

**FAMILY STRUCTURE AND CHANGE
THROUGH MIDDLE CHILDHOOD:

THE IMPACT ON CHILDREN'S
ADJUSTMENT AND ACHIEVEMENT**

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Abstract

This research investigates family stability and change for young Australian children across middle childhood. The nature of family structure and multiple family transitions have been shown to adversely impact on children's wellbeing. However, there is not a strong research base in Australia that has examined the effects of family structure and change on developmental and educational outcomes for children. The current research addresses this gap. It uses data from *Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC)*.

LSAC is a longitudinal study which involves a nationally representative sample of 10,000 children recruited in two age cohorts, an Infant Cohort and a Kindergarten Cohort. Data for the Kindergarten Cohort is used in the current research. LSAC data has been collected biennially since 2004. In this research, data for four waves of data collection are used, from recruitment when children were aged 4-5 years (Wave 1) until age 10-11 years (Wave 4). There are three studies reported in this thesis.

Study 1 used data from Wave 1 (2004) through to Wave 4 (2010) to determine the level of family change that occurred for Australian children across middle childhood (4-5 years to 10-11 years). It examined if socio-demographic differences for children and families were evident across data periods for three family types: two-parent families with biological parents, re-partnered families, and single-parent families headed by mothers. The sample selection process involved identifying children who resided with a biological or adopted mother ($n = 3648$). Because mothers were the main respondent at each wave of data collection then more comprehensive data on personal variables for mothers could be consistently used across waves, rather than having confounding effects in the analyses across waves if the primary respondent changed or were fathers. Overall, there were few family transitions. Demographic differences by family type were evident. For example, single-parent families, headed by mothers, had lower income and were less well educated than mothers in two-parent and re-partnered families.

Study 2 used data from Wave 1 (2004) through to Wave 4 (2010) to provide descriptive analyses on a range of ecological variables considered from previous research to influence child outcomes. The analyses examined residential and school changes for children through middle childhood (from data collection Waves 1 to 4); differences in the quality of relationships that children reported with parents, teachers, and peers at Wave 4;

as well as maternal reports of personal mental health and family cohesion. Findings indicated that children in re-partnered mother or single-mother families were more likely to experience both residential and school change in comparison to children who resided with two biological parents. In addition, children living with both biological parents were also more likely to report higher levels of quality relationships with parents, teachers and peers. Single mothers also reported higher levels of psychological distress in comparison to mothers in two-parent families and re-partnered families.

Study 3 developed hierarchical regression models with sets of variables that measured child and family characteristics, change variables on family structure, income, home and school changes for children, and home and school support variables. The models examined the influence of the predictor variables on four outcome variables related to children's adjustment and academic achievement at Wave 4 (10-11 years). Child behavioural adjustment was measured by scales from the Strengths and Difficulties Questionnaire (SDQ) for Conduct Problems and the Emotional Symptoms, while academic achievement was measured by scales from the Academic Rating Scale (ARS) for Language and Literacy and the Mathematical Thinking.

Results from the hierarchical multiple regression models indicated that social and economic change (residential, school and income changes) significantly contributed to the prediction of child outcomes at Wave 4. Children's perceptions of their relationships with peers were positively associated with adjustment while maternal education and family income were also influential on academic outcomes. Family instability in comparison was not a significant contributor to the models. These results indicated support for the ecological nature of child development given that factors related to home and school contexts contributed to child outcomes. This lack of association of outcomes to family transitions was attributed to the relatively small number of transitions across family type for the six year time period for which data were analysed.

The results of these studies provide new understanding of continuity and change experienced for children in Australia by family structure, number of family transitions and home and school change. Children in single-mother families or re-partnered families faced greater economic disadvantage in comparison to children in families with two biological parents. In addition to being at risk of subsequent family structure change, they are more likely to experience residential or school change, potentially leading to disruption of peer and teacher relationships.

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Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: QUT Verified Signature

Kirstine Hand

Date: 01/11/14

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CHAPTER 1: INTRODUCTION

1.1 Introduction

While the majority of children live in households in which there are two biological parents, a substantial number of children now experience parental separation during childhood and live in single-parent households. Other children live in households in which their biological parents have re-partnered and the children become members of blended or step-parent families. The introduction of no-fault divorce in a number of countries, including Australia, in the 1970s, brought significant increases in family separation and divorce and a significant number of those relationships involved children. This led to a burgeoning of research to investigate the impact of these changes on children. However, there has been relatively little focus in Australian research focused on outcomes for children who experience either single or multiple family transitions. The current research presented in this thesis contributes new understanding about the family experiences of Australian children.

The current research on children's experiences of continuity and change in families will help to identify factors that may affect children's developmental outcomes. The findings can help to raise awareness about the effect of family instability on children and inform interventions for children who are at developmental risk. Factors that affect child wellbeing may include changes to the economic circumstances of the household in which the child lives (Cooper, McLanahan, Meadows, & Brooks-Gunn, 2009), as well as residential and school changes (Fomby & Sennott, 2013). These ecological factors may have significant effects on children's experiences (Bronfenbrenner, 1979). In this research, particular account is taken of children's perspectives on their relationships with parents, teachers, and peers. These are ecological factors which may mediate or moderate the effects of family transitions on developmental outcomes.

This research examines stability and change in family structure for Australian children, aged from 4 to 11 years. The impact on child adjustment and achievement are considered when children are 10-11 years of age. The research analyses draw on data from *Growing up in Australia: The Longitudinal Study of Australian Children* (LSAC) to explore the research questions posed in this thesis. The LSAC study is a nationally representative sample of Australian children (Gray & Smart, 2009). LSAC tracks two

cohorts across time through biennial data collection. Data for the current program of research will focus on the Kindergarten Cohort, aged 4 to 5 years at the time of recruitment to the LSAC study followed to age 10-11 years. Analyses draw on data for the Kindergarten Cohort from Wave 1 (2004), Wave 2 (2006), Wave 3 (2008) and Wave 4 (2010).

1.2 Background to the Research Problem

Across the last four decades, there have been significant changes to the kinds of family structures in which Australian children live (Qu & Weston, 2013). While two biological parents in the family are still the norm for the majority of children, significant numbers of children live in other family types, primarily as the result of parental separation, divorce, and re-partnering (Coontz, 2004; Saggars & Sims, 2004). It is clear from demographic trends that family instability has become a salient part of many children's lives (Fomby & Cherlin, 2007). A focus on the effects of such instability has become an important focus in current research on families and children's wellbeing; exploring the number of family household changes that children experience and the consequences of those changes (Osborne, Berger, & Magnuson, 2012; Osborne & McLanahan, 2007). Family instability has been found to have a range of negative effects on children (Cavanagh & Huston 2006, 2008; Fomby & Cherlin 2007; Magnuson & Berger 2009; Osborne & McLanahan 2007); as well as longer term consequences on wellbeing in adulthood (Gilman, Kawachi, Fitzmaurice, & Buka, 2003).

Early research, on the effects of family divorce and separation, through the 1970s and 1980s, found negative effects from parental divorce for a high proportion of children. For example, longitudinal research studies conducted by Mavis Hetherington and colleagues in the United States followed more than 1,400 families (Hetherington & Kelly, 2002). Their conclusions indicated that about 75% of children do well after experiencing parental divorce, while 25% of children experience major problems or emotional difficulties; in comparison to about 10% of children in non-divorced families who may also experience major behavioural or academic difficulties. Another early researcher, Judith Wallerstein found, through her clinical research, that parental separation and divorce had only short term impact on wellbeing (Wallerstein & Blakeslee, 1989). However, in a follow-up study by Wallerstein with the 131 children originally engaged in her research, Wallerstein, Lewis and Blakeslee (2000) identified that there were

significant long term differences between growing up in an intact versus a divorced family. Children of divorce encountered extensive difficulties in their personal relationships in adulthood compared to a comparison group who had grown up in the same neighbourhoods and attended the same elementary and high schools as the original participants.

In a synthesis of findings from this research period through the 1970s to the 1990s, Pryor and Rodgers (2001) concluded that separation and divorce resulted in significant negative impacts on some children. It remains an important direction for current developmental research to identify which factors make some children more resilient after family change and to identify factors that also may lead to greater vulnerability. However, since this early period of research that looked at change in family structure as a single phenomenon, it is now evident that many children experience multiple family transitions across childhood. It is this family instability through parental relationship changes that is considered to have a significant impact on child outcomes.

Current demographic trends indicate there is substantial diversity in family structures. Children are raised in single-parent families, as a result of parental separation or by mothers who have never married; in families with non-married parents; and in re-partnered and blended families. Researchers have recognised the need to study families as dynamic systems (Osborne, Berger, & Magnuson, 2012). Kiernan, McLanahan, Holmes, and Wright (2011) suggested from their research that it is the resultant family complexities that lead to poorer child outcomes. It appears that family structure, per se, does not necessarily lead to negative child outcomes but it is the number of family transitions that may be more strongly associated with compromised development opportunities for children (Fomby & Cherlin, 2007; Magnuson & Berger, 2009; Waldfogel, Craigie, & Brooks-Gunn, 2010). This, in turn, raises concerns about how best to support these children and families.

There are various hypotheses about the reasons for the negative effects of family transitions and instability on children's wellbeing. Possibilities include the effects of having to adjust and re-adjust to new circumstances if there are multiple family transitions. These new circumstances may include adjusting to new parent figures, new friends, and new schools. These adjustments may be more difficult for some children than others. For example, Ackerman, Kogos, Youngstrom, Schoff, and Izard (1999) identified an interaction between the child temperament dimension of adaptability and family

instability, indicating that the least adaptable children were most affected. Family instability may also have differential effects across developmental domains. For example, Ackerman and Brown (2006) reported that family instability was related to heightened levels of problem behaviours at school but not to academic competence. Ackerman and Brown propose that current academic achievement is more strongly influenced by past competence whereas existing behavioural problems are likely to be exacerbated by family transitions. The theoretical points that Ackerman and colleagues make from their research studies are that the ecological adversity associated with family instability explains differences in outcomes; the effects are not the same for all children; and poorer economic circumstances in particular, prior to, or after family change intensify the consequences for children.

1.3 Key Constructs and Definitions

In this section, definitions of key constructs relevant to the current program of research are introduced. Three family structures are of interest in this thesis. They are focused on the LSAC study child and his/her relationship to the parental figures in the household, either by a biological relationship or by adoption. Family structures considered are: two-parent-biological families; re-partnered families; and single-parent families.

Family structure: Baker (2001) noted that the term, family, can be used to describe a number of different arrangements. Definitions and categorisations of family types by structure can vary with different distinctions being made depending on the research context. The definitions used in this thesis were selected after consideration of those used by the Australian Bureau of Statistics (ABS, 2011).

Two-parent-biological family refers to a family in which the LSAC child is residing with biological or adoptive parents. Couple relationships are defined as two people, usually residing in the same household, who share a social and economic bond usually associated with marriage. This may either be a registered marriage or a de facto relationship.

Re-partnered family refers to a family that has two parental figures in the home through the addition of a new parenting figure. These families would typically include the LSAC study child and one biological or adopted mother along with a new unrelated adult.

Non-biological fathers are referred to as social fathers. Parents in the household may be either married or cohabitating. Distinctions are not made for step or blended families which distinguish between families based on the presence of other children who may, or may not, be biological siblings.

Single-parent family refers to a family which is headed by a sole parent. Single-parent families in which the parent is female are a particular focus in this research given that female-headed single-parent households constitute the majority of such families and that these families are known to face increased risks of economic adversity when compared to families headed by single fathers.

Social father is a term used in the research literature to refer to stepfathers or unrelated cohabiting romantic partners of children's mothers (Berger, Paxson, & Waldfogel, 2009).

Family transition: Family transition refers to the dissolution of a parent relationship or the reformation of a new parental relationship. Transitions occur for example, if married or cohabitating parents separate or if a single parent forms a new partnership through marriage or cohabitation. It is acknowledged that this may not capture other new parental relationships that occur without sharing a household residence which may also have an impact on child outcomes.

Family instability: Instability can be considered as multiple changes in family structure which is usually measured as a count of the entrances and exits by a biological parent's partner(s) or spouse(s) in and out of the child's household (Fomby & Cherlin, 2007; Osborne & McLanahan, 2007).

Residential mobility refers to a move to a different home. Frequent residential moves have been found to be associated with poor child outcomes (Adam & Chase-Lansdale, 2002; Wilkerson, 2009). The levels of disruption caused by a residential move can differ depending on distance moved; the reasons for the move; and other related changes for the child such as a change in family structure or a school change.

School mobility refers to a change of school. For children, changing schools can result can have significant impact through the need to adjust to a new school environment with new school rules and expectations and the need to build new relationships with teachers and peers. School mobility has been shown to impact negatively on child

outcomes, with increasing negative effects for highly mobile children (Mehana & Reynolds, 2004; Rumberger, 2003).

1.4 Research Questions

The research reported in this thesis investigates stability and change in family structure for young Australian children, across the primary school years, and the impact of such change on academic achievement and behavioural adjustment at 10-11 years. The additional impact of residential and school changes on children is also considered; as well as the influence of the quality of relationships that children have with parents, teachers, and peers, and maternal mental health on achievement and adjustment.

The key research questions that are addressed in this thesis are:

1. What changes in family structure occur for Australian children through the primary school years? *Specifically, in what family structures (two-parent, single-parent, or re-partnered family) do children typically live at 4-5 years, 6-7 years, 8-9 years, and 10-11 years and how does family structure change for children across those years?*
2. Do socio-demographic factors differentiate families by structure, and change in structure, through the primary school years? *Specifically, what child, parental, and household characteristics, and economic circumstances, are associated with family structure (two-parent, single-parent, and re-partnered families) when children are 4-5 years, 6-7 years, 8-9 years, and 10-11 years?*
3. How is stability and change in family structure associated with residential and school mobility of Australian children across the primary school years? *Specifically, does the number of residential and school changes vary for children from different family structures (two-parent families, single-parent families, or re-partnered families) across the primary school years?*
4. What is the quality of maternal mental health for Australian children, at age 10-11 years, and is maternal mental health associated with family structure? *Specifically, what differences are there in the mental health of mothers in different family structures (two-parent families, single-parent families, and re-partnered families) for children at 10-11 years?*
5. What is the quality of the relationships that Australian children, at age 10-11 years, have with their parents, teachers, and peers and is the quality of relationships

associated with family structure? *Specifically, what differences are there in the quality of relationships with parents, teachers, and peers by family structure (two-parent families, single-parent families or re-partnered families) for children at 10-11 years?*

6. What impact, over time, does change in family structure, social and economic instability (residential, school and economic change) have on children's academic and behavioural adjustment, at age 10 to 11 years; while taking account of maternal mental health, and the quality of relationships which children have with parents, teachers, and peers? *Specifically, what factors are associated with achievement and behavioural adjustment for children at 10-11 years, including accounting for change in family structure, residential, school, and economic circumstances across the school years?*

1.5 Methodology

The research questions of interest for this thesis will be addressed using data from the LSAC Kindergarten Cohort. Chapter 3 will provide detailed information about the LSAC study. In brief, in 2004, 4983 children were recruited for the LSAC Kindergarten Cohort. Four time points of data are utilised in the analyses - Wave 1 (2004), Wave 2 (2006), Wave 3 (2008) and Wave 4 (2010). At the time of recruitment, children in this cohort were aged 4-5 years; at Wave 2 they were aged 6-7 years; at Wave 3 they were aged 8-9 years; and at Wave 4 they were 10-11 years. This research captures the experiences of children by the nature of their family structure across data collection waves, as well as their changing educational contexts as they move from early childhood education programs into formal schooling.

At Wave 1 in the LSAC data collection, 'the person who was most knowledgeable about the child' (Parent 1) was interviewed. These persons were predominately mothers. In later waves of LSAC data collection, continuity in the adult respondent about the child was encouraged, in order to ensure greater consistency in data collected when parents were reporting on aspects of family life across time, such as parenting practices. Therefore, the parent respondents at each wave of data collection were most likely to be mothers who were either a biological parent or an adoptive parent. At Wave 1, only 2.9% of Parent 1 respondents were fathers. In the sampling for the research reported in this thesis, it is families in which there was a maternal parental respondent at Wave 1 that are selected and tracked because of data complexities in having different primary respondents

about the child across time. While it is acknowledged that fathers make important contributions to their children's development it was not within the scope of this thesis because of the small sample of fathers who were a primary respondent at Wave 1 to include this group in the overall analytic sample that is tracked from Wave 1 to Wave 4 data collection.

This decision about restricting the sample to families in which Parent 1 was female was also made in order to restrict complexities in analyses when family structure changed across waves. It is still the case, that after separation or divorce, most children will reside with their mothers. From Wave 1, and in subsequent waves of data collection, when family separation occurred then children were more likely to be residing in female-headed households. Other research has also adopted this approach in sample selection when examining the impact of change in family structure on children (e.g., Coley & Carrano, 2011; Fagan, 2012; Martinez & Forgatch, 2002; Osborne & McLanahan, 2007; Ryan & Claessens, 2012). Therefore, in tracking family structure and change, over time it is only female-headed households in single parent families who are represented as the primary respondent about the child; and in re-partnered families it is mother of the child at Wave 1 (Parent 1) who remains the informant about the child.

Using large data sets for secondary analyses provides greater statistical power as well as more flexibility to explore the experiences of subgroups of participants within a larger study (McMillan & Schumacher, 2006). However, this is offset by certain limitations. These limitations include the lack of researcher control over measurement because the data set has measured variables predetermined by the designers of the research (Gorard, 2003). For example, large surveys like LSAC often use shorter versions of measurement instruments as opposed to full item sets, in order to be more cost and time efficient in the delivery of a complex longitudinal survey to participants in the research. This in turn may reduce the depth of measurement of particular constructs of interest for the secondary data analyst. However, an advantage of secondary analysis is the opportunity to access high quality and large longitudinal data sets (Smith, 2008).

Approaches to the data analyses employed in this study include descriptive analyses of family structure and changes and description of family demographics across the four waves of LSAC data considered in this research. Descriptive statistics of residential and school changes are also presented. Regression analyses examine predictive models on four child outcomes related to school adjustment and achievement, using

teacher-report data. The predictor variables relate to child and family characteristics; change variables on family structure (*family instability*); residence, school, and economic changes (*social and economic instability*) from ages 4 to 11 years, and child-report variables on the quality of relationships with parents, teachers, and peers. The analytic approaches taken to address the research questions for this thesis are described in detail in Chapter 3.

1.6 Significance of the Research

This research is significant because it provides important new knowledge into family stability and change for Australian children across the primary school years, as well as the level of residential and school mobility. As noted by de Vaus and Gray (2003) there is a lack of information available on the number of Australian children who experience one or more family transitions and the impact this has on child outcomes. Beausang, Farrell, and Walsh (2012) also drew attention to the importance of research considering both home and school contexts for Australian children undergoing family change and the limited research that has been conducted. The current research provides an important contribution by addressing this current research gap in considering family, residential, and school changes for children.

Extensive reviews of research have reported strong associations between divorce and separation and poorer child outcomes (e.g., Amato & Cheadle, 2005; Fomby & Cherlin, 2007). Changes in family structure through parental separation impact on children in a number of ways. These may include the stress of the initial parental separation, continuing parental conflict, changes in parenting quality, and the loss of important relationships; as well as significant consequences if children are living in less affluent economic circumstances (Kelly & Emery, 2003). Changes in family living arrangements also increase a child's chances of experiencing a residential move or a change of school. There may also be a loss of social supports for the child, including friendship networks (Pribesh & Downey, 1999; South & Haynie, 2004). As a consequence, children face multiple stressors. It is important that greater understanding of the effects of such changes on children be explored in order that effective family and child support interventions are developed and implemented in order to ensure successful school engagement and completion of school. It is also important to recognise that the negative impact of changes in family structure on children does not apply to all children

(Flowerdew & Neale, 2003; Fomby & Cherlin, 2007). The majority of children are likely to adjust to a changed situation after a period of instability.

Researchers have moved from the simple question of whether family changes affect child outcomes to a process-oriented approach which involves exploring what ecological features of a child's life affect outcomes. This can lead to greater understanding of the short term and longer term effects of these changes that may adversely affect some children more than others (Amato, 2000; Kelly & Emery, 2003). Greater understanding is needed about how school change and residential change, in conjunction with family transitions affect child outcomes, in order to identify how a range of factors mediate or moderate greater risks for children.

The significance of the current research is also related to its focus on multiple domains of competence. While focusing on a single developmental domain may be appropriate for any given study, it does not provide an holistic picture because children may demonstrate resilient outcomes in one domain of development while struggling in another (Luthar, 1993; Luthar & Zelazo, 2003;). There is also strong interest from a policy perspective on children's social, behavioural and academic engagement in school and factors that promote successful achievement and adjustment. Recent changes to public policy that has reduced financial supports for single-parent families may result in greater hardship and increased financial vulnerability (Summerfield, Young, Harman & Flatau, 2010). These changes have consequences for children's wellbeing and children's life at school, in terms of such things as affordability of educational resources and extra-curricular activities. Determining complex patterns in family stability and change for children and the effects on family relationships and school engagement provide valuable knowledge to inform design of effective intervention programs to support children at risk.

Increased understanding and awareness of the nature of risk and protective factors could enable schools to provide relevant resources to support children's wellbeing. It could also enable teachers to gain greater awareness of factors affecting childhood developmental trajectories, so that those at greater risk can be offered supports that foster resilient outcomes. While previous research has begun to examine the compounded effects of multiple family transitions, residential and school change, it is important to examine the patterns of stability and change for the Australian context.

Data from LSAC provides new opportunities for research with a large sample of young Australian children. The process of using data that has been previously collected is referred to as secondary data analysis. This technique presents great potential for researchers to use quality data to answer unique and original research questions. Secondary data analysis utilising data from large government-funded studies has traditionally been conducted by sociologists and economists. This practice has been far less common in educational and developmental research despite the increasingly recognised benefits of using large data sets for secondary analyses (Smith, 2008).

There are a number of advantages to using pre-existing data sets. Most importantly the data can provide individual researchers access to representative samples of particular populations (Boslaugh, 2007). Large sample sizes and population representation reduce the risk of selection bias in the research, especially when data collection is well designed to maximise response rates (Brooks-Gunn, Berlin, Leventhal, & Fuligni, 2000). LSAC enables Australian researchers to explore research questions using data from a large nationally representative sample; hence providing important opportunities to conduct analyses that can inform new directions for educational and developmental policy and practice.

1.8 Overview of the Thesis

The current chapter has provided an overview of the directions of the research undertaken for this thesis. Key constructs were presented along with relevant definitions. The specific research questions and the methodological approaches used in addressing them were outlined, along with some background information on LSAC which provides the dataset for the current research.

Chapter 2 reviews current theory and research with respect to family stability and instability and the developmental effects. It considers that change in economic circumstances and other ecological factors have an impact on children's wellbeing. It explores family stress and ecological theories which posit that negative developmental outcomes are dependent on family resources and the coping strategies available to family members. Finally, it considers changes in social contexts that co-occur with family instability.

Chapter 3 presents an overview of the studies presented in the thesis. It will provide an overview of the LSAC study, including design, sampling and instrumentation. It will comment on the value of secondary data analysis that LSAC affords to researchers to explore unique questions. It will explain the sample selection for this research study and the approach to handling missing data. It will detail the measurement in the research and overview the approaches to the analyses utilised across the three studies presented in the thesis.

There are three chapters with research results. Chapter 4 will address Research Questions 1 and 2, exploring the level of change through family transitions that occur for Australian children across the primary school years and reporting the socio-demographic characteristics of families who experience family change. Chapter 4 has a primary focus on Wave 1 data for the K cohort but also refers to data from the next three data waves. Chapter 5 focuses on Research Questions 3, 4 and 5 and describes the extent to which family transitions are associated with residential mobility and school mobility for young Australian children and children's relationships with parents, teachers, and peers at ages 10-11 years. It will also describe maternal mental health when children are 10-11 years in relation to family structure. In Chapter 6, Research Question 6 is addressed. The analyses focus on the impact of continuity and change, in family structure, and social and economic changes, across the primary school years, on child academic achievement and behavioural adjustment. Through regression analyses, the extent to which ecological factors of home and school changes and relationship quality with parents, teachers, and peers contribute to developmental outcomes is assessed.

Chapter 7 will review the key findings of the research and explore the implications for theory and policy. It will discuss the limitations and strengths of the research and directions for future research.

1.9 Conclusions

This chapter has provided a rationale for the current research and its significance. It has defined key family constructs and described the research questions. It has provided a brief overview of the LSAC study from which the data to be analysed for this thesis are drawn.

Family demographics have changed from the 1970s as a result of the liberalisation of divorce laws which led to an increase in single-parent and re-partnered families. A first wave of research focused solely on family structure as the key influence on child outcomes. Since this early period of research, it is now evident that many children may experience multiple changes in the family household in which they live. Current demographic trends indicate substantially more diversity of family structures through re-partnering and remarriage. Current research now seeks to account for the dynamic and complex nature of family structure. Some children experience repeated changes when parents form and dissolve relationships. Each change is considered to compromise child wellbeing.

This research seeks to bring further breadth to the theoretical development in the area of the effects of family change on children and how children's lives are influenced by the dynamic and complex nature of contemporary family formations and dissolutions. The research identifies key ecological factors that may influence outcomes so that they may serve as the basis for child and family interventions when children and families require support.

In the next chapter, previous research and theory in the focus area is reviewed. The concept of family instability has become more nuanced as researchers have sought to explain how family structure and family instability make a difference to children. In seeking to identify the mechanisms regarding why instability makes a difference, the research has emphasised the influences of maternal stress, changes in parenting quality, adult relationship conflict prior to and after separation, economic changes associated with family change, and the residential and school changes that children may experience. This is an ecological perspective on the effects of family stability and instability on children.

CHAPTER 2: FAMILY STRUCTURE: CONTINUITY AND CHANGE AND CHILD WELLBEING

2.1 Introduction

Over several decades as the traditional structure of families has changed, researchers have investigated the impact of different family forms on child wellbeing (Amato, 2005; Brown, 2004; Magnuson & Berger, 2009). While diverse types of family structure may now be more common, there is still much to be learnt about the impact of changes in family structures on children (Hill, Yeung, & Duncan, 2001). In some families, children may experience more than one family transition and these possibilities for multiple family transitions has prompted researchers to study families as dynamic, rather than as static systems (Kiernan, McLanahan, Holmes, & Wright, 2011; Osborne, Berger, & Magnuson, 2012). There has been relatively little research in Australia on children's wellbeing as the result of changes in family structure or family transitions. In this thesis, family structure for children across the primary school years is considered in relation to their developmental outcomes at age 10-11 years.

Child wellbeing can be defined in many different ways. There is consensus that childhood wellbeing is multidimensional and should include dimensions of physical, educational, emotional and social wellbeing. Wellbeing is considered to be influenced by family income and access to education because these particular factors minimise the likelihood of disparities between individuals and enhance quality of life (Conti & Heckman, 2012). Lamb (2012) emphasised the importance of psychological adjustment as a key aspect of wellbeing. Adjustment reflects the social competence that individuals acquire to get along with others and to function well in everyday life, for example, at school. In this research, child wellbeing and developmental outcomes are considered through measures of behavioural adjustment and academic achievement.

In this chapter, the nature of changes in the demographics of families over recent time is presented. Key findings of research on the impact of family transitions on children are reviewed. Theoretical perspectives on the mechanisms by which family change impacts on children are outlined. The impact of residential and school changes as mediating the effects of family change on wellbeing is considered; as well as the importance of children's relationships with parents, teachers, and peers. An ecological

model is discussed to illustrate the multi-layered nature of the influences of family change on child outcomes.

2.2 Demography of Families: International Perspectives

Since the 1970s, the rates of sole parenthood have increased internationally as divorce laws became more liberal. Through this period, women have achieved greater financial independence to support themselves and their children as a result of increased opportunities for education and employment. While the majority of children still reside in households with two biological parents, through either marriage or cohabitation, there are many other household living arrangements that children experience. These family forms include single-parent households, blended families or step-families when parents have re-partnered. In such families, it is possible that there are siblings who are biologically-related or step-siblings. Adding another layer of complexity to the children's lives in single or re-partnered families is that children may reside across two households because of shared parenting arrangements. A smaller proportion of children have gay or lesbian parents; while other children may not live with their biological parents and, instead, live with other relatives in kinship care arrangements. This thesis focuses on three family structures: two-parent families with biological parents, re-partnered families, and single-parent families.

The OECD (2011) reported family demographic data from 27 countries and concluded that, from 2000 to 2007, marriage was still the most likely form of partnership for couples. Countries which had most strongly maintained a traditional form of family included Japan, Korea and Greece. Across the OECD countries, which are countries that have the most developed national economies, one in six children lived in a single-parent household and most of these single-parent households were headed by women (85%). The highest proportion of children living with a single parent is in English-speaking countries which include the United States, United Kingdom, Canada and Australia. In these countries, more than 20% of children live in single-parent families.

In a comparative analysis on national family structures, Cherlin (2008) found that the United States had by far the highest rate of divorce, internationally. Almost 25% of marriages ended in divorce or separation within five years. In Australia, 9% of marriages ended within five years. This percentage was comparable to countries that included the

United Kingdom, Canada and France. For cohabiting relationships in the United States, more than 50% of these relationships ended within five years while in Australia the percentage was 40%. This was slightly more than the United Kingdom, Canada and Sweden.

Cherlin (2008) noted that it is now increasingly evident that a minority of men and women will have a number of relationships across their lifetime. He compared relevant statistics for Australia (2001) and the United States (2002) on this phenomenon for women aged 35 to 44 years. In this age range, many of these women will have had, or be having children. In Australia, 11% of women had experienced three or more partnerships compared to 14% of women in the United States. These figures could be predicted to increase over time. While there were some variations by level of education for women who had multiple partnerships in Australia, the percentage of women who had multiple partnerships and only high school education in the United States was very high.

2.2.1 Demography of Families in Australia

Increased family diversity in Australia emerged particularly as a result of the Family Law Act in 1976. Legal changes allowed individuals to divorce after a minimum of one year separation from a spouse, without demonstration of 'fault' by either spouse (ABS, 2012). Before the 1976 Family Law Act, the Australian Bureau of Statistics (ABS) recorded the average divorce rate, between 1961 and 1970, as 0.8 divorces per 1000 marriages (ABS, 2012). After the legislative changes were introduced, this rate fluctuated between 2.2 and 2.9 divorces per 1000 marriages. The incidence of single parent families also rose, from about 9% in 1974 to about 19% in 1996 (AIHW, 1997).

In 2009-2010, two-parent families with biological/adopted parents or who were married or cohabiting with dependent children, aged 17 years or less, were clearly the most common form of family type (ABS, 2011). These families accounted for 73% of all families with dependent children; 7% were step-families (families with a step-child who was not the biological child of both parents) or blended families (families with a step-child and a biological child of both parents). The remaining 20% were sole-parent families.

Regardless of family type, children are most likely to reside with their mothers. In 2009-2010, 21% of Australian children, between the ages of 0 to 17 years, had one parent living elsewhere (ABS, 2011). Of these children, 73% were living in single parent

households, 11% were in blended families and 14% were in step-families. Children lived with mothers in 81% of all families. In single-parent households, 85% of children lived with mothers. Mothers are still most likely to be the primary caregiver for Australian children.

2.3 Family Structure and Transitions

Much of the research from the United States investigating the effects of family structure and family transitions on child outcomes has been designed to test the hypothesis that children in sole-parent families fare less well than children in families with two biological parents who are married. This hypothesis is supported by research. The interpretation of this finding is that it is the level of social and financial disadvantage for sole-parent families that results in negative consequences for children. Research in other countries arrives at similar conclusions that family structure does matter for children's developmental outcomes. These findings are modest but consistent, across countries, that children who live in two-parent families have better educational, social, cognitive, and behavioural outcomes compared to children in all other family forms (e.g., Brown, 2004; Carlson & Corcoran, 2001; Manning & Lamb, 2003). Differences between outcomes for children who live in other family forms, such as step-families, cohabiting families, and single-parent families are usually minimal (Brown, 2004; Manning & Lamb, 2003). Benefits for children living with married biological parents, compared to cohabiting, biological parents, are also evident in the short-term and long term (Amato, 2005; Hill, Yeung, & Duncan, 2001; Gilman, Kawachi, Fitzmaurice & Buka, 2003).

2.3.1 Research on family structure

If parental marriage is good for children, then it might be expected that remarriage might have more benefits for children than living in a sole-parent family. However, while remarriage often results in an economic advantage for single parents, there seem to be greater adjustment and emotional stressors for re-partnered families as family roles are re-negotiated. No evident advantage is seen for children when parents re-marry (Stewart, 2007) and negative effects accumulate for children with each family transition, either into or out of a marriage (Fomby & Cherlin, 2007). Cavanaugh and Huston (2006) reported that children who experienced two or more transitions were more at risk for negative outcomes than children who had experienced just one or none.

Cohabitation does not appear to provide the same degree of protection against negative outcomes for children, even if the cohabitation involves two biological parents, at least in the research from the United States. Brown (2004) suggested that in cohabitation, families have less clearly defined parental roles and there is greater fragility in the relationship. There are also socio-demographic differences between married and unmarried parents. Gibson-Davis (2008) found that married biological parents were older, had higher education qualifications, higher household income, and better mental health than unmarried parents. Waldfogel, Craigie and Brooks-Gunn (2010) also reported that cohabiting and single parents were younger and less well educated than married parents. From the existing evidence, marital status and biological parentage seem to promote children's wellbeing, over and above any advantage of family stability.

2.3.2 Children's experiences in different family forms

In 2005 in the United States, a special issue of *The Future of Children* reviewed the status of research and policy on marriage and children's wellbeing. In the introduction to the series of papers in the special issue, McLanahan, Donahue and Haskins (2005) noted that from the U.S. research there was a broad consensus that the outcomes for children were more positive in stable, low-conflict, two-parent families while unstable and high-conflict relationships resulted in more negative outcomes for children.

Thomas and Sawhill (2005) in the special issue of *The Future of Children* reviewed the research evidence that children in married households fared better in terms of income than children in households of cohabiting couples who, in turn, fared better than children in sole-parent households. Households with married parents and cohabiting households benefit from the economies of scale in sharing household expenses that come from having two adult wage earners. Thomas and Sawhill also noted that a "selection" effect operates, with respect to marriage and income, because more highly educated individuals are more likely to marry than less well educated individuals. As a consequence, single parenthood reduces children's economic prospects. However, they noted that this link cannot be interpreted as causal. The financial support from government given to sole-parent families in many national contexts is more generous than the financial support given in the United States. However, despite this increased level of welfare support, there is still evidence of a negative impact on children as a consequence of living in a sole-parent household across most national contexts.

Amato (2005) in his article in *The Future of Children* also summarised the evidence for the proposition that children who grow up with two continuously married parents are less likely to experience cognitive, emotional, and social problems, either during childhood or in adulthood. He concluded that there is a true treatment effect of family structure on child outcomes although the effect sizes are small in meta-analyses of this research. Amato, like Thomas and Sawhill (2005), proposed that these differences in child outcomes by family structure were most likely the result of economic disparities but there was also evidence about parenting differences across family types (i.e., families with married biological parents compared to sole-parent and re-partnered families) that included differences in the level of co-operative parenting and level of emotional closeness that children perceived from parents.

2.3.3 The timing of family transitions

More research is still needed to explore the effects of the timing of family changes on children taking account of the age of the child when the family transition occurred and the age at which the impact on child outcomes is assessed. Longitudinal studies are needed that track children from an early age to adulthood because the timing of the family transition may have differential effects on outcomes. Few studies have considered the impact of family changes during middle childhood, although there are a number of studies which have looked at family instability and adolescent outcomes (e.g., Cavanagh, Schiller & Riegle-Crumb, 2006; Landsford, Malone, Castellino, Dodge, Pettit & Bates, 2006). Separation and re-partnering may result in residential and school moves through middle childhood and adolescence and these changes may affect outcomes when children's and adolescents' relationships and activities beyond the family are disrupted through mobility and changes in the family.

In a study of adolescents, Cavanagh et al. (2006) found that family transitions impacted most strongly on achievement when the transition occurred as the child began high school and at the completion of high school. Landsford et al. (2006) reported that the occurrence and timing of parental separation or divorce was related to academic achievement as well as mother-reported and teacher-reported internalising and externalising problems for adolescents in Grade 10. Internalising and externalising problems were associated with early parent separation, while later parent separation had

more impact on academic outcomes. It seems that the experience of family transitions at critical developmental time points may have different effects by the age of the child.

Waldfoegel et al. (2010) in their review of studies that used data from *The Fragile Families and Child Wellbeing Study* also indicated differential effects. This research study, for which the data are on public access, is following a cohort of approximately 5,000 children born between 1998 and 2000 in medium to large U.S. cities. The families were recruited in hospitals at the child's birth and include 3,700 children born to unmarried mothers and 1,200 children born to married mothers. Waldfoegel et al. identified five key mediators from their analyses of studies conducted by different researchers using this database through which family structure influences child outcomes. These key mediators are the level of parental resources, parental mental health, parental relationship quality, parenting quality, and father involvement. Waldfoegel et al. then tested the strength of those mediators on child cognitive, behavioural and health outcomes for children at 5 years of age. Their analyses indicated that family instability seems to matter more than family structure for cognitive and health outcomes; whereas growing up with a single mother across time seemed to matter more than instability for behaviour problems.

2.3.4 Australian research on family structure and transitions

There is not an extensive Australian research base that has examined the impact on child outcomes of marital transitions, although some analyses have examined the prevalence rates for family transitions. Analyses from the *Australian Household Income and Labour Dynamics* (HILDA) survey have been useful in extending this knowledge about the Australian context. In the 2001 HILDA survey, the number of family transitions experienced by individuals was retrospectively tracked for three cross-sectional age cohorts participating in the survey. De Vaus and Gray (2003) reported that 1.5% of individuals in the first cohort (born 1990-1995) had experienced two or more family transitions by age 5 years; by age 12 years, for the second cohort (born 1984-1989) this percentage had risen to 8% of individuals who had experienced two or more family transitions; by age 18 years, for the third cohort (born 1976-1983), 13% of individuals had experienced two or more family transitions and 16% had experienced one family transition. De Vaus and Gray noted the limitations in using retrospective data and the lack of outcome data available to assess the impact of these transitions over time on the

individuals reporting a high number of family transitions. Nonetheless, these findings provide important information about how many children had experienced multiple family transitions by adulthood for the Australian context.

In 2004, de Vaus reported on various data from Australian national surveys. He noted that the number of sole-parent families in Australia had increased at higher rates than divorces rates and that these households, usually headed by mothers, faced higher levels of financial stress when compared to families headed by single fathers. Mothers were more likely to have lower incomes than single fathers and they were more reliant on government support because of lower levels of education and employment skills. Craig (2004) reported that Australian family policies had sought to address the financial stress faced by single parent families through financial payments even while the issues of the level of family support to single parents was significant policy debate. This is an ongoing policy debate in 2013 as the Australian government moves to cut payments to sole parents (Australian Council of Social Services, 2013).

Ruschena, Prior, Sanson, and Smart (2005) examined the impact of family transitions on Australian adolescents at ages 17-18 years, using data from the Australian Temperament Study in which children had been recruited in infancy in Victoria. They used the longitudinal and concurrent questionnaire data for the young people who had experienced family transitions during their lifetime (i.e., marital separation, divorce, remarriage or parental death) compared to a sample of those who had not experienced any family transition. No significant differences between groups were found with regard to behavioural and emotional adjustment, concurrently or across time, and nor were there any difference on academic outcomes or social competence. However, there were significant differences between the groups on measures of parent-teen conflict and parent-child attachment, with the parents of those who had experienced a family transition indicating more conflict with their adolescent and the adolescents reporting lower relationship quality with their primary parent. The conclusions drawn were that the adolescents were relatively resilient to the family transitions. Further details on this study are provided in Appendix A.1.

Using LSAC data from Wave 1 to Wave 3 (a four year period) for children in the Kindergarten cohort, Qu and Weston (2012) examined family structure, co-parental relationship quality, post-separation paternal involvement and children's emotional wellbeing for cohabiting families, married biological parents, and sole-mother families.

From the reports of primary caregivers children with cohabiting parents were doing less well than those with married parents in some areas (e.g. overall social–emotional development and general development), but they were doing better than those in sole-mother families. The family-related factors that were examined accounted for virtually all of the differences apparent between children with married parents and those with cohabiting parents. Differences apparent in Wave 1 in the wellbeing of children in married families and those in sole mother families could be largely explained by the family-related factors that were examined.

A range of other Australian studies have examined legal issues surrounding family structure change stemming from ongoing family conflict after parental separation, and the impact of the legal processes on children (e.g., Fehlberg, Smyth, Maclean, & Roberts, 2011; Hart, 2009; Parkinson, Cashmore, & Single, 2007). These studies have informed policy on Australian family law, for example on child custody arrangements and parental contact arrangements for children when parents are unable to reach shared parenting agreements. Such determinations are made in family courts (Kelly, 2007). High conflict custody disputes are often linked to parental concern over child wellbeing and safety when in the care of the other parent or when there is child resistance to spending time with a parent with whom they do not have a close relationship. The presence of new partners and financial disputes over child support can create additional friction throughout the separation and divorce process for parents (Cashmore & Parkinson, 2011). These studies conducted when parents are in dispute highlight the additional stresses faced by Australian families, particularly children, when there are parental relationship breakdowns and when parents re-partner.

2.4 Mechanisms that Link Family Change to Child Wellbeing

A number of mechanisms have been proposed to explain the link between parental family change and negative child outcomes (e.g., Amato, 2005; Carlson & Corcoran, 2001). These include economic resources and changes as a result of parental separation, family selection factors and family stress factors such as paternal absence, poor maternal mental health, conflict between parents, compromised parenting practices, and support provided to children via child-parent relationships. Three of these mechanisms are considered in this section: level of economic resources available to the family; family stress; and family selection. Although few studies have assessed all three mechanisms

simultaneously, a general consensus from this research is that each mechanism is likely to have a meaningful influence on outcomes for children. In this thesis, indicators used in the analyses tap selection processes, family processes, and the ecological context in order to better understand the links between family structure changes and child outcomes through middle childhood.

2.4.1 Economic resources

The economic circumstances of families often decline after divorce, especially for sole-parent families headed by mothers. Economic resources, including parental education and income, have a direct influence on children's lives and are also critical to the wellbeing of parents in order to ensure effective family functioning (Carlson & Corcoran, 2001). In the United States, levels of child poverty are highly differentiated by family structure. Manning and Brown (2006) noted that about 7% of children in married families with two biological parents experience poverty compared with almost 44% of single-parent families headed by mothers. Such economic deprivation for single parents impedes effective parenting and contributes to parental stress. Children in low-income homes consistently fare less well on cognitive, social-emotional, and physical outcomes compared to children in higher income homes (Gennetian, Castells, & Morris, 2010).

The level of financial resources shape family processes, and relationships. Parents who have consistently low incomes have fewer resources to invest in their children, including nutritious food and cognitively stimulating materials (Bradley & Corwyn, 2002). Economic hardship is also a cause of parental stress which decreases the quality of parenting and places children at risk for social-emotional and behavioural difficulties (Conger, Conger, & Martin, 2010). Empirical evidence supports these propositions that low income and stress are important to cognitive, social and emotional development (Yeung, Linver, & Brooks-Gunn, 2002). Therefore, if family structure is associated with the level of economic resources there will be consequent effects on children's wellbeing.

2.4.2 Family stress

Children seem to have better developmental outcomes in stable family environments in which well-adjusted parents have established consistent routines. Family turbulence, defined by the number of disruptions and stressful life events that might include residential, school, or parental employment changes are linked to lower levels of

child wellbeing (Teachman, 2008). Family conflict and disruptions often occur with economic instability and result in inconsistent parenting that places stress on children (Carlson & Corcoran, 2001).

Family stress theory suggests that the changes in family structure adversely affect children due to the disruption to the parental nurturing roles and the support available to children that is provided by parents (Hill et al., 2001). The family changes as a result of a separation, divorce, or in re-partnering appears to be as stressful to children as it is to parents. The consequences of stress are thought to impact on the emotional bonds between parents and children which lead to social and emotional difficulties (Hill et al., 2001). Parents who are preoccupied by economic issues and marital conflict are likely to be less able to engage in competent or consistent parenting. Single parents who do not have a partner with whom to discuss issues for the child or support parenting decisions tend to exert less control and spend less time with their children. There are also the differences between the role of mothers and fathers in parenting, along with disruptions to regular contact for the child with a non-residential parent (usually the father) after family transitions. These factors may all impact on the wellbeing of a child.

The level of parental conflict prior to, or during, a family transition is also a significant stressor on family members (Harold, 2011). This can be an important contributing factor to poorer outcomes for children, even while separation and divorce may result in more positive outcomes for the parents. Parental conflict can also continue for many years after separation, contributing further stress to parent-child relationships (Sarrazin & Cyr, 2007). When children live with their mother and parental conflict persists at high levels after separation, there are likely to be decreased levels of paternal involvement, in particular, and lower quality in father-child relationships over time (Ahrons & Tanner, 2003). Having a high quality relationship with at least one parent has also been found to be a protective factor for children even when there are high levels of parental conflict (Kelly & Emery, 2003).

Positive maternal wellbeing that is maintained through family transitions is an important factor that can support children. However, family change including dissolution of an existing relationship or entering into a new relationship can create maternal stress as well as emotional and mental health problems (Meadows, McLanahan & Brooks-Gunn, 2008; Osborne & McLanahan 2007). Although Osborne, Berger and Magnuson (2012) reported that entering new relationships may also bring positive effects for some mothers.

2.4.3 Family selection factors

While the benefits to children that accrue from residing in two-parent families seem to be a reasonable proposition, it is not explained simply by the presence of two biological parents or by their marital status (married versus unmarried). It is likely that biological parents who marry and maintain a family have particular attributes (Brown, 2010; Hofferth, 2005). These may include the personal characteristics of each parent, their resources and the quality of the environments in which they live which lead to better adjusted, better resourced and more stable relationships in which to bring up their children.

The selection perspective proposes that it is the characteristics of parents that are influential on family formation and, consequently, child outcomes (Hofferth, 2005). Children fare best in two-parent families with their biological parents because these adults are able to form and maintain a family as a result of being more stable and well-adjusted, and having the education and the economic resources that reduce family stress. Parents bring into a relationship a range of characteristics that are likely to raise the possibilities that the marriage will fail or characteristics that make the risk of adverse outcomes for their children more likely. These characteristics might include poor mental health, antisocial behaviour or substance dependencies. Parents with such personal difficulties are likely to have greater difficulties in maintaining stable and enduring intimate relationships and in providing for their children with a family environment that is likely to promote their children's wellbeing.

A question posed in the sociological and psychological research literature is why some individuals have more difficulty than others in achieving stable relationships. Fomby and Cherlin (2007) reported on a two-generational survey in the United States about children's experiences of transitions. The mothers had participated in a research study when they were children, so it was possible to control statistically for mothers' own experience of family transitions and other behavioural characteristics. The more family transitions that mothers had experienced as children, then the more likely it was that their children had behavioural adjustment problems. In an effort to account for selection, researchers typically control for factors associated with family structure and child wellbeing, such as parental characteristics, parental resources, and family environment (Hofferth, 2005). Consistent with the selection perspective, controlling for these factors usually reduces the effect of family structure to non-significance (Amato, 2005). A failure

to account for possible selection characteristics can overstate the effect of family structure on child wellbeing (McLanahan & Percheski, 2008).

In an Australian study, Butterworth, Oz, Rodgers, and Berry (2008) used longitudinal data from three waves of the HILDA survey to investigate the characteristics of couples that separated. The analysis focused on adult respondents with dependent children and considered couples in both marriage and de facto relationships. Having identified intact couples with dependent children at Wave 1, Butterworth et al. (2008) contrasted the initial circumstances of those who remain together with those who separated or divorced. Of the 1,498 couples: 1,384 (92%) were classified as intact couples over three waves of data and 114 (8%) had separated. The analyses confirmed associations found in international research that stability is associated with couple concordance on factors such as physical health and mental health, labour force status, and educational attainment; demonstrating the how such characteristics of spouses may influence relationship stability. For example, of the 25 couples in which women reported tertiary qualifications and men reported not completing high school, there was a ten-fold greater risk of divorce or separation. This highlights how selection factors may contribute to relationship stability or instability over time.

2.5 Residential and School Mobility: Mediators of Effects on Child Wellbeing

There has been considerable interest in examining how other changes in children's lives after a family transition may be associated with negative effects on wellbeing. Of most interest in the research has been the focus on the mobility of families through residential moves that may also be associated with school moves for children.

2.5.1 Residential mobility

Residential mobility, or change of residence, may occur for a variety of reasons. Family structure changes, such as partnership dissolution or reformation, contribute to residential moves. Other household shifts may occur due to an end of lease for renters, job loss, or family death, or may be a result of more positive events such as a parent moving closer to family support networks, for a better job or to a better neighbourhood or home (Crowley, 2003).

In Australia, data presented by the ABS (2010) outlines findings from a survey conducted in 2007-08 on Australian household moves. For couple families (two parents, blended or step families), 45% were identified as having moved in the last five years, with moves more likely if children were five years or under. Moves tended to be motivated by wanting to improve the quality of the home, by moving to larger or better homes (30%) or by purchasing a new home (22%). New parental partnerships also contributed to residential changes for blended and step families, as well as for 20% of couples without children. Approximately 76% of the couple families in this survey either owned their own home or were paying off their home, and only 19% were renting. For single parent families the picture from the ABS survey was very different. With 59% of single parents having moved within the last five years (compared to 45% of couple families) and 21% listed relationship breakdown as the reason. A much higher proportion of single parents were renting properties (42%) compared to the couple families (ABS, 2010).

While these figures provide some baseline information, Jelleyman and Spencer (2008) noted that household shifts are underestimated in this type of census data for individuals who have moved more than once. These authors completed a review of twenty-two studies which examined residential mobility and the associations with health outcomes, including behavioural and emotional problems for children. The majority of the studies analysed were conducted in the United States. Results indicated that higher levels of residential mobility were associated with higher risks of behavioural and emotional problems for children. It was also concluded from this review that higher residential mobility was associated with specific individual, family and neighbourhood characteristics. The authors recommended that greater consideration should be given to housing and economic policies that can protect children from the effects associated with residential instability.

Residential mobility has been shown to contribute to negative child outcomes (Adam & Chase-Lansdale, 2002; Wilkerson, 2009). Partnership dissolution leads to increased rates of residential mobility, often involving moves to lower quality residences and increasing the odds of renting as opposed to home ownership (Feijten & van Ham, 2007). Low income single-parent families or families who are renting are more likely to be highly mobile (Ersing, Sutphen, & Loeffler, 2009). These latter researchers found increased developmental risks for children in fifth grade who had high residential

mobility for academic and behavioural problems. Children in the first grade have also presented with behavioural and emotional problems associated with multiple household moves (Hoglund & Leadbeater, 2004). A study by McLeod, Heriot, and Hunt (2008) found different results with a sample of 77 children, aged 8-12 years. Residential mobility, including for those children with multiple moves, was not associated with adverse impacts on child academic or behavioural outcomes. However, this study had a small sample size and there was an underrepresentation of children in higher risk groups.

Taylor and Edwards (2012) reported analyses on housing and the residential mobility of Australian children using LSAC data for Wave 3 data when the Birth cohort children were aged 4-5 years and the children in the Kindergarten cohort were aged 8-9 years. They found that, between 2004 (Wave 1 of data collection) and 2008 (Wave 3 of data collection), 55% of children had not moved house; 27% had moved once; and 18% had moved two or more times. For the children aged 4-5 years who had higher residential mobility, there were more emotional and behavioural problems and lower receptive vocabulary scores reported compared to children with less residential mobility. Similar effects were not found for children aged 8-9 years. It was also found that children from both cohorts living in public housing were more likely to have poorer social and emotional outcomes.

In a review of research on the effects of residential relocation for children in separated and non-separated families, Horsfall and Kaspiew (2010) reported a lack of rigorous research that has investigated the effects of such mobility as a result of parental separation. For the research that had been conducted, inconsistent findings were found on the effects of residential mobility and parental separation on child outcomes. Some studies had found positive or non-significant negative associations (e.g., Norford & Medway, 2002; Verropoulou, Joshi & Wiggins, 2002) while other studies found significant negative associations (e.g., Braver, Ellman & Fabricius, 2003; Gilman, Kawachi, Fitzmaurice & Buka, 2003). One key theme identified in the research was that socio-economic difficulties, and a lack of resources available to the family, were associated with more frequent relocation and negative child developmental outcomes. Domestic violence was also identified as a potential issue in affecting relocation decisions.

2.5.2 School mobility

Continuity in a school appears to have benefits for children with positive associations between the length of time in a school and child achievement (Demie, 2002); while school moves, beyond normal transitions, have been found to result in lower academic results (Heinlein & Shinn, 2000; Montavon-McKillip, 2009; Strand & Demie, 2007). Even a single school move has been linked to lower teacher ratings of academic performance, while multiple school moves have been shown to be predictive of lower levels of classroom participation by fifth grade (Gruman, Harachi, Abbott, Catalano, & Fleming, 2008). It should be noted, however, that children may experience school moves due to pre-existing child factors, such as challenging behaviour. For example, increased rates of suspension for mobile students have been found compared to non-mobile students (Engec, 2006).

Children may change school for a number of reasons (Burkam, Lee & Dwyer, 2009). Burkham and colleagues differentiated between structural and family reasons for school change which are associated with strategic or reactive choices by parents. Structural reasons include when a school does not provide the next grade level for the child or that the school closes down. Family reasons could relate to strategic choices, including changing schools so that children moved to 'better' schools and reactive choices are associated with the occurrence of negative events at the school or at home (e.g., problems for the child at school or a residential move because of family disruptions). Burkham et al. used data from the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K) to test their ideas on the impact of school mobility, from kindergarten to third grade, on mathematics and reading achievement. They found that 55% of children were still in the same school at which they had attended Kindergarten at the end of third grade and 36% of children had changed schools once. Multiple school moves, of three or more, were rare. School changes were most frequently due to family reasons and associated to socioeconomic status. Disadvantaged children had a higher number of school changes. Earlier school moves appeared to have a stronger impact on later child achievement.

A research synthesis by Reynolds, Chen and Herbers (2009) examined 16 studies completed between 1990 to 2008 that focused on child school mobility and educational achievement. Findings from 13 of the reviewed studies indicated that school mobility across early school settings to high school was associated with child outcomes. Factors

such as the timing and number of moves also emerged as holding significance. Highly mobile children who had moved schools three or more times had higher rates of school dropout than students with continuity in a school; they also had poorer academic results.

Heinlein and Shinn (2000) also found lasting negative effects on achievement and adjustment from multiple school changes. With a sample of 764 students in sixth grade within New York City, they examined the effects of moves prior to third grade; moves from fourth to sixth grade; and the total number of school moves on adjustment and achievement. Early mobility with two or more moves prior to third grade proved to be a more significant predictor of 6th grade achievement in maths and reading than later school changes. Heinlein and Shim suggest that the disruption during the period in which foundational skills are taught and consolidated may contribute to this finding. This suggests that the early formal years of schooling may be a critical period for achieving ongoing academic success and that older children are better equipped to adjust to school moves.

The disruption to social connections and support from teachers and peers are of particular importance, as family stress and a family transition may prompt a school move. Demie (2002) noted that family breakdown was the most frequently listed reason for a change in school. In an Australian study, Boon (2011) found that adolescents, aged 12-15 years who had experienced school mobility were at increased risk for school suspension and poorer Mathematics and English achievement. These students were also more likely to have mothers who were less well educated than the rest of the sample participants and were less likely to live with both biological parents. Gruman et al. (2008) found that teacher and peer relationships served as a protective factor for school achievement in relation to school mobility. The benefits of social relationships on child outcome trajectories are an important consideration in this research.

2.5.3 Residential and school mobility

A change in residence or school may occur in isolation, although it is not uncommon for both to occur at the same time. While a link between school moves and residential moves is recognised, many studies have not incorporated this factor into analyses of educational outcomes (Leckie, 2009). This is in part due to the difficulty in obtaining relevant data. Being able to track school and residential mobility and its effects on students has proven challenging for researchers because longitudinal data on families

and children is needed. Increasing access to large national databases, along with developments in methodology, is making it more likely that residential and school mobility of students can be more easily tracked.

Gasper, DeLuca, and Estacion (2009) used data from the National Longitudinal Survey of Youth, 1997, to determine associations between residential and school mobility on delinquency and substance use. Descriptive results revealed that in 58% of cases, residential moves also involved school changes and 33% of students also moved residence. There was also a decrease in school and residential moves as children got older. Regression analyses found associations between residential and school mobility and student outcomes. The students more likely to experience school and residential moves in this sample were less likely to be living with both biological parents. These findings are similar to those of Fomby and Sennott (2013) who found that students who had experienced family transitions were also more likely to have more residential and school changes. Results suggested that there were independent effects for school and residential mobility and family transitions on behavioural outcomes.

From this body of research, it seems that there are links between residential or school mobility and the likelihood of negative effects on children. Negative social impact on students is likely to be compounded when there is concurrent home and school mobility. Moving schools results in a loss of teacher-child connections and peer connections for children and there is the added stress of needing to build new relationships in a new school setting (Pribesh & Downey, 1999). South and Haynie (2004) examined the effects of school and residential mobility on the friendship networks of adolescents. They found that recent movers or school changers were more likely to have smaller social networks, and to hold lower ranked positions within social networks. The parents of the mobile students were also more likely to not know their children's friends or the parents of friends. Results also suggested that these effects were maintained across several years. However, less is known of the effects of school and residential mobility on younger children across the primary school years.

2.6 Children's Relationships with Mothers, Teachers and Peers

As noted in previous sections, changes in family structure often place stress on parents and on their relationships with their children. Additionally the likelihood of

school and residential changes for children can disrupt children's relationships with peers and teachers.

2.6.1 Child-parent relationships

The importance of mother-child relationships and attachment is well documented in the child development literature and the quality of the relationship has long-term effects on child wellbeing. The quality of mother-child interactions in kindergarten have been found to still impact on the social and academic outcomes of adolescents even after demographic variables such as child IQ, gender, ethnicity and maternal education were controlled (Morrison, Rimm-Kauffman, & Pianta, 2003). Warm relationships with mothers and high maternal school involvement have been shown to be associated with higher kindergartners' achievement in literacy and mathematics (Simpkins, Weiss, McCartney, Kreider, & Dearing, 2006).

A positive relationship with the maternal parent has been found to provide protective effects on children's internalising problems even in the presence of maternal depression (Frampton, Jenkins & Dunn, 2010). Children who experience parental relationship separation may not benefit from the same level of protective effects. Woodward, Fergusson and Belsky (2000) reported that there was a lower quality of attachment for adolescents whose parents had separated when they were young children. The younger the child was when separation occurred then the lower was the level of attachment; as well as the adolescents perceiving that their parents were either less caring or overprotective.

Attachment theories propose that the quality of early parent-child relationships has strong effects on child wellbeing. Children's internal models of attachment are influenced by their interactions with a parent which impacts on children's abilities to establish positive relationships with other adults (Colwell & Lindsey, 2003). This includes relationships with teachers. While mother-child attachment has been shown to influence the establishment of positive relationships with teachers, it is important to recognise that individual child and teacher attributes along with other social-emotional and ecological factors may also impact on relationship quality (Howes, 2000; Stuhlman & Pianta, 2002).

2.6.2 Child-teacher relationships

A strong bond with a teacher provides children with opportunities for additional support. This is beneficial to child school adjustment and impacts on both social and academic outcomes (Pianta & Stuhlman, 2004). Establishing a high quality relationship with teachers may be particularly important during the early years of formal schooling when children may face additional stresses associated with the school transition. This could hold even greater implications for children experiencing multiple family changes or stress across school or home contexts. For example, Gruman et al. (2008) found for fifth graders (n = 1003) that while school mobility predicted an overall decline in academic achievement, higher teacher support and peer acceptance had beneficial and protective effects on child outcomes. Child perceptions of teacher support in particular fostered positive school attitudes in children and increased their classroom participation regardless of higher rates of school mobility. The benefits of peer relationships on child trajectories are also clearly an important consideration and will be discussed in more detail below.

Teachers are more likely to interact negatively towards children who they view negatively (Stuhlman & Pianta, 2002) and conflict with teachers can contribute to child exclusion from interactions in the classroom (Hamre & Pianta, 2001). Associations have been found between teacher ratings of child problem behaviours and conflict in the teacher-child relationships (Hamre, Pianta, Downer & Mashburn, 2007) as well as negative teacher ratings of academic skills (Fowler, Banks, Anhalt, Der, & Kalis, 2008).

Positive social and academic outcomes and higher levels of engagement are more likely for children who establish close relationships with their teachers (Decker, Dona, & Christenson, 2007). Potentially this is due to teachers investing more time and support into children they view favourably (Hamre & Pianta, 2001). The support gained from quality teacher-child relationships can be an important factor for long term child trajectories and provide protective effects for at risk groups of children.

Child factors have been shown to contribute to teacher perceptions of relationship quality. Gender differences have been identified so that girls are likely to have closer relationships with teachers while boys are more likely to have conflicted relationships with teachers (Colwell & Lindsey, 2003; Kesner, 2000). Ethnicity has also influenced outcomes with teacher ratings of relationships tending to be higher if teachers were the same ethnicity as students (Murray, Murray & Waas, 2008; Saft & Pianta, 2001).

Understanding the influence that teacher-child relationship quality can have may be especially important for students placed at higher risk. Teacher-child relationships have been shown to have a protective effect for student outcomes. A close relationship was found to provide protective effects for children with behaviour problems on both social and academic outcomes, while those with significant learning problems had protective effects on social outcomes (Baker, 2006). Child temperament also plays a part in this.

2.6.3 Child-peer relationships

As for parents and teachers, peer support also contributes to child wellbeing. Teachers and peers, in particular, can help to foster coping strategies and promote positive child adjustment and achievement within school contexts. Peer acceptance has been linked to child internalising and externalising behaviours, along with child perceptions of self-worth (Klima & Repetti, 2008). Given this, the social ramifications may be particularly important for children who change residence and schools after a family transition. Both residential and school mobility are common for adolescents as the result of family transitions (Fomby & Sennott, 2013). Newman et al. (2007) reported that when adolescents viewed peer group membership as being important, there was greater value attached to be a part of a peer group and these adolescents had significantly fewer behavioural problems compared to those who did not place value on their attachment to a peer group.

Domain-specific links between children's social relationships and their self-concept were reported by Verschueren, Doumen, and Buyse (2012). Teacher-child relationship quality was related to academic self-concept, quality of peer relationships to social self-concept, and quality of mother-child relationship to general self-concept. Such relationships could have additional significance for the wellbeing of children who have experienced family transitions given that the overall self-concepts of children from single-parent families have been found to be significantly lower than for children in two parent families (Bracken & Sweeney, 2000). Results of this study also reported that the family self-concepts of children in re-partnered families were less strong than the family self-concepts for children in two-parent families. Clearly, the relationships that children have with parents, teachers and peers are important to wellbeing.

2.7 An Ecological Model: Family Structure and Transitions and Child Wellbeing

Developmental theories that account for contextual elements and embedded, interacting components of the developmental environments have grown in importance over the last few decades. Ecological perspectives of child development, such as that proposed by Bronfenbrenner (1977, 1979), take into account that there are interconnected systems, which may be proximal or distal to a child, that influence and contribute to developmental trajectories. Bronfenbrenner's ecological model (1977) consists of a microsystem, mesosystem, an exosystem and a macrosystem. The microsystem refers to the interactions between an individual and their immediate environments, for example, home or school settings. The mesosystem refers to interactions between these environments, for example for children these might consist of interactions between home, school and peer groups. The exosystem extends this by taking into account larger social structures both informal and formal, for example neighbourhoods, government agencies and other major institutions. Finally the macrosystem refers to the underlying institutional patterns of culture and ideologies that influence across all the other interconnected systems.

The Contextual Systems Model proposed by Pianta and Walsh (1996) similarly positions children as developing within interconnected systems. Four of the systems within the Contextual Systems Model (Pianta & Walsh, 1996) consist of the individual child, family, classroom/school environment and broader social/cultural contexts. Factors across the systems interact and influence each other and thus child development. Importantly, relationships are also factored into this model with parent-child relationships central to family system and teacher-child and teacher-peer relationships central to the school system (O'Conner & McCartney, 2007).

The influence these child-relationships can have on other systems is acknowledged, for example parenting can influence children's attitude towards education (Roffey, 2004). This model therefore considers a child's experiences in context along with interactions between systems and the relationships that exist within these (Early, Pianta & Cox, 1999). Pianta and Walsh (1996) suggested that a broad ecological model provides a means to understand the variety of influences on development especially for children and families who are at a higher level of risk.

When considering possible models that capture the experiences of children undergoing change across multiple risk areas, it is important to account for the different contexts of development, while adequately capturing the stress these changes place on children and families. Variables within these contexts may act as either risk or protective factors depending on what interactions take place at any given time. The Contextual Model of Family Stress (Boss, 2002) considers the contexts in which family stress occurs. External and internal ecosystems are seen as influencing families and shaped by interactions associated with the stressful event and the influence of family resources, and family perceptions of the issue. External contexts consist of those outside of the family's control, including genetics, stage of development (either family or individual), the economy in which the family is embedded and level of family income.

Internal contexts are those that are within the control of families, hence, they are able to provide resources to lower stress levels and make more resilient outcomes likely. These internal contexts and resources include family beliefs, the psychological context within the family and the structural context or boundaries and rules that operate within a family. This model is therefore framed around ecosystems in which families either have no direct control (external contexts) or alternatively, in which they do have control to work towards positive outcomes when faced by adversity.

2.7.1 An ecological model for the current research

After consideration of the Contextual Systems Model (Pianta & Walsh, 1996) and the Contextual Model of Family Stress (Boss, 2002) the model presented in Figure 2.1 was conceptualised for the current research. This model takes into account child, family and school attributes, as well as broader social contexts. The importance of child-parent, child-teacher and child-peer relationships is also recognised in this model. For the current research, other factors of interest are stability and change in family structure, family economic resources, residential and school moves. The impact that cumulative risks may have on developmental outcomes as well as the timing and frequency of family transitions are also represented.

The degree of impact changes to the influencing factors has is dependent on the timing and frequency of change across child development, and on whether changes are singular or cumulative. These factors are also influenced by and influence broader social contexts such as government policy, schools, peers, families and child factors, including

the relationships and support children receive within these contexts. These interactions in turn contribute to child risk or resilience trajectories as determined by selected outcome measures. For the current research the outcome measures of interest were child adjustment, as measured by teacher ratings of internalising and externalising behaviours and child academic achievement, as measured by teacher ratings of child mathematical and literacy skills.



Figure 2.1 Ecological Factors Impacting on Child Adjustment and Achievement

Adapted from: Contextual Systems Model (Pianta & Walsh, 1996) and Contextual Model of Family Stress (Boss, 2002).

This model provides a framework for each of the studies completed for the current body of research.

In Study 1: *Family Demographics and Family Transitions through Middle Childhood*, child and family demographics are described so that a sense of the different family structure, timing and frequency of family transitions and economic changes are apparent. In Study 2: *Residential and School Changes and Relationship Support at Home and School* extends the nature of the ecological factors considered within and beyond the family, including the school context, encompassing peer and teacher relationships for the child. Timing and frequency of changes to home and school environments are also examined, as are the proximal qualities of the family environments available to children via maternal mental health, family cohesion, parent-child relationships.

Study 3: *Ecological Factors Impacting on Children's Adjustment and Achievement* expands this ecological model incorporating the whole range of ecological factors at distal and proximal levels, from family structure and family transitions, to the quality of family and school relationships and experiences on child outcomes. This is achieved by assessing the effect of child characteristics and household characteristics on outcomes; broadening the model then to include stability and change factors for family structure, home and school environments and economic resources; and then expanding the final model in the analyses to include the immediate relationship support of parents, teachers and peers on child outcomes; as well as proximal factors in the family environment such as maternal wellbeing and cohesion. The outcomes, as shown in the model, are related to child internalising and externalising behaviours and child mathematical and literacy skills.

The specific variables for inclusion in the analyses for Study 3, as represented in Figure 2.1, were identified after a review of relevant research that looked at child outcomes and wellbeing, as a consequence of family transitions. In Appendix A.1, 12 key studies are summarised that examined factors impacting on child adjustment (e.g., externalising and internalising behaviour problems) and/or child academic achievement. A number of these key studies controlled for child and family characteristics before stability and change variables were entered into the analytic models. This ordering of variables into the analytic models also, in part, controls for possible family selection effects that may significantly impact on family stability (e.g., Fagan, 2012; Magnuson & Berger, 2009; Osborne & McLanahan, 2007). The development of this research is driven by findings from previous empirical studies which have contributed to greater understanding of the ecological factors influencing child wellbeing after family

transitions. An overview of a number of these key studies is presented in the next section, with further detail on this research base presented in Appendix A.1.

2.7.2 Summary of previous research informing the methodology

A synthesis of key quantitative studies relevant to the current research was undertaken. These studies were selected because they focused on the impact of family structure on child outcomes and informed the conceptualisation of this study. The studies differed in relation to the nature of the variables and the covariates included in the analyses. Some studies considered the effects of school or residential mobility on outcomes. Several studies used cumulative risk indexes of child and family characteristics to test associations between the number of family transitions and the impact on developmental outcomes. The use of such cumulative indexes provided parsimony in the statistical analyses. Most of the studies included had a focus on child outcomes through middle childhood which was also of important interest in the conceptualisation of this research. The outcomes of interest were those relating to child emotional or behavioural adjustment, or academic achievement. Primarily, these studies were conducted in the United States.

A number of the studies reviewed focused on family transitions. For example, Fagan (2012) examined the effects of maternal relationship dissolution on the literacy skills of preschool children using data from the Birth Cohort of the Early Childhood Longitudinal Survey (ECLS-B) conducted in the United States. A sample of 6,450 children selected for this study from the larger dataset included those children who were living with their biological mothers as the primary caregiver, across two time points, when children were 24 months and 48 months old. Children in family situations in which relationship dissolution had occurred (in either married or cohabitating partnerships) were compared with children in stable parental relationships. Multiple regression analyses were used to examine differences between the groups. Control variables to account for selection effects in each group included child gender, age, ethnicity and cognitive ability.

Results in Fagan's research revealed that lower literacy outcomes were evident for children whose mothers divorced and were now cohabitating in comparison to those children in stable intact married families. Additionally, those children who had transitioned from married or cohabitating households into single-parent families also had lower literacy levels, as did children in stable cohabiting families, when compared to

those children in stable married families. No significant differences were found for children who had transitioned from divorcing or cohabitating parents to live in single-parent households. This research highlighted that differing family structures and transitions may result in different developmental trajectories. The experience of two family transitions compounded negative effects.

Ryan and Claessens (2012) examined family structure change and the associations with children's behaviour problems using longitudinal data from the Maternal and Child Supplement of the National Longitudinal Survey of Youth. A sample of 3492 children was selected. Family structure and family transitions were compared for three family types (two biological parents, single parents, and re-partnered parents); and a category of 'other change' was also utilised. Hierarchical linear models were developed to examine long term impacts for family changes experienced by children within their first three years. For children who transitioned from two-parent households into single parent families, significant associations were found for increased problem behaviour through to age 9/10 years. Variations in outcomes were found in relation to the type of change in family structure. For example, early changes into a single-parent family were associated with short and long term effects on problem behaviours if children had come from households with two married parents. For children, whose parents had not married there were short term and smaller increases in problem behaviours. The combined effects of multiple transitions were not considered in this study.

The association between family transitions and child outcomes for 238 boys was also examined, using data from the Oregon Divorce Study-II, by Martinez and Forgatch (2002). Children were tracked from grades 1 to 3, with family transitions including maternal relationship formation or dissolution. A minimum transition count of one was given to mothers who were separated or divorced at the study onset. Academic, behavioural and emotional outcomes were considered using structural equation modelling. There were significant associations between higher numbers of family transitions, poorer behavioural and emotional adjustment, and lower academic achievement. However, behavioural and emotional outcomes were mediated by effective parenting such that children with more family transitions received less effective parenting. Similarly, academic outcomes were mediated by parental academic skill encouragement such that children with more transitions received less encouragement. While the limitations of this study included that this was a study of boys who had already

experienced a parental separation, results demonstrate greater negative effects for multiple transitions on children's developmental trajectories.

Studies which focused on family transitions along with other social changes such as residential change were also of interest in the conceptualisation of the current research. For example, Osborne and McLanahan (2007) explored the associations between mother partnership changes and child behaviour. A sample of 2,111 children participating in the Fragile Families Study was used and three waves of data were utilised for analyses, including data from soon after the child's birth, when they were 1 year old, and again when children were 3 years of age. Family transitions were defined in this study as the formation or dissolution of romantic relationships for mothers (marriage, cohabitation, and also dating). The total number of maternal partnership changes was calculated, and changes in income, residential moves, maternal stress, quality of mothering and education were also considered.

Results found by Osborne and McLanahan (2007) indicated that there was an accumulation of negative effects that occurred with multiple transitions that resulted in increases in behavioural problems. Children born to single mothers were more likely to have significantly higher ratings for aggressive behaviour and were more likely to have experienced multiple moves in comparison to those born to married mothers. Maternal stress and lower levels of parenting quality increased the likelihood of negative effects on children. It is important to note that the effect of partnership instability on child outcomes was not mediated by income or residential change potentially because there was little change in the level of financial resources available to the family and/or because of the short time frame across which data was analysed.

Ackerman, Brown, D'Eramo and Izard (2002) examined the associations between maternal relationship instability and child behavioural and academic outcomes. A sample of 139 children recruited from Head Start programs was selected and data were collected when children were in preschool, first grade and third grade. Children were aged 8-9 years by the third round of data collection. Maternal relationship instability was measured by the number of relationship dissolutions with partners who had lived in the child's household. Instability was categorised into three groups - past instability (from child's birth to first grade), recent instability (change from first grade to third grade) and chronic instability (total number of changes). Negative life events experiences were also scored at each point of data collection. Measures of chronic adversity were constructed across time

points that included family income, number of residential moves, number of negative life events and parent mental health. Hierarchical linear regression was used to examine the effects of chronic instability. Significant effects were found for family instability on externalising behaviour for both boys and girls, and internalising behaviours for girls. Chronic instability did not predict child academic outcomes. However, maternal education did have an impact on academic outcomes. Past and recent experiences of instability were found to have independent effects on outcomes, with past instability predicting behaviour problems in third grade.

While variation can be seen across these studies in the nature of the findings, similarities to the design of the current research included the use of longitudinal data collected across multiple time points. Parent relationship status tended to be usually defined as relationship status (married, separated or cohabitating) or by parent status (two biological parents, single parent, re-partnered parent). Variations in the approaches to measurement of change are also evident, ranging from categorisation of past or recent changes, or by a count of the total number of changes. This approach was also seen in the studies that included residential or financial change. Cumulative risk indexes were also utilised by some studies. The majority selected samples that had children residing with biological mothers. Some samples were representative while others focused on economically disadvantaged groups. Most of the studies were completed within the United States. For the current research, LSAC provides an opportunity to examine a representative Australian sample. Further detail on how these studies have informed the current research is presented in Appendix A.1, along with detail on the key findings relating to outcomes by family structure, directional effects of transition type, timing effects, cumulative risk, and other influential variables.

In summary, the key findings of the studies reviewed indicated that children in single-parent and re-partnered parent families had a higher risk of lower academic achievement and adjustment compared to those in biological parent households. For example, children born to married parents achieved more positively on the majority of outcomes examined (e.g., Bachman et al., 2011); and were less likely to face future additional risk of family transitions in comparison to children born to single mothers who more likely to have higher ratings on measures of aggression (Osborne & McLanahan, 2007). More positive behaviour and higher achievement were found for children living in

intact families, while living in a single-parent family was associated with lower academic achievement and behavioural adjustment (Magnuson & Berger, 2009).

Overall, these studies established that in relation to family structure and cumulative risk that included multiple family transitions, both family and child level factors contribute to variations in child developmental outcomes. Support that children received, including relationship quality across home and school contexts, is also an important consideration for measurement in this study. Ecological models, such as that adopted for LSAC and the current research, provided opportunities to take into account the inter-connections across and between factors in different contexts of the child's life.

Given the strong focus on the support and relationship quality for the child, the proposed theoretical model and the current research utilises a similar approach to Adam and Chase-Lansdale (2002) which was discussed above and also in Appendix A.1. Adam and Chase-Lansdale (2002) also used hierarchical regression analyses with demographic controls entered into models first (relating to child and family contexts), followed by disruption (stability and change) variables, and lastly social support and environment quality variables were entered. For the current research, this enabled Study 3 to examine the ecological factors that influence child adjustment and achievement by considering child, family/household, and school contexts, potential stresses across these contexts and the role support and quality relationships play in contributing to risk or resilience in child developmental trajectories.

2.8 Conclusions

The instability of family structure has become an increasingly salient part of many children's lives in Australia, and in other countries, over the past half-century. During this period, divorce rates have increased, as has the prevalence of non-marital cohabitation. A relatively high percentage of Australian children experience transitions into single-parent families and stepfamilies. Research is still needed to understand the impact of these family forms on children, especially for the Australian context. The value of longitudinal data has also been identified in this chapter as important in order to assess the shorter term and longer term impact of family transitions on children's wellbeing.

In this chapter, the nature of changes in the demographics of families over recent time has been outlined. Current understanding of research about the impact on family structure on child outcomes from national and international studies has been considered. The mechanisms by which family change impacts on children have also been identified, including economic issues, issues of family stress, and partner selection factors that may operate in forming adult relationships. Residential and school changes as mediating the effects of family change have also been discussed. The importance of children's positive relationships with parents, teachers, and peers to longer term developmental outcomes is also relevant. An ecological model was proposed to capture the embedded nature of children and families in larger systems. This model has provided a framework for the current body of research.

In the next chapter, information about the LSAC study is presented. It provides the longitudinal data which is used in this research. Details on the studies for this thesis are outlined. Measures used in the analyses are explained as well as the approaches to the statistical analyses.

CHAPTER 3: RESEARCH DESIGN AND METHODS

3.1 Introduction

The overall aim of the current research is to investigate the nature of stability and change in family structure across the primary school years for young Australian children while also taking into account other changes in home and school environments that can co-occur. This has been identified as a current gap in the literature and is timely given recent changes to policy impacting on sole parent families. This chapter will outline the research methodology and key measurement items used. A brief overview of the three studies which address the five research questions of interest is also provided. This research used secondary data analyses of a public access database from Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC). The chapter will start by providing an overview of the background, sampling design and methodology of LSAC.

This research uses an existing data set. Secondary data analyses using pre-existing data sets has in the past been utilised extensively by sociologists and economists and less commonly used in educational or developmental research (Smith, 2008). However, increasingly government funding has been invested in large public access longitudinal studies of child development and families in order to inform educational, family and social policies (Brooks-Gunn, Berlin, Leventhal & Fuligni, 2000; Hofferth, 2005). Using large, pre-existing data sets is both cost and time effective, however perhaps more importantly it also enables researchers to have access to large representative samples. The current research would not be possible if not for the availability of the LSAC data sets, given the scale and scope of the provided data. Having access to four time points of data spanning 8 years of child development, family and school history has allowed for a detailed examination of the stability and change experienced by young Australian children in relation to both the home lives and school environments.

3.2 The LSAC Study

The LSAC study was first initiated and funded in 2001 by the Commonwealth Department of Families, Housing, Community Services, Housing and Indigenous Affairs (FaHCSIA) and now the Department of Social Services . This occurred as part of an Australian Government policy involving the Stronger Families and Communities Strategy

(Sanson et al., 2002). LSAC is the first Australian research study to include a nationally representative sample of children across a longitudinal design (Sanson et al., 2002). Within the data collected by LSAC, there are data on individual children across multiple dimensions of development including physical, emotional, cognitive and social development. An ecological framework has also been considered, with data on major developmental contexts also collected including home, school/child care and other community environments.

The main purpose for LSAC is to provide data needed to establish strong evidence to inform policies concerned with child development, such as early intervention and prevention programs (Gray & Sanson, 2005; Sanson, Johnstone, LSAC Research Consortium & FaCS LSAC Project Team, 2004). This includes policy areas such as child care, child health and family support as well as education. Originally, LSAC was only provided with funding until 2010, however, more funding was granted meaning that data collection will continue until 2018. During this time, biennial waves of data collection will be completed along with 'in-between waves' of data collection.

Due to the large scope of the study it was designed and implemented by a multidisciplinary research team (Sanson et al., 2004). Design and implementation of the research originally resided with the LSAC Research Consortium which also had responsibilities for the development of appropriate measurement tools for each successive data collection wave. The Australian Institute of Family Studies, FaHCSIA, and the Australian Bureau of Statistics now have key responsibilities for guiding and monitoring the progress of the study.

The Australian Institute of Family Studies (AIFS) manages the operational aspects of LSAC, being the lead agency of the LSAC Research Consortium. FaHCSIA is also involved in the management of the LSAC data set. While funding is provided for the development, implementation and monitoring of the study, it is not provided for data analyses. Instead the data set has been made available for both Federal and State Government departments. Government departments are able to commission analyses of data in specific areas of interest. The independent use of LSAC data is also encouraged and promoted by the Strategic Policy Section of FaHCSIA, which enables academic researchers and post-graduate students to access it provided that they become registered users.

3.2.1 LSAC design

LSAC uses a cross-sequential research design. Multiple cohorts are tracked across time with the capacity to analyse cohort effects, and this design allows for both cross sectional and longitudinal analyses (Sanson et al., 2002). There are currently two LSAC cohorts, a birth cohort who were 0-1 years of age (Infant Cohort) at the first wave of data collection (2004) and a cohort who were 4-5 years old (Kindergarten Cohort). These cohorts will be tracked from 2004 until 2018, with biennial waves of data collection being completed.

Wave 1 data collection was completed in 2004 (Kindergarten Cohort 4-5 years; data release in 2005), Wave 2 data collection was completed in 2006 (Kindergarten Cohort 6-7 years; data release in 2007), Wave 3 was completed in 2008 (Kindergarten Cohort 8-9 years; data release in 2009) and Wave 4 was completed in 2010 (Kindergarten Cohort 10-11 years; data release in 2011). In-between wave data collection has also occurred with the use of mailed questionnaires in 2005, 2007 and 2009 to date. IView, which is a commercial social science research agency, undertook the first wave of data collection. At Wave 2, the Australian Bureau of Statistics became responsible for data collection and has managed the data collection for subsequent waves.

3.2.2 Sampling strategy

The LSAC Technical Paper No. 1: Sample Design outlines the sampling procedures used by LSAC (Soloff, Lawrence & Johnstone, 2005). The procedures were designed to result in a nationally representative sample of children. Medicare's enrolment database was used to develop the sampling frame through the Health Insurance Commission. This was used as it provided the most comprehensive listing of Australian children. In order to identify a nationally representative sample, a two-stage clustered sampling design strategy was used. Random selection of postcodes, and then children within these postcodes, was used. Due to the associated costs with collecting data from remote postcodes some of these were excluded. Recruitment for the study took into account that some families would have multiple children within the sampling frame. It was specified that only one child per family be recruited for the study, including for families with multiple births.

3.2.3 Demographics of the Kindergarten Cohort

As the sample for the current research is selected from the LSAC data set for the Kindergarten Cohort, a brief outline of some of the key child and demographic characteristics of the Kindergarten Cohort will be provided. Recruitment at Wave 1 (2004) for the Kindergarten Cohort consisted of 4983 children. Of these children 2537 were male and 2446 were female. A comprehensive table with a list of the socio-demographic characteristics of the sample at Wave 1 is provided in Table 3.2. This table compares details of the Kindergarten Cohort families against census data from the ABS. This provides an indication of whether over-representation or under-representation has occurred through consideration of family and child characteristics. The table shows little variation between data collected by LSAC and the ABS with the main exceptions relating to family characteristics.

Parents identified 3.9% of the children as being Indigenous with *Aboriginal or Torres Strait Islander* (ATSI) status. This figure is only slightly higher than the population estimate given by the Australian Bureau of Statistics (ABS) of 3.5%. As would be expected, English was the main language spoken with only 16% of Kindergarten Cohort children living in homes where a *language background other than English* (LBOTE) was the primary language, compared to 18% for the ABS. Two parent homes were common with the majority of children (86%) in such a residence. This was a less common occurrence for the ABS sample with 82% of children in a two parent household. Parents were also more educated in the LSAC sample with 59% of mothers and 53% of fathers having completed year 12 compared to 48% of mothers and 45% of fathers from the ABS sample. Further comparisons are discussed later in the chapter in relation to the characteristics of the sample selected for the current research.

3.2.4 LSAC instruments and procedures

A range of comprehensive instruments have been developed for Wave 1, Wave 2, Wave 3 and Wave 4 data collection for the Kindergarten Cohort. Data on study children are collected from a range of sources including Parent 1, Parent 2, Parent Living Elsewhere (PLE), and directly from children in Wave 4. At Wave 1 data collection instruments included the Parent 1 Face-to-Face Interviews, Parent Self-Complete Questionnaires, a Time Use Diary and Teacher Questionnaires (Johnstone et al., 2004). The parent or guardian who best knew the child participant is defined as Parent 1. For the

majority of participants Parent 1 was the biological mother, however, other primary caregivers were evident including biological fathers, step-parents or grandparents amongst others. For Wave 2 and 3 a computer-assisted interview (CAI) with Parent 1 was used during a home visit.

Wave 4 had a number of additional changes with families having an option to complete a computer-assisted telephone interview (CATI), thus reducing the length of the subsequent home visit allowing more flexibility for families (LSAC, 2012). The Parent 1 Self-Complete Questionnaire was replaced by a computer-assisted self-interview (CASI) which was completed along with a face-to face interview during the home visit, and a CATI was also used for PLE respondents. Study Child Interviews used an audio computer-assisted self-interview (ACASI) was used for children in the Kindergarten Cohort, as well as a Time Use Diary and interviewer recorded measurements, for example, weight and blood pressure (LSAC, 2012). Teacher Questionnaires were not sent out unless Parent 1 gave permission for them to be sent to the teacher of the child participant. Permission is required for each subsequent wave of data collection.

The procedures for data collection initially involved selected families being contacted by Medicare via a letter which informed them about the study. Families were given the option to decline participation in the study, however if they did not decline then their contact details were given to the data collection agency. These families were then contacted so that interview times could be arranged. The interview with Parent 1 was the primary data collection method. This usually involved an interviewer being in family homes for two hours.

Direct child assessment by the interviewer was also completed during this time. If parental permission was given, Teacher Questionnaires were also mailed out. These were sent to either a child care provider, preschool teacher, or primary school teacher under the provision that they had contact with the child for at least eight hours per week (Soloff et al., 2005). As previously noted, this procedure has altered slightly with the addition of CATI options and use of CASI and ACASI as data collection tools (LSAC, 2012).

3.3 The Current Research

The current research was completed through analyses which utilised LSAC data for the Kindergarten Cohort across Wave 1 to Wave 4. A sub-sample from the LSAC data

set was selected with the main criteria being that the study child had a biological or adopted mother as Parent 1 for each data point. More detail on the sample is provided below. The use of longitudinal data was important in order to be able to identify continuity and change in children's lives across time, in order to address the following research questions, in their basic form:

1. What changes in family structure occur for Australian children through the primary school years?
2. Do socio-demographic factors differentiate families by structure, and change in structure, through the primary school years?
3. How is stability and change in family structure associated with residential and school mobility of Australian children across the primary school years?
4. What is the quality of maternal mental health for Australian children, at age 10-11 years, and is maternal mental health associated with family structure?
5. What is the quality of the relationships that Australian children, at age 10-11 years, have with their parents, teachers, and peers and is the quality of relationships associated with family structure?
6. What impact, over time, does change in family structure, social and economic instability (residential, school and economic change) have on children's academic and behavioural adjustment, at age 10 to 11 years; while taking account of maternal mental health, and the quality of relationships which children have with parents, teachers, and peers?

These research questions are addressed through three studies. Study 1: *Family Demographics and Family Transitions through Middle Childhood*, is descriptive and focuses on family transitions and socio-demographic differences evident for Australian children. Study 2: *Residential and School Change and Relationship Support at Home and School* is also descriptive. However the scope is broadened to consider contexts of home and school, examining both residential and school mobility along with the quality of relationships experienced by children across these contexts. Non-parametric tests are used to examine differences in relationship quality. Study 3: *Ecological Factors Impacting on Children's Adjustment and Achievement*, involves the use of confirmatory factor analysis (CFA) and hierarchical multiple regression. The CFA informed the use of weighted

summed outcome scores, while hierarchical multiple regression was used to determine the impact that family stability and change has on child outcomes at age 10-11 years.

While ideally the same sample would be used for each study, missing data on outcome variables for the multiple regressions resulted in a significantly reduced sample size for Study 3. Missing data also presented issues for the completion of CFA therefore data imputation was used. More details on each study and the approach used to handle missing data are provided later in the chapter.

3.3.1 Sample selection

The sample for the current research was drawn from the 4983 children included in the LSAC Kindergarten Cohort. Children were identified as eligible if sufficient data on key variables were available. A reduction of sample size from the original LSAC total occurred primarily due to attrition, followed by the lack of identification on key variables or missing data. To be selected in the sample, cases were initially restricted to Parent 1 at Wave 1 being the study child's adopted or biological mother. A variable (*cparsit*) describing the relationship of the study child to their parents and parental relationship history was then used to exclude cases with complex or unknown relationship histories at Wave 1.

Following this, Parent 1 was then restricted to being the study child's adopted or biological mother for Wave 2, Wave 3 and Wave 4. This was to ensure that the mother (adopted or biological) was the same respondent for the child at each Wave. Figure 3.1 shows the sample selection process starting with the original LSAC sample and the final sample. A comparison of the original frequencies on the variable capturing the relationship history between the study child and their parents at Wave 1 and the resulting frequencies for the restricted sample are also provided in Appendix B, Table B.1. This table shows that on the items of interest, the restricted sample resulted in slightly higher frequencies of children with both biological parents (from 82.9% to 87.3%) and slightly lower frequencies of children noted as having a parent living elsewhere (PLE) (15.9% to 12.5%). The frequency of children with adopted parents remained at 0.2%.

A comparison of sample characteristics at Wave 1 of the original LSAC Kindergarten Cohort, figures from the ABS and the reduced sample for the current body of research can be seen in Table 3.1. This table is adapted from the *LSAC Data User Guide* (Australian Institute of Family Studies, 2006) in order to include details on the

reduced sample. Some minor differences can be seen for the reduced sample in comparison to both the original LSAC Kindergarten Cohort and the ABS reported figures. Some key differences were noted.

In the reduced sample, there are slightly higher frequencies of families with two resident parents and lower frequencies of sole parents. Lower frequencies of Indigenous participants were noted as well as lower frequencies of families with a language background other than English in comparison to the ABS figures. Parents in the reduced sample were slightly more likely to be in paid work compared to original LSAC data. Mothers were also more likely to have higher levels of education in comparison to ABS data, with marginally higher rates compared to the original LSAC sample. Father rates of Year 12 completion decreased from the original LSAC sample, however, rates were still marginally higher than the ABS figures. These differences reflect slight biases in the final sample selection, in part as a result of attrition across waves, a selection of mothers as the respondent across all waves and also due to minor biases evident in the original LSAC dataset.

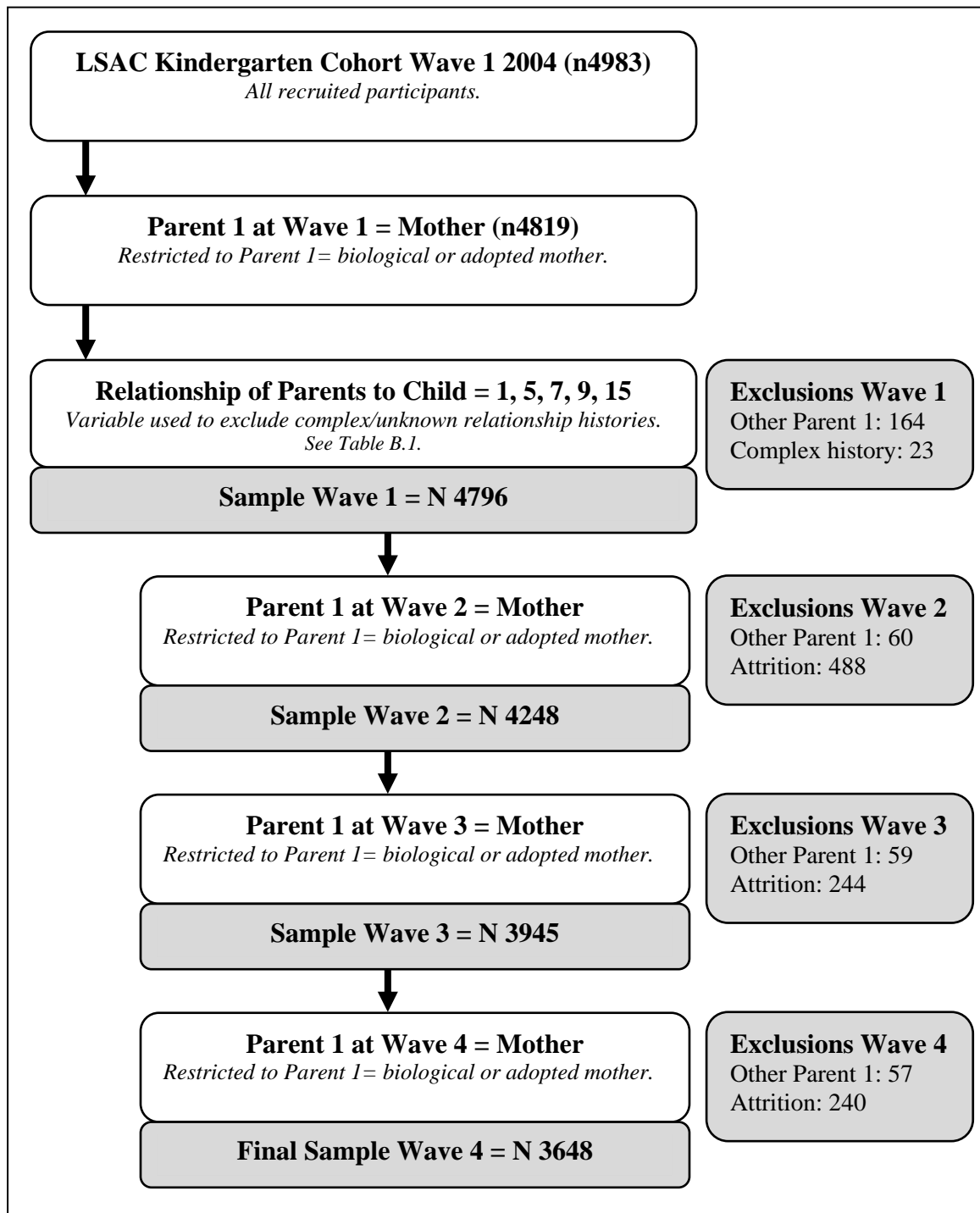


Figure 3.1 Flowchart of sample selection

Note: Parent 1 is the main survey respondent being the parent that best knows the child.

Table 3.1 LSAC Kindergarten cohort, ABS and reduced sample data

	LSAC K Cohort		ABS	Reduced Sample	
	No.	%	%	No.	%
Gender*					
Male	2537	50.9	51.3	1861	51.0
Female	2446	49.1	48.7	1787	49.0
Age range of children					
Less than 4 years 6 months	526	10.6	nc	383	10.5
4 years 6-11 months	3591	72.1	nc	2642	72.4
5 years 0-2 months	800	16.1	nc	576	15.8
5 years 3 months and over	66	1.3	nc	47	1.3
Family type					
Two resident parents/guardians:	4286	86.0	82.1	3271	89.7
- both biological	4130	82.9	nc	3193	87.5
- step or blended family	107	2.2	nc	76	2.1
- other	49	1.0		9	0.2
One resident parent/guardian:	697	14.0	17.9	379	10.4
- biological	690	13.9	nc	379	10.4
- other	7	0.1	nc	0	0
Siblings					
Only child	571	11.5	12.2	364	10.0
One sibling	2412	48.4	46.2	1836	50.3
Two or more siblings	2000	40.1	41.6	1448	39.8
Ethnicity					
Aboriginal or Torres Strait Islander	187	3.8	3.5	90	2.5
Mother speaks a language other than English at home	778	15.7	17.6	304	8.3
Work status					
Both parents or lone parent work	2757	55.5	nc	2159	59.2
One parent works (in couple family)	1631	32.8	nc	1204	33.0
No parent works	578	11.6	nc	285	7.8
Educational status					
Mother completed Year 12	2896	58.6	48.3	2275	62.4
Father completed Year 12	2244	52.7	45.3	1735	47.6
Parents' combined income					
Less than \$800 per week	1361	29.2	nc	1023	28.1
\$800-1499 per week	1735	37.2	nc	1354	37.1
\$1500 or more per week	1567	33.6	nc	1271	34.8
State*					
New South Wales	1573	31.6	33.7	1128	30.9
Victoria	1245	25.0	23.8	905	24.8
Queensland	988	19.8	19.7	717	19.7
South Australia	339	6.8	7.2	244	6.7
Western Australia	507	10.2	10.1	395	10.8
Tasmania	136	2.7	2.5	109	3.0
Northern Territory	82	1.7	1.6	59	1.6
Australian Capital Territory	113	2.3	1.3	91	2.5
Region*					
Capital City Statistical Division	3095	62.1	61.9	2244	61.5
Balance of state	1888	37.9	38.1	1404	38.5
Total	4983			3648	

Note: nc = not comparable; ABS= 2001 Census for families for 0 and 4 year olds, except where * which is based on March 2004 Estimated Resident Population for families of 0 and 4 year olds. **Modified from:** (Australian Institute of Family Studies, 2006).

3.3.2 Measurement instruments

Data were used from the LSAC instruments across Wave 1 through to Wave 4 including the Parent 1 Interviews and Self-Complete Questionnaires and Teacher Questionnaires. Items from the study child completed ACASI at Wave 4 were also utilised. Primary caregivers of child participants are called Parent 1. The Parent 1 interview provides data on a child's personal attributes and their family and educational contexts (Johnstone et al., 2004). Additional information about the child and their family is available in the Parent 1 Self-Complete Questionnaire (Johnstone et al., 2004). Information on child attributes and behaviours is provided in the Teacher Questionnaires as well as characteristics of teachers and the teaching program and context (Johnstone et al., 2004).

Careful consideration of the selection of variables is required. It is important to base such decisions on a strong rationale that can be developed from the findings from previous research as well as theoretical considerations (Luthar & Zelazo, 2003). Table 3.2 provides a brief summary of the relevant constructs for the current research. In addition, the items for key outcome measures are presented in Appendix B, Table B.2.

Amongst these variables are some key measurement tools pertaining to child relationship quality with parents and teachers, along with academic achievement and behavioural adjustment outcomes. These include the Student-Teacher Relationship Scale (STRS; Pianta, 2001); the People in My Life scale (PIML; Ridenour, Greenberg & Cook, 2006); the Peer Relations Scale of the Self Description Questionnaire I (SDQ-I; Marsh, 1990); the Strength and Difficulties Questionnaire (SDQ; Goodman, 1999); and the Academic Rating Scale (ARS; ECLS-K, Pollack, Atkins-Burnett, Rock, & Weiss, 2005). A brief outline of these key measures is provided below.

Table 3.2 Key constructs used in analyses

Construct	Variables
Child characteristics	<ul style="list-style-type: none"> • Age, sex, ATSI, LBOTE
Family characteristics	<ul style="list-style-type: none"> • Family structure • Mother age, ATSI, LBOTE, education • Father age, ATSI, LBOTE, education • Number of people and siblings in house • Sibling Type
Maternal wellbeing/home environment	<ul style="list-style-type: none"> • Maternal psychological functioning –Kessler K6 • Family Cohesion
Household financial circumstances	<ul style="list-style-type: none"> • Parent 1, Parent 2 and combined income • Home ownership • Income source • Family financial comfort
Child relationship quality	<ul style="list-style-type: none"> • PIML Parent scores • PIML Teacher scores • SDQ-I Peer relations scale scores
Stability and change	<ul style="list-style-type: none"> • Family structure • Income • Residential • School
Child outcomes	<ul style="list-style-type: none"> • ARS Language and literacy • ARS Mathematical thinking • SDQ Emotional symptoms • SDQ Conduct problems

The People in My Life Scale

The People in My Life Scale (PIML; Ridenour, Greenberg & Cook, 2006) is an instrument with multiple subscales on which children can rate their attachment to parents, teachers and peers, along with schools and neighbourhoods. It has been used with children aged from 10 to 12 years. It was adapted from the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987) which was originally designed for adolescents. Items were removed or altered in order to make comprehension easier for younger children and to encompass questions about teacher relationships (Murray & Greenberg, 2000). The PIML asks children to rate statements about the relationship with their parents and teachers on a 4-point scale with response ratings ranging from: (1) *Almost never or never true* through to (4) *Almost always or always true*. Higher ratings indicate stronger relationships. There are both positive and negative items so when constructing summed scores the negative items are reversed coded. The PIML is valuable as it can provide a child self-report measure on both parent-child and teacher-child attachment. Its inclusion in the LSAC study was based around it being a well validated self-report assessment for child attachment in middle childhood (FaHCSIA; 2012).

Parent-child relationship: Child perceptions of parent-child relationships were measured through the use of the trust and communication scale from the PIML. The original PIML parent scales consisted of three factors being Trust (10 item), Communication (5 items) and Alienation (5 items) (Ridenour et al., 2006). These can then be summed into an Attachment score with Alienation being reversed coded, however, only 8 items from the trust and communication scale were utilised in the LSAC study for the Wave 4 Kindergarten Cohort and the current study. Example items include ‘*My parents accept me as I am*’ and ‘*My parents pay attention to me*’. When examining the construct validity and factor structure of the PIML for parent and peer attachment on 320 U.S. children in fifth and sixth grade, Ridenour et al. (2006) reported the Cronbach’s Alpha for the Parent Trust scale as 0.87 while the Communication scale was 0.76. For the current research, at Wave 4 the LSAC version of the PIML parent scale was found to have internal consistency ($\alpha = 0.88$).

Teacher-child relationship: The original teacher scale from the PIML consisted of two factors being Affiliation (8 items) and Dissatisfaction (3 items) (Ridenour et al., 2006). For the LSAC Wave 4 K cohort and the current study, the PIML Teacher Affiliation scale was utilised. Example items include ‘*I like my teachers*’ and ‘*I trust my*

teachers'. A study which utilised a sample of 289 children in fifth and sixth grade from the Promoting Alternative Thinking Strategies (PATHS) study reported the reliability coefficient for the Teacher Affiliation scale as $\alpha = 0.88$ (Murray & Greenberg, 2000). For the current research, at Wave 4 the PIML teacher scale from LSAC (using the Affiliation scale) had a Cronbach's Alpha of 0.90.

Peer Relations Scale

Eight items measuring the nature of peer relations were used from the Self Description Questionnaire-I (SDQ-I; Marsh, 1990) as a child rated measure of their relationships with peers. The full questionnaire consisted of 76 items and measured child self concept in areas such as their physical ability and appearance, peer and parent relationships, ability in reading and mathematics, along with general school. The subscales could be used to create an Academic scale, a Non-academic scale and a Total scale score. The SDQ-I uses a 5-point, Likert-type scale ranging from (1) False to (5) True, with higher overall scores indicating more positive child self-concept. The peer subscale consists of nine items however a negatively worded item is not included in the LSAC derived scale. Example items from the peer subscale include '*For each of the following sentences, pick the answer that best describes you. I have many friends*' and '*I make friends easily*'.

This measure is considered to be a well validated measure of child self-concept. Internal consistency of the SDQ-I subscales have been shown to range from 0.80 to 0.94 (Marsh, 1988). Within an Australian context, a study which individually administered the SDQ-I to 501 Australian children in Kindergarten through to the second grade found that the Peer Relation scale found the coefficient alpha = 0.79. A group administration was also conducted for all grades except Kindergarten a few weeks after and this resulted in a coefficient alpha = 0.83 (Marsh, Craven & Debus, 1991). For the current research, at Wave 4 the Peer Relation scale also showed high internal consistency ($\alpha = 0.90$).

The Strengths and Difficulties Questionnaire

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1999) is used as a behavioural screening tool for children aged between 3-16 years old. Different versions of the SDQ are available for parents, teachers or children to complete. Each version includes the same 25 items, which can be rated on 3-point scale which ranges from '*Not true*' ,

'Somewhat true' and *'Certainly true'*. For the purposes of analysis, the 25 items can then be divided into five sub-scales which consist of Emotional symptoms, Conduct problems, Hyperactivity/inattention, Peer relationship problems and Pro-social behaviour. The first four of these subscales can be combined in order to obtain a Total Difficulties score. Higher scores indicate higher levels of problems. For the current research, only the subscales of emotional symptoms and conduct problems completed by Parent 1 were used as measures of child internalising and externalising behaviours. The respondent is asked: *'Please tick the box [rating] for each statement which best describes the study child's behaviour over the past six months'*. Examples of items for internalising behaviour are: *many fears, easily scared*; and for externalising behaviour, *often loses temper*.

The SDQ has been found to have sound psychometric properties in international contexts and the internal consistency and external validity of the SDQ within an Australian context has also been established by an Australian study (Hawes & Dadds, 2004). The parent-report SDQ subscales were found to have internal reliability and validity. Correlations between the SDQ subscales and teacher ratings and diagnostic interviews were used to demonstrate external validity. This study provided evidence that the parent-report SDQ had sound psychometric properties with an Australian sample. The SDQ was used in each wave of LSAC data collection for the kindergarten cohort. For the current research teacher reports on the Emotional symptoms and Conduct problems subscales at Wave 4 are used as measures of child internalising and externalising behaviours. Hawes and Dadds (2004) reported alphas of 0.66 for both of these scales with parent reported data for 1359 Australian children aged from 4-9 years. For the current research, internal consistency was stronger for the teacher-reported data with emotional symptoms, $\alpha = 0.77$, and conduct problems, $\alpha = 0.77$, as measured at Wave 4.

Academic Rating Scale

Two subscales from the Academic Rating Scale were used in Wave 2, Wave 3 and Wave 4 of LSAC data collection. Items are modified to be age appropriate at each wave of data collection. It measures teacher perceptions of how well the child can complete a series of language and literacy skills, and mathematical skills. At Wave 4, there are nine questions directed at language and literacy and ten questions directed at ascertaining mathematical skills. Each question is rated on a five point scale ranging from (1) Not yet, (2) Beginning, (3) In progress, (4) Intermediate and (5) Proficient. There is also a (-1) Not

applicable options. Higher scores indicate teacher perceptions of higher levels of student proficiency. Example items for language and literacy and mathematical thinking include: The study child '*reads and comprehends expository text*' and '*uses strategies to multiply and divide*'.

The Academic Rating Scale was designed for the Early Childhood Longitudinal Study-Kindergarteners (ECLS-K) in the United States and was found to have good psychometric properties when examined with a fifth-grade sample (Pollack, Atkins-Burnett, Najarian, & Rock, 2005). A person-reliability score based on Rasch-modelled data was reported for the US data, with 0.95 for the Language and Literacy scale and 0.92 for the Mathematical Thinking scale. For the current research, high internal consistency was also indicated for the Language and Literacy scale with $\alpha = 0.97$ and for the Mathematical Thinking scale with $\alpha = 0.97$ as measured at Wave 4.

The Kessler K6

The Kessler K6 is a self-report measure of psychological distress (Kessler et al., 2003) and it was used in the current research as a measure of maternal mental health. The K6 is known to have strong psychometric properties and ability as a mental health screening tool for mood and anxiety disorders (Kessler et al., 2002). Internal consistency or reliability has been shown to be high, for example one study reported $\alpha = 0.88$ (Cornelius, Groothoff, van der Klink, & Brouwer, 2013). For the current research, at Wave 4 high internal consistency was also found with $\alpha = 0.87$. It has been shown to be able to strongly predict depression and anxiety disorders in accordance with diagnostic criteria (Furukawa, Kessler, Slade & Andrews, 2003). In addition it has also been shown to have similar sensitivity across a range of population subsamples including race and ethnicity (Bratter, 2004) as well as age, sex and education (Kessler et al., 2002).

The Kessler K6 consists of six items which asks respondents to rate how often in the past four weeks they had experienced a range of feelings, for example, '*nervous*', '*hopeless*', and '*fidgety*'. Items are rated on a 5-point scale ranging from: (1) All of the time to (5) None of the time. Items are then reverse scored (from 0 to 4) so that higher values then represent higher levels of psychological distress. The final sum score range is 0 to 24. A cut-off score of 8 or higher has been used to indicate differences between mothers with low and high levels of psychological distress (Khan, Brown, & Burton, 2013). A higher threshold of scores 13 or above are an indication of high psychological

distress (Furukawa et al., 2003; Kessler et al., 2003). A cut-off of 8 is more commonly used in population studies to indicate high levels of psychological distress and this cut-off has been utilised in the current research.

3.4 Data Analysis Approach

Study 1: Family Demographics and Family Transitions through Middle Childhood

The main objective of Study 1, which is presented in Chapter 4, was to address the first two research questions:

1. What changes in family structure occur for Australian children through the primary school years? *Specifically, in what family structure (two-parent, single-parent, or re-partnered family) do children live at 4-5 years, 6-7 years, 8-9 years, and 10-11 years and how does the family structure change across those years?*
2. Do socio-demographic factors differentiate families by structure, and change in structure, through the primary school years? *Specifically, what child, parental, and household characteristics, and economic circumstances, are associated with family structure (two-parent, single-parent, and re-partnered families) when children are 4-5 years, 6-7 years, 8-9 years, and 10-11 years?*

The first task in Study 1 was to identify and describe the sample of interest, being children in mother-headed households that differed by family structure types including single mother, re-partnered mother or two-biological-parent families. The procedure used in sample selection is outlined in Section 3.3.1. The level of change across different family structure transitions was of interest, as was the identification of any socio-demographic differences between family structures across waves.

To be able to identify transition trajectories variables were computed in order to track change across time from the family structure of origin at Wave 1. Change was measured across waves based on indications of a change between waves in relationship status. While mothers had potentially undergone more than one change in the previous two years, change was only recorded as occurring once. Change was assessed at two different levels. One set of variables aimed at providing specific descriptive detail about patterns of individual change trajectories. It provided details of the stability or specific family transitions experienced by a child, for example if a child had originated in a single-

mother family at Wave 1, then transitioned into a re-partnered mother family at Wave 2, remained stable in this family type at Wave 3, before returning to a single-mother family at Wave 4.

The other set of change variables created for Study 1 simply measured family structure at each wave. This provided total figures of group membership (being single mother, re-partnered mother or two biological parent families) at each time point. These measures of family structure change were used to compare differences between groups with descriptive analyses of demographic details and characteristics of children, families and households across Wave 1 to Wave 4. This enabled patterns of continuity and change to be established in relation to family structure transitions and related socio-demographic characteristics.

Study 2: Residential and School Changes and Relationship Support at Home and School

The main objective of Study 2, which is presented in Chapter 5, was to address the next three research questions:

3. How is stability and change in family structure associated with residential and school mobility of Australian children across the primary school years?
Specifically, does the number of residential and school changes vary for children from different family structures (two-parent families, single-parent families, or re-partnered families) across the primary school years?
4. What is the quality of maternal mental health for Australian children, at age 10-11 years, and is maternal mental health associated with family structure? *Specifically, are there differences in the mental health of mothers in different family structures (two-parent families, single-parent families, and re-partnered families) for children at 10-11 years?*
5. What is the quality of the relationships that Australian children, at age 10-11 years, have with their parents, teachers, and peers and is the quality of relationships associated with family structure? *Specifically, are there differences in the quality of relationships with parents, teachers, and peers by family structure (two-parent families, single-parent families or re-partnered families) for children at 10-11 years?*

The same sample was used in Study 2 as identified for Study 1 and is described in Section 3.1.1. Likewise, the variables measuring family structure at each wave used in Study 1 were again utilised. These variables were used in order to determine differences in the continuity and change in residential and school settings, and relationship quality and support experienced by children across the three family-structure groups (two-biological-parent families, single-mother, re-partnered mother).

In order to address the research questions a combination of descriptive and inferential statistical analyses were used. Descriptive analyses were used to determine patterns of continuity and change in residential and school contexts across waves, in relation to family structure at each time point. Differences in the quality of relationships and support within home and school contexts, however, were examined through the use of Kruskal-Wallis tests as this is appropriate for use in determining significant differences between the means of three or more independent groups (Field, 2013).

Study 3: Ecological Factors Impacting on Children's Adjustment and Achievement

The objective of Study 3, which is presented in Chapter 6, was to address the final research question:

6. What impact, over time, does change in family structure, social and economic instability (residential, school and economic change) have on children's academic and behavioural adjustment, at age 10 to 11 years; while taking account of maternal mental health, and the quality of relationships which children have with parents, teachers, and peers? *Specifically, what factors are associated with achievement and behavioural adjustment for children at 10-11 years, including accounting for change in family structure, residential, school, and economic circumstances across the school years?*

Study 3 also used the sample as outlined in Section 3.1.1. The initial analytic task for Study 3 was to conduct confirmatory factor analysis (CFA) on each outcome of interest which consisted of the ARS Language and literacy scale, ARS Mathematical thinking scale, SDQ Emotional symptoms scale and the SDQ Conduct problems scale at Wave 4 with children aged 10-11 years. This was done in order to determine weighted sum scores as opposed to raw scores which allows for the loading value of each individual item to be accounted for, resulting in items with higher loadings to have larger

effects (DiStefano, Zhu, & Mîndrilă, 2009). Further details on the completion of the CFA for each outcome measure, and the resulting weighted sum scores are available in Appendix E.

The impact of continuity and change over time on child outcomes, as measured by the weighted sum scores, was then examined through the use of a series of hierarchical multiple regressions. Multiple regression analyses were selected as it is an appropriate data analysis approach when examining relationships between outcome variables and several independent variables (Tabachnick & Fidell, 2007). In addition to the outcome variables, variables were also computed in order to capture the family and school changes (family structure, SES change, residential change and school change) experienced by children across each data point. Other predictor variables included are discussed in more detail in Chapter 6.

The assumptions for multiple regression analyses were examined before completing analyses. This included ensuring adequate sample size and checking for multi-collinearity, outliers and the normality of distribution (Pallant, 2007). A suggested formula for identifying a minimum sample size outlined by Tabachnick and Fidell (2007) if $N \geq 50 + 8m$, with the number of independent variables being the value of m . For the current research, the maximum number of independent or predictor variables used in the analyses was 16. Based on this formula the minimum sample size required would be $n = 178$, so the current sample of $n = 3648$ was more than adequate. Missing data was an issue for Study 3 as will be discussed in the next section.

3.4.1 Missing data imputation

Missing data is a common problem in large scale survey research. This can occur due to a number of reasons including non-response on single items or non-return of questionnaires. Another complication with longitudinal data is that over time sample attrition can occur resulting in missing data for participants across waves. The original LSAC Kindergarten sample size was $n = 4983$, with gradual attrition occurring at each time point. By Wave 4, the final sample of respondents providing data was $n = 4163$, or 83% of the original sample (LSAC, 2012).

Due to the criteria used in sample selection in the current research, cases of missing data were relatively small on the parent or child related variables. This was due to the requirement of the biological or adopted mother being the Parent 1 respondent for

each wave of data collection. Missing data on variables of up to 10% have been suggested to be non problematic and suitable for use in analyses (Cohen & Cohen, 1983). This may not however be the case if data is not missing at random, due to potential biases. For the descriptive analyses used in Study 1 and Study 2, missing data did not present a problem due to low rates of missingness. Although missing data on the variable for combined household income did reach 9.2% this was not considered problematic on the criteria set out by Cohen and Cohen (1983).

For the completion of Study 3, however, missing data did become problematic. This was due to the use of teacher-reported data for the outcome measures used for the completion of CFA and the hierarchal regression analyses through lower rates of return of teacher questionnaires. Much higher rates of missing data were evident therefore a missing values analysis as outlined by the IBM SPSS Missing Values 20 guide (2011) was conducted in order to establish the overall rate and pattern of missing for variables relating to the CFA and regression models.

A summary of variables with at least 10% of missing values is shown in Appendix B, Table B.3. This table reveals that the majority of the missing data was located on teacher reported variables, with ARS Mathematical thinking scale items having the highest rate of missing data with one item missing 24.4% of cases. High rates of missing data were also seen on the ARS Language and Literacy Scale items and the SDQ Emotional Symptoms and SDQ Conduct Problems scale items.

Due to this and the amount of missing data on teacher reported variables, data imputation was required. Missing values were therefore imputed using expectation maximization (EM), which uses a maximum likelihood approach to missing value replacement (Peters & Enders, 2002). This was considered a good approach given that EM techniques are considered to provide good results similar to those of multiple imputation approaches (Collins, Schafer, & Kam, 2001; Graham, 2012).

3.5 Ethical Considerations

Before analysis was undertaken, ethical considerations relating to secondary data analysis were considered. Initially, permission was sought from LSAC to gain access to the data sets and a user agreement was signed. This process was facilitated by a QUT LSAC data users group as per the current QUT requirements. All research should be

completed in an ethically appropriate manner. However, this is especially important when projects involve children (Alderson & Morrow, 2011; Lambert, 2003). While the current body of research utilised data on children, the LSAC data set was de-identified and confidentialised. This is typical for large data sets that are released publically and made available for secondary data analyses (McMillian & Schumacher, 2006). The National Statement on Ethical Conduct in Human Research outlines in Section 5.1.2 that research using such data sets may be considered exempt from ethical review due to participants being non-identifiable (Australian Government et al., 2007). The current research met these criteria.

3.6 Conclusion

Details of the methodology followed throughout the completion of this research have been outlined in this chapter. Secondary data analysis was completed through the use of data sets originally sourced for the Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC). Use of a longitudinal large scale representative data set on Australian children provides opportunities for researchers to examine patterns of continuity and change through secondary data analysis. Given that data from LSAC were used, brief background information about LSAC was provided with a focus on its purpose, research design and methods.

The current research direction and objectives were outlined, with a focus on establishing areas of continuity and change in children's lives over time across home and school contexts. Details of the criteria used for selection of a sub-sample from the original LSAC Kindergarten Cohort were provided along with details on some of the key measurement instruments used and the data analysis approach for each individual study. The approaches used for handling missing data were also presented which was particularly relevant for the completion of Study 3. Ethical considerations pertaining to the current research were also highlighted.

The next chapter will continue by presenting Study 1, which will include details on the methodology, results and the discussion. Study 1 examines family structure changes experienced by children at each wave. It also examines family and child characteristics and differences across family structure and determines patterns of change by using data from Wave 1 through to Wave 4. Study 2 and Study 3 will then be

presented in each subsequent chapter with a discussion of the implications of each study along with limitations, being provided in Chapter 7.

CHAPTER 4: FAMILY DEMOGRAPHICS AND FAMILY TRANSITIONS THROUGH MIDDLE CHILDHOOD

4.1 Introduction

The aim of Study 1: *Family Demographics and Family Transitions through Middle Childhood* was to determine what level of change through family transitions occurs for Australian children across middle childhood. Additionally, it aimed to also identify if any socio-demographic differences were evident in families in differing family structure types and if these remained constant or changed over time. This study seeks to confirm the patterns of family change identified in prior research and also extends knowledge about the number of family transitions experienced by Australian children in middle childhood.

While the majority of children still grow up in two-biological-parent households, a significant number grow up in other family structures including but not limited to single-mother or re-partnered-mother families. Previous research has found that children who grow up in two-biological-parent households are advantaged across academic, social and behavioural outcomes compared to single or re-partnered parent households (Amato, 2005; Brown, 2010). The economic disadvantages faced by single-parent families are also well documented (Craig, 2004; de Vaus, 2004; Wilkerson, 2009).

Children who do not reside with both biological parents are also at greater risk of experiencing multiple family transitions, due to subsequent parent re-partnering or relationship dissolutions, which in turn can contribute to poorer outcomes (Cavanagh, Schiller & Riegle-Crumb, 2006; Fomby & Cherlin, 2007; Waldfogel et al., 2010). Currently, little Australian research has addressed this area, with the majority of studies originating in the United States. Additional Australian research which tracks family structure stability and the associated demographics over time is therefore important in order to identify potential selectivity factors evident in patterns of continuity and change.

Throughout this chapter, the methodology of Study 1 will be briefly presented followed by the research findings for descriptive analyses on the characteristics of young Australian children and their families. Family structure and the transitions across the four waves of data will first be discussed. Household family characteristics are then explored which provides details on the number of people in the home, along with the number and

type of siblings. This will be followed with child characteristics which will look at basic demographic details. Mother characteristics will then be presented outlining age, education, employment and work status.

The same details will then be provided for biological fathers of children in two-biological-parent households, and social fathers of children in re-partnered-mother households. However, no demographics details on fathers living elsewhere for the children in single-mother households are included because of the very low response rates from this group that were available in the LSAC dataset. Family economic circumstances are then examined, which takes into consideration the main source of income for mothers, maternal and paternal weekly income, as well as combined household income. Home ownership is also examined as are maternal perceptions of financial comfort. A discussion of the results will then follow which will discuss the key findings, before the chapter concludes.

4.2 Data and Methods

The research questions for Study 1 were:

1. What changes in family structure occur for Australian children through the primary school years? Specifically, in what family structure (two-parent, single-parent, or re-partnered family) do children live at 4-5 years, 6-7 years, 8-9 years, and 10-11 years and how does the family structure change across those years? and
2. Do socio-demographic factors differentiate families by structure, and change in structure, through the primary school years? Specifically, what child, parental, and household characteristics, and economic circumstances, are associated with family structure (two-parent, single-parent, and re-partnered families) when children are 4-5 years, 6-7 years, 8-9 years, and 10-11 years?

In order to address these questions a reduced sample from the LSAC Kindergarten Cohort was utilised. This sample included children whose biological or adopted mothers were the main respondent (Parent 1 – the parent that best knows the child) across all four waves of data. These mothers are referred to as biological mothers for the purpose of this thesis. Selection criteria were also met through the use of an additional variable that provided information on the relationship of both parents in these families to the study child. This was used to remove cases with complex and/or unknown

relationship histories at Wave 1. Once all sample criteria were applied, the original sample number of 4796 children was reduced to 3648. Further details on the process used in sample selection and the differences in relation to the original sample are located in Chapter 3, Section 3.3.1.

Descriptive statistics were used for the analyses in order to determine patterns of continuity and change in family structure and family demographics across each wave of data. Three types of family groups are considered in the analyses: families with two-biological parents, re-partnered families, and single-parent families headed by mothers. Family structure transitions are initially examined, along with the overall change in family structure at each wave. There were a number of family group changes at each wave because of relationship dissolution or reformation. Family and household demographics are presented in relation to family structure at each wave (Table 4.1).

4.3 Results

The variables in the analyses were selected from the LSAC dataset across waves in order to examine the family structure trajectories of children from ages 4-5 through to 10-11 years. Patterns of continuity and change in family and household demographic variables are also examined, with items being selected to determine child, mother and father characteristics, along with associated household details. Economic circumstances are also considered. Demographic details are examined at each wave of data in order to determine if experiences with family types and differences between family types remain stable over time. Residential and school changes and the perceived social support available to children from family and school were also explored.

Table 4.1 Measures of family, household and economic characteristics

Construct	Wave	Item Description
<i>Family Structure</i>		
Family structure status	1, 2, 3, 4	Measures group membership in two-biological-parent, re-partnered-mother or single-mother households.
Family transition pathways	1, 2, 3, 4	Measures individual trajectories across family structure types from Wave 1 to Wave 4.
<i>Household Characteristics</i>		
Number of people in house	1, 2, 3, 4	Measurement of household size.
Number of siblings in house	1, 2, 3, 4	Measurement of the number of siblings residing with the study child.
Biological sibling in home	1, 2, 3, 4	Indicates yes/no if a biological sibling resides with the study child.
Half or step sibling in home	1, 2, 3, 4	Indicates yes/no if a half or step sibling resides with the study child.
<i>Child Characteristics</i>		
Sex	1, 2, 3, 4	Measures child sex.
Age	1, 2, 3, 4	Measures child age in months.
ATSI	1, 2, 3, 4	Measures child Aboriginal or Torres Strait Islander status.
LBOTE	1, 2, 3, 4	Measure of child ethnicity as language other than English spoken.
<i>Mother and Father Characteristics</i>		
Age	1, 2, 3, 4	Measures mother/father age in months.
ATSI	1, 2, 3, 4	Measures mother/father Aboriginal or Torres Strait Islander status.
LBOTE	1, 2, 3, 4	Measures mother/father ethnicity as language other than English spoken.
Education	1, 2, 3, 4	Measure of completion of year 12 or equivalent.
Highest qualification	1, 2, 3, 4	Measures level of highest qualification beyond high school.
Employment status	1, 2, 3, 4	Indicator of employment status.
Work status	1, 2, 3, 4	Indicator of full time or part time work.
<i>Family Economic Circumstances</i>		
Main income source for mother	1, 2, 3, 4	Provides indication of the main source of income for mothers.
Weekly income	1, 2, 3, 4	Measure of weekly income – used for both mothers and fathers.
Combined weekly income	1, 2, 3, 4	Measure of total household income.
Family financial comfort	1, 2, 3, 4	Measure of maternal report of the level of financial comfort ranging from very comfortable – very poor.
Home ownership	1, 2, 3, 4	Indicates if families rent, are paying off or own homes.

4.3.1 Family structure continuity and change

The family group status and relationship type of mothers were tracked across Wave 1 to Wave 4 as shown in Table 4.2. Family groups consisted of either ‘two biological parents’, ‘re-partnered mother’ or ‘single mother’. Results showed that over time, the number of two biological parents decreased from n = 3193 (87.5%) at Wave 1 to n = 2882 (79%) at Wave 4. Re-partnered mothers increased from n = 76 (2.1%) at Wave 1 to n = 240 (6.6%) at Wave 4. Single mothers also increased from n = 379 (10.4%) to n = 526 (14.4%). A table providing a breakdown by marital status is provided in Appendix C, Table C.1 which shows markedly different levels of marriage and cohabitating rates between two-biological parent and re-partnered parent families. Table 4.3 provides detail on the degree of percentage point change evident across waves in family structure type.

Table 4.2 Family structure status across Wave 1 – Wave 4

Family Group Across Waves			
Variable (% of total sample)	Two Biological Parents	Re-partnered Mother	Single Mother
Wave 1 2004	3193 (87.5)	76 (2.1)	379 (10.4)
Wave 2 2006	3098 (84.9)	102 (2.8)	448 (12.3)
Wave 3 2008	2989 (82.0)	199 (5.5)	458 (12.6)
Wave 4 2010	2882 (79.0)	240 (6.6)	526 (14.4)

Table 4.3 Family structure percentage point change from Wave 1 to Wave 4

Variable (% of total sample)	Wave 1 2004	Wave 4 2010	Percentage Point Change
Two Biological Parents	87.5%	79.0%	-8.5
Re-partnered Mother	2.1%	6.6%	4.5
Single Mother	10.4%	14.4%	4.0

When examining the types of changes across time, the complexity of differing child trajectories in relation to family structure change became apparent. Family type at Wave 1 was used as the initial family type (although it is acknowledged that children may

have experienced prior family transitions before this point). At Wave 1 there were three initial family structures described. These were families with two biological parents, re-partnered mothers, and single mothers. At Wave 2, the majority of families had remained stable in structure. However, as a result of transitions in the relationships of mothers, there were a five types of change evident for children when family transitions had occurred (e.g., two biological parents →single mother; two biological parents →re-partnered mother; re-partnered mother →single mother; single mother →re-partnered mother; and single mother →two biological parents). By Wave 3, 10 additional patterns of family transition experiences, across time, were evident. At Wave 4 this had increased to 19 additional patterns of transition experiences that children may have experienced across time.

After tracking family stability and change across the four waves of data, a total of 37 different patterns of change in family structure had emerged. The specific types of transition patterns from the initial family type at Wave 1 to Wave 4 are presented in Appendix C, Table C.2. It should be noted, that family stability or change was measured by a single indicator of a change (or no change in family structure) at each data collection wave. Potentially, some of these families could have experienced more than one family transition between data collection waves that is not reflected in this data.

A total of three transitions were possible from Wave 1 to Wave 4. Table 4.4 presents details on the total numbers of family structure transitions that were evident by Wave 4, along with figures for the families that were still in the same family structure as measured at Wave 1. These results showed that two-biological-parent families were more likely to still be intact at Wave 4 with 89% of the original 3193 still with the same family structure at Wave 4. This can be compared with 65.8% ($n = 76$) for re-partnered mothers at Wave 1 and 56.5% ($n = 379$) of single-mother families at Wave 1.

There were 14.7% ($n = 535$) of children who experienced one or more family transitions between Wave 1 to Wave 4. The majority of these children experienced one transition from Wave 1 and they were usually from single-mother families (33.8%), followed by re-partnered families (25%), and then two-parent families with biological parents (8.8%). Few children experienced two transitions (2.8%) with 1.9% of these children from two-biological-parent families at Wave 1; and 9.2% from both re-partnered and single-mother families at Wave 1. Only 5 (0.1%) children from the total sample experienced three transitions from Wave 1 to Wave 4. Three of these were originally

from two-biological-parent families (0.1%) and the other two children were from single-mother families (0.5%).

Overall these results showed that experiencing family transitions was more likely for children initially residing in single-mother families at Wave 1, followed by those children in re-partnered-mother families at Wave 1. Children initially in two-biological-parent households were more likely to continue to remain in a stable family structure across Wave 1 to Wave 4. While these data do not take into account all potential changes experienced by children, for example prior to Wave 1 in 2004 when children were 4-5 years of age or multiple changes between waves, it still gives an indication of patterns of stability and change across family structures during children’s early school years through to upper primary school.

Table 4.4 Family stability and change from Wave 1 to Wave 4

Initial Family Type Wave 1	No Transition	One Transition	Two Transitions	Three Transitions	One or more transitions
Two Biological parents n=3193	2848 89.0%	281 8.8%	60 1.9%	3 0.1%	344 10.7%
Re-partnered Mothers n=76	50 65.8%	19 25.0%	7 9.2%	0 0%	26 34.0%
Single Mothers n=379	214 56.5%	128 33.8%	35 9.2%	2 0.5%	165 43.5%
Totals N=3648	3112 85.3%	428 11.7%	102 2.8%	5 0.1%	535 14.7%

4.3.2 Household characteristics

Results for the household characteristics at Wave 1 are presented in Table 4.5 with the results from Wave 2 to Wave 4 presented in Appendix C, Table C.3 (Wave 2), C.4 (Wave 3) and C.5 (Wave 4). At Wave 1, household numbers varied across groups, with single-mother households tending to be smaller, two-biological-parent households larger, and re-partnered households being more evenly distributed across categories. These numbers refer to the total number of household residents who may include unrelated

household members. As might be expected, single-mother homes were the only group to have a minimum of two people in the household, 20.6% (n = 78).

Table 4.5 Household characteristics by family structure at Wave 1

Variable	Two Biological Parents (n=3193)	Re-partnered Mother (n=76)	Single Mother (n=379)	Total Group (N=3648)
No. of people in house (%)				
2	0	0	78 (20.6)	78 (2.1)
3	215 (6.7)	21 (27.6)	152 (40.1)	388 (10.6)
4	1580 (49.5)	25 (32.9)	87 (23.0)	1692 (46.4)
5	964 (30.2)	17 (22.4)	36 (9.5)	1017 (27.9)
6 or more	434 (13.6)	13 (17.1)	26 (6.9)	473 (13.0)
No. of siblings in house (%)				
0	227 (7.1)	24 (31.6)	113 (29.8)	364 (10.0)
1	1660 (52.0)	26 (34.2)	150 (39.6)	1836 (50.3)
2	936 (29.3)	15 (19.7)	76 (20.1)	1027 (28.2)
3	266 (8.3)	10 (13.2)	30 (7.9)	306 (8.4)
4 or more	104 (3.3)	1 (1.3)	10 (2.6)	115 (3.2)
Biological siblings in home – Yes (%)				
	2888 (90.4)	34 (44.7)	229 (60.4)	3151 (86.4)
Half or Step-sibling in home – Yes (%)				
	211 (6.6)	33 (43.4)	68 (17.9)	312 (8.6)

The majority of single-mother families had three people in the home with 40.1% (n = 152), followed by households with four people at 23% (n = 87), five people at 9.5% (n = 36) and six or more people at 6.9% (n = 26). For households with two-biological-parents, nearly half of these families at 49.5% (n = 1580) had four people living in the home, followed by 30.2% (n = 964) of households with five people, 13.6% (n = 434) with six or more people, and 6.7% (n = 215) of households with three people. Re-partnered-mother families had 32.9% (n = 25) of households with four people, 27.6% (n = 21) with three people, 22.4% (n = 17) with five people, and 17.1% with six or more people.

The number of siblings in the home varied across groups. Only 7.1% (n = 227) of two-biological-parent households had no siblings in the home. In comparison nearly a third of homes with re-partnered parents had no siblings at 31.6% (n = 24) which was also the case for single-mother homes at 29.8% (n = 113). Most homes had at least one sibling present and this was the largest category across all family groups. A total of 52%

(n = 1660) of two-biological-parent homes, 34.2% (n = 26) of re-partnered-mother homes and 39.6% (n = 150) of single-mother homes had one sibling.

Two-biological-parent homes were also more likely to have two siblings present with this being the case for 29.3% (n = 936) of families. Approximately, a fifth of re-partnered and single-mother homes had two siblings, at 19.7% (n = 15) and 20.1% (n = 76), respectively. Fewer homes across all groups had three siblings, with 8.3% (n = 266) for two-biological-parent homes, 13.2% (n = 10) for re-partnered-mother homes and 7.9% (n = 30) for single-mother homes. Homes with four or more siblings were the smallest in number, with 3.3% (n = 104) for two-biological-parent homes, 1.3% (n = 1) for re-partnered-mother homes and 2.6% (n = 10) for single-mother homes.

Large differences in the type of sibling could be seen across the family group types. Biological siblings were more common across all family groups. This was the case for 90.4% (n = 2888) of two-biological-parent households. Only 60.4% (n = 229) of single-parent homes and 44.7% (n = 34) of re-partnered-mother homes had biological siblings in the home. Numbers for households with a half or step-sibling present differ greatly across groups. Only 6% (n = 211) of two-biological-parent households have a half or step sibling, as compared to 43.4% (n = 33) of re-partnered-mother and 17.9% (n = 68) of single-mother homes. Adopted siblings were uncommon being present for only 0.3% (n = 8) for two-biological-parent households and 1% (n = 2) of re-partnered-mother households.

Variations were evident across each wave of data collection with household and sibling numbers tending to increase. A comparison of Wave 1 to Wave 4 best highlights how family composition changed over time. At Wave 1 single-mother homes tended to have fewer people residing there and this was still the case at Wave 4. Again, single-mother families were the only group with only two residents (n = 75; 14.3%). As found in Wave 1, the majority of single-mother families still had a total of three people in the home at 40.5% (n = 213). In comparison the majority of two-biological-parent homes and re-partnered-mother homes had four people residing there at 43.3% (n = 1247) and 34.6% (n = 83) respectively. Two-biological-parent families had higher frequencies of having 5 in the home at 33.8% (n = 975) compared to 25.4% (n = 61) of re-partnered and 11.8% (n = 62) of single mothers. Re-partnered-mother families however were most likely to have six or more people living in a home with this being the case for 29.2% (n = 70). This was

followed by two-biological-parent families at 17.9% (n = 515), while only 7% (n = 37) of single-mother households had these numbers.

Overall by Wave 4 children were more likely to have a sibling with the number of children with no siblings decreasing from Wave 1. The largest decreases were seen in the re-partnered-mother and single-mother households. Re-partnered-mother households with zero siblings present decreased to 12.5% (n = 30) from 31.6% (n = 24) at Wave 1, while single-mother households decreased to 17.9% from 29.8% (n = 113). Only 5.2% (n = 150) of two-biological-parent households still had zero siblings compared to 7.1% in Wave 1. One sibling in the home was the largest category for all family groups, 45.9% (n = 1322) for two-biological-parent, 37.1% (n = 89) for re-partnered-mother and 43.5% (n = 229) for single-mother families.

Having two siblings in the home was also very common, this being the case for 33.4% (n = 964) of two-biological-parent homes, 27.1% (n = 65) for re-partnered-mother and 25.1% (n = 132) of single-mother homes. As in Wave 1, fewer homes across all groups had three siblings, with 11.4% (n = 328) for two-biological-parent homes, 13.8% (n = 33) for re-partnered-mother homes and 9.7% (n = 51) for single-mother homes. Homes with four or more siblings were the smallest in number, with 4.1% (n = 118) for two-biological-parent homes, 9.6% (n = 23) for re-partnered-mother homes and 3.8% (n = 20) for single-mother homes.

Large differences in the type of sibling could again be seen across the family group types. Biological siblings were still the most common across all family groups. This was more likely in two-biological-parent households with 93.2% (n = 2686), compared to 71.9% (n = 378) of single-mother homes and just 62.5% (n = 150) of re-partnered-mother households. Not surprisingly re-partnered households were much more likely to have a half or step-sibling present with 53.3% (n = 128) compared to 5.6% (n = 82) in single-mother families and just 3.8% (n = 109) in two-biological-parent families.

4.3.3 Child characteristics

The child characteristics of sex, age, Aboriginal or Torres Strait Islander status, and language background other than English status were explored across family structure. Results for Wave 1 are presented in Table 4.6. Results for the other waves are presented in Appendix C Table C.6. At Wave 1, all family groups had slightly higher rates of male study children. In two-biological-parent households 50.9% (n = 1624) were male, in re-

partnered-mother households 53.9% (n = 41) were male, while single-mother households had 51.7% (n = 196). The mean age of children (in months) was also similar across groups, with children in two-biological-parent households having a mean age of 56.9 months (SD 2.6); re-partnered-mother children were 57.4 months (SD 2.8) and single-mother children were 57.0 months (SD 2.6).

Table 4.6 Child characteristics by family structure at Wave 1

Variable	Two Biological Parents (n=3193)	Re-partnered Mother (n=76)	Single Mother (n=379)	Total Group (N=3648)
Sex (% male)	1624 (50.9)	410 (53.9)	196 (51.7)	1861 (51.0)
Age mean months (S.D)	56.9 (2.6)	57 (2.9)	57 (2.6)	56.9 (2.6)
ATSI (%)	63 (2.0)	6 (7.9)	21 (5.5)	90 (2.5)
LBOTE (%)	278 (8.7)	3 (3.9)	23 (6.1)	304 (8.4)

The Aboriginal or Torres-Strait Islander status of children showed greater differences. Only 2.0% (n = 63) of children in two-biological-parent families were Indigenous. In comparison, 7.9% (n = 6) of children in re-partnered-mother families and 5.5% (n = 21) of children in single-mother families were Indigenous. The number of children with a language background other than English also varied across groups. In two-biological-parent families, children had the highest frequency of language background other than English status at 8.7% (n = 278). In re-partnered families, 3.9% (n = 3) of children had a language background other than English status, while in single-mother families, this was 6.1% (n = 23) of children.

Child demographics across family types did not vary greatly across waves. While the frequencies for each wave are presented in Appendix C, Table C.6, only the results for Wave 4 in comparison to Wave 1 will be discussed here. The proportion of children by sex at Wave 4 remained consistent with 51% (n = 1469) of children in two-biological-parent households being male. For re-partnered-mother families, 54.2% (n = 130) of children were male, while 49.8% (n = 262) of male children resided in single-mother households. The mean age of children (in months) was stable across all family groups from Wave1 to Wave 4. At Wave 4, two-biological-parent households had children with a mean age of 129.8 months (SD 3.5); while in re-partnered-mother families, children were aged 130.2 months (SD 3.5) at Wave 4; and for children in single-mother families children were aged 130.3 months (SD 3.5).

At Wave 4, there were 1.9% (n = 56) of children with Aboriginal or Torres-Strait Islander status in two-biological-parent households which was a small decrease from Wave 1 (2.0%, n = 63). At Wave 4, this was 3.8% (n = 9) of children in re-partnered-mother households who were Indigenous (a percentage decrease from Wave 1, 7.9%, n = 6) and 4.8% (n = 25) of children in single-mother households were Indigenous (a percentage decrease from Wave 1, 5.5%, n = 21). At Wave 4, children with a language background other than English were more likely to live in two-biological-parent families at 7.7% (n = 221) despite a small decrease from 8.7% (n = 278) at Wave 1. Children in re-partnered-mother families continued to have the lowest proportion of language background other than English at 3.8% (n = 9). This was 3.9% (n = 3) at Wave 1. For single-mother families, 6.3% (n = 33) of children at Wave 4 had a language background other than English (6.1%, n = 23 at Wave 1).

4.3.4 Mother characteristics

Results for descriptive analyses on mother characteristics for Wave 1 can be seen in Table 4.7, while results for the other time points are located in Appendix C Table C.7 (Wave 2), C.8 (Wave 3) and C.9 (Wave 4). The mean age for mothers differed slightly across groups. The mean age was 35.3 years (SD 4.8) for two-biological-parent households, 29.8 years (SD 5.3) in re-partnered-mother households and 33.1 years (SD 6.4) in single-mother households. Maternal age differences across groups remained relatively consistent across waves (as shown in Appendix C, Table C.7).

For Aboriginal or Torres-Strait Islander status, only 1.4% (n = 45) of mothers in two-biological-parent households were Indigenous. This is in comparison to 9.2% (n = 7) of re-partnered mothers and 4% (n = 15) of single mothers. Small variations were evident across waves. At Wave 4, only 1.4% (n = 40) of mothers in two-biological-parent households were Indigenous while 2.5% (n = 6) of re-partnered mothers and 4.0% (n = 21) of single mothers had Indigenous status.

At Wave 1, higher rates of mothers with a language background other than English were apparent for two-biological-parent households, with 11.7% (n = 372); then re-partnered mothers with a proportion of 6.6% (n = 5); and single mothers 6.6% (n = 25). This changed marginally over each wave. Frequencies appeared to increase by Wave 4 for mothers in two-parent families reporting a language background other than English at 13.2% (n = 379). This could be a result of people who had previously not disclosed this

information choosing at Wave 4 to identify a language background other than English. At Wave 4, 4.2% (n = 10) of re-partnered mothers and 10.3% (n = 54) of single mothers also reported a language background other than English.

At Wave 1, differences across groups were evident for mothers in relation to education when looking at completion of Year 12 and the highest qualification held. Mothers in two-biological-parent households were more likely to have completed Year 12 at 65.1% (n = 2079), followed by re-partnered mothers at 52.6% (n = 40). Only 41.2% (n = 156) of single mothers had completed year 12 at Wave 1. Similarly, mothers in two-biological-parent households were also more likely to hold a Bachelor degree, Graduate Diploma or postgraduate degree with 34.1% (n = 1089) having a highest qualification within these categories. A total of 21.1% (n = 16) of re-partnered mothers also held one of these types of qualifications, as opposed to only 16.9% (n = 64) of single mother households. Advanced diplomas, diplomas, certificates or other qualification types were held by 34.1% (n = 1088) of mothers in two-biological-parent households. Re-partnered and single mothers had slightly higher rates and were very similar with 38.1% (n = 29) of re-partnered mothers and 38% (n = 144) of single mothers holding these qualification types.

Table 4.7 Mother characteristics by family structure at Wave 1

Variable	Two Biological Parents (n=3193)	Re-partnered Mother (n=76)	Single Mother (n=379)	Total Group (N=3648)
Age mean years (S.D)	35.3 (4.7)	29.8 (5.3)	33.2 (6.1)	35.0 (5.0)
ATSI (%)	45 (1.4)	7 (9.2)	15 (4.0)	67 (1.8)
LBOTE (%)	372 (11.8)	5 (6.6)	25 (6.6)	402 (11.1)
Education				
Completed Yr 12 or equivalent (%)	2079 (65.1)	40 (52.6)	156 (41.2)	2275 (62.4)
Highest Qualification (%)				
Postgraduate	225 (7.0)	4 (5.3)	16 (4.2)	245 (6.7)
Grad Diploma	242 (7.6)	4 (5.3)	19 (5.0)	265 (7.3)
Bachelor	622 (19.5)	8 (10.5)	29 (7.7)	659 (18.1)
Adv/Diploma	303 (9.5)	8 (10.5)	24 (6.3)	335 (9.2)
Certificate	740 (23.2)	20 (26.3)	117 (30.9)	877 (24.0)
Other	45 (1.4)	1 (1.3)	3 (.8)	49 (1.3)
Employment Status (%)				
Employed	1972 (61.8)	44 (57.9)	197 (52.3)	2213 (60.7)
Unemployed	81 (2.5)	3 (3.9)	29 (7.7)	113 (3.1)
Not in labour force	1138 (35.6)	29 (38.2)	151 (40.1)	1318 (36.2)
Work Status (%)				
Employed Full Time 30 + hrs (%)	609 (19.1)	23 (30.3)	69 (18.3)	701 (19.2)
Employed Part Time (%)	1325 (41.5)	17 (22.4)	127 (33.7)	1469 (40.3)

At Wave 1, employment and work status also showed differences across groups. Mothers in two-biological-parent households showed slightly higher employment rates at 61.8% (n = 1972), while 57.9% (n = 44) of re-partnered mothers and 52.3% (n = 197) of single mothers were employed. Employment type differed between full time or part time work. Two-biological-parent household mothers were more likely to be working part-time, with 19.1% (n = 609) holding full time jobs and 41.5% (n = 1325) holding part-time jobs. This was also the same for single mothers with 18.3% (n = 69) working full time and 33.7% (n = 127) working part time. Re-partnered mothers differed with higher rates working full time as 30.3% (n = 23) had a full time job and 22.4% (n = 17) were employed part-time.

Single mothers were more likely to be either unemployed but looking for work or not in the labour force. While 7.7% (n = 29) of single mothers were unemployed but looking for work, only 3.9% (n = 3) of re-partnered mothers and 2.5% of two-biological-parent mothers were. A total of 40.1% (n = 151) of single mothers were not in the labour force, followed by re-partnered mothers at 38.2% (n = 29) and two-biological-parent mothers at 35.6% (n = 1138).

At Wave 2, for level of education, there was not much change from Wave 1. The largest change was evident for single parents with a certificate level qualification whose proportion increased from 30.9% (n = 117) to 35.5% (n = 159). Employment among women in all family groups increased. The greatest increase was seen in re-partnered mothers with employment increasing from 57.9% (n = 44) at Wave 1 to 72.5% (n = 74). Work type showed increases in both full time and part time work for all family status groups. The single mothers had the largest increase in full time work from 18.3% (n = 69) to 28.1% (n = 126). For part time work, re-partnered mothers had the greatest increase from 22.4% (n = 17) to 39.2% (n = 40).

Education categories remained relatively stable again from Wave 2 to Wave 3. Slight variations could be seen in Year 12 completion with re-partnered mothers decreasing from 52% (n = 53) to 47.7% (n = 95), and a slight increase for single parents from 46.2% (n = 207) to 49.6% (n = 227). Higher qualifications also remained stable. The greatest differences could be seen for single mothers, with an increase in Bachelor degree holders from 8.5% (n = 38) to 11.1% (n = 51) and Certificate holders from 35.5% (n = 159) to 38.4% (n = 176). A similar increase in Certificate holders was also evident for re-partnered mothers from 27.5% (n = 28) to 30.2% (n = 60).

Employment among all family groups increased from Wave 2 to Wave 3, with an increase in mothers working in either full time or part time work. Two-biological-parent mother's employment rates increased the most from 69.6% (n = 2155) at Wave 2, to 77.4% (n = 2313) at Wave 3. This increase was seen mostly in full time work, with a rise of 23.3% (n = 722) to 30% (n = 897), although these mothers were still more likely to hold a part time job than re-partnered or single mothers.

At Wave 4, education and qualification type again remained very similar as to previous waves. An increase in percentage in re-partnered mothers was evident for the completion of year 12 from 47.7% (n = 95) to 50.4% (n = 121). The biggest changes in

qualification type could be seen with re-partnered mothers and single mothers. Re-partnered mothers held more Bachelor degrees at Wave 4 with 10% (n = 24) as opposed to 7.5% (n = 15) at Wave 3. Single mothers with advanced diplomas or diploma qualifications rose to 11.4% (n = 60) from 8.5% (n = 39).

The rate of employment differed at Wave 4 with much higher rates compared to other waves. This can be clearly seen in Figure 4.1. All family groups have a similar rate of employment ranging from 78.6% (n = 2262) for the two-biological-parent group, 76.7% (n = 184) for the re-partnered group and 77% (n = 405) for the single-mother group. Mothers in the single-mother group showed the largest increase in employment from 69.4% (n = 318) at Wave 3. The work status of mothers had changed slightly from Wave 3. Fewer mothers in the two-biological-parent group were working part time, decreasing from 47% (n = 1404) to 43.6% (n = 1256). However, there was an increase in full-time work for this group to 34.6% (n = 996). This was similar for re-partnered mothers with a decrease in part-time work to 32.5% (n = 78) and an increase in full-time work to 42.1% (n = 101). A total of 38% (n = 200) of single mothers were working full-time and 38.8% (n = 204) were working part-time.

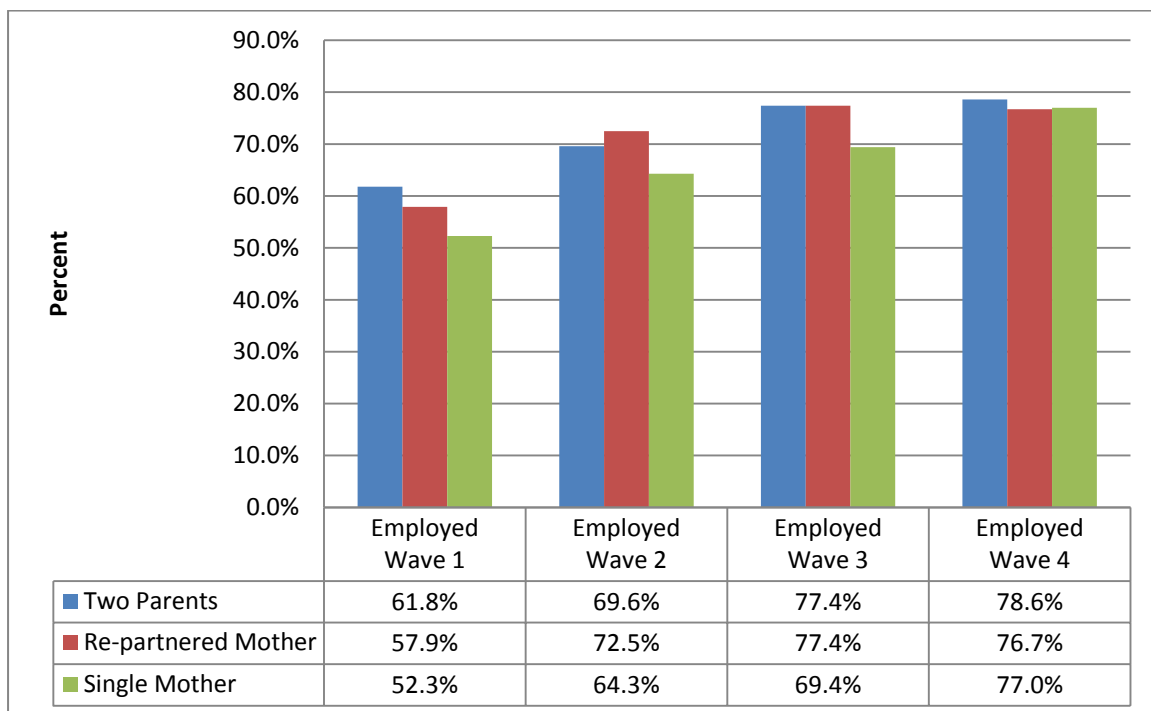


Figure 4.1 Mother employment by family type

4.3.5 Father characteristics

Information on the biological fathers in two-biological-parent households and the social fathers in re-partnered-mother households was examined. Results for Wave 1 are presented in Table 4.8, with the results for Wave 2 to 4 presented in Appendix C, Table C.10 (Wave 2), C.11 (Wave 3) and C.12 (Wave 4). At Wave 1, the mean age for fathers differed across the two groups. The mean age was 37.7 years (SD 5.7) for biological fathers and 33.1 years (SD 7) for social fathers. Paternal age differences across groups remained relatively consistent across waves (as shown in Appendix C).

At Wave 1, slight differences in Aboriginal or Torres-Strait Islander status were evident with 1% (n = 33) of biological fathers compared to 3.9% (n = 3) of social fathers identifying as Indigenous. This remained relatively consistent across waves and at Wave 4, 0.8% (n = 24) of biological fathers identified as Indigenous compared to 3.8% (n = 9) of social fathers. At Wave 1, higher rates of language background other than English were evident for biological fathers (11.6%, n = 371) compared to social fathers (5.3%, n = 4). Again only small variation was evident across waves. By Wave 4, 13.1% (n = 378) of biological fathers and 2.9% (n = 7) of social fathers identified as speaking a language other than English.

At Wave 1, differences across groups in relation to education were evident, with 53.6% (n = 1711) of biological fathers completing Year 12 as opposed to 30.3% (n = 23) of social fathers. Biological fathers were also more likely to hold a bachelor or post graduate qualification (30.2%, n = 965) compared to social fathers (14.5%, n = 11). Similar levels between the groups were seen in regards to holding other types of qualifications including diplomas and certificates with 45.8% (n = 1462) of biological fathers doing so compared to 48.6% (n = 37) of social fathers.

Employment and work status also showed slight differences between the groups. Biological fathers were more likely to be employed (95.5%, n = 3049) compared to social fathers (88.2%, n = 67). The majority of men in both groups worked full time hours. The same frequency of men in both groups were currently unemployed (1.3%, n = 43 of biological fathers; n = 1 of social fathers) however a higher frequency of social fathers (10.5%, n = 8) were not currently in the labour force as compared with biological fathers (3%, n = 97).

Table 4.8 Father characteristics by family structure at Wave 1

Variable	Two Biological Parents (n=3193)	Re-partnered Mother (n=76)	Single Mother (n=379)	Father Total Group (n=3269)
Age mean years (S.D)	37.7 (5.7)	33.1 (7.0)	N/A	37.6 (5.8)
ATSI (%)	33 (1.0)	3 (3.9)	N/A	36 (1.1)
LBOTE (%)	371 (11.6)	4 (5.3)	N/A	375 (11.5)
Education				
Completed Yr 12 or equivalent (%)	1711 (53.6)	23 (30.3)	N/A	1734 (53.0)
Highest Qualification (%)				
Postgraduate	268 (8.4)	3 (3.9)	N/A	271 (8.3)
Grad Diploma	189 (5.9)	4 (5.3)	N/A	193 (5.9)
Bachelor	508 (15.9)	4 (5.3)	N/A	512 (15.7)
Adv/Diploma	278 (8.7)	7 (9.2)	N/A	285 (8.7)
Certificate	1123(35.2)	27 (35.5)	N/A	1150 (35.2)
Other	61 (1.9)	3 (3.9)	N/A	64 (2.0)
Employment Status (%)				
Employed	3049 (95.5)	67 (88.2)	N/A	3116 (95.4)
Unemployed	43 (1.3)	1 (1.3)	N/A	44 (1.3)
Not in labour force	97 (3.0)	8 (10.5)	N/A	105 (3.2)
Work Status (%)				
Employed Full Time 30 + hrs (%)	2923 (91.7)	65 (85.5)	N/A	2988 (91.5)
Employed Part Time (%)	127 (4.0)	4 (5.3)	N/A	131 (4.0)

There was little variation across data waves for father education and employment. The completion of Year 12 for biological fathers remained stable from Wave 1 (53.6%, n = 1711) to Wave 4 (54%, n = 1556), while there was a slight increase for social fathers from Wave 1 to Wave 4 (30.3%, n = 23 to 36.3%, n = 87). Nearly the same proportion of fathers held university degrees at Wave 4 as was evident at Wave 1, with 32.5% (n = 937) of biological fathers and 14.8% (n = 31) of social fathers compared to 30.2% (n = 1462) and 14.5% (n = 11) at Wave 1, respectively. Similar patterns across waves were apparent for other level of post-school qualifications. Employment status was consistent for men from Wave 1 to Wave 4, with the majority of (over 90% for both groups) working full-

time, although slightly higher numbers of social fathers were either unemployed or working part-time. Overall, minimal change was seen in demographic patterns for either biological or social fathers across Wave 1 to Wave 4 data.

4.3.6 Family financial circumstances

Results for Wave 1 are presented in Table 4.9, while the remaining waves are presented in Appendix C, Table C.13 (Wave 2), C.14 (Wave 3) and C.15 (Wave 4). At Wave 1 the main source of income for mothers showed some key differences across family groups. Wages were the main source of income for mothers in two-biological-parent households (46.1%, n = 1471), and also for re-partnered mothers (44.7%, n = 34). This was not the case for single mothers with the majority of these (65.2%, n = 247) having a government pension or allowance as their main income source, in comparison to 40.8% (n = 31) of re-partnered and 34.5% (n = 1103) of two-biological-parent mothers. Interestingly more re-partnered mothers listed child support (from the other biological parent) as their main source of income (10.5%, n = 8) compared to single mothers (4.2%, n = 16).

The weekly income of mothers showed that higher rates of single mothers were earning over \$500 (52.1%, n = 185), while lower proportions were seen for mothers in two-biological-parent households (30.1%, n = 846) and re-partnered households (32.8%, n = 24). The weekly income of fathers (or partners) showed that men in two-biological-parent households were more likely to earn above \$1000 a week (46.1%, n = 1252) compared to those in re-partnered households who were more like to earn between \$500-999 (56.7%, n = 38).

The majority of couple households had the additional wage of a biological or social father contributing to combined weekly household income. Large differences in income brackets were evident across the family types. Mothers in families with two-biological-parents were much more likely to earn over \$2000 a week (20.4%, n = 612) compared to 4.3% (n = 3) of re-partnered and 0.8% (n = 3) of single-mother families. Re-partnered mothers were most likely to have a weekly income of \$1000-\$1999 (55.7%, n = 39) closely followed by mothers in two-biological-parent households (50.6%, n = 1523). Again, single-mother households reaching this income bracket were marginal (6.7%, n = 24). The majority of single-mother families fell within the two lowest income brackets. For the \$500-\$999 bracket, 46.1% (n = 165), single mothers were within this range

compared to 35.7% (n = 25) of re-partnered mothers and 25.6% (n = 769) of two-biological-parent family households. For the bracket of less than \$500 a week, the differences were stark with 46.4% (n = 166) of single mothers sitting within this bracket compared to only 4.3% (n = 3) of re-partnered mothers and 3.4% (n = 103) of families with two-biological-parents.

Differences between family groups on a scale of financial comfort were clearly evident with single mothers indicating being less comfortable in their financial circumstances. Approximately a fifth of two-biological-parent families and re-partnered mothers indicated that they were *prosperous/very comfortable* with 20.9% (n = 667) and 21.1% (n = 16) respectively, compared to only 7.1% (n = 27) of single mothers. The majority of two-biological-parent families and re-partnered mothers indicated that they were *reasonably comfortable* with 48.5% (n = 1548) and 51.3% (n = 39) respectively, compared to 34% (n = 29) of single mothers. Nearly half of single mothers (49.9%, n = 189) identified that they were *just getting along*, while 8.7% (n = 33) identified as being *poor/very poor*. In comparison only 28.6% (n = 914) of two-biological-parent families and 23.7% (n = 18) of re-partnered mothers were *just getting along*, and 1.9% (n = 61) of two-biological-parent families and 3.9% (n = 3) of re-partnered mothers were *poor/very poor*.

Home ownership at Wave 1 also indicated financial resource differences between family types with the majority of single mothers renting their accommodation (60.4%, n = 229). For re-partnered mothers, there were about equal numbers renting or paying off a home at 47.4% (n = 36). The majority of two-biological-parent families however were paying off their homes (67.6%, n = 2160) and were also more likely to own their home outright (12.7%, n = 406), compared to re-partnered families (2.6%, n = 2) and single-mother families (2.6%, n = 10).

At Wave 2 similar patterns of difference on the main source of income for mothers across family groups could be seen. Wages were still the main source of income for 54.7% (n = 1696) of mothers in two-biological-parent households, and also for 53.9% (n = 55) of re-partnered mothers while 41.7% (n = 187) of single mothers identified wages as their primary income. The majority of single mothers at 51.6% (n = 231) still had a government pension or allowance as their main income source, in comparison to 38.2% (n = 39) of re-partnered and 29.75% (n = 920) of two-biological-parent mothers. Overall more women in all family groups identified wages as their main source of income

compared to Wave 1. The proportions of women reporting child support as their main source of income also decreased across all groups.

Similarly to Wave 1, in Wave 2 the weekly income of mothers showed that higher rates of single mothers were earning over \$500 (59.2%, n = 265), and again similar results were seen for mothers in two-biological-parent households (37.5%, n = 1161) and re-partnered households (46.1%, n = 47). Weekly income patterns also remained similar for fathers, with men in two-biological-parent households more likely to earn above \$1000 a week (56.2%, n = 1742) compared to those in re-partnered households who were more like to earn between \$500-999 (49%, n = 50). Overall both mothers and fathers were earning more from Wave 1, although increases were higher for fathers.

Combined weekly income again showed large differences in income brackets across the family types. Families with two-biological-parents were still much more likely to earn over \$2000 a week at 31.8% (n = 911) compared to 19.1% (n = 18) of re-partnered and 3.9% (n = 16) of single-mother families. The rate of single mothers earning this amount did not increase much in comparison to the other family groups. Re-partnered families were most again likely to have a weekly income of \$1000-\$1999 (55.3%, n = 2) closely followed by families in two-biological-parent households (51.7%, n = 1480).

Higher rates of single mothers compared to Wave 1 reached this income bracket (22.4%, n = 91), although the majority still fell within the two lowest income brackets. For the \$500-\$999 bracket, 43.6% (n = 177) single mothers were within this range compared to 24.5% (n = 23) of re-partnered mothers and 14% (n = 402) of two-biological-parent family households. For the bracket of less than \$500 a week, the differences were again clearly evident with 30% (n = 122) of single mothers sitting within this bracket compared to only 1.1% (n = 1) of re-partnered mothers and 2.3% (n = 65) of families with two-biological-parents.

Differences between family groups on financial comfort still indicated that single mothers were experiencing higher rates of financial difficulty. The majority of two-biological-parent families (80.9%, n = 2509) and re-partnered mothers (71.6%, n = 73) indicated that they were either Prosperous/Very Comfortable or Reasonably Comfortable compared to only 49.3% (n = 221) of single mothers. Again, nearly half of mothers (44.6%, n = 200) identified that they were Just Getting Along, with 6% (n = 27) identifying as being Poor/Very Poor. In comparison only 18% (n = 557) of two-

biological-parent families and 27.5% (n = 28) of re-partnered mothers were Just Getting Along, and 1% of both two-biological-parent families (n = 32) and re-partnered mothers (n = 1) were Poor/Very Poor.

Home ownership at Wave 2 again indicated that the majority of single mothers were renting (54%, n = 242) although this had decreased by 6% from Wave 1. For re-partnered mothers more were now paying off a home at 54.9% (n = 56). The majority of two-biological-parent families were also still paying off homes (69.6%, n = 2148) and were also still more likely to own their home outright (13.8%, n = 426) compared to re-partnered (2.9%, n = 3) and single (5.1%, n = 23) mother families.

At Wave 3 over half of all mothers identified wages as their main source of income at 63.4% (n = 1880) for two-biological-parent mothers, 55.1% (n = 108) for re-partnered mothers and 52.1% (n = 237) of single mothers. For the first time less than half of single mothers had a government pension as their main income source (42.6%, n = 194), and these figures also dropped for re-partnered (28.6%, n = 56) and two-biological-parent (19.6%, n = 582) mothers.

As in the previous two waves of data, higher rates of single mothers were still earning over \$500 a week (69.3%, n = 317), and again increases in other family types from Wave 2 were evident for mothers in two-biological-parent households (47.6%, n = 1424) and re-partnered households (52.3%, n = 104). Weekly income patterns for fathers were also similar as the previous two waves, with the pattern of fathers in two-biological-parent households earning more remaining with 63.2% (n = 1872) earning \$1000 or more a week compared to 36.6% (n = 73) of those in re-partnered households.

Large differences in combined weekly income for Wave 3 were still evident, again with single mothers clearly at a financial disadvantage. Families with two-biological-parents were still much more likely to earn over \$2000 a week at 44.6% (n = 1221) compared to 25.3% (n = 43) of re-partnered and only 3.3% (n = 15) of single mother families. Re-partnered families were still most likely to have a weekly income of \$1000-\$1999 (57.6%, n = 98) followed by families in two-biological-parent households (44.9%, n = 1229) then single mothers (25.1%, n = 11).

For the \$500-\$999 bracket, 49.6% (n = 200) of single mothers fell within this range compared to 14.7% (n = 25) of re-partnered mothers and 8.8% (n = 240) of two-biological-parent family households. For the bracket of less than \$500 a week, 21.3% (n =

86) of single mothers fell within this bracket compared to only 2.4% (n = 4) of re-partnered mothers and 1.6% (n = 43) of families with two-biological-parents.

The same pattern of difference across financial comfort were also still evident at Wave 3 with the majority of two-biological-parent families (79%, n = 2362) and re-partnered mothers (71.9%, n = 143) indicating that they were either Prosperous/Very Comfortable or Reasonably Comfortably compared to only 47.3% (n = 216) of single mothers. As with previous waves, nearly half of single mothers (46.3%, n = 212) identified that they were Just Getting Along, with 6.6% (n = 30) identifying as being Poor/Very Poor.

The same pattern of difference across financial comfort were also still evident at Wave 3 with the majority of two-biological-parent families (79%, n = 2362) and re-partnered mothers (71.9%, n = 143) indicating that they were either Prosperous/Very Comfortable or Reasonably Comfortably compared to only 47.3% (n = 216) of single mothers. As with previous waves, nearly half of single mothers (46.3%, n = 212) identified that they were Just Getting Along, with 6.6% (n = 30) identifying as being Poor/Very Poor.

In comparison only 19.7% (n = 590) of two-biological-parent families and 26.6% (n = 53) of re-partnered mothers were Just Getting Along, while only 1.3% (n = 37) of two-biological-parent families and 1.5% (n = 3) of re-partnered mothers were Poor/Very Poor. Home ownership at Wave 3 also continued to show similar patterns with single mothers more likely to rent (52%, n = 238) compared to other family types who were more likely to either be paying off a home or own it outright.

Table 4.9 Family economic circumstances by family structure at wave 1

Variable	Two Biological Parents (n=3193)	Re-partnered Mother (n=76)	Single Mother (n=379)	Total Group (N=3648)
Main Income Source of Mother (%)				
Wages/Salary	1471 (46.1)	34 (44.7)	111 (29.3)	1616 (46.4)
Government Pension/Allowance	1103 (34.5)	31 (40.8)	247 (65.2)	1381 (39.6)
Child Support	11 (.3)	8 (10.5)	16 (4.2)	35 (1.0)
Mother Weekly Income (%)				
\$2000 or more per week	26 (.9)	NIL	2 (.6)	28 (.8)
\$1000-\$1999 per week	179 (6.4)	7 (9.2)	20 (5.6)	206 (6.4)
\$500-\$999 per week	641 (22.8)	17 (23.6)	163 (45.9)	821 (25.3)
Less than \$500 per week	1966 (69.9)	48 (66.7)	170 (47.9)	2184 (67.4)
<i>Missing or N/A</i>	381	4	24	409
Father Weekly Income (%)				
				<i>Father n=3269</i>
\$2000 or more per week	230 (8.5)	NIL	N/A	230 (7.0)
\$1000-\$1999 per week	1022 (37.6)	11 (16.4)	N/A	1033 (31.6)
\$500-\$999 per week	1080 (39.7)	38 (56.7)	N/A	1118 (34.2)
Less than \$500 per week	385 (14.2)	18 (26.9)	N/A	404 (12.4)
<i>Missing or N/A</i>	476	9	N/A	495
Combined Income Weekly (%)				
\$2000 or more per week	612 (20.4)	3 (4.3)	3 (.8)	618 (18.0)
\$1000-\$1999 per week	1523 (50.6)	39 (55.7)	24 (6.7)	1586 (46.2)
\$500-\$999 per week	769 (25.6)	25 (35.7)	165 (46.1)	959 (27.9)
Less than \$500 per week	103 (3.4)	3 (4.3)	166 (46.4)	272 (7.9)
<i>Missing or N/A</i>	186	6	21	213
Family Financial Comfort (%)				
Prosperous/Very Comfortable	667 (20.9)	16 (21.1)	27 (7.1)	710 (19.5)
Reasonably Comfortable	1548 (48.5)	39 (51.3)	129 (34.0)	1716 (47.0)
Just Getting Along	914 (28.6)	18 (23.7)	189 (49.9)	1121 (30.7)
Poor/Very Poor	61 (1.9)	3 (3.9)	33 (8.7)	97 (2.7)
Home Ownership (%)				
Being rented	527 (16.5)	36 (47.4)	229 (60.4)	792 (21.7)
Being paid off	2160 (67.6)	36 (47.4)	105 (27.7)	2301 (63.1)
Owned outright	406 (12.7)	2 (2.6)	10 (2.6)	418 (11.5)

At Wave 4 mothers identifying wages as their main source of income increased across all groups again, with 66.7% (n = 1917) for two-biological-parent mothers, 58.3% (n = 140) for re-partnered mothers and 58.1% (n = 302) of single mothers. Accordingly rates of mothers noting a government pension as their main source also dropped with single mothers at 36.4% (n = 189), re-partnered at 26.7% (n = 64) and two-biological-parent mothers at 16.5% (n = 474).

Differences in weekly earnings were still evident, with single mothers marginally more likely to earn over \$1000 a week (26.6%, n = 135) and still in the majority for the bracket of \$500-\$999 a week (50.4%, n = 256). Higher rates of two-biological-parent family mothers were still earning less than \$500 a week (36.4%, n = 1012) compared to re-partnered mothers (33.5%, n = 77) and single mothers (21.3%, n = 108). Again the same pattern of weekly income was evident for fathers with those in two-biological-parent households continuing to be more likely to earn \$1000 or more a week (69.1%, n = 1821) compared to those in re-partnered households (49.2%, n = 100).

The same patterns for combined weekly income evident in previous waves were still apparent for Wave 4. Households with two-biological parents had 50.3% (n=337) earning \$2000 or more compared to 32% (n=70) of re-partnered and only 5.5% (n=25) of single-mother families. Re-partnered families were still most likely fall within the \$1000-\$1999 bracket (51.6%) followed by families in two-biological-parent households (38.7%) then single mothers (29.8%). For the \$500-\$999 bracket, higher frequencies of single mothers were still evident at 47.7% (n = 218) compared to 12.3% (n = 27) of re-partnered mothers and 7.8% (n = 208) of two-biological-parent family households. Again, single mothers were more likely to earn less than \$500 a week 17.1% (n = 78) compared to only 4.1% (n = 9) of re-partnered mothers and 3.1% (n = 14) of families with two-biological parents.

Ratings on household financial comfort at Wave 4 were consistent with previous waves. The majority of two-biological-parent families at 83.3% (n = 2400) and re-partnered mothers at 68.8% (n = 165) indicating that they were either Prosperous/Very Comfortable or Reasonably Comfortably compared to only 50.1% (n = 264) of single mothers. Home ownership at Wave 4 showed similar patterns to previous waves. More outright home ownership was evident across all groups, with 17% (n = 489) for two-biological-parent families, 7.1% (n = 17) for re-partnered-mother and 7.6% (n = 40) for

single-mother families. Single mothers were still more likely to rent (51.8%, n = 271) compared to other family types who were more likely to be paying off houses.

4.4 Discussion

The following section will provide a discussion of the key findings for Study 1 with consideration given to how these may be associated with or influence child outcomes. Family structure and patterns of continuity and change will first be discussed. Household characteristics in relation to household size, sibling number and sibling type will then be examined. The child characteristics of sex and age will then follow. Family patterns of Aboriginal or Torres-Strait Islander and language background other than English status is then considered. The parental characteristics of age and education are also discussed before consideration of parental employment and household economic circumstances.

4.4.1 Family structure, continuity and change

For the current research when children were aged 4.7 years, 87.5% were still living with two biological parents, 10.4% lived with single mothers and 2.1% lived with a re-partnered mother. By Wave 4 at age 10.8 years, two-biological-parent families had decreased to 79%, single-mother families had increased to 14.4% and re-partnered-mother families had increased to 6.6%. These figures reconfirm assertions that while non-traditional family types have increased in frequency in Australia, nuclear families are still more common (Saggers & Sims, 2004). Since 1976 the general pattern has been that up to 84% of children born to couple parents are still with intact families by age 10 (de Vaus, 2004), and the current findings are in line with this trend. The current pattern also aligns with previous data released by the ABS.

Data from the ABS (2011) presenting family structure for children aged 0 to 17 years, indicated that in 2009-2010, 73% lived in two-biological-parent families, while 7% were re-partnered and 20% were sole parents. These figures are not directly comparable to the current research given that data on single and re-partnered fathers would have also been included, and the age range of included children is wider. However, given children are 10-11 years of age in the current research at Wave 4, a similar pattern can be seen to be emerging from the LSAC data.

Over the six year period between 2004 (Wave 1) and 2010 (Wave 4) the majority of children remained in their initial family structure group with 85% of the sample experiencing no family transitions during this time frame. For those that did experience family transitions, it was more common to only have one occur (11.7%). Data from an Australian 2001 HILDA survey provided some indication of family transitions experienced by children. For the youngest cohort, by 5 years 10.2% had experienced one transition and by 12 years this rose to 14.2% and to 18.3% by 18 years (de Vaus & Gray, 2003). For children in the current study, by 10-11 years 11.7% had experienced only one transition, which is a similar benchmark to the HILDA figures.

Higher rates of multiple transitions were found in the HILDA study, with 1.5% of five years olds having two or more, increasing to 8% by 12 years and 13% by 18. In comparison the current results indicated that 3% of children by 10-11 years had multiple transitions. It should be noted that for the current study, the percentage of transitions from birth would potentially be higher, and that transitions were only counted once across data waves again possibly underestimating total transitions. Also, the HILDA study relied on retrospective data for family transitions potentially increasing error in transition numbers. Regardless, Australian children seem to be experiencing less family transition in comparison to their U.S. counterparts. One U.S. study found that from birth to early adolescence 18% of children experienced one family transition, while 21% had two or more (Cavanagh, Schiller & Riegle-Crumb, 2006).

Experiencing family transition was most likely if originating from a single mother family where 43.5% of the 379 children with single mothers at Wave 1 experienced one or more family transitions by Wave 4. Transitions were also more common for children originating from re-partnered families with 34% experiencing one or more family changes compared to only 10.7% of children originating in two-biological-parent families. This supports results from a study which examined data from the United States and the United Kingdom, and which also found in both countries higher levels of transition for single mothers, followed by cohabiting mothers (Kiernan, McLanahan, Holmes & Wright, 2011).

Higher risk rates are evident for U.S. children depending on family structure at birth. Being born into a single mother family resulted in the greatest risk of experiencing multiple family transitions, with 30% children by the age of 3 years having three or more (Osborne & McLanahan, 2007). Australian children seem to be more likely to experience

fewer transitions than U.S. children possibly due to higher rates of partnership dissolution currently evident in the United States (Cherlin, 2008) and the high rates of births to single mothers (Cherlin, 2010).

The current findings on family structure, and stability or change over time, sheds important light on the experiences of young Australian children. Family structure has been shown to be associated with child wellbeing and achievement. Effects can be long lasting with family structure at birth shown to still impact at adolescence (Cavanagh, Schiller & Riegle-Crumb, 2006). Children who are within two-biological-parent families are advantaged compared to those in other family groups, having been found to have more favourable academic, social and behavioural outcomes (Amato, 2005; Brown, 2010). Children in single mother households have been shown to fare worse on cognitive, behavioural and health outcomes compared to those with married biological parents (Craigie, Brooks-Gunn & Waldfogel, 2010).

Even for those children whose single parents re-partner, child outcomes can remain similar to those remaining in single-parent households (Artis, 2007; Carlson & Corcoran, 2001; Craigie et al., 2010). For example, being in either a single parent or re-partnered family has been shown to have adverse impact on child academic achievement for both maths and reading (Ginther & Pollak, 2004). It has been suggested that re-partnering with children from previous partners can contribute to more conflict resulting in less stable relationships than those without (Brown, 2010).

In addition, evidence suggests that child wellbeing may be adversely impacted by family structure transitions. Family structure transitions have been shown to be associated with decreases in academic achievement (Francesconi, Jenkins, & Siedler, 2010; Sun & Li, 2009) and increases in behavioural problems (Cavanagh & Huston, 2006; Magnuson & Berger, 2009). In addition transitioning into specific family types can lead to differing trajectories, for example, transitions into single mother families have been found to be associated with increased behavioural problems, while transitions into a re-partnered family had associations to lower academic achievement (Magnuson & Berger, 2009). The negative effects of family transitions have also been shown to increase in relation to the number of transitions experienced (Mance & Yu, 2010). It is therefore important to have an indication of the family structure Australian children reside in, and the trajectories of change that result due to parental relationship dissolution and reformation.

4.2.2 Household characteristics

Slight variations in the number of people and siblings in the house were evident across waves, although general patterns of difference between family structure groups remained relatively consistent. By Wave 4, children living with re-partnered mothers were more likely to have 5 or more people in the household (54.6%), followed by those with two biological parents (51.7%) in comparison to those with single mothers (18.8%). These children were more likely to have either two or three people in the household (44.8%).

In relation to siblings present in the home, children with single mothers were also more likely to have no siblings at Wave 4 (17.9%) compared to other family types. Children across all family types were most likely to have either 1 or 2 siblings in the home. Those in re-partnered-mother households were more likely to have 4 or more siblings at (9.6%) compared to 4.1% of two-biological-parent and 3.8% of single-mother families. So overall this showed that children in re-partnered-mother households were more likely to have more people in the household, often due to the presence of more siblings. Not surprisingly children residing in re-partnered-mother families were also far more likely to have a half or step sibling in the home with 53.3% at Wave 4 compared to 15.6% for single mother and 3.8% for two-biological-parent families. Children in two-biological-parent homes were more likely to have a biological sibling in the home with 93.2% at Wave 4 compared to 71.9% for single mother and 62.5% for re-partnered families.

Descriptive figures on family characteristics on a subsample of U.S. children (aged 5-10 years) from the National Longitudinal Survey of Youth (NLSY) showed similar patterns (Gennetian, 2005). NLSY data revealed that half or step siblings were found in 48% of re-partnered families, 27% of single mother and 7% of two-biological-parent families. Higher figures than found in the LSAC data can be seen for the single and re-partnered families potentially reflecting that the NLSY data was over sampled for higher rates of black, Hispanic and low income white populations. Kreider (2008) noted that 13.4% of U.S. children, in 2004, lived in families with at least one half- or step-sibling, which is similar to the 8.7% of the total sample in the current study.

The percentage of Australian children in families that are blended or step families are of note given suggestions that non-biological parents are more likely to invest less

time and resources into children potentially contributing to poorer outcomes (Howe, 2009). The addition of half or step siblings has been found to contribute to poorer academic and social outcomes including for children who reside with two biological parents (Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008; Tillman, 2008). However, family size may also be a contributing factor to this.

Differences in outcomes between children in intact families and other family types have been shown to reduce when sibling structure and parent education were accounted for in both American and Swedish samples (Björklund, Ginther, & Sundström, 2007). In this study, negative associations occurred for number of siblings, and type of sibling and child outcomes. This suggested that larger families and those with half- or step-siblings may have fewer resources to invest for individual children (Björklund et al., 2007). Again, this highlights the need to be aware of the compositions of families that Australian children reside in and the possible implications for their wellbeing.

4.4.3 Child sex and age

There was little variation in child sex distribution across family types for any of the four waves of data, although marginally higher rates of boys were in families with re-partnered mothers. Child sex has been shown to contribute towards differing effects for children in families that experience parental separation, with girls tending to experience more internalising behaviour problems than boys (Ackerman, Brown, D'Eramo, & Izard, 2002; Størksena, Røysamba, Moumc, & Tambsa, 2005). The age of children can also lead to differing effects. Age was consistent across family types over the four waves of data, with the overall average age of children at Wave 1 being 56.9 months, or 4.7 years. The average age increased by two years for each wave of data collection to 6.8 years, 8.8 years and 10.8 years.

These time periods capture children entering into early schooling through to upper primary years. The age of children when family structure changes eventuate can contribute to ongoing adjustment. The effects of family transitions experienced in childhood may not emerge until later, as little to no significance was found in one study which also examined the impact of multiple transitions for children aged 7-10 years (Carlson & Corcoran, 2001); while only behavioural effects were found in another (Ackerman et al., 2002). However, family transitions experienced in early childhood have

been found to contribute to adolescent outcomes (Cavanagh & Huston, 2008; Heard, 2007).

4.4.4 Family patterns: Indigenous status and language background

The number of families with Aboriginal or Torres-Strait Islander or language background other than English status across family types did not change greatly across the four waves of data. Of note are the different proportions evident in family structures by Wave 4, when looking at the percentage of families with either Indigenous status or language background other than English status. At Wave 4, 67 mothers identified as Indigenous. Of these, 60% were still residing with the child's biological father, 8% were re-partnered and 31% were single mothers. In comparison, there were 433 mothers identified as having a language background other than English, with 85.5% of these remaining in two-biological-parent households, 2.3% being re-partnered and 12% were single mothers at Wave 4. At Wave 4, it was evident that mothers identifying as Indigenous were much more likely to be single (31%, compared to 14.4% of the total sample) while mothers with a language background other than English mothers were more likely to remain with biological fathers (85.5% compared to 79% of the total sample).

These figures may not reflect the accurate population patterns either given that Aboriginal or Torres-Strait Islanders were underrepresented in both the original LSAC dataset and the selected sample for the current research due to higher levels of attrition. Also, only children residing with biological mothers were included in the current sample. This would potentially also decrease accurate representation of Indigenous children as they are more likely to experience care from somebody other than a biological parent, with a study using a sample from Western Australia finding up to 20% of Aboriginal or Torres-Strait Islander children aged 12-17 years in alternative care arrangements (Blair, Zubrick, & Cox, 2005). The current research still provides an important indication of the different family structure experiences for Indigenous and Language Background Other Than English children.

Previous Australian research has also identified that Aboriginal or Torres-Strait Islander families are more likely to have a single parent than non Indigenous Australians. In 1996, 36.8% of Indigenous families with children under age 18 had single parents compared to just 19.5% of non Indigenous families (de Vaus, 2004). Racial differences

have also been found in a previous U.S. study, which examined the family structure experiences of children, including transitions (Blau & van der Klaauw, 2008). This research reported that the average number of children born to black mothers that remained living with both biological parents was 33% in comparison to 74% of children born to white mothers.

Ethnic variations in family structure was also found in the UK, where data collected in 2001 revealed 85% of Indian couples with children were married, while 50-60% of black families had single parents and South Asian families having overall the lowest rates of family separation and low rates of single parenthood (Social Policy Justice Group, 2006). It was also found that these differing trajectories seemed to stem from cultural differences as opposed to economic influences such as education or employment. Their results, like the current findings, highlight that different ethnicity and cultural backgrounds can contribute to differing family structure trajectories for children.

4.4.5 Parental age and education

Biological mothers

At Wave 1, the mothers in re-partnered families were, on average, the youngest group (29.8 years), followed by single mothers (33.2 years), and mothers living with the child's biological father (35.3 years). By Wave 4 the differences in age had decreased slightly although a similar pattern was evident with re-partnered mothers still being on average younger (37.5 years) than single mothers (40.7 years) or those with biological fathers (41.4 years).

Mothers still partnered with biological fathers retained higher levels of education across each time-point. At Wave 1, those partnered with biological fathers were more likely to have completed year 12 (65.1%) and more likely to hold either a bachelor or post graduate qualification (34.1%). Re-partnered mothers were next likely to finish high school (52.6%) and to hold a bachelor or post graduate qualification (21.1%), in comparison to 41.2% of single mothers finishing high school and 16.9% holding a university qualification. Single mothers were more likely to hold a certificate than any other family group (30.9%). By Wave 4 the gaps between re-partnered and single mothers had nearly closed.

Year 12 completion at Wave 4 was evident for 65.8% of mothers in two-biological-parent families, compared to 50.4% of re-partnered and 49.4% of single mothers. Again mothers with biological fathers were still more likely to hold a Bachelor or post graduate degree (36.7%) compared to 23% of re-partnered and 22.9% of single mothers. The closing of a gap between levels of education held by single and re-partnered mothers could be in part due to mothers furthering their education and/or contributed to by transitions of mothers across family type from Wave 1 to Wave 4.

These results are similar to education trends outlined by de Vaus (2004) on Australian data. Overall, single mothers had lower rates of education than those in couples with 74.6% not having post-school qualifications in comparison to 65.6% of mothers with partners. Those in couples were more likely to have a university degree at 14.8% compared to 9.1% of single mothers. However, de Vaus (2004) also notes that when examining single mothers' educational profiles across different child age range, it become evident that older single mothers are more likely to hold more qualifications than younger mothers. This was also shown in the current research. Similarly de Vaus (2004) draws conclusions that this may indicate further education once children are older, but is also likely to reflect changes of women transitioning in or out of single motherhood.

The level of maternal education may hold particular importance for at risk families. Parental education has been found to have both direct and indirect links to child achievement (Davis-Kean, 2005). An increase in educational attainment for young mothers previously with low levels has been shown to improve child academic skills and the quality of home environments (Magnuson, 2007). Maternal education has also been shown to have a significant influence on child outcomes across low to high income families (Acs, 2007). Maternal education could therefore act as a potential buffer for children in low income single mother families, given that these families are more likely to experience economic disadvantage as will be discussed further later in this chapter.

Biological fathers and social fathers

Fathers at Wave 1 in the biological two parent families were on average older than the social fathers in re-partnered families at 37.7 years as opposed to 33.1 years. By Wave 4 a similar age gap was still evident with biological fathers having an average age of 43.8 years compared to social fathers at 39.5 years. The level of education held by fathers revealed similar patterns across all waves, with biological fathers more likely to have

higher levels of education at each time-point. Biological fathers were much more likely to have completed high school, with 54% at Wave 4 having done so compared to only 36.3% of social fathers. Biological fathers were also more likely to hold a university degree compared to social fathers, who were more likely to hold a certificate. These factors are of note as they may give insight into selection effects that contribute to trajectories of family status patterns.

Previous research has also noted that the partners of a child's mother that were not married-biological fathers, tended to be younger and less educated (Brown, 2004). The effects of residential fathers (both biological and non-biological) on child wellbeing were investigated by Hofferth (2006). Results indicated that there were child achievement differences across family structure groups. These were associated with the demographic and economic factors evident across families, with social fathers being more likely to be less educated and earning less. Lower levels of income were also evident in the current research as will be discussed in the next section.

4.4.6 Employment and economic circumstances

Employment

The employment of mothers varied greatly across the four waves of data with rates of employment increasing as children were older. This was expected given that it is not uncommon for women to reduce employment rates until their children are older (Craig & Sawrikar, 2009). At Wave 1 when children were 4-5 years, 61.8% of mothers in two-biological-parent families, 57.9% of re-partnered mothers and 52.3% of single mothers were employed. This shows that lower rates of single mothers were working compared to other family groups, despite a greater need for household income (as will be discussed in the next section). Working while children are younger can prove difficult due to higher supervision and care levels (Craig, Mullan, & Blaxland, 2010). Being a sole parent, a greater responsibility to manage an unpaid work load of supervising young children may explain these differences.

The increased rates of working mothers at Wave 4 would support this, as once children were older similar rates of mothers across all family groups were employed, with 78.6% for two-biological-parent mothers, 76.7% for re-partnered mothers and 77% for single mothers. This demonstrates that once children were older, single mothers were equally employed to other family structure groups.

Both biological and social fathers showed high levels of employment across each time-point. Unlike the employment rates of mothers, these did not fluctuate in relation to the age of children and remained consistent across time. At Wave 4, 95.4% of biological fathers and 92.5% of social fathers were employed with the majority working full time. Due to the additional income generated by father employment, despite the increased working hours of single mothers at Wave 4, they were still at an economic disadvantage compared to the other families as will now be discussed.

Income

Examination of variables relating to income showed overall that single mother families are financially disadvantaged in comparison to couple families. Previous research has also found families with single mothers to consistently have higher levels of income inequality compared to couple households (Martin, 2006). This is of concern given that children in families with lower income have been shown to be at risk of adverse outcomes due to a lack of resources (Berger, 2004). This is already known in Australia where the growth of single-parent families has received government policy focus due to recognition of the financial difficulties faced by single parents, in particular single mothers, and the impact this may have on child wellbeing (de Vaus, 2004).

Data on Australian families with children under 15 years collected between 2003-2004, found similar results to the current research on single mother families, with 41.7% being identified as being a low income household, compared to just 16.4% of couple families (ABS, 2007). While not directly comparable, the combined weekly household income results of the current research align with this with single mothers consistently showing higher frequencies in the lower income brackets.

The ABS data also found higher rates of single mothers listing government pensions or allowances as their main source of income, at 63.3% compared to 8.2% of couple families (ABS, 2007). These figures offer an average of all families regardless of child age from birth to 15 years, however, like the current study they show that single mothers are more likely to rely on benefits compared to couple families. Similar rates of home renting were also found with the ABS reporting that 65.1% of single mothers compared to 21.2% of couple families renting in 2003-2004 (ABS, 2007). Again, while not directly comparable, this highlights that the current findings are in line with previous social trends identified with an Australian sample.

It is interesting to note that despite having overall lower levels of household income, single mothers tended to earn more weekly income on average than other mothers by Wave 4. While at Wave 1 when children were younger only approximately half of single mothers were working (52.3% compared to 61.8% of two-biological-parent mothers and 57.9% of re-partnered mothers), by Wave 4 similar rates of mothers across all family types working were evident. The large economic gap evident was due in part to the lack of additional income as granted mothers in couple families. Prior research has found that the loss of income from parental separation can have more significant negative effects for child than the actual change in family structure (Walker & Zhu, 2011).

This could lead to assumptions that re-partnering would automatically lead to an improvement in child outcomes due to the additional economic resources. The financial benefits to re-partnering have been acknowledged with previous Australian data finding that 44% of single mother are below the poverty line compared to 15% of re-partnered mothers (de Vaus, 2004). While economic resources may increase compared to resources available as a single parent, stepparent families have been shown to have lower economic wellbeing in comparison to married two-biological parent families (Manning & Brown, 2006).

While marital status was not a focus in the current research, similar findings emerged. For the current sample, while single mother households were the most clearly economically disadvantaged, re-partnered mothers were also disadvantaged compared to those in two-biological-parent households. This in part is due to the difference between the biological fathers and the social fathers, with biological fathers on average being older, more likely to finish high school, have higher levels of education and earning more with 69% earning more than \$1000 a week at Wave 4 compared to 49% of social fathers in re-partnered households.

The differences in income across family structure groups are significant as previous research has well documented the link between household income and child outcomes. Low income has been found to have negative effects on academic outcomes (Ackerman, Brown & Izard, 2004; Davis-Kean, 2005; Sektnan, McClelland, Acock & Morrison, 2010; Walker & Zhu, 2011) and behavioural adjustment (Gustafsson, Larsson, Nelson, & Gustafsson, 2009; Carlson & Corcoran, 2001). In addition, income has been found to have stronger effects on child wellbeing than family structure (Arc, 2007; Foster & Kalil, 2007). It has also been suggested that income inequality across differing family

structures could be contributing to the ongoing perpetuation of ethnic, gender and economic class inequalities (McLanahan & Percheski, 2008). As in previous research, these economic differences could also potentially hold implications for the wellbeing of the current sample.

4.5 Conclusion

In conclusion, the findings for the current study have identified key differences between characteristics of family structures, for two-biological-parent, re-partnered-mother and single-mother families. In regards to basic demographics, single mothers initially tended to be younger and less educated although these gaps changed over time as women from the other family groups separated from partners. Mothers in two-biological-parent families were older and held higher levels of education than both other family groups at each time-point. Biological fathers also tended to be older with higher levels of education in comparison to social fathers.

Another important finding was the large economic disadvantage faced by single mothers. While children were younger, single mothers' employment levels were lower than mothers with partners. However by Wave 4, they had similar rates of employment. Despite this they continued to have far less household income due to lacking the additional earning capacity a partner can provide. It was however discovered that re-partnered-mother families were also economically disadvantaged compared to those with two-biological parents, potentially due to the biological fathers being older, better educated and thus earning more than social fathers.

The current study also sheds light on the nature of family transitions experienced by Australian children. Results indicated that family transitions due either to a new partnership formation or the dissolution of an existing relationship were more common for children originating in single-mother households, followed by those children who lived in a re-partnered family at Wave 1. Children whose mothers had Aboriginal or Torres-Strait Islander status were also more likely to live in single-parent families and there were more two-biological-parent families in which mothers had a language background other than English.

As a whole, the differences evident between the characteristics of parents and patterns of stability and change across family structure found in the current study may

lend weight to theories of selection effects. Selection effects (Brown, 2010; Hofferth, 2005; Sweeny, 2010) refer to the phenomena that individuals with particular attributes are more likely to find partners with similar attributes and, depending on the nature of the attribute, then these attributes contribute either to more family stability (e.g., parents with higher levels of education) or less family stability (e.g., parents with low levels of education). Certainly the consistent patterns across time evident in the current study suggest that selection characteristics of parents, by demographics, may contribute to more or less family stability. Additional research which tracks Australian children and family structure stability and change from birth would enable further understanding of these trajectories and the contribution that selectivity factors play in parental relationship formation.

The focus of the next chapter is the presentation and discussion of findings for *Study 2: Residential and school change and relationship support at home and school*. This continues to examine areas of continuity and change within children's lives from early childhood during transition into early educational settings through to middle childhood. Investigating these ecological factors and determining if differences in experience are evident in relation to family structure is important given the influence these may hold in child developmental trajectories.

CHAPTER 5: RESIDENTIAL AND SCHOOL CHANGES AND RELATIONSHIP SUPPORT AT HOME AND SCHOOL

5.1 Introduction

The aim of this study was to determine the extent to which family structure and family transitions are associated with residential and school change for young Australian children through middle childhood. This study also aimed to examine differences in the quality of parent, teacher, and peer relationships and to determine associations between the quality of relationships and family structure at Wave 4. This study provides important insight and understanding as to the degree of change and continuity in children's lives across multiple contexts.

Further research into the extent to which children are undergoing rates of change across multiple contexts is important given the possible cumulative effects. Children experiencing family structure change may be more at risk from associated changes in home or school, and support from others including parents, teachers and peers may be critical. It is therefore important to establish the rate of residential and school change for Australian children and to determine the associations with family structure while also gaining insight into any differences in the quality of available social support across home and school contexts.

Child development takes place across multiple contexts, and home and school are two that hold significant influence on developmental trajectories. In addition upheaval in one area of a child's life may cause indirect or direct effects across these contexts. For example, a change in residence or school may occur as a single event in isolation, or these events may occur together. In addition, corresponding family structure change may also be occurring at the same time. The association between school and residential moves has been previously recognised, however, the lack of appropriate longitudinal data has resulted in some researchers being unable to address this (Leckie, 2009). The current study will therefore address this by providing insight into the residential and school continuity and change experiences of young Australian children through to middle childhood.

The potential social implications are also an important consideration. Changing schools can result in children needing to adjust to a new school environment, new

teachers and new peers (Reynolds, Chen & Herbers, 2009). The social implications may be heightened when a school change coincides with a home change resulting in low community ties in addition to the loss of previous school and peer relationships (Pribesh & Downey, 1999). Home support may also be reduced during times of family change and upheaval. The study will therefore also provide insight into differences in home and school relationship support across family structure groups at Wave 4, in order to identify potential sources of protective or risk factors for Australian children.

Throughout the remainder of this chapter, details of the methodology will be briefly outlined, followed by findings for descriptive analyses on continuity and change experienced by young Australian children across differing family structure groups. Experiences within the context of residential mobility will initially be discussed, followed by child experiences in early education and school contexts. After this, the quality of home interactions and support will be considered via inferential analyses of maternal psychological distress and child perceptions of parent relationship quality. School support via child perceptions of teacher and peer relationship quality are then examined. A discussion of the key findings is then provided.

5.2 Data and Methods

This study uses data from Wave 1 to Wave 4 of the LSAC Kindergarten cohort to address Research Questions 3, 4 and 5:

3. How is stability and change in family structure associated with residential and school mobility of Australian children across the primary school years? *Specifically, does the number of residential and school changes vary for children from different family structures (two-parent families, single-parent families, or re-partnered families) across the primary school years?*
4. What is the quality of maternal mental health for Australian children, at age 10-11 years, and is maternal mental health associated with family structure? *Specifically, are there differences in the mental health of mothers in different family structures (two-parent families, single-parent families, and re-partnered families) for children at 10-11 years?; and*
5. What is the quality of the relationships that Australian children, at age 10-11 years, have with their parents, teachers, and peers and is the quality of relationships

associated with family structure? *Specifically, are there differences in the quality of relationships with parents, teachers, and peers by family structure (two-parent families, single-parent families or re-partnered families) for children at 10-11 years?*

The same sample used in the previous study was utilised for the analyses in this chapter. The sample was a restricted subsample from the LSAC Kindergarten Cohort. In order to be included the biological or adopted mother (referred to as biological parents in analyses) needed to be the Parent 1 (Parent who knows the most about the child) respondent across all four waves of data. Further restrictions were then made based on information on the relationship of both Parent 1 and Parent 2 to the study child, with complex or unknown histories excluded. This resulted in the original LSAC Kindergarten sample size of $n = 4983$ reducing to a sample size of $n = 3648$ cases. Further detail on the procedure used in sample selection is provided in Chapter 3.

The variables used in these analyses are described in Table 5.1. These variables were selected from the LSAC dataset across waves in order to examine the constructs of continuity and change in residential and school settings, and the perceived social support available to children in family and school contexts.

The items selected for continuity and change were chosen in order to best describe the experiences of children in residential and school settings, however, due to the variable availability at each wave some variations were inevitable. This was also in part due to the different early education experiences of children at Wave 1 as some had not yet transitioned into formal schooling. Variable selection therefore differed across waves depending on availability.

A combination of descriptive and non-parametric inferential statistical analyses was used in order to address the research questions. The patterns of stability and change in residential and school contexts across waves used a descriptive approach. These are presented in relation to family structure at each wave, again consisting of two-biological-parent, re-partnered-mother or single-mother families. Slight variations in variables measuring these constructs examined were provided across waves, therefore when necessary differing variables were selected and reported for consecutive waves.

Table 5.1 Measures of residential and school contexts and experiences

Construct	Wave	Item Description
<i>Residential</i>		
Moved in last 2 years	1, 2, 3, 4	Indicates if children have experienced a house move in the previous two years.
Distance in most recent move	1, 2, 3, 4	Indicates the distance moved in the last residential change. There is some overlap in this variable as respondents may report moves beyond the two year period between waves.
Time child has lived in house	1, 2, 3, 4	Provides an indication of the length of time children have resided in current homes.
Total number of houses child has lived in	4	This captures the total number of homes the child has resided in since birth by Wave 4 at 10-11 years of age.
<i>School</i>		
Program type	1	Indicates if children are in day care, preschool or kindergarten/preparatory settings.
Attends education setting	1	Indicates that children are in an early educational setting.
Attended full-time school previous year	2	Indicates if children had transitioned into school the year before data collection at Wave 2.
Changed school from previous year	2	Indicates if children have changed schools since the prior year.
Changed school since previous wave	3, 4	Indicates if the child has changed schools in-between waves of data collection.
Main reason for school change	2, 3, 4	Indicates the main reason for the child changing school.
School type	2, 3, 4	Identifies if children attend government or private schools or are homeschooled.
Total number of schools attended	4	Indicates the total number of schools that children have attended by Wave 4.
Quality of Support and Relationships		
Maternal mental health	4	The Kessler K6 (Kessler et al., 2003) a scale which consists of six items.
Child relationship with parent	4	The People In My Life (PIML; Cook, Greenberg, & Kusche, 1995; Ridenour, Greenberg & Cook, 2006). The parent scale consisting of eight items from the original parent trust and communication scales.
Teacher and Peer and Relationships		
Child relationship with teacher	4	The People In My Life (PIML; Cook, Greenberg, & Kusche, 1995; Ridenour, Greenberg & Cook, 2006). The teacher scale has eight items.
Child relationship with peers	4	Peer Relations scale from the Marsh-Self Description questionnaire I (SDQ-I; Marsh, 1990), eight items.

In order to determine differences in the quality of relationships and support within home and school contexts, the non-parametric Kruskal-Wallis test was utilised. This is the non-parametric option of a one-way between groups analysis of variance (ANOVA) (Pallant, 2007). ANOVA was considered however it is sensitive to unequal sample sizes (Field, 2012) and initial explorations revealed the assumption of homogeneity was violated. Post Hoc comparisons of Kruskal-Wallis tests indicating significance were conducted using Mann-Whitney U tests.

5.3 Results

The results section will start by presenting findings for the variables relating to stability and change across home and school settings. Initially the residential mobility of children will be explored across waves, followed by changes across school settings. This will then be followed by presentation of results for the examination of the quality of children's relationships and support across home and school contexts at Wave 4. Again, results relating to child home and family life will first be presented, followed by those pertaining to external support via school teachers and peers.

5.3.1 Residential continuity and change

At Wave 1, whether children had moved in the previous two years, the distance of their most recent move and the length of time in their current house were examined. Results are presented in Table 5.2. Results indicated that children with re-partnered mothers were more likely to move at 61.8% (n = 76), followed by those with single mothers at 57.3% (n = 217), with those in two-biological-parent households being the least likely to have moved at 29.7% (n = 948).

The distance involved in the most recent move experienced (not necessarily within a two year time frame; see Appendix D.1) showed that the majority of all children remained within the same town. Children in re-partnered-mother households were most likely to do so at 50% (n = 38). Those in single-mother households were next likely at 37.5% (n = 142) followed by 24.3% (n = 776) for those with two-biological parents. Similar rates of children across groups moved within the same region with 21% (n = 671) of two-biological-parent, 22.4% (n = 17) of re-partnered-mother and 28.5% (n = 108) of single-mother families. Higher rates of children with re-partnered mothers moved within

state (17.1%, n = 13) and either interstate or overseas (19.7%, n = 5), a reflection of their overall higher rates of mobility.

When examining the amount of time children had lived in their current homes, higher rates of mobility were again reflected for the children in re-partnered-mother, followed by single-mother households. Over half of children at 52% (n = 39) had lived in homes for less than two years, with this closely followed by single-mother households at 49.9% (n = 188) while this was the case for only 25.1% (n = 801) of two-biological-parent households. Having lived in homes between two to three years and eleven months was also more common for children with re-partnered-mothers at 34.7% (n = 26). This was again followed by single-mother households at 27.9% (n = 105), with 24.3% (n = 775) of two-biological-parent households. Children in two-biological-parent households were the clear majority in relation to having resided in houses since birth (the four to five years and eleven months bracket), with 50.5% (n = 1608) having done so. This was the case for only 22.3% (n = 84) of children with single mothers and only a marginal 13.3% (n = 10) of children with re-partnered mothers.

Overall at Wave 1, the results show that children from re-partnered-mother households had nearly double the amount of moves than those with two-biological parents, followed closely by children with single mothers. Of children who moved it was most common for all groups to remain in the same town or region, however, again overall higher rates of re-partnered-mother families were evident. They were also more likely than other groups to move within or interstate or overseas.

Table 5.2 Residential continuity and change at Wave 1

Variable	Two Biological Parents (n=3193)	Re-partnered Mother (n=76)	Single Mother (n=379)	Total Group (N=3648)
Moved in last 2 years – Yes (%)	948 (29.7)	47 (61.8)	217 (57.3)	1212 (33.3)
Time Child has Lived in House (%)				
Less than 2 years	801 (25.1)	39 (52.0)	188 (49.9)	1028 (28.3)
2 – 3 years 11 months	775 (24.3)	26 (34.7)	105 (27.9)	906 (24.9)
4 – 5 years 11 months	1608 (50.5)	10 (13.3)	84 (22.3)	1702 (46.8)

Results for Wave 2 are presented in Table 5.3. At Wave 2, whether families had moved in the last two years was again looked at in relation to current Wave 2 family groups. Similarly to Wave 1, results indicated that children with re-partnered mothers were more likely to move at 52% (n = 53), followed by those with single mothers at 48.7% (n = 218). Children in two-biological-parent households were the least likely to have moved at 22.1% (n = 686).

The distance involved in the most recent move (see Appendix D.1) experienced again showed that the majority of children across all groups remained within the same town. Again the children in re-partnered-mother households were most likely to do so at 52% (n = 53), followed by 40% (n = 179) of single-mother and 29.1% (n = 903) of two-biological-parent households. Rates of children staying within the same region ranged from 22.8% (n = 706) for two-biological-parent households, 25.5% (n = 26) for re-partnered-mother and 29.7% (n = 133) for single-mother households. Fewer children moved within state, interstate or overseas, although this was marginally more common for re-partnered-mother households at 15.7% (n = 16), followed by 14.5% (n = 65) of single-mother and 10.9% (n = 336) of two-biological-parent families.

The time children had spent in their current homes generally increased slightly from Wave 1. At less than two years was 48% (n = 49) of re-partnered-mother families, followed closely by 47.3% (n = 212) of single-mother families. Much lower rates of two-biological-parent families were evident at 21.3% (n = 659). The majority of these children fell within the bracket of 6 – 7 years and 11 months, with 41.7% (n = 1291) having resided in homes for this length of time. In comparison, only 18.5% of single-mother and 9.8% of re-partnered-mother families had done so.

Overall at Wave 2, the general pattern was similar to that found in Wave 1. Results showed that children from re-partnered-mother households had over double the amount of moves than those with two-biological parents, followed closely by children with single mothers. For the distance of the most recent move, it was most common again for all groups to remain in the same town or region, with this being mostly experienced by children in re-partnered-mother families, followed closely by single-mother families.

Table 5.3 Residential continuity and change at Wave 2

Variable	Two Biological Parents (n=3098)	Re-partnered Mother (N=102)	Single Mother (n=448)	Total Group (N=3648)
Moved in last 2 years – Yes (%)	686 (22.1)	51 (50.0)	218 (48.7)	955 (26.2)
Time Child has Lived in House (%)				
Less than 2 years	659 (21.3)	49 (48.0)	212 (47.3)	920 (25.2)
2 – 3 years 11 months	546 (17.6)	20 (19.6)	85 (19.0)	651 (17.8)
4 – 5 years 11 months	602 (19.4)	23 (22.5)	68 (15.2)	693 (19.0)
6 – 7 years 11 months	1291 (41.7)	10 (9.8)	83 (18.5)	384 (37.9)

Results for Wave 3 are presented in Table 5.4. At Wave 3, the rate of moves over the last two years was examined again. While patterns were similar to previous waves, the rate of overall movement was decreasing. Children with re-partnered mothers were again more likely to have moved at 43.7% (n = 199), followed by those with single mothers at 35.6% (n = 163). Children in two-biological-parent households were the least likely to have moved at 19% (n = 567).

Table 5.4 Residential continuity and change at Wave 3

Variable	Two Biological Parents (n=2989)	Re-partnered Mother (n=199)	Single Mother (n=458)	Total Group (N=3648)
Moved in last 2 years – Yes (%)	567 (19.0)	87 (43.7)	163 (35.6)	817 (22.4)
Time Child has Lived in House (%)				
Less than 2 years	583 (19.5)	88 (44.2)	168 (36.7)	839 (23.0)
2 – 3 years 11 months	436 (14.6)	61 (30.7)	94 (20.5)	591 (16.2)
4 – 5 years 11 months	416 (13.9)	24 (12.1)	48 (10.5)	488 (13.4)
6 – 7 years 11 months	484 (16.2)	19 (9.5)	52 (11.4)	555 (15.2)
8 – 9 years 11 months	1072 (35.8)	7 (3.5)	96 (21.0)	1175 (32.2)

The distance involved in the most recent move experienced also showed similar patterns as the previous waves (see Appendix D.1). The majority of children across all groups remained within the same town when moving. Children in re-partnered-mother households were again most likely to experience this at 48.7% (n = 97), followed by

39.3% (n = 180) of single-mother and 32.5% (n = 972) of two-biological-parent households. Rates of children staying within the same region ranged from 23% (n = 689) for two-biological-parent, 33.7% (n = 67) of re-partnered-mother and 27.1% (n = 124) of single-mother families. Again, it was less common for children to move within state, interstate or overseas, with similar rates for re-partnered-mother (15.1%, n = 30) and single-mother (15%, n = 69) households, with two-biological-parent households only marginally lower (12%, n = 359).

As with the previous waves, the time children had lived in their current homes had generally increased slightly. At less than two years was 44.2% (n = 88) of re-partnered-mother families, followed by 36.7% (n = 168) of single-mother families. Much lower rates of two-biological-parent families were again evident at 19.5% (n = 583). The majority of these children fell within the bracket of 8 – 9 years and 11 months, with 35.8% (n = 1072) having resided in homes for this length of time. In comparison, only 21% (n = 96) of single-mother and 3.5% (n = 7) of re-partnered-mother families had done so.

Overall at Wave 3, the general pattern was similar to that found in Wave 1 and Wave 2, with a continued decrease in the rate of residential mobility being evident. Results again showed that children from re-partnered-mother households were twice as likely to experience a house move as those with two-biological parents, followed by children with single mothers. Distance for the most recent move still indicated that all groups were most likely to remain in the same town, or same regions, with few from any group moving further afield.

Results for Wave 4 are presented in Table 5.5. At Wave 4 the rate of moves in the last two years overall had decreased again. Children with re-partnered mothers were still most likely to have moved at 37.1% (n = 89), followed by those with single mothers at 35.4% (n = 186). Children in two-biological-parent households were still the least likely to have moved at 15.8% (n = 454).

Table 5.5 Residential continuity and change at Wave 4

Variable	Two Biological Parents (n=2882)	Re-partnered Mother (n=240)	Single Mother (n=526)	Total Group (N=3648)
Moved in last 2 years – Yes (%)	454 (15.8)	89 (37.1)	186 (35.4)	729 (20.0)
Time Child has Lived in House (%)				
Less than 2 years	462 (16.0)	91 (37.9)	187 (35.8)	740 (20.3)
2 – 3 years 11 months	385 (13.4)	52 (21.7)	90 (17.1)	527 (14.5)
4 – 5 years 11 months	339 (11.8)	40 (16.7)	67 (12.7)	446 (12.3)
6 – 7 years 11 months	336 (11.7)	23 (9.6)	37 (7.0)	396 (10.9)
8 – 9 years 11 months	405 (14.1)	22 (9.2)	52 (9.9)	479 (13.2)
10 years plus	950 (33.0)	12 (5.0)	90 (17.2)	1052 (28.9)

For distances involved in the most recent move (see Appendix D.1) the majority of children were still likely to either stay within the same town or region. This was still far more likely to be experienced by children with re-partnered mothers (72.5%, n = 198), and those with single mothers (42.6%, n = 223) as opposed to children with two-biological parents (57.9%, n = 1576) given their higher residential mobility rates. Similar percentages of children across all groups had most recent moves within state, interstate or overseas. Re-partnered-mother families had 14.1% (n = 34), single-mother families had 11% (n = 58) and two-biological-parent families had 12.1% (n = 349).

Similar patterns as with previous waves were again seen with the length of time children had lived in their current homes. At less than two years was 37.9% (n = 91) of re-partnered-mother families, followed by 35.8% (n = 187) of single-mother families. Less than half of this amount was evident for two-biological-parent families with 16% (n = 462). The majority of these children fell within the bracket of 10 years plus, with 33% (n = 950). In comparison, only 17.2% (n = 90) of single-mother and 5% (n = 12) of re-partnered-mother families had done so.

Overall at Wave 4, gradual decreases in residential mobility continued to occur. Higher rates of residential moves were again experienced by children in re-partnered-mother families. Single-mother families also moved frequently in comparison to those with two-biological parents. Distances moved continued to remain mostly within the same town or region. By Wave 4, few children in re-partnered-mother homes had lived in

homes for more than ten years with the majority residing there for less than two. Children with single mothers also were more likely to have spent less than two years in homes.

The pattern of gradual decline in residential mobility can clearly be seen in Figure 5.1 which presents the percentage of children from each family group having experienced a move within the previous two years. This figure also clearly shows that at each wave, children with re-partnered mothers were mostly likely to experience a move with children from single-mother families also experiencing significantly more moves than those with two-biological-parent families.

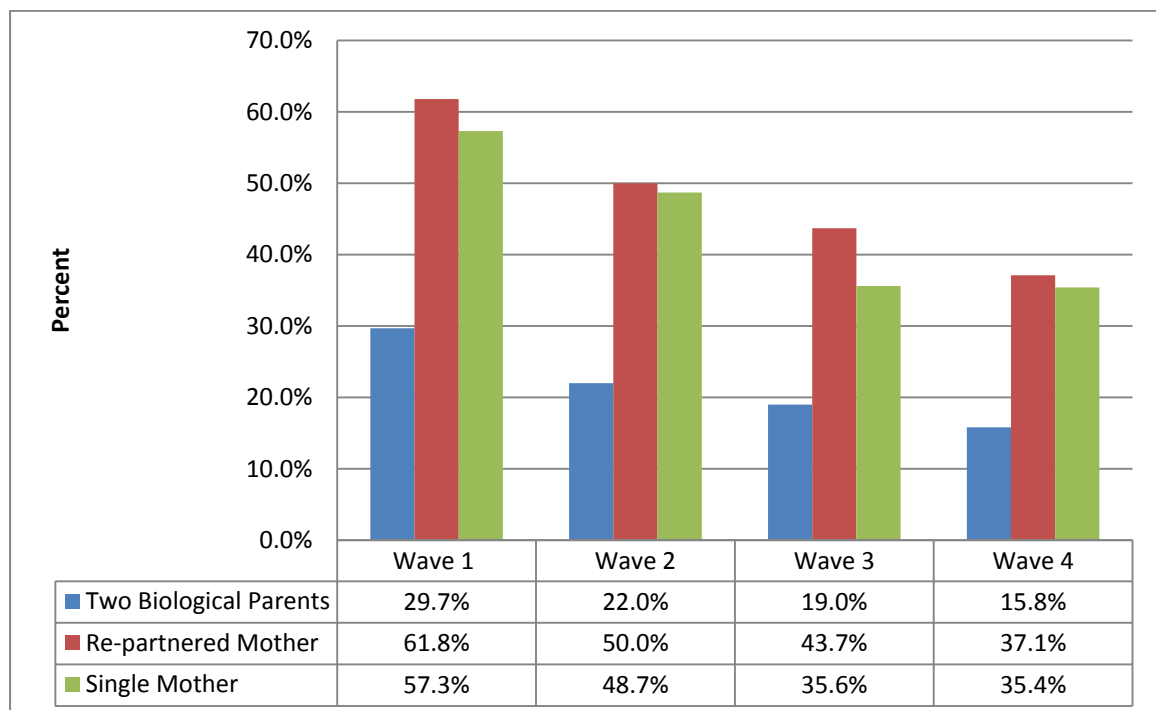


Figure 5.1 Residential mobility across waves

This is also highlighted in Figure 5.2 which shows the number of homes children had lived in since birth by Wave 4. Children with two-biological parents were most likely to have lived in only one home (29.8%, n = 859). Children with re-partnered mothers were most likely to have lived in four or more homes with over half, with 57.5% (n = 138) doing so. A large number of children in single-mother families had also lived in four or more homes at 44.6% (n = 233) compared to only 20.4% (n = 587) for children in two-biological-parent homes. This again demonstrates the high rates of residential mobility for children with re-partnered mothers, and also the higher rates of mobility experienced by children with single mothers in comparison to those with two-biological parents.

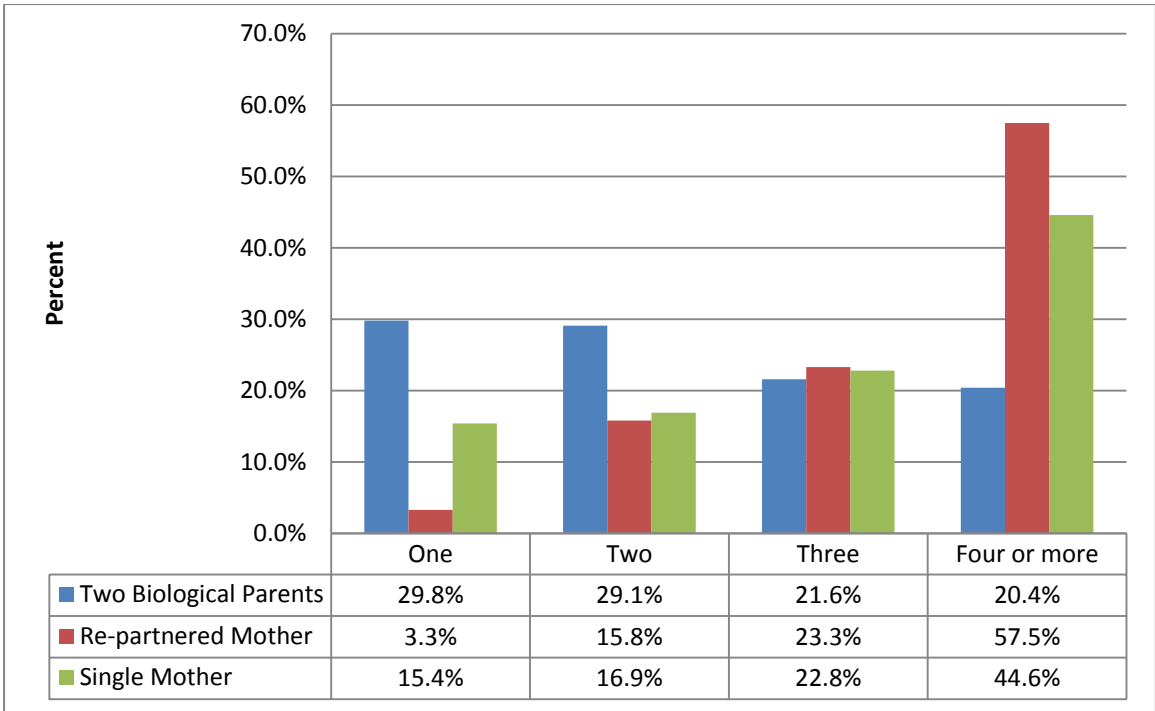


Figure 5.2 Total number of homes lived in since child’s birth at Wave 4

5.3.2 School continuity and change

The variables used to examine child experiences in educational settings vary slightly across waves. This is due in part to the age of children at Wave 1. Being aged 4-5 years, a range of experiences was evident with many involved in early educational settings either through school or in child care. The differences here are also possibly a reflection of the current differing age requirements across states for the transition into school settings. The results for Wave 1 variables are presented in Table 5.6. At Wave 1 the majority of children were attending an early education setting for 96.7% (n = 3089) of children from two-biological-parent families, 98.7% (n = 75) from re-partnered families and 94.5% (n = 358) of children from single-mother families.

The type of program being attended varied however with some children in day care, preschool, or kindergarten/preparatory settings. Children in two-biological-parent families were slightly less likely to attend day care at 22% (n = 701) compared to 28.9% (n = 22) of single-mother and 27.4% (n = 104) of re-partnered-mother families. At least half of all children were placed in preschool settings with 59% (1883) of two-biological-parent families, 50% (n = 38) of re-partnered-mother and 50.4% (n = 191) of single-mother families. Fewer children were placed in Kindergarten or Preparatory settings with

15.8% (n = 505) from two-biological-parent families, 19.7% (n = 15) re-partnered-mother and 16.6% (n = 63) single-mother families.

Table 5.6 Early education setting attendance of child at Wave 1

Variable	Two Biological Parents (n=3193)	Re-partnered Mother (n=76)	Single Mother (n=379)	Total Group (N=3648)
Attends Education Setting – Yes (%)	3089 (96.7%)	75 (98.7)	358 (94.5)	3522 (96.5)
Program Type (%)				
Day Care	701 (22.0)	22 (28.9)	104 (27.4)	827 (22.7)
Preschool	1883 (59.0)	38 (50.0)	191 (50.4)	2112 (57.9)
Kindergarten/Preparatory	505 (15.8)	15 (19.7)	63 (16.6)	583 (16.0)
School Type (%)				
Government	927 (29.0)	29 (38.2)	130 (34.3)	1086 (29.8)
Private	423 (7.2)	8 (10.5)	35 (9.3)	466 (7.1)
N/A	1770 (55.4)	38 (50.0)	204 (53.8)	2012 (56.3)

For those children attending programs in school based settings, the majority across all groups were in government placements. The percentage of children attending a government setting consisted of 29% (n = 927) from two-biological-parent, 38.2% (n = 29) from re-partnered-mother and 34.3% (n = 130) from single-mother families. Private settings were less common with only 7.2% (423) of two-biological-parents, 10.5% (n = 8) of re-partnered-mother and 9.3% (n = 35) of single-mother family children. For the majority of children at Wave 1, being in a school setting was not applicable, due to either no attendance or their placements being in other early educational contexts. This was the case for 55.4% (n = 1770) of children in two-biological-parent families, 50% (n = 38) of re-partnered-mother and 53.8% (n = 204) of single-mother families.

Results for Wave 2 can be seen in Table 5.7. At Wave 2, children were aged 6-7 years so the majority had by this time transitioned into school settings with the exception of a few children who were being homeschooled. Many had been attending school in the previous year, with this being the case for 91.3% (n = 2830) of two-biological-parent children, 96.1% (n = 98) of re-partnered-mother children, and 92.2% (n = 413) of

children in single-mother families. Of children who had been attending school the previous year, very few had experienced a change of school.

Table 5.7 Education continuity and change at Wave 2

Variable	Two Biological Parents (n=3093)	Re-partnered Mother (n=102)	Single Mother (n=448)	Total Group (N=3648)
Changed School of Previous Year (%)				
Yes	183 (5.9)	13 (12.7)	50 (11.2)	246 (6.7)
No	2647 (85.4)	85 (83.3)	363 (81.0)	3095 (84.8)
N/A	268 (8.7)	4 (3.9)	35 (7.8)	307 (8.4)
Main Reason for School Change (%)				
Residential move	107 (3.5)	9 (8.8)	36 (8.0)	152 (4.2)
Convenience for family	19 (0.6)	2 (2.0)	3 (0.7)	24 (0.7)
Academic Reasons	31 (1.0)	1 (1.0)	4 (0.9)	36 (1.0)
Child related concerns	10 (0.3)	1 (1.0)	5 (1.1)	16 (0.4)
Other	14 (0.5)	N/A	4 (0.9)	18 (0.5)
N/A	2917 (94.2)	89 (87.3)	396 (88.4)	3402 (93.3)
School Type (%)				
Government	1992 (64.3)	78 (76.5)	340 (75.9)	2410 (66.1)
Private	1091 (35.2)	24 (23.5)	108 (24.1)	1223 (33.6)
Home school/other	15 (0.5)	0	0	15 (0.4)

This was the case for only 5.9% (n = 83) of children in two-biological-parent families. Rates were nearly double for other family types with 12.7% (n = 13) of children in re-partnered-mother, and 1.2% (n = 50) of children in single-mother families changing schools from the previous year. The main reason noted for the school change was due to residential move, with this being the case for 3.5% (n = 107) children in two-biological-parent families, 8.8% (n = 9) of children in re-partnered-mother and 8% of children in single-mother families.

At Wave 2, for the majority of children their current school type was government based. Higher rates were seen for children from re-partnered-mother (76.5%, n = 78) and single-mother (75.9%, n = 340), with fewer numbers of children from two-biological-parent families (64.3%, n = 1992). This is due to higher rates of children from two-biological-parent families attending private school settings (34.2%, n = 1091) compared

to children in re-partnered-mother (23.5%, n = 24) and single-mother (24.1%, n = 108) families. A small percentage of children were either home schooled or not in school due to disabilities/health. All of these children were from two-biological-parent households (0.5%, n = 15).

Results for Wave 3 can be seen in Table 5.8. At Wave 3, children were aged 8-9 years and slightly higher rates of experience of school mobility were evident. Given the majority had been in school settings by Wave 2, the question focus on mobility for Wave 3 was an indication of a school change since the previous wave of data collection. Lower rates of school change were seen for children in two-biological-parent families, with this being the case for 13.7% (n = 411) of them, compared to 28.1% (n = 56) of children in re-partnered-mother families and 21.6% (n = 99) of children in single-mother families.

The main reason for school change was again due to a residential move. Children in re-partnered-mother families were most likely to experience this with 22.1% (n = 44) experiencing both a change of home and school. They were closely followed by children in single-mother families with 17.5% (n = 80) also changing schools due to a residential move. This was the case for only 9.2% (n = 274) of children in two-biological-parent families.

While cases were lower, it is also interesting to note that amongst the other reasons given for a school change, higher rates for academic reasons were given for both children in two-biological-parent families (4.2%, n = 126) and re-partnered-mother families (5%, n = 10) respectively. In comparison only 2.6% (n = 12) of children in single-mother families changed schools for academic reasons. Also, children with re-partnered (4.5%, n = 9) or single (4.4%, n = 20) mothers were more likely to have changed schools due to child related concerns, while this was the case for only 1.6% (n = 49) of children in two-biological-parent families.

At Wave 3, for the majority of children were still located at government based schools. Higher rates were still seen for children from re-partnered-mother (79.4%, n = 158) and single-mother (74.7%, n = 342) families, followed by fewer numbers from two-biological-parent families (62.6%, n = 1872). Again this was a result of higher rates of children from two-biological-parent families attending private school settings (36.7%, n = 1098) compared to children in re-partnered-mother (20.6%, n = 41) and single-mother

(15.4%, n = 11) families. The small percentage of children either home schooled or not in school again resided in two-biological-parent households (0.7%, n = 21).

Table 5.8 Education continuity and change at Wave 3

Variable	Two Biological Parents (n=2991)	Re-partnered Mother (n=199)	Single Mother (n=458)	Total Group (N=3648)
Changed School since Previous Wave (%)				
Yes	411 (13.7)	56 (28.1)	99 (21.6)	566 (15.5)
No	2559 (85.6)	143 (71.9)	359 (78.4)	3061 (83.9)
N/A	21 (0.7)	0	0	21 (0.6)
Main Reason for School Change (%)				
Residential move	274 (9.2)	44 (22.1)	80 (17.5)	398 (10.9)
Convenience for family	56 (1.9)	2 (1.0)	9 (2.0)	67 (1.8)
Academic Reasons	126 (4.2)	10 (5.0)	12 (2.6)	148 (4.1)
Child related concerns/Other	49 (1.6)	9 (4.5)	20 (4.4)	78 (2.1)
Other	32 (1.1)	2 (1.0)	6 (1.3)	40 (1.1)
N/A	2454 (82.0)	132 (66.3)	331 (72.3)	2917 (80.0)
School Type (%)				
Government	1872 (62.6)	158 (79.4)	342 (74.7)	2372 (65.0)
Private	1098 (36.7)	41 (20.6)	116 (25.4)	1255 (34.4)
Home school/other	21 (0.7)	0	0	21 (0.6)

Results for Wave 4 are presented in Table 5.9. At Wave 4, children were aged 10-11 years and rates of school mobility in-between waves had decreased slightly from Wave 3 except for children with two-biological parents whose rate of school mobility increased marginally, at 15.6% (n = 449). School mobility was still more likely for children with re-partnered mothers at 21.7% (n = 52) followed by those with single mothers at 17.7% (n = 93).

Overall the main reason for school change continued to be due to a coinciding residential shift. Again children in re-partnered-mother families were most likely to experience this at 11.3% (n = 27), followed by children with single mothers at 8.9% (n = 47). At Wave 4 children with two-biological parents had similar rates of school change due to residential shift (5.5%, n = 159) and due to other unidentified reasons (5.9%, n = 167). At this wave moving for academic reasons was more likely for children in re-

partnered-mother families at 5.4% (n = 13) compared to 2.7% of children in two-biological-parent (n = 79) and single-mother (n = 14) families.

Table 5.9 Education continuity and change at Wave 4

Variable	Two Biological Parents (n=2882)	Re-partnered Mother (n=240)	Single Mother (n=526)	Total Group (N=3648)
Changed School since Previous Wave (%)				
Yes	449 (15.6)	52 (21.7)	93 (17.7)	594 (16.3)
No	2411 (83.7)	187 (77.9)	433 (82.3)	3031 (83.1)
N/A	22 (0.8)	1 (0.4)	0	23 (0.6)
Main Reason for School Change (%)				
Residential Move	159 (5.5)	27 (11.3)	47 (8.9)	233 (6.4)
Convenience for family	29 (1.0)	2 (0.8)	3 (0.6)	34 (0.9)
Academic Reasons	79 (2.7)	13 (5.4)	14 (2.7)	106 (2.9)
Child related concerns	15 (0.5)	3 (1.3)	3 (0.6)	21 (0.6)
Other	167 (5.9)	7 (2.9)	26 (5.0)	200 (5.4)
N/A	2433 (84.4)	188 (78.3)	433 (82.3)	3054 (83.7)
School Type (%)				
Government	1715 (59.5)	184 (76.7)	390 (74.1)	2289 (62.7)
Private	1145 (39.7)	55 (22.9)	136 (25.9)	1336 (36.6)
Home school/other	22 (0.8)	1 (0.4)	0	23 (0.6)

The type of school attended by children at Wave 4 was still predominately government based. Again higher rates were seen for children from re-partnered-mother (76.7%, n = 184) and single-mother (74.1%, n = 390) families, followed by fewer numbers from two-biological-parent families (59.5%, n = 1715). Children from two-biological-parent families were nearly twice as likely to attend private schools (39.7%, n = 1145) compared to children in re-partnered-mother (22.9%, n = 55) and single-mother (25.9%, n = 136) families. The majority of the small percentage of children either home schooled or not in school again resided in two-biological-parent households (0.8%, n = 22), although a single case was also present for re-partnered-mother families (0.4%).

Overall patterns of school mobility (as shown in Figure 5.3) seemed to initially spike in-between Wave 2 and Wave 3, and then were decreasing again at Wave 4. It is important to consider that at Wave 2, some children had only just recently made the initial

transition into formal schooling the year prior as opposed to the other waves which measured school change across approximately a two year range. Figure 5.3 does clearly show that school mobility was mostly to be experienced by children in the re-partnered-mother families at each wave. High rates were also experienced by children in single-mother families at each wave in comparison to those who remained in the two-biological-parent households. The decrease in school mobility at Wave 4 is potentially associated with the decrease in rates of residential mobility, given that residential moves were the main reason for a school change for all groups.

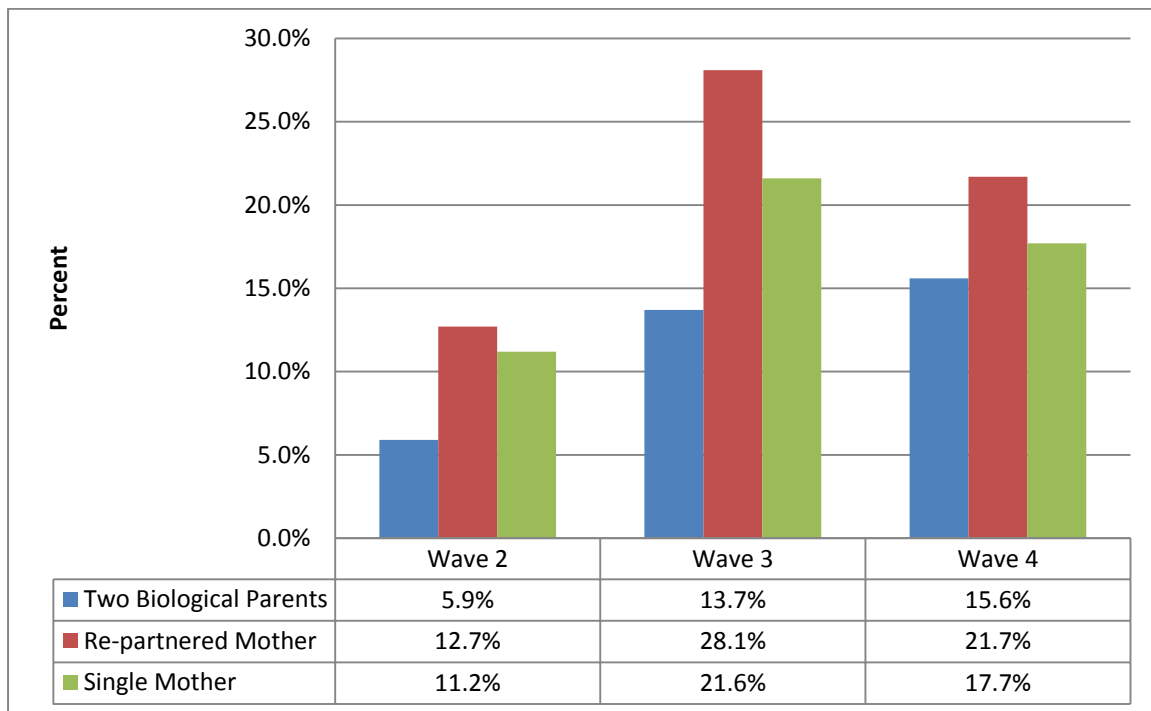


Figure 5.3 School change across data waves

Higher rates of school mobility for children in re-partnered-mother families, followed by those in single-mother families are clearly evident. This is also highlighted in Figure 5.4 which shows the number of schools children had attended by Wave 4. Children with two-biological parents were most likely to have attended only one school (70.8%, $n = 2041$), in comparison to 62.4% ($n = 328$) of those in single-mother and 55.8% ($n = 134$) re-partnered-mother families at Wave 4.

Higher rates of both re-partnered-mother and single-mother families were seen in all other categories. Children with re-partnered mothers were most likely to have attended four or more schools with 10.4% ($n = 25$) doing so followed closely by 9.7% ($n = 51$) of those in single-mother families at Wave 4. This again demonstrates the high rates of

school mobility for children with re-partnered mothers, and also the higher rates of mobility experienced by children with single mothers in comparison to those residing with two-biological parents.

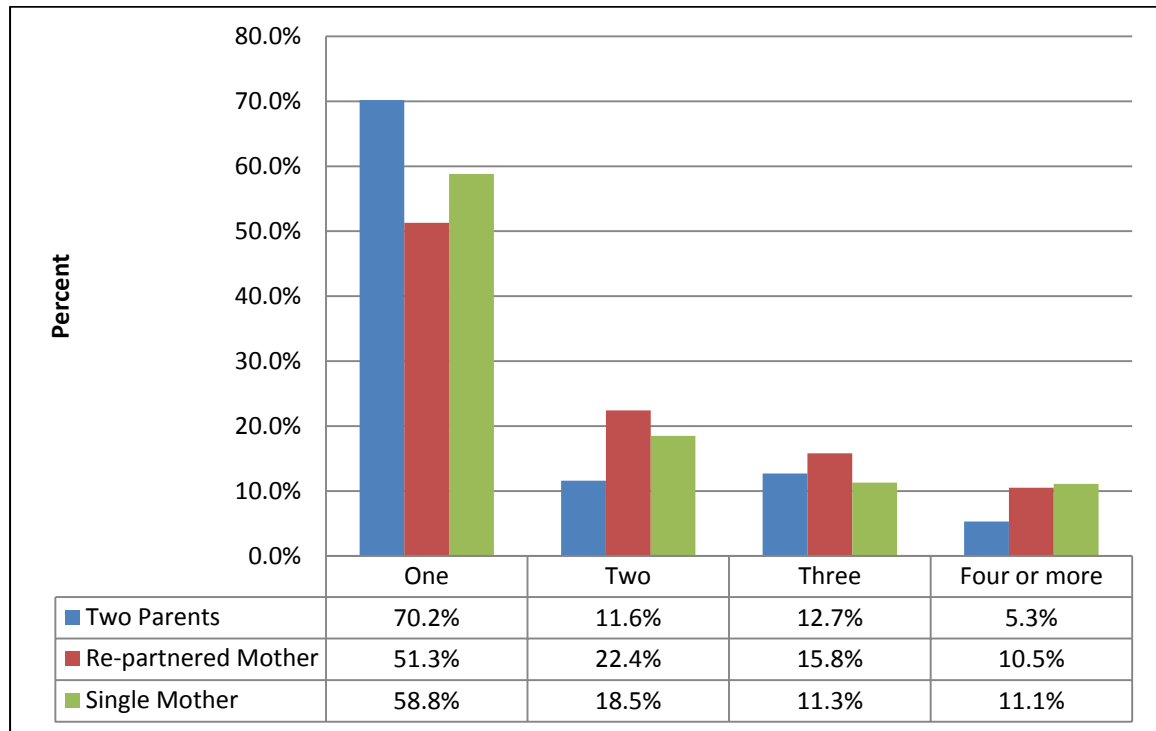


Figure 5.4 Total number of schools attended by Wave 4

5.3.3 Mothers' mental health

A Kruskal-Wallis Test was conducted to examine the association between family structure at Wave 4 and mothers' levels of psychological distress. The independent variable was family structure, for three family groups - two-biological parents, re-partnered mothers and single mothers at Wave 4. The dependent variable was the mothers' scores on the Kessler K6, used as a continuous scale. See Table 5.10 for the means and standard deviations for each of the three family groups.

Table 5.10 Means and standard deviations for the Kessler K6

Family Structure at Wave 4 (K6)	<i>n</i>	Mean	SD
Two Biological Parents	2858	3.00	3.24
Re-partnered Mother	238	3.15	3.59
Single Mother	516	4.80	4.69
Total Sample	3613	3.27	3.56

The Kruskal-Wallis Test revealed a statistically significant difference in Kessler K6 scores across family structure at Wave 4, $\chi^2(2, 3612) = 66.99, p < .000$. Post hoc comparisons were therefore conducted using the Mann-Whitney U test. A Mann-Whitney U test revealed a significant difference between mothers in two-biological-parent families ($Md = 2, n = 2858$) and single mothers ($Md = 3, n = 516$), $U = 573080, z = -8.15, p < .000, r = .14$ suggesting a small effect size. Significant differences were also found between re-partnered mothers ($Md = 2, n = 238$) and single mothers ($Md = 3, n = 516$), $U = 48097, z = -4.82, p < .000, r = .18$, again suggesting a small effect size. These results as well as the differences in group means (as shown in Table 5.10) indicated that single mothers were significantly more likely to have a higher mean score than mothers in both two-biological-parent families and re-partnered-mother families.

5.3.4 Child-parent relationship quality

A Kruskal-Wallis Test was used to examine the impact family structure at Wave 4 had on child reports of the quality of their parental relationships. The independent variable used was family structure, again consisting of the three groups of two-biological-parents, re-partnered-mother and single-mother families at Wave 4. The dependent variable was the child responses on the PIML Parent scale. See Table 5.11 for the means and standard deviations for child responses across the three family groups.

Table 5.11 Means and standard deviations of the child-parent relationship quality

Family Structure at Wave 4	<i>n</i>	Mean	SD
Two Biological Parents	2827	3.55	.51
Re-partnered Mother	238	3.47	.57
Single Mother	514	3.46	.61
Total Sample	3579	3.53	.53

The Kruskal-Wallis Test revealed a statistically significant difference in PIML parent relationship scores across family structure at Wave 4, $\chi^2(2, 3579) = 7.63, p = .022$. Post hoc comparisons were therefore conducted using the Mann-Whitney U test. The Mann-Whitney U tests revealed significant differences in child-parent relationship quality between children in families with two-biological parents ($Md = 3.8, n = 2827$) and children of re-partnered mothers ($Md = 3.6, n = 238$), $U = 311039, z = -1.96, p = .05, r = .04$, suggesting a very small effect size. Significant differences were also found between children in families with two-biological parents ($Md = 3.8, n = 2827$) and children of single mothers ($Md = 3.6, n = 514$), $U = 683723, z = -2.16, p = .031, r = .04$, again suggesting a very small effect size. The difference in mean scores for the PIML child-parent relationship (presented in Table 5.11) for children with either single or re-partnered mothers in comparison to those children living with two-biological parents, indicated that these children were more likely to report lower levels of quality in the child-parent relationship.

5.3.5 Child-teacher relationship quality

Differences between family structure groups at Wave 4 on child reports of teacher-child relationship quality were also examined using a Kruskal-Wallis test. The independent variable used was family structure at Wave 4, consisting of the three groups of two-biological-parent, re-partnered-mother and single-mother families. The dependent variable was the child responses on the PIML Teacher scale (child-teacher relationship quality). The means and standard deviations for child responses across the three family groups are presented in Table 5.12.

Table 5.12 Means and standard deviations of child-teacher relationships

Family Structure at Wave 4	<i>n</i>	Mean	SD
Two Biological Parents	2808	3.21	.66
Re-partnered Mother	237	3.07	.75
Single Mother	509	3.07	.72
Total Sample	3554	3.18	.68

The Kruskal-Wallis Test revealed a statistically significant difference in PIML Teacher scores across family structure at Wave 4, $\chi^2(2, 3554) = 20.78, p < .000$. Post hoc comparisons were therefore conducted using the Mann-Whitney U test. A Mann-Whitney U test revealed significant differences in reported differences for the quality of the child-teacher relationship between children in families with two-biological parents ($Md = 3.4, n = 2808$) and re-partnered mothers ($Md = 3.3, n = 237$), $U = 301915, z = -2.38, p = .017, r = .04$ suggesting a very small effect size. Significant differences were also found between children in families with two-biological parents ($Md = 3.4, n = 2808$) and single mothers ($Md = 3.1, n = 509$), $U = 63281, z = -4.13, p < .000, r = .07$, again suggesting a small effect size. The mean scores (as shown in Table 5.12) indicated that children in single-mother families or re-partnered-mother families reported lower levels of quality for the child-teacher relationship.

5.3.6 Child-peer relationship quality

Differences between family structure groups at Wave 4 on child reports of peer relationships were also examined using a Kruskal-Wallis test. The independent variable was family structure at Wave 4, consisting of the three groups of two-biological-parent families, re-partnered-mother families and single-mother families. The dependent variable was the child ratings on the Peer Relations scale. The means and standard deviations for child responses across the three family groups are presented in Table 5.13.

Table 5.13 Means and standard deviations of child-peer relationship quality

Family Structure at Wave 4	<i>n</i>	Mean	SD
Two Biological Parents	2834	3.92	.81
Re-partnered Mother	239	3.79	.93
Single Mother	518	3.77	.91
Total Sample	3591	3.89	.83

The Kruskal-Wallis Test revealed a statistically significant difference in the Peer Relations scale scores across family structure at Wave 4, $\chi^2(2, 3591) = 12.54, p = .002$. Post hoc comparisons were therefore conducted using the Mann-Whitney U test. Significant differences were found between children in families with two-biological parents ($Md = 4.0, n = 2834$) and children in single mother families ($Md = 3.9, n = 518$), $U = 668881, z = -3.22, p = .001, r = .06$, suggesting a small effect size. These results, in conjunction with the mean scores (as shown in Table 5.13) suggest that children in both re-partnered and single mother families are more likely to report lower levels of perceived quality of peer interactions compared to children in two-biological-parent households, with those in single mother families having statistical significance.

5.4 Discussion

5.4.1 Residential continuity and change

It was evident in the current research that children in re-partnered-mother households experienced higher rates of residential mobility than either single mother or intact biological parent families, while children in single-mother families also experienced higher rates of residential mobility in comparison to those children living with two-biological parents. Direct comparisons are not possible given the different family type construct, with re-partnered and intact biological families both included as couple families, however, figures provided by the ABS (2010) show some similar patterns to this current research. The ABS (2010) reported that 59% of single parents with dependent children had moved within the previous five years compared to only 45% of couple families. This was linked to the higher rates of renting by single parents. Higher rental rates of single parents were also reported in Chapter 4 in this current research.

Also highlighted in the ABS (2010) report was that 21% of single parents had moved because of a separation, while for couples 22% had moved as a result of buying their own home. Ersing, Stuphen, and Loeffler (2009) also found that low income single-parent families or those that were renting were most likely to be highly mobile. While not directly comparable, this adds support to the current findings of the higher rates of residential mobility of single parents, and also gives some insight into some of the possible contributing factors underlying residential mobility rates.

The higher rates of residential mobility of separated adults, including both single and re-partnered, in comparison to those still with original partners were also found by Feijten and van Ham (2007). These higher rates of residential mobility were found to decrease over time. It should be noted however that their sample included both people with and without dependent children. These results still show like the current research that higher rates of mobility are more likely for single or re-partnered adults compared to those in intact original relationships.

A gradual decline in the rates of residential mobility over time was also found in the current research, resulting in children across all family groups being less likely to move as they got older. The trend of moving decreasing as children get older has also been noted previously with Australian data (ABS, 2010). This could be due to a combination of not wanting to disrupt children as they get settled into schools, and also due to higher rates of home ownership over time as found in Study 1 of the current research.

Another finding of the current research was that the majority of families that moved remained living in either the same town or region. This supports figures from the ABS (2010) that found that of 2006 HILDA respondents, most people who had experienced a move in the year prior had stayed within the same location with 60% moving only 0-9 kilometres from their original location. This is of note, as remaining in local areas may reduce the degree of adjustment to relocation required by children and minimise additional change such as a change of school. Although, Jackson and Mare (2009) found differing effects of residential mobility and neighbourhood change (both to new neighbourhoods and changes within neighbourhoods) and noted that a shift of neighbourhood did not necessarily determine a negative outcome.

The residential mobility rates for the current study for the sample as a whole indicated that 26% of children had never moved, 25.7% had experienced one move, and 48.2% had moved two or more times. These rates were slightly higher than those found by Rumbold et al. (2012) who examined residential mobility for a sample 403 children. At 9 years, 40.4% had not experienced a house move, 22.6% had moved once and 37% had moved two or more times. These differences could in part be due to the current sample total moves being calculated when children were 10-11 years of age.

In the current study, the results clearly indicated that when examining differences in experience in relation to family structure type, children in re-partnered-mother family structures at Wave 4, as well as those in single-mother families were more likely to have lived in more homes since birth. At age 10 – 11 years, 57.5% of children in re-partnered families and 44.6% of those in single-mother families had lived in four or more houses compared to only 20.4% of those with two-biological parents. This is important as the number of moves experienced has been shown to be positively associated with adjustment problems independent of other family and environmental effects (Adam & Chase – Lansdale, 2002).

5.4.2 School continuity and change

The findings on school experiences indicated that the majority of children attended government schools, with higher rates of private school attendance by children living with both biological parents, and a higher level of school moves experienced by children in re-partnered-mother families. High levels of school moves were also present for children in single-mother families compared to those still living in two-biological-parent households. By the end of Wave 4 while 70.8% of children still living with biological parents had attended just one school, this was only the case for 62.4% of children with single mothers just over half of children with re-partnered mothers at 55.8%.

This supports previous findings that school mobility occurs more frequently for children who have experienced family change with the number of changes being significantly different from other young adolescents with no family structure change (Fomby & Sennott, 2013). This was also found in an Australian study which examined the effects of school mobility on adolescents aged 12-15 years. Increased risks for negative outcomes were found, but also noted was that children with higher rates of

school mobility were also more likely to have mothers with lower levels of education and were less likely to still be living in two-biological-parent households (Boon, 2011).

Figures for the whole sample indicated that 68.6% of all children attended only one school by Wave 4, 12.5% had one school change, 12.6% had two school changes and 6% had three or more school changes. This pattern reflects similar findings by Gruman, Harachi, Abbott, Catalano and Fleming (2008) who examined student mobility for a sample of 1003 U.S. children through second to fifth grade. They found that 50% of children remained in the same school, 33% experienced one change, 13% had two changes and 5% had three or more school changes. The higher levels of mobility for one school change compared to the current study is not surprising as America has been documented as having high rates of both school and residential mobility (Reynolds, Chen, & Herbers, 2009).

The pattern of timing and frequency of school moves seemed to indicate that children were less likely to experience a move after initially starting school, with a large peak in the rate of moves evident at Wave 3 (2008) when children were aged 8-9 years, which then decreased again at Wave 4 (2010). Previous research has also found decreases in school moves as children get older as do rates of residential moves (Gasper, DeLuca, & Estacion, 2009). Demie (2002) found that the rates of school mobility were higher in primary schools compared to secondary schools. Potentially further tracking of the current sample across into adolescence could find the pattern of school mobility continue to decrease over time.

The timing and frequency of the school moves could hold importance given that long term effects of multiple moves have been previously found. One study found that associations between two more school moves by third grade and sixth grade academic achievement were a more significant predictor than later school transitions (Heinlein & Shinn, 2000). Other research also found that children who experienced a school move during the first two years of school were more likely to have slower progression in reading and maths by fifth grade (Montavon McKillip, 2009).

This would suggest that multiple school moves can cause long term impacts on child development trajectories and that the early formal years of schooling are a critical point in time. This raises questions on the long term impact on the current sample given that a large percentage of the school changes occurred during the early grades of primary

school. The majority of school change was also experienced by children in re-partnered-mother or single-mother families, potentially coinciding with a family structure change. Family separation has been previously noted as a frequently listed reason for a school change (Demie, 2002), most likely due to associated residential shifts. Re-partnering of a parent could also lead to an increased rate of residential shifts and therefore higher rates of school mobility.

5.4.3 Concurrent school and residential change

Findings from the current study indicated that the most frequently listed reason for children changing schools was in relation to a residential move. This was consistent across all waves of data. Links between school and residential change have also been found in America where data has indicated that approximately two-thirds of residential moves also result in children changing schools (Reynolds et al., 2009). While the associations between home and school mobility have been acknowledged they are not always taken account of in studies in part due to difficulty in obtaining accurate longitudinal data (Leckie, 2009).

In the current study, the co-occurrence of school and residential changes were most evident for children in re-partnered-mother family groups across each wave of data. Children in single-mother families were next likely to have residential moves as the reason for their school change. Family change resulting in higher rates of both residential and school mobility has been previously found by Fomby and Sennott (2013). When examining family structure instability and coinciding residential and school mobility while aged 12-17 years, adolescents with unstable family structures were found to experience nearly twice as many house moves and significantly more school changes than their peers. Mobility was also found to have independent effects on child outcomes from family structure change despite occurring at the same time.

Overall then the results for the current study show that while residential and school change are experienced by children in all family groups, the highest rates of both residential and school change are found for children in the re-partnered-mother families at each time point. Higher rates of both residential and school change are also found for children in single-mother families at each time point compared to those with two-biological parents. This is of note as these coinciding stresses may create a cumulative effect of stress on children and as noted by Francescori, Jenkins and Siedler (2010)

additional stresses to family structure may increase child vulnerability. In addition these changes of residence and school may impact on child relationships, with friends and teachers at a time where parental relationships may be strained due to family transitions.

5.4.4 Mothers' mental health

Mother-child relationships and interactions are known to be important to child development having long term impact on child wellbeing across multiple domains including academic outcomes (Morrison, Rimm-Kauffman, & Pianta, 2003; Simpkins, Weiss, McCartney, Kreider, & Dearing, 2006), behavioural and emotional adjustment (Goodman et al., 2011; Morrison et al., 2003). The quality of these relationships can be impacted by maternal mental health. Maternal depression has been found to be associated with dysfunctional parenting (Hammen, 2003; Herwig, Wirtz, & Bengel, 2004). A meta-analytic review of 46 studies conducted by Lovejoy, Graczyk, O'Hare and Neuman (2000) found strong associations between maternal depression and negative parenting behaviour. The psychological functioning of mothers is therefore an important indicator of potential child support or lack thereof within home contexts.

The findings in the current study, using the Kessler K6 as a measure of maternal mental health, found that at Wave 4 single mothers had statistically significant differences to other family groups, with higher mean scores than both re-partnered mothers and those still in relationships with the child's biological father. These findings support research by Osborne, Berger and Magnuson (2012) which found that family structure transitions into a single mother family was associated with increased levels of maternal depression.

Results were also similar to previous findings of Bachman, Coley and Carrano (2011). They investigated associations of family structure, maternal partnership instability and adolescent wellbeing, on a sample of 2305 U.S. families from the Three-City Study. Definitions of family structure differed from the current research with a focus on single, cohabitating and married family groups and psychological functioning was measured by an 18 item version of a Brief Symptom Inventory. Results indicated that higher levels of psychological distress were reported by mothers that were single or cohabitating. It should be noted that the sample used consisted of low income families. However, like the current study this highlights the higher incidence of psychological distress evident in single mothers.

Similar results were also found by Cooper, McLanahan, Meadows, Brooks-Gunn and Johnson (2009) who examined family structure transitions and maternal parenting stress using a sample of 4176 from the Fragile Families and Child Wellbeing Study. They found that mothers either exiting relationships with biological fathers or entering new co-residential relationships with social fathers were more likely to report higher levels of parenting stress than those that remained in stable relationships. While the measure used in the Cooper et al. (2009) study was parenting stress as opposed to the general psychological distress measure used in the current study, similar patterns of increased levels of distress were evident for mothers in family structures not involving the child's biological father.

5.4.5 Child-parent relationship quality

Small differences in child perceptions of parental attachment in the current research were found. Children in single mother families had significant differences in scores to those with two biological parents reporting lower quality relationships. No significant differences were evident for children in the re-partnered-mother families. Child perceptions of positive parental relationships may be especially important for children whose mothers have maternal depression as they have been found to provide protective effects on associated internalising problems (Frampton, Jenkins & Dunn, 2010). In the current research this holds great relevance as the single mothers also rated higher levels of maternal psychological distress.

The current findings add support to results found by Woodward, Fergusson and Belsky (2000). They examined parental separation and attachment to parents at age 16. Lower levels of attachment for children whose parents separated were evident at adolescence. In addition, the younger children were at the time of parental separation, then the lower the level of their attachment was. They were also more likely to perceive parents as less caring. Effects were found for relationships with both mothers and fathers.

Similarly Kalmijn (2012) found that parental divorce in childhood had long lasting effects on relationships between children and parents even when children reached adulthood. Parental divorce was found to be associated with lower quality relationships with fathers, but also was associated with negative impacts on relationships with mothers. Hamilton (2000) found that the incidence of negative life events (which included parental separation) was a significant predictor of poorer parental attachment scores. However, it

should be noted that this was the case for an adolescent sample with a history of insecure attachment from early childhood.

In contrast to this are findings of Sturgess, Dunn and Davies (2001) who examined child perceptions of closeness of relationships via visual representations for a sample of 258 children aged 4-7 years. They found that differing family type and biological relatedness affected perceptions of closeness to fathers, however if mothers were consistently classified as having close relationships with children regardless of family type. Gibson-Davis and Gassman Pines (2010) found differing effects on mother-child interactions via marital status and ethnicity, although in general no differences in the quality of interactions were found in relation to the presence of a biological father or lack thereof. This study however did not use child reported data.

5.4.6 Child-teacher relationship quality

In the current study there were significant differences found in child perceptions of teacher relationships between the children in two-biological-parent families and those in re-partnered-mother and single-mother families. No significant differences were found between the children in re-partnered-mother or single-mother families. The results indicated that lower levels of teacher-child relationship quality were reported by children no longer living with two-biological parents, regardless of whether in a single-mother or re-partnered-mother household.

These results support attachment theories which suggest that early parent attachments can significantly contribute to child development by influencing their ability to establish positive relationships with other adults (Colwell & Lindsey, 2003). These effects can have long lasting impacts and can also impact the relationships children develop with teachers. Higher levels of attachment to mothers evident in preschool have been shown to positively influence teacher-child relationships by Year 1 (Verschuere, Doumen, & Buyse, 2012). As previously noted, parental separation has been found to contribute to lower levels of attachment to parents, with associations increasing the younger the age of the child at separation (Woodward et al., 2000). This could potentially contribute to explanations of why children in re-partnered-mother and single-mother homes reported lower levels of relationship quality and attachment to teachers at Wave 4.

Potentially differing levels of child internalising or externalising problems also contributed to the results of the current study. Child externalising problems have been

shown to significantly influence poor teacher child relationship outcomes, which in turn was associated with lower academic outcomes (Fowler, Banks, Anhalt, Hinrichs Der & Kalis, 2008). Links between early parent separation and child internalising and externalising problems have been found (Landsford et al., 2006). In addition children residing with single mothers with either stable or unstable relationship histories have been found to have higher levels of behavioural problems (Waldfogel, Craigie, & Brooks-Gunn, 2010). These factors could contribute to the lower levels of teacher-child relationship quality reported by children from re-partnered-mother and single-mother families.

Another possible contributing factor to the lower reported teacher relationship quality by children in re-partnered-mother and single-mother families is the higher levels of school mobility evident for these children. Children with re-partnered mothers had the highest rates of school mobility, followed by children with single mothers. Changing schools requires adjusting to new teachers, classmates and curriculum (Conger & Finkelstein, 2003). In addition correlations between the length of time students have spent at the same school and achievement have been found (Demie, 2002). Quality teacher-child relationships have been shown to provide protective effects for at risk students (Baker, 2006; O'Conner & McCartney, 2007). Fostering supportive teacher-child relationships are therefore especially important for children faced with multiple risk factors.

Child perceptions of relationships with teachers as being supportive can contribute to social connection to school environments, which may be especially important for at risk children. Children's perceptions of the quality of their relationships with teachers have been shown to contribute to the level of school engagement for primary school students (Furrer & Skinner, 2003). This may then also foster higher levels of child motivation towards achievement. Children that have positive perceptions of teacher relationships may also be more likely to seek assistance when needed (Marchand & Skinner, 2007). Again, this may be of high significance for the children in re-partnered-mother and single-mother families in the current study that experienced school change, as teacher support has been shown to have strong influences on school attitudes of highly mobile children (Gruman et al., 2008).

5.4.7 Child-peer relationship quality

Child perceptions of their relationships with peers in the current study indicated that significant differences were evident between children living with both biological parents and those living with single mothers. While no other significant differences were evident between other groups, differences in results for children in re-partnered-mother families approached significance in relation to children with two-biological parents. Both children in single-mother and re-partnered-mother homes mean scores reflected child reports of lower levels of quality of peer relationships.

Another contributing factor to these results could be associations with internalising and externalising behaviours. Children in stable two-biological-parent households have been shown to exhibit less internalising and externalising behaviour problems in comparison to peers in other family structures (Carlson, 2006; Lansford et al., 2006). Early parental separation has been linked to increased levels of internalising and externalising problems for children (Landsford et al., 2006). In relation to peers, peer acceptance has also been linked to child internalising and externalising behaviours along with children's perceptions of self-worth (Klima & Repetti, 2008). While not measured in the current study, potentially higher levels of problems with behavioural adjustment associated with parental separation have an impact on peer relationships.

As with teacher-child relationship quality, child reports of peer relationships may have been affected by the higher rates of school and residential mobility found for children not residing with both biological parents. Mobility can have detrimental impacts on child relationships with peers (Reynolds et al., 2009). Having peer relationships disrupted due to school or home moves potentially leads to lower engagement in school along with lower quality peer relationships (South, Haynie, & Bose, 2007). The effects of school and residential mobility on adolescent friendship networks have been found to contribute to smaller networks of friends with less prestigious positions within friendship groups, with effects lasting for several years (South & Haynie, 2004).

The effects of residential and school mobility along with family structure change experienced by teenagers were examined by Fomby and Sennott (2013). They found that family instability and resulting mobility were associated but had independent effects on adolescent outcomes with these varying depending on age. Small associations with peer pressure were found for both family instability and mobility. Also of note, they found that

adolescents were more likely to have lower quality peer networks if they had experienced a change in family structure and for younger girls this was the case regardless even if no school or home change occurred. These studies add support to the current findings highlighting that family structure change may increase risks faced by children, including home and school mobility, with these disruptions potentially contributing to lower levels of social support.

5.5 Conclusion

Throughout this chapter Study 2 was presented which provided insight into the residential and school continuity and change experiences of young Australian children from early through to middle childhood. The quality of support via social networks was also examined in relation to mothers, teachers and peers. This is important to consider given that high quality relationships may serve as a protective buffer for children facing multiple risks through cumulative change.

A number of key findings emerged from the results. First, examination of residential mobility found that higher rates of mobility across each wave were present for children living in re-partnered-mother families compared to other family groups. Higher rates were also evident for children in single-mother families in comparison to children in two biological parent families. The rate of residential mobility did show patterns of gradual decline across all family groups as children were older. While not the focus of the current study, this potentially has an association with families being less likely to move as children become more settled into schools or due to increasing rates of homeownership as was seen in Study 1.

When examining school mobility again higher rates were found for children in re-partnered-mother families in comparison to other family groups. Children in single-mother families were also again experiencing higher rates of mobility in comparison to those living with both biological parents. Low levels of school mobility were seen at Wave 2 however, this may correspond to the fact that many children had only started attending formal school settings the previous year. A large increase in school transitions was seen at Wave 3. However, this trend had reversed by Wave 4 with the number of children changing schools decreasing. The main reason given for school change was a coinciding residential move therefore the reduction in school moves was likely due to the lower frequency of residential moves at this point in time.

Some key findings also emerged when examining the quality of social support available to children and determining if differences were evident in relation to family structure. Firstly, single mothers were much more likely to report higher levels of psychological distress than mothers from any other family group. Children in single-mother families were also statistically more likely to report lower quality relationships with mothers than those residing with two-biological parents.

Relationships outside of the home context also revealed differences according to family structure. Children in re-partnered-mother or single-mother families were both more likely to report lower quality relationships with teachers compared to those living with two-biological-parent families. Re-partnered-mother and single-mother children were also more likely to report lower quality relationships with peers, however, only differences between those with single mothers and two-biological parents emerged as statistically significant.

This chapter has therefore highlighted the multiple risk factors faced by children in re-partnered-mother and single-mother households, given their initial and potentially ongoing family structure changes, their higher rates of residential and school mobility and the lower quality of relationships across parent, teacher and peer groups. The next chapter will follow with Study 3. This study examines the effect of cumulative family structure change, and the cumulative effects of associated changes in economic resources, residential and home environments on child academic and behavioural adjustment.

CHAPTER 6: ECOLOGICAL FACTORS IMPACTING ON CHILDREN'S ADJUSTMENT AND ACHIEVEMENT

6.1 Introduction

This chapter presents data analyses that examine the impact of family, social and economic instability on children's behavioural adjustment and academic achievement. The impact of child and family characteristics and children's perceptions of the quality of relationships with parents, peers and teachers are also taken into account. The analyses use multiple waves of data for the Kindergarten Cohort in *Growing Up in Australia: The Longitudinal study of Australian Children (LSAC)*. These analyses add to existing Australian research and knowledge about the impact of family stability and change through the focus on family change through children's primary school years, from 4 to 11 years, and using teacher-report data on child outcomes. The analyses are also unique through the inclusion of children's perceptions on school and home support as influences on outcomes.

Previous Australian research by de Vaus and Gray (2003) indicated that, on average, two or more family transitions were experienced by 13% of Australian children by the age of 18 years, from the time of parental breakup or re-partnering. De Vaus and Gray (2003) used a subsample of 2660 mothers and 5470 children from the HILDA survey which was conducted in 2001 and which originally had nearly 14000 participants representative of Australian households. Data used in relation to parental relationship history however was retrospective and did not examine the impact of the family transitions on child outcomes.

In research from the United States, multiple family transitions have been shown to contribute to poorer outcomes for children, for both behavioural adjustment and academic achievement (Bachman, Coley & Carrano, 2011; Martinez & Forgatch, 2002). In addition to instability caused by family structural changes, there is often additional instability for children because of residential and school changes; and changes to the household income in which the child resides. These latter changes can occur independently of a family transition or co-occur; and, thus, there are potentially cumulative negative effects on children (Sepanski Whipple, Evans, Barry, & Maxwell, 2010).

Other factors in the life of the child can also either increase child vulnerability or provide protective effects that buffer the impact of family, social, and economic instability. Children's relationships with parents, peers, and teachers may be of particular importance in providing support in times of family change. Warm relationships with mothers has been shown to benefit kindergarten children's literacy and mathematics achievement (Simpkins, Weiss, McCartney, Kreider, & Dearing., 2006) and long lasting effects on adolescents' social and academic outcomes have also been found from the quality of early mother-child interactions (Morrison, Rimm-Kauffman & Pianta, 2003).

Peer acceptance has been found to impact on the level of children's internalising and externalising problems (Klima & Repetti, 2008). Teacher support has been shown to provide protective effects on child outcomes when children change schools (Gruman, Harachi, Abbott, Catalano, & Fleming, 2008). The impact of close relationships with teachers is well documented as providing protective effects and positive outcomes in both social and academic areas of child achievement (Baker, 2006; Decker, Dona, & Christenson, 2007). The importance of relationships with parents, teachers, and peers on the behavioural adjustment and the academic achievement of Australian children faced with family instability are highlighted through the results of this study.

In this chapter, a brief overview of the study will be initially presented. This will be followed by a detailed presentation of the results for four sets of hierarchical regression analyses that unpack the influence of a range of variables on four child outcomes that focus on children's internalising and externalising behaviours and literacy and mathematical achievement, as rated by teachers. A brief discussion of the results will be presented before the chapter's conclusions.

6.2 Data and Methods

Four hierarchical regressions analyses were conducted in order to address the final research question. Each set of regressions assessed the impact of a child outcome variable. The final research question is:

6. What impact, over time, does change in family structure, social and economic instability (residential, school and economic change) have on children's academic and behavioural adjustment, at age 10 to 11 years; while taking account of maternal mental health, and the quality of relationships which children have with parents,

teachers, and peers? *Specifically, what factors are associated with achievement and behavioural adjustment for children at 10-11 years, including accounting for change in family structure, residential, school, and economic circumstances across the school years?*

Hierarchical regression is used to evaluate the relationship between sets of independent variables (predictors) and a dependent variable (outcome variable), controlling for or taking into account the impact of different sets of independent variables on the dependent variable. In hierarchical regression, independent variables are entered into the analysis in a sequence of blocks that may contain one or more variables. While the overall variance explained in each regression is of interest, the increase when sets of predictor variables are added to the analysis is also of importance. The strength of relationship between an independent variable and the outcome variable is also of interest.

The outcomes used in the analyses comprise weighted scale scores on LSAC Wave 4 child outcome measures for two scales from the Strength and Difficulties Questionnaire (SDQ), Conduct Problems and Emotional Symptoms, and two achievement measures from the Academic Rating Scale (ARS), Language and Literacy and Mathematical Thinking. The weighted scale scores for these outcomes were derived after completion of confirmatory factor analyses presented in Appendix E. This approach was used in order to ensure that scale scores reflected the proportional contribution of each item. The SDQ Conduct Problems score is a measure of externalising behaviours and the SDQ Emotional Symptoms score is a measure of internalising behaviours. The ARS Language and Literacy scale and ARS Mathematical Thinking scale are global measures of children's general competencies in two key academic areas. All outcome variables were obtained from teacher-report data at Wave 4. Detail about these measures is presented in Chapter 3.

For each outcome variable, four blocks of predictor variables were sequentially used to successively build more complex models for each of the four outcome variables. The same blocks of predictor variables were used for each outcome. These variables were included because of their known influence on child wellbeing and achievement outcomes in previous research, primarily conducted in the United States (see Ackerman, Brown, D'Eramo & Izard, 2002; Adam & Chase-Lansdale, 2002; Cavanagh & Huston, 2006; Osborne & McLanahan, 2007; Ryan & Claessens, 2012). A review of measurement and analyses in current research in this area (see Appendix A) identified key variables and

constructs for child and family characteristics, family instability, and home and school support that are used in these analyses and which are ordered in blocks that reflect distal to more proximal and temporal influences that are considered to influence child outcomes.

The first block of predictor variables entered into the regression models were child characteristics of child sex, child age in months, Aboriginal or Torres-Strait Islander (ATSI) status and language background other than English (LBOTE) status as measured at Wave 1. The second block of predictors included family characteristics as measured at Wave 1. These variables were mother relationship status (partnered with biological fathers, re-partnered, or single), household income, and mother education.

The third block of variables included in the hierarchical regression analyses were measures of change from Wave 1 to Wave 4 for family instability, social and economic instability, and an interaction term of family and social and economic instability. Family instability was a derived variable as was the social and economic instability variable. Family instability was a count of the number of family structure changes from Wave 1 to Wave 4. Change was measured as occurring once across each time point if family structure had changed between waves, resulting in a possible family change score from 0 to 3 changes. The social and economic instability variable was a count of the total number of residential changes, school changes, and decreases in income, measured across each data point from Wave 1 to Wave 2, Wave 2 to Wave 3, and Wave 3 to Wave 4. This meant a total of 3 changes were possible across each time point for the count of residential, school, and decrease in income. This gave a possible change score of 0 to 9. Thus, these variables measured cumulative social and economic change score from Wave 1 (child was 4 to 5 years) to Wave 4 (child was 10 to 11 years).

The fourth block of predictor variables included measures of quality of relationships by child self-report and the home psychological environment for the child measured by mother-reported family cohesion and mental health. These variables reflect the quality of home and school support available to the child as measured at Wave 4. Again, these variables were selected after consideration of findings from previous research as discussed in Appendix A. Ideally, a measure of parent conflict would have been included. However, the inclusion of differing family types made this difficult to tease out a common variable across the dataset by mother report because of lack of available data from all mothers for biological fathers and/or the presence of some

responses referring to either social or biological fathers. Instead a measure of family cohesion was included as a measure of family functioning, which has been shown to be a protective factor against internalising and externalising behaviours (Gabalda et al., 2010). Maternal mental health has also been shown to be an important risk or protective factor in child development (Augustine & Crosnoe, 2010; Munson, McMahon, & Spieker, 2001), as has the quality of parent-child relationships (Morrison et al., 2003; Simpkins et al., 2006). Similarly, child relationship quality with teachers has also been shown to be an important risk or protective factor (Hamre et al., 2007; Pianta & Stuhlman, 2004) as have peer relationship support (Klima & Repetti, 2008; Newman et al., 2007).

These blocks of variables are ordered in blocks from distal to proximal variables influences. The entry of variables in specific blocks was also informed by the ecological model underpinning the current research as discussed in Chapter 2, Section 2.7 and displayed in Figure 2.1. Child factors were entered in the first block, followed by family/household characteristics. This was then followed by potential cumulative stress factors that may influence child outcomes as measured by the instability variables (family instability and social and economic instability encompassing home and school change and economic resources decrease). The last block took into account environmental support and the quality of relationships across home and school contexts. This approach is similar to that utilised by Adam and Chase-Lansdale (2002) who entered demographic controls relating to child and family context first into hierarchical regression analyses, followed by disruption/change variables, with social support and environment quality variables entered last (see Appendix A).

The descriptive statistics for these variables and the four outcome variables are presented in Table 6.1, and the correlations are presented in Table 6.2. The total sample size for the analyses was 3,648. In preliminary analyses, the interrelations of predictor variables and the correlation of predictor variables with the outcome variables were examined. According to Cohen (1988), the strength of the relationship between two variables can be determined by correlation coefficients, with those ranging from .10 to .29 considered small, .30 to .49 medium and .50 to .10 large.

Small to medium positive correlations were found between the binary measure of single-mother family status at Wave 1 and family instability (.247), household income and mother education (.310), and family instability and social and economic instability (.293). Medium positive correlations were found between the PIML child-parent

relationship score and the peer relationship score (.323), the PIML child-parent relationship and PIML child-teacher relationship scores (.397), as well as the peer relationship score and the PIML child-teacher relationships scores (.357). A large positive correlation was evident between the family instability score and the instability interaction term for family and social and economic environment (.843).

Small to medium negative correlations were found between SDQ Conduct Problems and child sex (-.201), SDQ Conduct Problems and Peer Relations scores (-.209), SDQ Conduct Problems and PIML child-teacher relationship score (-.240), SDQ Emotional Symptoms and Peer Relation scores (-.280), and single mother family status at Wave 1 and household income (-.410).

Table 6.1 Descriptive statistics of predictor variables and outcome variables

Variable	N (%)	M	SD
<i>SDQ Conduct</i> Wave 4 (scale – 1 to 3)		1.16	.33
<i>SDQ Emotional</i> Wave 4 (scale – 1 to 3)		1.24	.35
<i>ARS Language and Literacy</i> (scale – 1 to 5)		4.01	.83
<i>ARS Mathematical Thinking</i> Wave 4 (scale – 1 to 5)		3.69	.94
1. Child Age in Months Wave 1		56.9	2.63
2. Child Sex Wave 1 (% boys)	1861 (51%)	-	-
3. Child LBOTE Wave 1 (% LBOTE)	342 (9.4%)	-	-
4. Child ATSI Wave 1 (% ATSI)	91 (2.5%)	-	-
<i>Mother partnered with biological father – reference group for relationship status</i>			
5. Re-partnered Mother Wave 1 (% Re-partnered)	76 (2.1%)	-	-
6. Single Mother Wave 1 (% Single)	379 (10.4%)	-	-
7. Household Income Wave 1	-	3.0255	.13119
8. Mother Education Wave 1	-	2.949	1.27446
9. Family Instability Wave 1 – 4	-	.1713	.43996
10. Social and Economic Instability Wave 1 – 4	-	1.4921	1.41497
11. Instability Interaction	-	.4378	1.38402
12. K6 Score Wave 4 (binary- 8 cut off for high)	412 (11.3%)	-	-
13. Family Cohesion Wave 4 (% Good)	3326 (91.2%)	-	-
14. PIML parent relationship scale Wave 4	-	3.53	.53
15. Peer relations scale Wave 4	-	3.9	.83
16. PIML teacher relationship scale Wave 4	-	3.18	.67

Note: The outcome measures are weighted scale scores computed through CFA, see Appendix E.

Table 6.2 Correlations between outcome variables and predictor variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>SDQ Conduct</i> Wave 4	.008	-.201**	-.032*	.093**	.055**	.173**	-.136**	-.099**	.113**	.118**	.108**	.106**	-.131**	-.166**	-.209**	-.240**
<i>SDQ Emotional</i> Wave 4	-.016	-.016	-.020	.081**	.022	.096**	-.086**	-.048**	.065**	.069**	.055**	.116**	-.058**	-.130**	-.280**	-.100**
<i>ARS Language and Literacy</i> Wave 4	.041*	.151**	.031	-.133**	-.021	-.134**	.189**	.179**	-.063**	-.076**	-.058**	-.085**	.073**	.128**	.132**	.152**
<i>ARS Mathematical Thinking</i> Wave 4	.079**	-.010	.074**	-.124**	-.040*	-.127**	.186**	.191**	-.071**	-.087**	-.068**	-.070**	.070**	.093**	.125**	.114**
1. Child Age Wave 1	-	.024	.020	.022	.028	.013	.016	.027	.018	-.022	.006	.024	.000	-.009	.019	-.019
2. Child Sex Wave 1		-	-.007	.005	-.009	-.005	-.004	-.003	.014	-.008	.000	-.036*	.034*	.051**	.025	.150**
3. Child LBOTE Wave 1			-	-.027	-.021	-.032*	-.080**	.047**	-.046**	-.011	-.049**	.105**	-.009	.001	-.004	.015
4. Child ATSI Wave 1				-	.051**	.067**	-.078**	-.074**	.046**	.039*	.029	.026	-.037*	-.045**	-.011	-.036*
5. Re-partnered Mother Wave 1					-	-.050**	-.025	-.031	.087**	.094**	.095**	.021	.018	-.009	-.018	-.021
6. Single Mother Wave 1						-	-.410**	-.116**	.247**	.136**	.169**	.077**	-.113**	-.080**	-.064**	-.069**
7. Household Income Wave 1							-	.310**	-.143**	-.054**	-.96**	-.135**	.056**	.088**	.049**	.074**
8. Mother Education Wave 1								-	-.094**	-.061**	-.087**	-.045**	.032	.075**	.013	.028
9. Family Instability Wave 1-4									-	.293**	.843**	.078**	-.026	-.028	-.035*	-.049**
10. Social Economic Instability Wave 1-4										-	.443**	.082**	-.017	-.033*	-.041*	-.042*
11. Instability Interaction											-	.079**	-.026	-.044	-.041	-.066**
12. K6 (binary - 8 cut off) Wave 4												-	-.103**	-.062**	-.067**	-.059**
13. Family Cohesion Wave 4													-	.077**	.042*	.101**
14. PIML Parent Wave 4														-	.323**	.397**
15. Peer Relation Score Wave 4															-	.357**
16. PIML Teacher Wave 4																-

* p < .05 ** p < .01 ***p<.001 Please note these are ordered and binary variables. Correlations were all run with Pearsons therefore the correlations with binary and ordinal variables may be underestimated.

6.3 Prediction of SDQ Conduct Problems

The results of the analyses for SDQ Conduct Problems, and the unstandardised coefficients, standard errors, standardised coefficients and *t* scores are presented in Table 6.3. Model 1 identified the contribution of the child characteristics of age, sex, LBOTE and Aboriginal or Torres Strait Islander (ATSI) to SDQ Conduct scores. Adjusted R^2 was .050 indicating 5% of the variance was explained for SDQ Conduct scores. The model was statistically significant, $F(4, 3643) = 48.17, p < .001$. The strongest statistically significant predictor was child sex ($\beta = -.202$). Female children had lower levels of conduct problems. Also significant was child Aboriginal or Torres-Strait Islander (ATSI) status ($\beta = .093$) indicating increased likelihood of conduct problems.

In Model 2, additional variables for mother relationship status, household income and mother education at Wave 1 were also added. Adjusted R^2 was .086 indicating that the model accounted for 8.6% of the variance in SDQ Conduct scores. The R^2 change was .038. The model was statistically significant, $F(8, 3639) = 44.14, p < .001$. Statistically significant predictors included child sex ($\beta = -.201$); and being a single mother, against the reference group of mothers partnered with biological fathers at Time 1 ($\beta = .139$) indicating that children with single mothers, compared to partnered mothers, were more likely to have higher SDQ-reported conduct problems. Child Aboriginal or Torres-Strait Islander status was also significant ($\beta = .073$); also significant were mothers' education ($\beta = -.058$) and household income ($\beta = -.057$). Higher levels of maternal education and higher income resulted in lower levels of reported conduct problems by teacher report on the SDQ.

In Model 3, an additional block of variables was added related to mother relationship change measured by family instability, as well as social and economic instability and the effect of these combined. The adjusted R^2 was .094 (9.4% of the variance in SDQ Conduct scores). The R^2 change was small at .009. The model was statistically significant, $F(11, 3636) = 35.57, p < .001$. Child sex, was a strong statistically significant predictor ($\beta = -.201$), as well as single mother, against the reference category of partnered mother ($\beta = .119$). Also still significant were child Aboriginal or Torres-Strait Islander status ($\beta = .070$), mother education ($\beta = -.052$), household income ($\beta = -.058$) and re-partnered mother, against the reference category of partnered mother ($\beta = .041$). Only one of the change variables added for Model 3 showed statistical significance as a predictor. This was social and economic instability ($\beta = .073$), indicating that with an increased number of school and residential

changes or decreases in economic resources, from Wave 1 to Wave 4, then children's SDQ conduct problems also increased.

In Model 4, a block of variables reflecting home and school support were added. The variables measured maternal mental health, family cohesion, PIML parent relationships, the Peer Relation score and the PIML teacher relationship. Relationship variables were reported by the child. The adjusted R^2 for Model 4 was .157 indicating that the model accounted for 15.7% of the variance in SDQ Conduct scores. The R^2 change was .064. The model was statistically significant, $F(16, 3631) = 43.47, p < .001$. In the final model, all of the variables entered in the final block were significant predictors. Results for the Peer Relation score ($\beta = -.128$) and the PIML Teacher scale ($\beta = -.124$) were strongest predictors indicating positive relationships with peers and teachers were associated with reduced levels of conduct problems.

Family cohesion ($\beta = -.081$) indicated that higher family cohesion resulted in fewer conduct problems; the significant K6 Score ($\beta = .051$) indicated poorer maternal mental health was linked with increased conduct problems; and the PIML Parent scale ($\beta = -.036$) showed that more positive parent relationships were associated with fewer conduct problems. Of the remaining variables previously included child sex continued to remain a strong and significant predictor ($\beta = -.173$). Other variables of significance were single mother ($\beta = .096$), against partnered mother; social and economic instability ($\beta = .068$), child Aboriginal or Torres-Strait Islander status ($\beta = .062$), mother education ($\beta = -.049$), household income ($\beta = -.040$), re-partnered mother ($\beta = .038$), against partnered mother; and child language background other than English ($\beta = -.032$).

Overall, the results for the hierarchical regression analyses with the outcome variable of SDQ Conduct Problems indicated that several variables were consistent predictors of child outcomes. All four models were statistically significant. Using Beta values as an indicator of the strength of that variable in the overall model, then child sex, Peer Relation scores and PIML Teacher scores were particularly influential. Family instability did not reach significance as a predictor, although it was clear that being a single mother and re-partnered mother at Wave 1, compared to children of married mothers, made it more likely that children would have higher levels of conduct problems at Wave 4 when the child was 10-11 years. However, social and economic instability (experiences of residential change, school change, or decreased income across data collection waves) did significantly contribute to increased conduct problems.

Table 6.3 Prediction of SDQ Conduct Problems at Wave 4

		SDQ Conduct			
		B	SE B	B	t
Model 1	R² .050; Adj R² .049; ΔR² .050				
	Child Age Wave 1	.001	.002	.011	.679
	Child Sex	-.131	.011	-.202	-12.479***
	Child LBOTE	-.035	.018	-.031	-1.949
	Child ATSI	.195	.034	.093	5.767***
Model 2	R² .088; Adj R² .086; ΔR² .038				
	Child Age	.001	.002	.011	.664
	Child Sex	-.131	.010	-.201	-12.676***
	Child LBOTE	-.032	.018	-.028	-1.769
	Child ATSI	.152	.033	.073	4.558***
	Re-partnered Mother Wave 1	.119	.036	.052	3.285**
	Single Mother Wave 1	.148	.019	.139	7.955***
	Household Income Wave 1	-.016	.005	-.057	-3.120**
	Mother Education Wave 1	-.015	.004	-.058	-3.454**
Model 3	R² .097; Adj R² .094; ΔR² .009				
	Child Age Wave 1	.001	.002	.012	.753
	Child Sex	-.131	.010	-.201	-12.736***
	Child LBOTE	-.030	.018	-.027	-1.678
	Child ATSI	.147	.033	.070	4.421***
	Re-partnered Mother Wave 1	.093	.036	.041	2.549*
	Single Mother Wave 1	.127	.019	.119	6.611***
	Household Income Wave 1	-.017	.005	-.058	-3.160**
	Mother Education Wave 1	-.013	.004	-.052	-3.121**
	Family Instability Wave 1-4	.029	.023	.039	1.268
	Social and Economic Instability Wave 1-4	.017	.004	.073	4.081***
	Instability Interaction Effect	.001	.008	.006	.175
Model 4	R² .161; Adj R² .157; ΔR² .064				
	Child Age Wave 1	.001	.002	.010	.651
	Child Sex	-.113	.010	-.173	-11.212***
	Child LBOTE	-.035	.017	-.032	-2.042*
	Child ATSI	.129	.032	.062	4.024***
	Re-partnered Mother Wave 1	.086	.035	.038	2.442*
	Single Mother Wave 1	.102	.019	.096	5.499***
	Household Income Wave 1	-.011	.005	-.040	-2.250*
	Mother Education Wave 1	-.013	.004	-.049	-3.044**
	Family Instability Wave 1-4	.037	.022	.050	1.684
	Social and Economic Instability Wave 1-4	.016	.004	.068	3.884***
	Instability Interaction Effect	-.004	.007	-.016	-.517
	K6 Score Wave 4	.053	.016	.051	3.273**
	Family Cohesion Wave 4	-.093	.018	-.081	-5.225***
	PIML Parent Wave 4	-.022	.011	-.036	-2.088*
	Peer Relation Score Wave 4	-.050	.007	-.128	-7.693***
	PIML Teacher Wave 4	-.060	.008	-.124	-7.121***

* p < .05 ** p < .01 ***p<.001

6.4 Prediction of SDQ Emotional Problems

The next set of hierarchical regressions focused on the prediction of child outcomes using the SDQ Emotional Symptoms scale, for internalising problems. Results along with the unstandardised coefficients, standard errors, standardised coefficients and *t* scores are presented in Table 6.4. Model 1 examined how much variance of the SDQ Emotional Symptoms could be explained by the contribution of the child attributes of age, sex, language background other than English and Aboriginal or Torres-Strait Islander status. Model 1 resulted in an adjusted R^2 of .006, contributing 0.6% of the variance in SDQ Emotional Symptoms scores. Despite the small amount of variance, the model was statistically significant, $F(4, 3643) = 6.895, p < .001$. The only statistically significant predictor was child Aboriginal or Torres-Strait Islander status ($\beta = .08$) indicating that having Aboriginal or Torres-Strait Islander status made it more likely that the child was rated by the teacher as have more emotional problems.

Model 2 added mother relationship status, household income and mother education at Wave 1. Model 2 resulted in an adjusted R^2 of .017 suggesting that the model accounted for only 1.7% of the variance in SDQ Emotional Symptoms scores. The R^2 change was .011. The model was statistically significant, $F(8, 3639) = 8.684, p < .001$. Child Aboriginal or Torres-Strait Islander status remained the strongest statistically significant predictor ($\beta = .071$), followed by single mother at Wave 1 ($\beta = .070$) suggesting higher SDQ Emotional Symptoms for children with single mothers, compared to partnered mothers at Wave 1; and household income ($\beta = -.047$) indicating children had lower teacher rating for emotional symptoms when families had higher household income.

In Model 3, the additional variables were family instability, social and economic instability, and the interaction effects for instability variables. Model 3 resulted in an adjusted R^2 of .019 (1.9% of the variance in SDQ Emotional Symptoms scores). The R^2 change was small at .003. The model was statistically significant, $F(11, 3636) = 7.45, p < .001$. Child Aboriginal or Torres-Strait Islander status remained a strong statistically significant predictor ($\beta = .069$) associated with higher levels of emotional symptoms; followed by single mother at Wave 1, as against the reference group of partnered mother ($\beta = .057$). Also significant was household income ($\beta = -.047$). Only one of the change variables added for Model 3 showed statistical significance as a predictor, social and economic instability ($\beta = .051$), indicating

that with increased levels of instability, children were rated as having higher levels of emotional problems.

Table 6.4 Prediction of SDQ Emotional Problems at Wave 4

		SDQ Emotional			
		B	SE B	B	t
Model 1	R² .008; Adj R² .006; ΔR² .008				
	Child Age Wave 1	-.002	.002	-.017	-1.026
	Child Sex	-.012	.012	-.017	-1.003
	Child LBOTE	-.021	.020	-.017	-1.042
	Child ATSI	.182	.037	.081	4.931***
Model 2	R² .019; Adj R² .017; ΔR² .011				
	Child Age Wave 1	-.002	.003	-.017	-1.032
	Child Sex	-.011	.011	-.016	-.987
	Child LBOTE	-.021	.020	-.018	-1.066
	Child ATSI	.158	.037	.071	4.276***
	Re-partnered Mother Wave 1	.050	.040	.021	1.249
	Single Mother Wave 1	.081	.021	.070	3.890***
	Household Income Wave 1	-.014	.006	-.047	-2.464*
	Mother Education Wave 1	-.005	.005	-.018	-1.023
Model 3	R² .022; Adj R² .019; ΔR² .003				
	Child Age Wave 1	-.002	.002	-.016	-.982
	Child Sex	-.012	.011	-.017	-1.006
	Child LBOTE	-.020	.020	-.017	-1.031
	Child ATSI	.154	.037	.069	4.171***
	Re-partnered Mother Wave 1	.034	.041	.014	.827
	Single Mother Wave 1	.065	.021	.057	3.055**
	Household Income Wave 1	-.015	.006	-.047	-2.476*
	Mother Education Wave 1	-.004	.005	-.015	-.838
	Family Instability Wave 1-4	.033	.025	.042	1.324
	Social and Economic Instability Wave 1-4	.013	.005	.051	2.723**
	Instability Interaction Effect	-.006	.008	-.022	-.666
Model 4	R² .104; Adj R² .101; ΔR² .082				
	Child Age Wave 1	-.002	.002	-.013	-.823
	Child Sex	-.006	.011	-.009	-.540
	Child LBOTE	-.033	.019	-.028	-1.73
	Child ATSI	.146	.035	.065	4.106***
	Re-partnered Mother Wave 1	.023	.039	.009	.587
	Single Mother Wave 1	.044	.021	.038	2.141*
	Household Income Wave 1	-.009	.006	-.030	-1.666
	Mother Education Wave 1	-.004	.005	-.013	-.778
	Family Instability Wave 1-4	.037	.024	.046	1.522
	Social and Economic Instability Wave 1-4	.010	.004	.041	2.279*
	Instability Interaction Effect	-.009	.008	-.034	-1.081
	K6 Score Wave 4	.093	.018	.083	5.238***
	Family Cohesion Wave 4	-.034	.020	-.028	-1.753
	PIML Parent Wave 4	-.025	.012	-.037	-2.114*
	Peer Relation Score Wave 4	-.111	.007	-.263	-15.276***
	PIML Teacher Wave 4	.014	.009	.027	1.520

* p < .05 ** p < .01 ***p<.001

In Model 4, additional variables included were mother mental health, family cohesion, PIML parent relationship, the Peer Relation score and the PIML teacher relationship. The adjusted R^2 for Model 4 was .101 indicating that the model accounted for 10% of the variance in SDQ Emotional Symptoms scores. The R^2 change was .082. The model was statistically significant, $F(16, 3631) = 26.47, p < .001$. In the final model, three of the variables entered in the final block were significant predictors. The Peer Relation score was a strong contributor ($\beta = -.263$) indicating more positive peer relationships were associated with lower levels of emotional symptoms. This was followed by the K6 score ($\beta = .083$) showing higher levels of maternal mental health problems were associated with higher ratings for emotional problems, and then the PIML Parent scale ($\beta = -.037$) which showed an association between positive parent relationships and lower ratings of emotional problems. Of the remaining variables previously included in the model, child Aboriginal or Torres-Strait Islander status continued to remain a significant predictor ($\beta = .065$), as did social and economic instability ($\beta = .041$); and single mother, compared to partnered mother as the reference group ($\beta = .038$).

Overall, the regression results indicated that several variables contributed significantly to the prediction of SDQ Emotional Symptoms scores. All four models were statistically significant. The Beta value of the child's Peer Relations score indicated its strength in the final model. Given that this was also a statistically significant predictor, in the overall model this highlights the importance of quality peer relationships for children for better outcomes measured by the SDQ scale, Emotional Symptoms. The K6 score for maternal mental health also was an important contributor to the significance of the overall model.

6.5 Prediction of ARS Language and Literacy

The results and the unstandardised coefficients, standard errors, standardised coefficients and t scores for the regression analyses with the ARS Language and Literacy as the outcome measure are shown in Table 6.5. For Model 1, the child attributes of age, sex, Language Background Other Than English and Aboriginal or Torres-Strait Islander status resulted in an adjusted R^2 of .042, contributing 4.2% of the variance to ARS Language and Literacy outcomes. The model was statistically significant, $F(4, 3643) = 41.085, p < .001$. Three of the four predictors included in Model 1 were statistically significant. These variables were child age ($\beta = .039$) indicating that stronger language and literacy outcomes at Wave 4 were more likely for older children; by child sex ($\beta = .151$), higher Language and Literacy

ratings were more likely for females, and child Aboriginal or Torres-Strait Islander status ($\beta = -.134$) indicating that children with Indigenous status had lower language and literacy ratings.

Table 6.5 Prediction of ARS Language and Literacy at Wave 4

		ARS Language and Literacy			
		B	SE B	B	t
Model 1	R² .043; Adj. R² .042; ΔR² .043				
	Child Age Wave 1	.012	.005	.039	2.430*
	Child Sex	.252	.027	.151	9.326***
	Child LBOTE	.078	.046	.027	1.695
	Child ATSI	-.715	.087	-.134	-8.264***
Model 2	R² .093; Adj. R² .091; ΔR² .050				
	Child Age Wave 1	.011	.005	.035	2.200*
	Child Sex	.252	.026	.152	9.601***
	Child LBOTE	.084	.045	.029	1.845
	Child ATSI	-.590	.085	-.111	-6.962***
	Re-partnered Mother Wave 1	-.060	.092	-.010	-.651
	Single Mother Wave 1	-.172	.047	-.063	-3.626***
	Household Income Wave 1	.086	.013	.117	6.436***
	Mother Education Wave 1	.082	.011	.125	7.503***
Model 3	R² .096; Adj. R² .093; ΔR² .002				
	Child Age Wave 1	.011	.005	.034	2.124*
	Child Sex	.252	.026	.151	9.594***
	Child LBOTE	.084	.045	.029	1.848
	Child ATSI	-.584	.085	-.109	-6.887***
	Re-partnered Mother Wave 1	-.031	.093	-.005	-.338
	Single Mother Wave 1	-.151	.049	-.055	-3.090**
	Household Income Wave 1	.087	.013	.119	6.493***
	Mother Education Wave 1	.080	.011	.123	7.361***
	Family Instability Wave 1-4	-.014	.058	-.008	-.250
	Social and Economic Instability Wave 1-4	-.029	.011	-.048	-2.692**
	Instability Interaction Effect	.004	.019	.007	.205
Model 4	R² .118; Adj. R² .114; ΔR² .023				
	Child Age Wave 1	.011	.005	.035	2.239*
	Child Sex	.225	.026	.136	8.578***
	Child LBOTE	.095	.045	.033	2.103*
	Child ATSI	-.557	.084	-.104	-6.639***
	Re-partnered Mother Wave 1	-.019	.092	-.003	-.210
	Single Mother Wave 1	-.117	.049	-.043	-2.399*
	Household Income Wave 1	.078	.013	.107	5.871***
	Mother Education Wave 1	.079	.011	.120	7.288***
	Family Instability Wave 1-4	-.027	.057	-.014	-.471
	Social and Economic Instability Wave 1-4	-.026	.010	-.044	-2.488*
	Instability Interaction Effect	.012	.019	.020	.622
	K6 Score Wave 4	-.107	.042	-.041	-2.541*
	Family Cohesion Wave 4	.096	.046	.033	2.074*
	PIML Parent Wave 4	.062	.028	.039	2.232*
	Peer Relation Score Wave 4	.077	.017	.076	4.459***
	PIML Teacher Wave 4	.079	.022	.064	3.569***

* p < .05 ** p < .01 ***p<.001

In Model 2, mother relationship status, household income and mother education were added. Model 2 resulted in an adjusted R^2 of .091 suggesting that the model accounted for 9.1% of the variance in ARS Language and Literacy ratings. The R^2 change was .050. The model was statistically significant, $F(8, 3639) = 46.802, p < .001$. Three of the four variables added for Model 2 were statistically significant predictors. These included mother education ($\beta = .125$) indicating higher levels of mother education contributed to higher child ARS Language and Literacy ratings, household income ($\beta = .117$) showing higher income also contributed to higher child ratings, and single mother ($\beta = -.063$) indicating children of single mothers at Wave 1 were more likely to have lower ARS Language and Literacy ratings. Previously significant variables in Model 1 remained in Model 2, with child age ($\beta = .035$), child sex ($\beta = .152$), and child Aboriginal or Torres-Strait Islander status ($\beta = -.111$).

In Model 3, family instability, social and economic instability and the interaction effect between them was added. Model 3 resulted in an adjusted R^2 of .093 suggesting that the model accounted for 9.3% of the variance in ARS Language and Literacy ratings. The R^2 change was small at .002. The model was statistically significant, $F(11, 3636) = 34.903, p < .001$. Social and economic instability was a statistically significant predictor ($\beta = -.048$) indicating that higher levels of instability resulted in a higher risk of lower ARS Language and Literacy ratings. Previously included variables retained statistical significance as predictors. These were child age ($\beta = .034$), child sex ($\beta = .151$), child Aboriginal or Torres-Strait Islander status ($\beta = -.109$), single mother ($\beta = -.055$), household income ($\beta = .119$), and mother education ($\beta = .123$).

In Model 4, variables included were measures of mother mental health, family cohesion, PIML parent relationships, the Peer Relation scores and the PIML teacher relationship were included. The adjusted R^2 for Model 4 was .114 indicating that the model accounted for 11.4% of the variance in ARS Language and Literacy ratings. The R^2 change was .023. The model was statistically significant, $F(16, 3631) = 30.389, p < .001$. In the final model, all five of the variables entered in the last block were significant predictors. The Peer Relation score was a strong contributor ($\beta = .076$), followed by the PIML Teacher scale ($\beta = .064$), the PIML Parent scale ($\beta = .039$), the K6 score ($\beta = -.041$), and then family cohesion ($\beta = .033$). Of the remaining variables previously included in the model, child sex remained a predictor ($\beta = .136$), as well as mother education ($\beta = .120$), household income ($\beta = .107$), child Aboriginal or Torres-Strait Islander status ($\beta = -.104$), social and economic instability (β

= -.044), single mother ($\beta = -.043$), child age ($\beta = .035$), and child language background other than English ($\beta = .033$).

Overall, the results for the regression analyses for the ARS Language and Literacy ratings indicated that several variables made important contributions to the prediction of child outcomes. All four models resulted in a statistically significant model. Strong predictor variables in the final model included child sex and Peer Relationship scores on the PIML. The quality of relationships with teachers also made significant contributions. Of the instability variables, notably family instability, did not reach significance as a predictor, although marital status at Wave 1 for single mother and re-partnered mother made a significant contribution. Social and economic instability did contribute although to a smaller degree than child sex, peer and teacher relationships to the overall significance, as did having a single mother at Wave 1 and the level of family cohesion.

6.6 Prediction of ARS Mathematical Thinking

The results and the unstandardised coefficients, standard errors, standardised coefficients and *t* scores for the regression analyses for ARS Mathematical Thinking are presented in Table 6.6. For Model 1 the child attributes of age, sex, language background other than English and Aboriginal or Torres-Strait Islander status resulted in an adjusted R^2 of .026, contributing 2.6% of the variance in ARS Mathematical Thinking. The model was statistically significant, $F(4, 3643) = 25.203, p < .001$. Three of the four predictors included in Model 1 were statistically significant. These were child age ($\beta = .081$) indicating that ARS Mathematical Thinking was more strongly rated for older children, child language background other than English status ($\beta = .069$) indicating that ARS ratings were positively associated with language background other than English status, and child Aboriginal or Torres-Strait Islander status ($\beta = -.124$) indicating that lower teacher ARS ratings were more likely for children identified as being Indigenous.

In Model 2, the addition of mother relationship status, household income and mother education at Wave 1 resulted in an adjusted R^2 of .078. This meant that the model accounted for 7.8% of the variance in ARS ratings. The R^2 change was .053. The model was statistically significant, $F(8, 3639) = 39.35, p < .001$. Three of the four variables added in Model 2 were statistically significant predictors. These included Mother Education ($\beta = .135$) indicating higher levels of mother education were linked to higher child Mathematical Thinking ratings, household income ($\beta = .117$) showing higher income also contributes to higher ARS ratings,

and single mother ($\beta = -.057$) indicating that children with a single mother, as compared to children of partnered mothers at Wave 1 were more likely to have lower ARS Mathematical Thinking ratings. Previously significant variables remained, child age ($\beta = .077$), child language background other than English ($\beta = .070$) and child ATSI status ($\beta = -.099$).

Table 6.6 Prediction of ARS Mathematical Thinking at Wave 4

		ARS Mathematical Thinking			
		B	SE B	β	<i>t</i>
Model 1	R² .027; Adj. R² .026; ΔR² .027				
	Child Age Wave 1	.029	.006	.081	4.947***
	Child Sex	-.021	.031	-.011	-.676
	Child LBOTE	.221	.053	.069	4.205***
	Child ATSI	-.744	.098	-.124	-7.563***
Model 2	R² .080; Adj. R² .078; ΔR² .053				
	Child Age Wave 1	.027	.006	.077	4.804***
	Child Sex	-.020	.030	-.011	-.676
	Child LBOTE	.225	.052	.070	4.359***
	Child ATSI	-.596	.096	-.099	-6.186***
	Re-partnered Mother Wave 1	-.206	.105	-.031	-1.959
	Single Mother Wave 1	-.175	.054	-.057	-3.238**
	Household Income Wave 1	.097	.015	.117	6.360***
	Mother Education Wave 1	.099	.012	.135	8.014***
Model 3	R² .083; Adj. R² .080; ΔR² .003				
	Child Age Wave 1	.027	.006	.075	4.719***
	Child Sex	-.021	.030	-.011	-.691
	Child LBOTE	.225	.052	.070	4.355***
	Child ATSI	-.587	.096	-.098	-6.100***
	Re-partnered Mother Wave 1	-.165	.106	-.025	-1.562
	Single Mother Wave 1	-.145	.056	-.047	-2.616**
	Household Income Wave 1	.098	.015	.118	6.428***
	Mother Education Wave 1	.097	.012	.132	7.840***
	Family Instability Wave 1-4	-.017	.065	-.008	-.259
	Social and Economic Instability Wave 1-4	-.038	.012	-.057	-3.164**
	Instability Interaction Effect	.002	.022	.003	.105
Model 4	R² .102; Adj. R² .098; ΔR² .019				
	Child Age Wave 1	.027	.006	.076	4.804*
	Child Sex	-.047	.030	-.025	-1.554
	Child LBOTE	.237	.051	.074	4.600***
	Child ATSI	-.563	.095	-.094	-5.892***
	Re-partnered Mother Wave 1	-.153	.105	-.023	-1.460
	Single Mother Wave 1	-.109	.055	-.035	-1.963
	Household Income Wave 1	.090	.015	.108	5.908***
	Mother Education Wave 1	.096	.012	.131	7.833***
	Family Instability Wave 1-4	-.027	.065	-.013	-.422
	Social and Economic Instability Wave 1-4	-.035	.012	-.053	-2.974**
	Instability Interaction Effect	.010	.022	.014	.442
	K6 Score Wave 4	-.107	.048	-.036	-2.229*
	Family Cohesion Wave 4	.130	.053	.039	2.458*
	PIML Parent Wave 4	.022	.031	.012	.691
	Peer Relation Score Wave 4	.094	.020	.083	4.819***
	PIML Teacher Wave 4	.080	.025	.057	3.166*

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

In Model 3, family instability, social and economic instability and the interaction effect variables were included. Model 3 resulted in an adjusted R^2 of .080 indicating that the model accounted for 8% of the variance in ARS Mathematical Thinking ratings. The R^2 change was small at .003. The model was statistically significant, $F(11, 3636) = 29.88, p < .001$. The social and economic instability variable was a statistically significant predictor ($\beta = -.057$) indicating that increased frequency of instability contributed to lower ARS Mathematical Thinking ratings. Previously included variables retaining statistical significance as predictors included child age ($\beta = .075$), child language background other than English ($\beta = .070$), child Aboriginal or Torres-Strait Islander status ($\beta = -.098$), single mother ($\beta = -.047$), household income ($\beta = .118$) and mother education ($\beta = .132$).

In Model 4, the variables included were the measures of mother mental health, family cohesion, PIML parent relationships, PIML peer relationships, and the PIML teacher relationship. This resulted in an adjusted R^2 of .098 for the model. This indicated that the model accounted for 9.8% of the variance in ARS Mathematical Thinking ratings. The R^2 change was .019. The model was statistically significant, $F(16, 3631) = 25.70, p < .001$. In the final model, four of the variables entered in the final block were significant predictors. The Peer Relations score was a strong contributor ($\beta = .083$) indicating positive associations between peer relationships and ARS ratings. The PIML teacher scale ($\beta = .057$) also contributed to positive associations on the outcome measure; as well the K6 score ($\beta = -.036$) indicating higher levels of maternal mental health issues were associated with decreased ARS ratings and family cohesion ($\beta = .039$) indicating higher family cohesion was associated with higher ARS ratings. Of the remaining variables previously included in the model, mother education remained a predictor ($\beta = .131$), as well household income ($\beta = .108$), child Aboriginal or Torres-Strait Islander status ($\beta = -.094$). Also still significant were child age ($\beta = .076$), child language background other than English ($\beta = .074$), and social and economic instability ($\beta = -.054$).

Overall, the results for the regression analyses for the ARS Mathematical Thinking ratings found several variables contributed to the prediction of child outcomes. All four models were statistically significant; however, the final model explained a higher level of variance. Statistically significant contributions in the final model were evident for mother education, household income, Aboriginal or Torres-Strait Islander status, peer relationships, child age, language background other than English status, teacher relationships, social and economic instability, mother mental health and then family cohesion. It is interesting to note

that mother relationship status at Wave 1 (re-partnered or single, compared to mothers partnered with biological fathers) were not statistically significant predictors in the final model and nor was the cumulative family instability variable.

6.7 Discussion

The results of the regression analyses will be discussed by first considering results relating to child adjustment, as measured by the teacher reported SDQ Conduct Problems and SDQ Emotional Symptoms scales. Then, results relating to academic achievement will be discussed, as measured by the ARS Language and Literacy and ARS Mathematical Thinking scales.

6.7.1 Adjustment: SDQ Conduct Problems and Emotional Problems

Child sex

Child sex was the largest significant predictor for the final SDQ Conduct Problems model with the direction of the association indicating that boys were more likely to have higher levels of conduct problems than girls. This direction was expected given the mean scores of the current sample showed higher SDQ conduct scores for boys than girls. Boys have typically been shown to rate with higher levels of externalising problems, and higher SDQ conduct scores for boys have been found in previous research (Hawes & Dadds, 2004; Matsuishi et al., 2008).

While child sex was significant for the SDQ Conduct Problems outcomes, it did not reach significance in the SDQ Emotional Symptoms model. Previous research that looked at chronic instability (as measured by mother relationship changes from child birth to year 3) and the effect on externalising and internalising behaviours found significant differences with prediction of externalising scores for both males and females, but only internalising for females (Ackerman et al., 2002). A Norwegian study that focused on the effect of parental separation for adolescents, also found associations to school problems (conduct and academic problems) for both boys and girls. Girls were more likely to experience anxiety, depression, subjective wellbeing and self-esteem (Størksen, Røysamb, Moum, & Tambs, 2005).

Child Aboriginal or Torres-Strait Islander Status

Child Aboriginal or Torres-Strait Islander status was a significant predictor for the final models of both SDQ Conduct Problems and Emotional Symptoms, although there was

higher significance in the Emotional Symptoms model. The direction of the association indicated that having Indigenous status meant children were more likely to be rated with higher behavioural problems. This supports findings from another Australian study which used a sample from Western Australia. Blair, Zubrick and Cox (2005) examined Indigenous children along with a comparison group of non-Indigenous peers. Results from children aged from 12-17 years indicated that 20.5% of the Indigenous group had clinically significant SDQ emotional/behavioural difficulties compared to 7% of the comparison group, and 31.4% were at risk of significant SDQ conduct problems, compared to 13.1% of the comparison group.

Family structure at Wave 1

While cumulative family instability between Waves 1 to Wave 4 was not a statistically significant predictor in the current models for SDQ Conduct Problems or SDQ Emotional Symptoms, variables measuring the relationship status of mothers at Wave 1 in 2004 were significant. For SDQ Conduct Problems this consisted of both re-partnered and single mothers at Wave 1, while for SDQ Emotional Symptoms this consisted of single mothers at Wave 1.

The long term impact suggested by family structure at Wave 1 also supports findings from a study by Ryan and Claessens (2012) that found that family structure changes experienced early in life had long lasting effects. Similarly a study which focused on the impact of parental relationship dissolution found that earlier separations had larger impact on child externalising and internalising problems than later separations (Lansford et al., 2006). It is important to note however that a proportion of the current sample with re-partnered or single mothers at Wave 1 may not have experienced any family structure changes since birth.

Mother education

The education level of mothers was a significant predictor in the final model for child SDQ Conduct Problems. Results indicated that higher levels of maternal education were associated with lower child conduct scores. Maternal education levels have been shown to significantly influence child outcomes in both behavioural and cognitive outcomes across low through to high income families (Acs, 2007). Research by McMunn, Nazroo, Marmot, Boreham, and Goodman (2001) used the parent reported SDQ as a measure of child psychological adjustment to examine the impact of differing family structures along with other family, economic and parental factors. Regression was used on a sample of 5705 with

children aged 4-15 years. Results found high levels of psychological problems for children of single mothers, however, this was accounted for by maternal education along with socio-economic factors such as benefits and housing tenure, although effects remained for children in re-partnered households. Overall, there was a strong association between mother's education levels and child SDQ outcomes with children whose mothers held no qualification being five times more likely than those whose mother held a university degree to have high SDQ total difficulties scores.

Household income

For the SDQ Conduct Problems model, household income was a significant predictor with the direction of the association indicating that child conduct problems increased with lower levels of income. Income was not a significant predictor for SDQ Emotional Symptoms ($\beta = -.030$). This is in contrast to findings by Gustafsson, Larsson, Nelson, and Gustafsson (2009) who used the SDQ Conduct Problems and Emotional Symptoms as measures of externalising and internalising behaviour to determine the impact of socio-cultural disadvantage and traumatic life events on Swedish children aged 6-12 years. They found that social disadvantage variables, including economic hardship, were more strongly associated with internalising behaviours.

Family instability

Family instability did not reach statistical significance in the final model examining SDQ Conduct Problems ($\beta = .050$, $p = .097$). This was also the case for the models examining SDQ Emotional Symptoms ($\beta = .046$, $p = .138$). A significant contribution was expected given previous research findings. For example, a study completed by Bachman et al. (2011) found that for children at 8 years of age higher numbers of total transitions of family instability, as measured by maternal partnership transitions, was associated with higher rates of child conduct problems, along with anxious and somatic problems. A small effect was also found for affective problems. However, another study completed by Cavanagh and Huston (2006) found only modest associations between teacher reported externalising behaviours along with modest associations to negative peer directed behaviour, and significant links to disruptive behaviour with problems more evident for children experiencing more instability.

The findings of the current study differ from results found by Bachman, Coley and Carrano (2011) who found that higher numbers of maternal relationship changes did predict a

range of child internalising and externalising outcomes. The sample used in their research consisted of children with an average age of 8 and was drawn from Welfare, Children, and Families: A Three-City Study which is a longitudinal study using a low-income sample. This was similar to results found by Ackerman et al. (2002). They found that chronic relationship instability of mothers predicted externalising behaviour for males and females, and internalising behaviour for girls. Their study used longitudinal data with outcomes measured from when children were in grade 3, also using an economically disadvantaged sample. Potentially using a more representative sample in the current research has contributed to these differences in results.

Social and economic instability

The combined social and economic instability did reach statistical significance in the final model for SDQ Conduct Problems ($\beta=.068$) and also in the final model for SDQ Emotional Symptoms ($\beta=.041$). These results support findings by Milan and Pinderhughes (2006) that found cumulative instability significantly predicted teacher rated child externalising behaviours. Family instability for the Milan and Pinderhughes (2006) study was measured by events including residential move, family death, parent separation or re-partnering, temporary parent-child separation, new sibling/child in home and parent job loss or job change. Also externalising behaviours were not measured by the SDQ, instead being measured by child behaviour checklists and teacher reporting forms. Like the present study however cumulative instability did significantly predict child externalising behaviours accounting for a small amount of the variance.

Similarly a study by Ackerman et al. (2002) which used chronic adversity looking at income, residential moves, negative life events and parental maladjustment found that chronic instability predicted externalising behaviour for males and females, but internalising was predicted only for girls. Appleyard, Egeland, van Dulmen, and Sroufe (2005) also found that cumulative risk measured in early and middle childhood ($n = 171$) resulted in associations between higher risk and problem behaviour in adolescence. Early childhood cumulative risk predicted behaviour in adolescence even after the inclusion of the middle childhood risks.

Parent mental health

The K6 measure of maternal psychological distress was a statistically significant predictor in both the SDQ Conduct Problems ($\beta=.051$) and the Emotional Symptoms models ($\beta=.083$). Increased levels of externalising problems for children 9 years of age have previously been found to be associated with higher levels of maternal depressive symptoms (Munson et al., 2001). Indirect effects were found by Herwig, Wirtz and Bengel (2004) with maternal depression indirectly impacting child behavioural problems in part via contributions to dysfunctional parenting. As previously noted, children with negative perceptions of mother-child relationships have been shown to be vulnerable to the effects of maternal depressive symptoms contributing to internalising behaviour problems (Frampton et al., 2010). Another study identified mediating variables between maternal depressive symptoms in early childhood and eventual outcomes in preadolescents, with poorer mother-child relationships mediating externalising problems and less maternal social support mediating internalising problems (McCarty & McMahan, 2003).

Maternal mental health may also be particularly significant for the current research given the link to increased levels of problems and relationship transitions. Meadows, McLanahan and Brooks-Gunn (2008) examined links between maternal relationship instability and mental and physical health, for the first five years after a birth of a child. They found that the mental health problems of mothers increased for those leaving a relationship (marital or cohabiting) and also for those with multiple relationship transitions, while mothers remaining consistently married had better mental health. Mothers who started cohabitating had lower mental health problems, although for those who initially were cohabitating with and then married biological fathers there were signs of increased problems.

Research findings of Cooper, McLanahan, Meadows, Brooks-Gunn and Johnson (2009) slightly differ from this. While they also found higher levels of parenting stress reported by mothers exiting residential relationships with children's biological fathers, those who were entering new residential relationships with unrelated partners also reported high stress. These former studies highlight that mothers undergoing relationship transitions are potentially at risk of having higher levels of mental health problems thus increasing risk for adverse child outcomes.

Family cohesion

The family cohesion variable proved to be a statistically significant predictor to the SDQ Conduct Problems model. The direction of the association showed that higher family cohesion resulted in lower conduct problems. This was also the case for the final SDQ Emotional Symptoms model, however, family cohesion did not reach statistical significance ($\beta = -.028$). This partially supports findings from a study (Gabalda, Thompson, & Kaslow, 2010) that examined risk and protective factors for a low-income African-American sample aged 8-12 years, in relation to the effect multiple risk had on internalising and externalising problems. They found that family functioning served as a protective factor against both internalising and externalising problems. Another study completed by McCauley Ohannessian, Lerner, Lerner, and von Eye (2000) found that discrepancies between family functioning perceptions of parents and adolescents were linked to lower levels of self-competence, also highlighting the contribution of family functioning to child adjustment.

Child-parent relationship

The PIML Parent score was a significant predictor for both the SDQ Conduct Problems and the Emotional Symptoms final models, with results indicating that more positive parent relationships were associated with lower levels of SDQ conduct and emotional ratings. These results are similar to previous research findings. One study found that children who had more negative perspectives of their mother-child relationship were more likely to have higher ratings of internalising problems in relation to maternal depression, even if initial risk was the same as children with more positive perspectives (Frampton, Jenkins, & Dunn, 2010).

The perceived quality of parental relationship may differ depending on family structure. A study which examined 258 young children's (4-7 years) perceptions of family relationships found that being biologically related and the family type affected ratings of level of closeness with fathers, but not mothers or siblings, and step-fathers were more likely to be rated as not close (Sturgess, Dunn, & Davies, 2001). In addition, child externalising problems were found to be related to perceptions of relationship quality with fathers, while closeness to mothers and fathers was linked to pro-social behaviours. Another used the SDQ Total Difficulties to examine differences between single-mother and stepfather families and the quality of relationships between family members. They found that the quality of the relationships between children and parents, as well as between parents, step-parents or ex-

partners was associated with child psychosocial adjustment as opposed to the family structure (Hakvoort, Bos, Balen, & Hermanns, 2011). Such differences were also found in the analyses in Study 2 of the current research.

Child-teacher relationship

The PIML Teacher score was the third largest significant predictor for the final SDQ Conduct Problems model. While it did contribute to the model for SDQ Emotional Symptoms, it did not reach statistical significance ($\beta=.027$, $p=.135$). Direction of associations indicated that a more positive child view of teacher-child relationships were linked to lower levels of teacher rated SDQ adjustment problems. The association between teacher-child relationships and child outcomes has been well documented. A study which found similar associations as the current research was conducted by Fowler, Banks, Anhalt, Hinrichs Der, and Kalis (2008). Data from 230 students, tracked from kindergarten to third grade, found associations between child externalising behaviour problems and poor teacher-child relationship quality.

Similarly, Silver, Measelle, Armstrong, and Essex (2005) examined a sample of 283 children and found that conflict in teacher-child relationships during school transitions at kindergarten contributed to increases in externalising behaviours through kindergarten to third grade, beyond initial child externalising ratings and negative parenting. Close teacher-child relationships in comparison were associated with decreased levels of externalising behaviours. Another study with a sample of 1140 children also found that having higher levels of conflict in teacher-child relationship trajectories across kindergarten to fifth grade was a significant predictor of child externalising problems in fifth grade (O’Conner, Collins, & Supplee, 2012).

Child-peer relationship

The Peer Relations score was the highest predictor of the SDQ Emotional Symptoms model, and it also significantly contributed to the SDQ Conduct Problems model. Positive relationships with peers were associated with lower levels of both emotional and conduct problems. These results support findings from a longitudinal study which tracked children from fourth to sixth grade by Klima and Repetti (2008). Results indicated that having less peer acceptance predicted higher levels of internalising and externalising problems (from the Teacher Report Form; Achenbach, 1991). Interestingly closer peer support did not predict

child adjustment. Peer acceptance of young children has been shown to impact on their social self-concept (Verschueren, Doumen, & Buyse, 2012).

These types of effects may change as children move into early adolescence. Woods, Done, and Kalsi (2009) examined the impact of peer victimisation on child internalising difficulties and if friendship quality had moderating effects on child outcomes. Using a sample of 40 adolescents (mean age 13.5 years) they found that friendship relationship quality did not moderate associations with victimisation and SDQ measured emotional problems. However, when considering cumulative risks, peer relationships have been shown to be a stronger mediator between school mobility and consequent later dropout above achievement and parental relationships (South, Haynie, & Bose, 2007).

6.7.2 Academic achievement: ARS Language and Literacy and Mathematical Thinking

Child sex

Child sex was the largest statistically significant predictor for the final ARS Language and Literacy model. However, it was not significant for the final ARS Mathematical Thinking model. The direction of the association indicated that girls were more likely to have higher teacher ratings for literacy skills. This is not unexpected as girls have been found to score higher on average in reading and literacy in previous research. A global study involving 15 year olds from 65 countries found gender gaps with females scoring higher in each country, although the gap differed depending on country (Fleishman, Hopstock, Pelczar, & Shelley, 2010).

Using ECLS-K data, and a sample of 7075, Robinson and Lubienski (2011) looked at ARS teacher ratings for reading and maths from kindergarten through to eighth grade and also compared these to child assessment measures. They found that for literacy, girls did start kindergarten with higher levels of proficiency and that gaps remained. Teachers also rated girls as higher on the ARS measure. In contrast, there was no overall gender gap for direct measures of maths at kindergarten. Over time a gender gap emerged favouring boys, however, teachers still tended to rate girls higher. Overall, these findings highlight that a gap in favour of girls for ARS Language and Literacy ratings would be expected.

Child age

Child age was a statistically significant predictor for both the ARS Language and Literacy and Mathematical Thinking models, with ARS ratings increasing with child age. This result could be a reflection of older children having mastered more of the skills listed in the items for the ARS Language and Literacy and ARS Mathematical Thinking scales. Academic advantages for older children have been found at kindergarten entry in a study by Stipek and Byler (2001) however by third grade these effects were no longer evident. Another possible contributing factor is that teachers' perceptions of their relationships with children have been shown to be linked to child age (Saft & Pianta, 2001) and this in turn can also contribute to how teachers rate students on academic performance (Hughes, Gleason, & Zhang, 2005).

Child Aboriginal or Torres-Strait Islander status

Child Aboriginal or Torres-Strait Islander status was also statistically significant as a predictor for the outcome variables of ARS Language and Literacy and Mathematical Thinking, with the direction of the relationship indicating that children with Indigenous status were more likely to receive lower teacher ratings. This was not unexpected given gaps in educational outcomes for Indigenous children have previously been identified. For example, a comparison of benchmark testing across Australia in 2002 found that for Year 5 Indigenous students 68% for reading, 76% for writing and 66% for numeracy, compared with rates for all students of 89% for reading, 94% for writing and 90% for numeracy (Trewin & Madden, 2005).

Child language background other than English status

Both ARS Language and Literacy and Mathematical Thinking also had child language background other than English status as a significant predictor, with the direction of the association indicating that children with language background other than English status were more likely to have higher teacher ratings. An Australian study examining school achievement for Anglo, Aboriginal, Asian and Lebanese students found group differences (McInerney, 2008). The Asian group performed significantly better on mathematics, while the Lebanese group achieved lower results. For English, the Asian and Anglo group performed significantly better while the Lebanese group was again the lowest ranking. This suggests that underlying cultural differences may contribute to differing child trajectories.

These may also be a result of economic circumstances, for example, Lebanese students in Australia have been found to be more likely to live in households with less economic resources compared to other immigrant groups (Katz & Redmond, 2010).

Family structure at Wave 1

Although cumulative family instability did not reach statistical significance as a predictor in the current models for ARS Language and Literacy or Mathematical Thinking, the variable measuring single mother status at Wave 1 in 2004 was significant for the ARS Language and Literacy model. This was not the case for re-partnered mothers, and neither variable was statistically significant for the ARS Mathematical Thinking models. The direction of association indicated that children with single mothers at Wave 1 were more likely to have lower ARS Language and Literacy scores.

This is supported by findings of an international study which examined literacy achievement for 15 year olds across eighteen countries (Hampden-Thompson, 2009). Data from the Program for International Student Assessment was used to compare literacy achievement for children in single-mother households and two-parent households. In fifteen of these countries, including Australia, children in single-mother households had lower reading literacy mean scores than those in two-parent households. Ten of these reached statistical significance. The largest gap was found in the USA. Results for Australia also indicated that a significant amount of the gap could be accounted for by the inclusion of economic inputs (parent occupation, education, number of books in home).

A study by Lansford et al. (2006) which used data from kindergarten through to Grade 10 for 356 children also found differences in academic outcomes for children whose parents had separated and those with stable two-parent households. Children remaining in stable two-parent families had higher achievement trajectories. Differences in the achievement gap were smaller for children whose parents separated early (during kindergarten to Grade 5) compared to those that experienced parental separation later (Grade 6 to 10). It should be noted that for the current research the family structure variable at Wave 1 does not take into account previous transitions, therefore, some children will potentially have been born into a stable single-mother family, while others may have experienced multiple family changes at the Wave 1 starting point.

Mother education

Mother education was the highest statistically significant predictor of ARS Mathematical Thinking scores, and the second highest for Language and Literacy scores, with higher levels of education being associated with higher child ratings. Low levels of mother education have been shown to have negative effects on the reading, math and vocabulary achievement of children in the first grade (Sektan, McClelland, Acock, & Morrison, 2010). Maternal education has also been found to moderate the association between child achievement and maternal depression, with lower achievement of children with mothers with depression only predicted if mothers did not have higher education (Augustine & Crosnoe, 2010). This highlights the protective effects that maternal education may provide in order to foster positive child academic trajectories.

Davis-Kean (2005) examined the influence of parent education and family income on child achievement. A sample of 868 children (8-12years) was used consisting of 49% European Americans and 47% African Americans. Structural Equation Models (SEM) found indirect effects for the African American group, while for the European American group parents' education had both direct and indirect effects on child academic achievement. This shows that effects may differ across cultural groups, however mothers' education is an important predictor of child academic achievement.

Household income

Household income was significant in both the ARS Language and Literacy and Mathematical Thinking models, with higher levels of income being associated with higher ratings of achievement. Low family income has been previously found to have significant negative effects on the academic outcomes of first graders (Sektan et al., 2010). Income has been found to potentially have a stronger impact on child outcomes above and beyond family structure. Arc (2007) also considered differences within low income family groups and found that academic scores did not significantly correlate with family living arrangements.

Similar results were also found by Foster and Kalil (2007) who found that children from economically disadvantaged backgrounds did not vary in cognitive and behavioural outcomes despite either family structure or ethnicity. Findings from Walker and Zhu (2011) also highlight this. They found when examining differing effects of loss of income versus loss of a parent on child academic achievement that while parental separation had strong

effects, when income was included in analyses the parental separation was no longer significant although income was.

Family instability

Family instability was not statistically significant in either ARS model but will be discussed given the focus on family structure change. Beta scores for the ARS Language and Literacy ($\beta=-.014$), and ARS Mathematical Thinking ($\beta=-.013$) scales showed higher levels of instability were associated with lower ARS ratings. These results are similar to findings by Carlson and Corcoran (2001) who examined effects of family structure and transitions on child cognitive and behavioural outcomes for a sample of 1809 children aged 7-10 years. While they found effects for initial family structure, most of these were reduced to insignificant once other factors, such as maternal mental health, test scores and income, were accounted for. In addition, they did not find support that children experiencing family instability via multiple maternal relationship transitions had poorer outcomes than those with one or no transitions from initial family type. The stable single parent families that consistently stayed single had the lowest outcome scores. Ackerman et al. (2002) also found for children in Year 3, that chronic relationship instability did not predict academic outcomes, although it did impact child adjustment.

It is possible that the negative effects of family instability may not be clearly evident until children are older. Heard (2007) used a sample of 11318 adolescents to examine the effect that family structure, and the timing and number of transitions had on student grade point average (GPA), college expectation and suspension/expulsion. Family transitions were retrospectively tracked from birth. Findings indicated that each year spent with a cohabiting mother-stepfather, single-father, single-mother or nonparent family resulted in decreases to GPA. Also there was evidence that family transitions that occurred in early childhood had effects on adolescent GPA decreases. Potentially for the current study, this suggests that while significant effects are not currently evident on academic outcomes, these may become emerge as children reach higher levels of schooling.

Social and economic instability

Social and economic instability was a statistically significant predictor for both the ARS Language and Literacy and Mathematical Thinking models, with higher levels of instability being associated with lower teacher ratings of child ARS outcomes. These results

support findings from other research that has examined the impact of cumulative risk factors on child outcomes. Morales and Guerra (2006) found that three different cumulative risk indices, covering school, family and neighbourhood factors, were associated with lower reading and math achievement for a sample of 2745 children (6-11 years), and that cumulative stress was related to concurrent and longitudinal increases in problems.

Another study using a multiple risk score consisting of 10 risk factors created when the 145 sample children were 4 years old found that high-risk children had lower academic results across schooling until 12th grade (Gutman, Sameroff, & Cole, 2003). Aro et al. (2009) also found that cumulative risk resulted children having higher number of risks being more likely to have poorer academic, cognitive and social outcomes at 8-9 years of age. They did also note however, that when individual risk variable effects were controlled for, the cumulative risk measure did not result in higher effects beyond the individual risk factors.

Parent mental health

The K6 measure of maternal mental health was a statistically significant predictor in both the ARS Language and Literacy ($\beta = -.041$) and Mathematical Thinking ($\beta = -.036$) models, with higher levels of maternal mental health problems contributing to lower levels of child ARS ratings. In contrast to the current findings, a study using growth curve analysis on child elementary school trajectories in order to examine associations between mother education, depression and child outcomes found that maternal depression only predicted lower academic achievement for children that had mothers with lower levels of education (Augustine & Crosnoe, 2010). It should be noted that these effects were found before the transition to school, and they diminished once children established connections with teachers and peers.

A Canadian study from Letourneau, Tramonte, and Willms (2013) looked at child trajectories until age 11 years and the effects of maternal depression on child outcomes. They found that the impact of early symptoms on child vocabulary and inattention at 4-5 years of age was partially explained by parenting and family functioning. However, overall they determined that maternal depression was a strong predictor of child outcomes, independent of the duration or timing. Differing samples were used for each analysis which may have impacted on results. Regardless, these studies highlight as does the current research that higher levels of maternal mental health problems are associated with poorer child academic achievement.

Family cohesion

The measure for family cohesion was statistically significant as a predictor for both the ARS Language and Literacy and Mathematical Thinking models, with higher family cohesion associated with more positive ARS ratings. Family cohesion has been found to be significantly associated with student academic engagement beyond negative effects of socialising with risky peers for a high-risk sample of 311 African-Americans aged 11-20 years (Stanard, Belgrave, Corneille, Wilson, & Owens, 2010). This is potentially due to interactions between family cohesion and increased levels of parental monitoring which then leads to higher levels of school engagement from students (Annuziata, Hogue, Faw, & Liddle, 2006).

Child-parent relationship

The PIML Parent score was a significant predictor for the ARS Language and Literacy model. It did not reach significance for the ARS Mathematical Thinking model ($\beta = -.012$). Positive child perceptions of the parent relationship were associated with higher ratings on the ARS scores. The quality of mother-child interactions has been previously found to contribute unique variance to child academic and social outcomes over other demographic variables (Morrison et al., 2003). Warm mother-child relationships have also been shown to contribute to child literacy and mathematics academic outcomes, as a moderator on family involvement in a child's education (Simpkins et al., 2006). Additional analyses however also identified that the effect was not significant for mathematics outcomes if the mother was a single parent.

Child-teacher relationship

The PIML teacher score was statistically significant for both the ARS Language and Literacy and ARS Mathematical Thinking models, with positive PIML scores being associated with higher ARS outcomes. This supports findings from previous research. One study examining associations between externalising behaviour, teacher-child relationships and academic outcomes found that poor teacher-student relationship quality was associated with lower academic ratings. It should however be noted that both of these measures were teacher rated (Fowler et al., 2008). Similarly, Maldonado-Carreño and Votruba-Drzal (2011) also found that teachers were more likely to rate children in elementary school higher on language, literacy and math skills if they had a positive relationship with the child.

Positive links between teacher-child relationship quality and child achievement have been found for children in preschool to third grade, along with buffering effects for insecure maternal attachment, and mediation of effects of quality of teacher relationships on achievement via child and teacher classroom behaviours (O'Connor & McCartney, 2007). Positive teacher-child relationships have also been shown to provide protective effects for young children in second grade at risk from previous low task accuracy, with positive relationships predicting better outcomes on future achievement (Liew, Chen, & Hughes, 2010).

Child-peer relationship

The Peer Relations score was statistically significant for both ARS Language and Literacy and Mathematical Thinking models, and a larger contributor than both the PIML Teacher and PIML Parent scores. Results indicated that positive views of peer relationships were associated with higher ARS ratings. The direction of this association is supported by research by Liem and Martin (2011). Using an Australian sample of 1436 students in Year 7-12, SEM was used to determine the role student perceptions of relationships with both same-sex and opposite-sex peers had in relation to academic outcomes and self-esteem. Student perceptions of same-sex peer relationships were found to have both direct and indirect positive associations with academic outcomes and self-esteem, while opposite-sex relationship perception was linked directly and indirectly to self-esteem, but only indirectly to academic outcomes. School engagement mediated effects.

Child perceptions of positive peer relationships have been shown to lead to higher levels of school engagement (Furrer & Skinner, 2003). This process is thought to involve positive peer relationships that provide a positive influence on child motivational beliefs about school which, in turn, lead to increased school engagement (Martin & Dowson, 2009). The perceptions that children hold about peer relationships are seen as being essential in order to understand processes of engagement and achievement (Ryan, 2001). The significance that child perceptions of peer relationships held in the current study for teacher ratings of academic skills would also suggest this.

As a whole, the findings for Study 3 provide support for ecological views of child development, given that factors across child, family and household characteristics all contributed to the prediction of child outcomes, along with the relationships and support fostered within these contexts. This will be discussed further in the next chapter. This also

supports suggestions that rather than focusing only on divorce or separation of parents, other associated changes also need to be considered (Flowerdew & Neale, 2003). Also, the protective potential of positive relationships with parents, peers and teachers should not be underestimated. These results have shown that despite children having had experiences of change across waves, positive relationships at Wave 4 could provide a potential buffer against negative outcomes.

6.8 Conclusion

This chapter has presented Study 3 which examined the impact that family, social and economic instability had on child adjustment and academic achievement. In addition, it also explored the effects that child and family characteristics and the quality of relationships with parents, peers and teachers had on behavioural and academic outcomes. The research findings indicated that the included characteristics and experiences from home and school settings significantly contributed to the prediction of child adjustment and achievement outcomes.

The overall variances explained by the models were relatively low ranging from 15.7% for SDQ Conduct problems, 10.0% for SDQ Emotional symptoms, 11.4% for ARS Language and Literacy and only 9.8% for ARS Mathematical Thinking scores. This suggests that additional factors not accounted for in the models also contribute to these outcomes. For example, the inclusion of child temperament would potentially increase the percent of explained variance given that it was a significant predictor for Ruschena, Prior, Sanson and Smart (2005) as outlined in Appendix A. Despite this, the results have provided insight into key variables which contribute to child adjustment and achievement.

Child attributes were found to be important, in particular sex for conduct problems, and literacy. The age of children was associated with higher ARS scores. Child Aboriginal or Torres-Strait Islander status left children more at risk across all four examined outcomes, highlighting the higher level of risk of poorer outcomes for these children. Having a language background other than English status in comparison was associated with higher ratings for the academic outcomes.

Mother and household characteristics also emerged as being important predictors. Children whose mothers were single or re-partnered at Wave 1 were more likely to have conduct problems compared to mothers partnered with biological fathers. Children with single mothers also had associations with higher emotional problems and lower literacy

levels. Maternal education was also significant especially for child academic outcomes with higher levels of maternal education being the largest predictor of mathematical ratings and second highest for literacy ratings. Lower levels of maternal education were associated with conduct problems. Lower levels of household income at Wave 1 were also associated with higher levels of conduct problems, while higher levels of income were positively associated with academic outcomes.

The continuity and change experienced by children as measured by the instability variables also provided important insight as to specific effects on child outcomes. The family instability measure did not emerge as a significant predictor for any of the examined outcomes, although contribution to the model indicated higher family instability was associated with lower outcome ratings. The social and economic instability measure however was a significant predictor across all four outcomes, indicating that higher instability was associated with lower adjustment and achievement.

Home and school support variables also emerged as being associated with child outcomes. Maternal psychological distress levels were significant with higher maternal distress associated with lower child adjustment and achievement. While not significant for emotional symptoms, family cohesion was significant for all other outcomes. Child reports of their relationship with parents were also significant for both adjustment outcomes, as well as for teacher rated literacy skills. Similarly the child reports of relationships with peers and teachers were also significant predictors. Peer relations were significant for all outcomes, while teacher relationships were significant for conduct problems, and both academic outcomes. These findings indicate that examining multiple aspects of children's lives and experiences of continuity and change is needed in order to further understand how to provide appropriate support in order to foster positive outcomes.

The following chapter will provide further discussion on this area, and others by presenting the final conclusions of the current research. In order to do so, a brief review of the research findings from each of the three completed studies will initially be presented. These will touch on the key findings of each study, before the implications of the research findings in relation to theory are considered. Following this the potential implications for policy and practice will be presented, with consideration given to a broad range of contexts. The limitations of the research will then also be outlined, followed by suggestions for possible directions of further research before the chapter concludes.

CHAPTER 7: DISCUSSION AND CONCLUSIONS

7.1 Introduction

The current program of research investigated Australian children's experiences of family transitions across middle childhood for children residing with mothers. It considered associated changes that might occur for residential and school environments and the quality of children's relationships with parents, teachers, and peers. Using regression analyses, the research examined whether family structure at age 4-5 predicted child adjustment and academic achievement at age 10-11 years, while taking account of other ecological factors, including the number of changes in family form, residential, school, and family income changes. The research adds to existing knowledge about risk and protective factors that may affect child outcomes when children experience family transitions. The analyses used data from *Growing Up In Australia: The Longitudinal Study of Australian Children* (LSAC).

The diversity of family structures in which children reside has increased across recent decades. While higher numbers of children now live in other family types, families with two biological parents are still the norm for most children (Coontz, 2004; Saggars & Sims, 2004). With the increases in family divorce and separation, since the 1970s, the impact that family structure had on child outcomes was investigated. More recently there has been recognition that multiple family transitions, through dissolutions and reformations of partnerships by parents, may be more detrimental to child outcomes than the structure of the family in which a child resides. This proposition is an important focus of current research on the effects of family structure and family transitions on children's wellbeing. In international research, there is broad consensus that the outcomes for children are more positive in stable, low-conflict, two-parent families compared to outcomes for children in other family forms (Amato, 2005; McLanahan, Donahue, & Haskins, 2005).

There has been less research conducted within an Australian context, compared to other countries such as the United States, about the short term and long term effects of family on child outcomes (de Vaus & Gray, 2003). The current program of research has sought to address this gap by providing insight into the family structure and transition experiences of Australian children, along with investigation of influencing variables that may mediate outcomes, including continuity and change across home and school settings.

This chapter provides a review of the findings of the current research. The research findings for each study are presented in turn, before the theoretical implications of the findings are outlined; and implications for both policy and educational practice. Limitations of the current research are discussed which lead to recommendations for future research.

7.2 Review of Research Findings

Three studies were conducted for this research and the findings are summarised in this section. The family structure groups constructed for this research and used across the three studies are: families with two biological parents (married or cohabitating), families in which the mother has re-partnered, and single parent families which are headed by the child's mother. These are measured across each wave of data. The analyses incorporated child and family characteristics, change variables on family transitions, family income, residential and school change, and child relationships variables with parents, teachers and peers.

Study 1 reported descriptive analyses of family demographics and family transitions through middle childhood for the families and children in the Kindergarten Cohort of the LSAC study, across the six year period from Wave 1 to Wave 4 data collection. *Study 2* reported descriptive analyses for a range of ecological factors that are potential mediating variables, influencing relationships between family structure, family transitions, and child outcomes. These variables include residential and school changes, the quality of maternal mental health, and the quality of children's relationships, as reported by the child, with parents, teachers, and peers. *Study 3* examined predictive models using multiple regression analyses for four outcome variables related to child adjustment and achievement.

7.2.1 Family demographics and family transitions through middle childhood

The aim of Study 1 was to identify the level of change through family transitions that occurred for Australian children across middle childhood. It also examined differences on socio-demographic variables for different family structural variables and investigated how these changed over time. Key differences between the characteristics for families from the three family groups of interest in this research were found. The family groups of interest were families with two biological parents, families with re-partnered mothers, and families headed by a single mother.

Demographic differences between the three family groups were found for age and education. At Wave 1 when children were 4-5 years old, the mothers in single-parent families

were more likely to be younger with lower levels of educational attainment, followed by mothers in re-partnered families. Mothers in two-biological-parent families were older and were more likely to have finished Year 12 at school and to hold university qualifications. This was the case at each time point (Wave 2 and Wave 3 data collections), which could be expected, but as the composition of the family groups changed slightly, the measured differences on the variables of age and education did decrease marginally, as women from the initial two-biological-parent families separated from partners and became members of other family groups. Biological fathers in the two-parent families were also on average older with higher educational attainment compared to social fathers of families in the other two family groups that were of interest.

These demographic trends reflect previous Australian findings from different datasets which have also found that single mothers have lower levels of education compared to those mothers in other family structures (de Vaus, 2004). This finding suggests that maternal education has an important moderating or mediating association with child outcomes (Davis-Kean, 2005) because of its contribution to the quality of home environments that children may experience, especially prior to school (Magnuson, 2007). Maternal education is also known to differentiate outcomes for children when outcomes between low to high economic households are compared (Acs, 2007).

Economic disadvantage faced by children in single-mother families is well established in the research literature (ABS, 2007; de Vaus, 2004; Martin, 2006). This was evident in the findings of this study, in measured variables on employment status and income. At Wave 1, single mothers were less likely to be employed compared to mothers in two-parent families. However, by Wave 4 when children were 10-11 years old, mothers in single parent families had similar rates of employment to the mothers in the other family groups. Additionally, at Wave 4, single mothers had higher weekly income than the mothers in the other family groups. However, in spite of this, they still had lower overall household incomes than the other family groups because there was only one income earner.

Re-partnered-mother families also had lower household incomes, overall, compared with families with two biological parents. This related to differences between biological and social fathers. Biological fathers were older, with higher levels of education than social fathers, which potentially increased biological fathers' relative earning potential. These demographic differences across family groups is in line with explanations of selection effects for partners that operate for different family structures, for example that families with two

biological parents who are married are likely to have more stable marriages (Brown, 2010; Hofferth, 2005; Sweeny, 2010).

Cultural differences between family groups were also evident. Mothers with Aboriginal or Torres-Strait Islander status were more likely to be single, in line with findings by de Vaus (2004). Children whose mothers spoke languages other than English (LBOTE status) were more likely to be living in two-biological-parent households. This latter difference suggests that cultural and ethnic differences affect the trajectories of family structure given cultural and religious values (Blau & van der Klaauw, 2008; Social Policy Justice Group, 2006).

Findings showed that, while some children did experience a family transition, very few had multiple transitions across the six year period which the data represented from when children were 4-5 years until 10-11 years. It also indicated lower rates of family transitions than those found in U.S. family research (e.g., Cavanagh, Schiller, & Riegle-Crumb, 2006). Children who were in single-mother households at Wave 1 were more likely to experience family transitions across the six year period compared to those in re-partnered or two-biological-parent families. These results also reflect previous research findings from the United Kingdom and the United States (Kiernan, McLanahan, Holmes, & Wright, 2011; Osborne & McLanahan, 2007).

Overall the findings from Study 1 indicated that children who were initially in single or re-partnered households at Wave 1 were more likely to experience family transitions and were also more likely to be living in families with fewer family income and education resources compared to children living in more stable families with two-biological parents.

7.2.2 Residential and school changes and relationship support at home and school

Study 2 examined the extent to which family structure and transitions were associated with residential and school mobility for Australian children, across middle childhood. It also examined the quality of maternal mental health and the quality of relationships at home and school as reported by the child and if differences were evident in relation to family structure and transitions. Family structure differences were evident in relation to home and school mobility, for family factors of maternal mental health and family cohesion, as well as for the quality of relationship support at home and school perceived by the child, over time.

Highest rates of residential mobility were found for children living in re-partnered families. Children in families headed by single mothers also had higher residential mobility in comparison to families with two biological parents. This aligns with previous research on residential mobility for adults who change relationship status because of separation or re-partnering (Feijten & van Ham, 2007). ABS (2010) data indicates higher rates of residential mobility for single parents compared to couple families. It has been suggested that this is because single parent households are more likely to be renting their home (Ersing, Stuphen, & Loeffler, 2009). The rate of residential mobility decreased across all family groups in this six year focus period. It was possible that families moved less because children were more settled into their schools or it could relate to increased levels of home ownership, if families bought homes as children began school. ABS (2010) data has shown that there is a decrease in residential mobility for families as children get older.

Higher rates of school mobility were evident for children in re-partnered families compared to those in the two other family groups and for children in families headed by a single mother compared to children residing with both biological parents. These findings align with U.S. research (e.g., Fomby & Sennott, 2013) which shows that by family structure there are lower rates of school change for children who live in two parent families compared with children in other family types. The most common reason reported by the LSAC parents, across waves for school changes, was that the school change was because of a residential move.

In comparing levels of maternal mental health across family groups, higher levels of psychological distress as measured by the K6 at Wave 4 were more likely to be reported by single mothers than mothers in any other family group across Waves. This is a consistent finding across previous research, including the findings by Osborne, Berger and Magnuson (2012) using data from the *Fragile Families and Child Wellbeing Study*. This remains a critical area for family support and intervention as children's development is compromised in particular by maternal depression (Hammen, 2003; Herwig, Wirtz, & Bengel, 2004) as it is associated with more negative parenting (Lovejoy, Graczyk, O'Hare, & Neuman, 2000).

Children rated the quality of their relationships with parents on a child-parent relationship scale at Wave 4. Lower levels of parental relationship quality were reported by children in families headed by single mothers and for re-partnered families in comparison to the ratings of the child-parent relationship for children residing with two biological parents. These findings lend support to previous work which found that parental separation

contributed to lower levels of attachment and relationship quality with parents (Kalmijn, 2012; Woodward, Fergusson, & Belsky, 2000). This means that there are potentially lower levels of home support for children and a level of possible fragility in light of attachment theories that hold that attachment between parent and child is very important to child wellbeing and child outcomes.

The support afforded to children in school contexts, through child-reported measures on the child-teacher relationship and child-peer relationship at Wave 4 when children were 10-11 years also revealed differences across the family groups constructed for this research. Lower quality relationships with teachers were more likely to be reported by both children in re-partnered families and single-parent families compared to those living in two-biological-parent families. These findings have important implications given that positive teacher-child relationships provide protective effects for children who may be at risk (Baker, 2006; O’Conner & McCartner, 2007). In addition, children’s positive relationships with teachers contribute to school engagement which makes it more likely that children will achieve at school and also complete school (Furrer & Skinner, 2003). Teacher support has been found to strongly influence attitudes to school for children with high levels of school mobility (Gruman, Harachi, Abbott, Catalano, & Fleming, 2008). Teacher-child relationships may hold particular importance for children who experience one or more family transitions.

Lower quality relationships with peers were also more likely to be reported by children in re-partnered families and single parent families, although only differences between families with single mothers and families with two biological parents were statistically significant. Higher levels of school and residential mobility can cause disruptions in relationships with peers (Reynolds, Chen, & Herbers, 2009; South & Haynie, 2004). Peer acceptance is important for child adjustment with links to internalising and externalising behaviours. Children’s perceptions of their own self-worth are also instrumental in how they are received and perceived by peers (Landsford et al., 2006). Fostering positive peer relationships could therefore result in beneficial effects on child wellbeing.

The findings of Study 2, which look at key ecological variables at Wave 4, showed that children in re-partnered families and single-parent families were much more likely to experience residential and school change. These family groups also had lower levels of child-reported relationship quality with parents, teachers, and peers. Children in single-parent families also had mothers who reported higher levels of psychological distress. Positive social support through parent, teacher and peer relationships are an important resource for

children and provide protective effects for children who face multiple risks through cumulative changes in their everyday life. These findings are important, especially when reported by the child. If supportive relationships are available for children in particular family groups or whose family structure changes, then these are likely to provide positive benefits if there are positive relationship experiences by the children with parents, teachers, and peers. Awareness by adults of the importance of these relationships to behavioural and learning outcomes at school is a significant finding of this research that has implications for practitioners who work with families.

7.2.3 Ecological factors impacting on children's adjustment and achievement

Study 3 investigated the impact of family structure, family transitions, residential and school mobility, home and school support on children's adjustment and academic achievement at 10-11 years. Four hierarchical regression models were developed with common sets of predictors to examine their impact on children's adjustment (conduct and emotional problems) and academic achievement (language and literacy and mathematical thinking). Hierarchical regression models were developed to examine the contribution of various blocks of variables.

Variables making important contributions to the full regression models

Child adjustment - SDQ Conduct problems: Variables making the strongest contribution to the higher levels of conduct problems reported by the child's teacher at 10-11 years were: single parent family status at Wave 1 (with two-biological-parent families as the reference group); higher levels of social and economic changes (family income, residential and school changes); child sex - boys; Aboriginal or Torres-Strait Islander status; lower scores for family cohesion as reported by the mother; and lower scores for peer relationship quality and teacher relationship quality as reported by the child. Lower maternal education and higher scores for maternal psychological distress were also influential in the full model, predicting higher levels of conduct problems. Family instability as measured by number of changes across the six year data period did not make a contribution, potentially because there were relatively low levels of change across the period.

Child adjustment – SDQ Emotional problems: Variables making the strongest contribution to higher levels of emotional problems reported by the child's teacher at 10-11 years were: child's Aboriginal or Torres-Strait Islander status; higher scores for maternal

psychological distress measured on the K6; and lower scores on the peer relationship quality as reported by the child. Children in single parent families were more likely than children in two parent families to have more emotional problems and greater social and economic instability across the data period, with this being significant in the full regression model.

Child achievement - ARS Language and Literacy: Variables making the strongest contribution to higher competence in language and literacy at 10-11 years were higher levels of household income and maternal education; child sex – girls; not having Aboriginal or Torres-Strait Islander status; the quality of peer relationships; and quality of teacher relationship. Single parent status in comparison to two-parent family status made it more likely that children would have lower scores on the ARS Language and Literacy scale. Having less social and economic instability was associated with higher scores for language and literacy.

Child achievement - ARS Mathematical Thinking: Variables making the strongest contribution to higher competence in mathematical thinking at 10-11 years were again higher levels of household income and maternal education; having a language background other than English status but not Aboriginal or Torres-Strait Islander status; and the quality of peer relationships. Lower change scores for social and economic instability also indicated higher scores for mathematical thinking.

Across these four regression models, family structure is implicated in predicting children's outcomes, especially for children living in a single parent family at Wave 1 in comparison to two parent families at Wave 1. As previously noted however, family instability across the six year period was not significant. Combined change scores for higher levels of social (home and school moves) and economic instability was also predictive of more negative developmental outcomes.

The contribution of child characteristics to developmental outcomes

Sex of child was a significant contributor for SDQ Conduct Problems with boys being more likely to have higher ratings which supported previous findings (Ackerman, Brown, D'Eramo, & Izard, 2002; Hawes & Dadds, 2004; Matsuishi et al., 2007). Child sex was also significant for ARS Language and Literacy scores with girls being more likely to have higher ratings. This is line findings from previous research (Fleishman, Hopstock, Pelczar & Shelley, 2010; Robinson & Lubienski, 2011). Child age was also significant for higher

ratings of both academic outcomes, potentially simply revealing higher levels of mastery over time.

Child Aboriginal or Torres-Strait Islander status was a significant predictor across all child outcomes examined. Having Aboriginal or Torres-Strait Islander status meant children were more likely to be rated as having higher adjustment problems for both conduct and emotional symptoms. This supported findings from a previous Australian study which also found higher levels of SDQ difficulties for Indigenous children (Blair, Zubrick, & Cox, 2005). Children with Indigenous status were also more likely to be rated as having lower achievement in literacy and numeracy skills. These findings are supported by previous Australian data which indicated that gaps in education outcomes for Indigenous children exist across reading, writing and numeracy in comparison to non-Indigenous peers (Trewin & Madden, 2005).

In comparison, language background other than English status was associated with higher teacher ratings for achievement in both literacy and numeracy skills. Prior Australian research has found differences in child achievement based on child ethnicity (McInerney, 2008). Asian students were found to achieve higher in mathematics while Anglo and Asian students achieved higher in literacy compared to Aboriginal and Lebanese groups. This, along with the current findings, suggests that cultural or ethnic differences contribute to child developmental trajectories in very specific ways.

The contribution of family characteristics to developmental outcomes

Children whose mothers were single or re-partnered at this time point were more likely to have higher levels of conduct problems compared to those with two-parent families. In addition, those with single mothers at Wave 1 were also more likely to have higher emotional problems and lower literacy levels by Wave 4 compared to those with two-biological parents. These findings add support to previous research which have found associations between family structure and child adjustment (Lansford et al., 2006; Ryan & Claessens, 2012), and child achievement (Hampden-Thompson, 2009; Lansford et al., 2006) with children in single-mother families at greater risk for poorer outcomes.

The level of education mothers held at Wave 1 was also a significant predictor, particularly for academic outcomes. Associations were found with the SDQ Conduct problems with higher ratings of problems more likely with lower levels of mother education. Higher levels of SDQ difficulties have previously been associated with lower levels of

maternal education (McMunn, Nazroo, Marmot, Boreham, & Goodman, 2001). Mother education was a very important contributor to child academic outcomes being the largest predictor of child ARS Mathematical Thinking ratings and the second highest predictor of ARS Language and Literacy ratings. The influence of maternal education on child academic outcomes has also been established in previous research (Davis-Kean, 2005; Sektnan, McClelland, Acock & Morrison, 2010). This combined with the current results suggests it may be an important protective factor for child academic trajectories.

The level of household income at Wave 1 was also a significant predictor of child outcomes. Associations were found between lower levels of income and conduct problems, while higher levels of income contributed to the prediction of higher academic teacher ratings of both literacy and numeracy skills. Low income has been shown to have significant effects on child academic outcomes (Sektnan et al., 2010) with economic impacts potentially having greater influence than child family structure (Arc, 2007; Foster & Kalil, 2007; Walker & Zhu, 2011). The results of the current study also suggest that this may be the case.

The family instability measure, measuring number of family transitions, was not a significant predictor for any of the adjustment or achievement outcomes. This is likely because there were relatively low numbers of family transitions for this sample across this data period. This may be because the adverse effects of family instability emerge later, as other longitudinal research tracking children from birth to adolescence found that the effects of early family change were evident in high school academic performance (Heard, 2007).

In comparison the measure for social (residential and school change) and economic instability was a significant predictor across all four child outcomes. Higher levels of instability were associated with lower adjustment ratings and lower academic ratings. These findings lend support to other research which has examined cumulative risk across different domains and found adverse effects on child adjustment (Ackerman et al., 2002; Appleyard et al., 2005) and child achievement (Aro et al., 2009; Gutman et al., 2003; Morales & Guerra, 2006). This could be because more children experienced social and economic changes than experienced family instability, as shown in Table 6.1.

The contribution of home and of school support to developmental outcomes

Factors relating to home support also emerged as important for child outcomes. Maternal psychological distress levels were significant for all outcomes with higher maternal distress associated with lower child adjustment and achievement. Maternal mental health has

previously been linked to poorer child adjustment (Herwig et al., 2004; Munson, McMahon & Spieker, 2001) and child achievement (Augustine & Crosnoe, 2010). Family cohesion was also significant for conduct problems and for both academic outcomes, which lends support to research highlighting that family functioning can serve as a protective factor for child adjustment (Gabalda, Thompson, & Kaslow, 2010), and that family cohesion can contribute to student academic engagement (Stanard, Belgrave, Corneille, Wilson & Owens, 2010).

Child reports of relationships with parents were also significant for both adjustment outcomes and for literacy skills. The positive benefits of quality relationships with mothers on child outcomes has been previously established (Frampton, Jenkins & Dunn, 2010; Morrison, Rimm-Kauffman & Pianta, 2003; Simpkins, Weiss, McCartney, Kreider & Dearing, 2006). The current results highlight that home support, family cohesion and parental relationship quality do significantly contribute to children's development trajectories with the potential to contribute to additional risk or additional support.

The included school support variables focusing on child reports of relationship quality with teachers and peers also emerged as important predictors for child outcomes. Child reports of teacher relationship quality were significantly associated with conduct problems, and were also significant for both academic outcomes. Child reports of peer relationships were significant for all outcomes, across adjustment and academic achievement, although it revealed higher contributions to child scores on emotional adjustment. These findings are important given the protective effects that quality teacher-child relationships can provide to children at risk (Liew, Chen & Hughes, 2010; O'Connor & McCartney, 2007). Peer relationships are also an important part of child adjustment (Klima & Repetti, 2008; Verschueren, Doumen, & Buyse, 2012). The current findings add support to the importance relationships may hold in fostering positive outcomes for children.

Overall, the findings of Study 3 provide important insight into mechanisms in which family structure and transitions impact Australian children during the ages of 4 – 10 years. For the current research, being in a single mother household at Wave 1 was a significant predictor of child outcomes at Wave 4, whereas subsequent family instability was not. This suggests that earlier life experiences or family structure transitions may have longer lasting effects than later transitions. Alternatively, the effects of subsequent transitions may not emerge until later in adolescence. The effects of cumulative social and economic transitions were however evident with higher levels of instability being associated with poorer child outcomes. However, also evident from results was the importance of children's current

circumstances in regards to the quality of relationships with parents, teachers and peers as these provided protective effects on child outcomes. These findings raise important areas for future research, which by utilising more sophisticated analyses, could shed further light on the ways in which these mechanisms operate. The findings for Study 3 as a whole also provide support for ecological views of child development, as factors across child, family and household characteristics, and support and relationships experienced, across home and school contexts all contributed to the prediction of child outcomes. The findings also support conclusions made by Flowerdew and Neale (2003) who noted that focus on the effects of divorce and separation needed to broaden to include consideration of other associated changes. Their research, like the current study, found that change across different domains of children's lives contributed to outcomes. Studies like these allow for better understandings of the risk and resilience trajectories of children facing multiple changes, which is vital if appropriate policy and educational practice that adequately support children are to be developed.

7.3 Theoretical Implications

The results of the current research provide support for existing theoretical ideas relating to family structure, change and continuity for children and associated factors. Descriptive results from the first study determined demographic differences in characteristics of mothers in different types of families, along with differences between biological and social fathers. These were clearly evident in relation to parent education with mothers in two biological parent households being more likely to have finished high school and more likely to hold a university degree compared to re-partnered or single mothers. Single mothers were the least likely to have finished high school or hold a university qualification out of all groups. Likewise, biological fathers were more likely than social fathers to have finished high school and hold university qualifications. These findings add support to theories around selection effects.

Possible selection effects were also seen to operate since biological parents who had and maintained stable family structure had higher income and education than mothers in single parent families and mothers and partners in re-partnered families, as similarly noted in the US family research (Brown, 2010; Hofferth, 2005). This can include personal attributes, resources and environmental factors which contribute to more stable relationships which in turn lead to better child adjustment. For example, selection effects for marriage have been

found which indicated that highly educated couples were more likely to marry compared to less educated couples (Thomas & Sawhill, 2005). While marriage was not the focus in the current research, findings still indicate a selection effect process is evident as differences in maternal education for mothers in relationships with biological fathers remained constant over time. Tracking children from birth would enable further understandings of the contribution pre existing selection effects may play on the parental relationship trajectories of Australian children.

Some tentative links from the findings can also be made in relation to attachment theories (Bowlby, 1982). The development of early relationships are viewed as being critical in attachment theories, as these establish internal models of attachment in relationships for children (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002) which can have long lasting implications. The internal models of attachment formed by children are influenced by parent-child interactions, which in turn contribute to children's ability to form and maintain positive relationships with others (Colwell & Lindsey, 2003).

This includes relationships with other adults, such as teachers (Howes, 2000; Stuhlman & Pianta, 2002; Verschueren et al., 2012), which can provide important support to children within school contexts. However, previous research has suggested that children who experience a parental relationship separation may have lower levels of attachment as a result with effects still evident by adolescence (Woodward et al, 2000). Effects were stronger the younger children were at time of separation.

In the current research at age 4-5 years a proportion of children in the sample were already residing in single mothers or re-partnered households, indicating a likely prior parental separation in early childhood. In addition, some parental separations occurred during the course of data collection through to middle childhood. Also noted in the current research was the lower reported attachment to parents by children in single and re-partnered mother homes compared to those with two biological parents. Lower reports for these children were also evident in relation to teacher relationships and peer relationships. While this was not the focus of analyses and no definite conclusions can be drawn, these results still align with previous theories of attachment and the impact on relationship attachment from parental separation.

The findings of the current research also provide support to ecological perspectives of child development that account for interconnected systems which influence child

developmental trajectories (Bronfenbrenner, 1977). As previously discussed, the Contextual Systems Model (Pianta & Walsh, 1996) is an ecological model which also recognises that children develop within interconnected systems. Child, family and school attributes, relationships with others, and environments or systems are taken into account and recognised as contextual factors that contribute to development.

The findings from the current research show support for the ecological model developed to inform this research which was outlined in Chapter 2, Section 2.7.1. Results in Study 1 and Study 2 provided important contextual information around child and family factors. Both home and school contexts were considered, as well as the support received by children through relationships with parents, teachers and peers. Support for ecological theories of interconnected systems across contexts such as those proposed by Bronfenbrenner (1977, 1979), the Contextual Systems Model (Pianta & Walsh, 1996) and the Contextual Model of Family Stress (Boss, 2002) can be seen, for example, by the differences in child outcomes that were evident across family structure type. Children residing in single mother homes were more likely to have mothers that were less educated, have lower household income and reports of higher levels of maternal mental health problems. In addition to this, these children were also more likely to experience residential and school moves, and also reported lower levels of quality of relationships with parents, peers and teachers. These clear, differing patterns across family structure suggest that there are external and internal factors interacting across ecological contexts influencing families and the developmental trajectories of the children within them.

Results from Study 3 also indicated that a range of factors across interconnected systems, such as the home and school contexts noted in the Contextual Systems Model (Pianta & Walsh, 1996), contributed to the prediction of child outcomes across areas of adjustment and achievement. For example, for conduct problems, variables encompassing child and family characteristics, home and school support, and level of change in income, residence, and schools were all implicated in the prediction of child outcomes. The child's sex, language background other than English and Aboriginal or Torres-Strait Islander status, family structure and household income at Wave 1, maternal education, social and economic instability, mothers psychological distress, family cohesion and child reports of relationships with their parents, teachers and peers all contributed to the prediction of adjustment. As noted by Sepanski Whipple, Evans, Barry and Maxwell (2010), often educational reforms focus on trying to improve gaps in academic achievement by school based interventions, however, this

does not take into account the ecological contexts which contribute to underachievement, including family and community factors, and the cumulative risks and interactions across these domains.

The results from the current research support this and highlight that many factors across a range of contexts contribute to child developmental trajectories. This, in turn, suggests that effective policy or programmes that aim at fostering resilient outcomes for children at risk should consider multi-dimensional approaches that take account of multiple contextual factors. These results also highlight the importance that child relationships across these inter-connected contexts hold on developmental trajectories and child outcomes.

7.4 Implications for Policy and Practice

There are several implications for Australian policy and educational practice that have emerged from the findings of the current research. These are important given that there is comparatively little Australian research which has examined instability in the lives of young Australian children and tracked this across childhood development. The availability of the LSAC data is helping to address this, with its main purpose being to provide researchers with data that is able to inform Australian policies across a wide range of child developmental areas (Gray & Sanson, 2005; Sanson et al., 2004). The current research findings provide insight into family structure change, and multiple transitions across both home and school settings, relevant to family and educational policy.

The issue of family stability in children's lives has received policy attention across international contexts, often with a focus on the promotion of parental marriage in order to improve child outcomes. However research findings in recent years have determined that a wider scope for policy is needed (Brown, 2010). This has been supported by Acs (2007) who examined the benefits of marriage on child outcomes. While results indicated that children with stable married parents had more positive behaviour and cognition outcomes, it was also determined that mother's level of education significantly influenced child outcomes, across both low and high income families. Given the effect sizes for the benefits of married families were small Acs (2007) drew conclusions that a stronger focus on improving maternal education would provide better opportunities for effective policy interventions.

Lower levels of maternal education were found in the current research in single-mother households across each time point, followed by mothers in re-partnered households.

Parental education has been linked to child achievement (Davis-Kean, 2005), with increases in young mothers' educational attainment shown to improve child academic skills and the quality of home environments (Magnuson, 2007). The significant influences of maternal education on child outcomes have been shown across low to high income families (Acs, 2007). Significant differences of child psychological adjustment were found by McMunn et al. (2001) when examining the impact of family structures along with other ecological factors. Strong associations with mother's education levels were evident for children with single mothers. Children with mothers who held no qualification were five times more likely to have high SDQ total difficulties scores in comparison to those children whose mother held a university degree. Maternal education therefore is an important protective factor for children at risk. Other factors that emerged as significant were socio-economic factors including benefits and housing tenure. This highlights the ecological nature of child development, as lower levels of education of mothers, potentially holds implications for the availability of economic resources, especially when residing in a single mother-headed family.

When considering the economic disadvantages faced by single-parent families headed by mothers, it is important that policy initiatives are maintained that provide support for mothers to engage in further education, and through higher levels of education and skills, find jobs with higher remuneration. It is known from existing research that children in single-parent families face greater economic disadvantage compared to children in other family types (Thomas & Sawhill, 2005). The current findings highlight the income gap for single-mother homes when compared to both re-partnered mothers and families with two biological parents. Also, based on the current research findings which indicate large discrepancies in education levels held by women in differing family structure groups, Australian policy should strive to make educational pathways more accessible for women heading single-parent families. This may help reduce disadvantage by increasing opportunities for gaining more highly skilled jobs and better incomes.

In the United States, the effects of family structure, family income and public policy on indicators of child maltreatment were examined by Berger (2004) using data from the National Longitudinal Survey of Youth. Level of income was shown to contribute to the quality of the caregiving environment for both single-parent and re-partnered mother families. Conclusions in relation to U.S. policy were that higher employment rates for parents and higher levels of income support appeared to act as protective factors for children at risk of adverse outcomes.

Additionally, government policies relating to families have been shown to make a difference to child outcomes via international comparisons of fourteen European countries with particular attention paid to children residing in single-parent households (Hampden-Thompson & Suet-ling, 2005). Variations in child outcomes were found with countries that had stronger family and welfare policies having a smaller performance gap for children in single parent homes than those that did not. Countries that had a strong emphasis on family and social networks as providers of welfare and support for families also revealed positive results for children as opposed to countries that had weak family policy, low benefits, and social stigma of single parent families. This highlights the important influence that the government policy environment can have in relation to child outcomes and the provision of additional support for children in differing family structures.

When changes to government policy on social welfare support impacted on sole parent families, these reforms were criticised for increasing potential vulnerability to economic disadvantage (Summerfield, Young, Harman & Flatau, 2010). Australia has previously been noted as having better income support and welfare systems in comparison to the United States and some other developed countries. For example, the income and assets tests required for some benefits are seen as more generous in comparison to the means tests in other OECD countries (Gray & Stanton, 2002). Benefit reforms which had time-limits and increased financial incentives to encourage mothers back to work resulted in increased employment of mothers in the United States (Gray & Stanton, 2002). However the comparison to an Australian context resulted in recommendations that the Australian job market would make it difficult to find employment with the increased number of job seekers and that Australian community attitudes were more aligned with mothers with young children not being required to work (Gray & Stanton, 2002). The results of the current research clearly show that children in single-mother families are more likely to be financially disadvantaged, as well as more likely to experience other risk factors, such as high levels of maternal psychological distress, and increased residential and school mobility. This demonstrates the need for careful consideration of any government policy that may impact negatively on social or financial support relevant to children in different family structures given the compounded risks that they may face.

As shown in the current research, associated factors rather than family structure itself, may contribute significantly to child outcomes. For example, findings highlighted the increased rates of home mobility for children in re-partnered and single-mother families,

which in turn as part of the cumulative social and economic change risk factor examined, impacted on child outcomes. In the current research, home ownership or paying off a home was also more likely for families with two-biological parents, followed by re-partnered mothers, while single mothers were more likely to be renting.

Home ownership by parents has been linked to higher quality home environments, which, in turn, is associated with better cognitive and social outcomes for children. These effects remain even after controlling for demographic and economic characteristics (Haurin, 2002). Given the ecological interactions as noted above between single mothers' levels of education and lower incomes, home ownership may, understandably, be more difficult to achieve. As noted by Haurin (2002) home ownership policies could target rental households with children, rather than just first home buyers, and provide a pathway for single parents into homeownership. Policy also needs to ensure the availability of long term affordable rental properties for families who are unable to purchase homes. This may provide more stability for children across both home and school contexts. This is especially important given that a high rate of school change was due to coinciding residential change. Given the rise in home price, and increased rental prices over the last few decades there has remained a shortage of affordable housing in Australia (Disney, 2007). The results of the current research highlight the need for this issue on affordable housing should remain a social and economic policy consideration.

The current research therefore also highlights the importance of considering change beyond that of family structure, with other associated changes such as residential move, house move, and decreases in economic resources. As previously noted, Flowerdew and Neale (2003) also drew similar conclusions. They recognised that multiple changes across different contexts including family, home, school and social contexts require multi-pronged approaches to policy in order to adequately provide children with support. Similar conclusions can be drawn from the current research, and while broader social policy implications have been highlighted, these conclusions also have implications on the approach to educational policy and practice. Fostering additional awareness and effective policies and practices within school settings for children may also serve as a cost effective and easily assessable means of providing additional support for at risk children. It is important to develop teachers' awareness on how the quality of the teacher-child relationship and the quality of peer relationships are major influences for achieving better behavioural outcomes, as well as academic outcomes. Child difficulties are too easily excused by family

circumstances (blaming the family) when the support afforded by teachers may be an important means through which children will engage with school and learning.

Greater awareness of ecological factors that affect childhood development is needed by schools and teachers, in order that student at greater risk can be offered suitable support. As noted by Sepanski Whipple et al. (2010), risk factors beyond the control of schools also contribute to child outcomes therefore broader approaches to school reforms that take ecological factors into account would be beneficial. Being aware of the of the potential effect of cumulative risk on children and families is important so that educators can adequately provide relevant support which may include providing families with links to external support services (Stacks, 2005). This also requires that teachers foster good communication with parents and work in conjunction with them to create consistency of support for children across the school and home environments.

Children who experience a family structure change may be more likely than peers to experience a school change, however, this may occur for a variety of reasons presenting as either a singular or cumulative risk factor. The need for refined process for the support of mobile children in Australian schools has been previously noted by Henderson (2001). When conducting a case study of six highly mobile families, conclusions were drawn that schools need to develop strategies to help make transitions between schools stress-free for mobile students, in order to help foster equitable child outcomes.

Effective practices in place within schools have been shown to lead to favourable outcomes for highly mobile students. Research from the United States which focused on highly mobile students attending Department of Defence Education Activity (DoDEA)schools, determined that the high achievement of highly mobile families was not just due to characteristics of the student or their families, but also to the systems that were in place amongst DoDEA schools (Smrekar & Owens, 2003). There were strategies in place to support effective communication and co-ordination strategies across schools for children who were mobile due to parental redeployment. By having such systems in place, there was greater awareness and commitment to fostering positive outcomes for highly mobile students. Co-ordinated strategies across schools could also be beneficial for Australian children who are mobile because of family circumstances, especially if these children were exposed to other family risk factors.

One such means of additional support could be through greater teacher awareness of the need to foster positive relationships with peers and teachers when children transition into a new school. The results of the current research indicated slight differences in child reports of the quality of the relationships with teachers and peers, with those in single mother or re-partnered mother households being more likely to report lower quality relationships. This is of particular importance given that positive teacher-child relationships have been shown to have such a significant effect on child outcomes (Palmero, Hanish, Martin, Fabes, & Reiser, 2007; Pianta & Stuhlman, 2004). Peer relationships have also been shown to be important for child adjustment (Klima & Repetti, 2008). This was also supported by the current research which found that child reports of teacher and peer relationships were associated with child outcomes.

School programmes which help to foster positive relationships with teachers and peers could therefore be beneficial. This may be especially important to children experiencing school change given the additional disruption to school relationships this can cause (Reynolds et al., 2009). Disrupted peer relationships due to either school or home mobility can also contribute to lower school engagement (South, Haynie, & Bose, 2007) and create long lasting effects on friendship networks (South & Haynie, 2004). This again highlights the need for educational policy and practice to take into account multiple risk areas faced by children, and the implications of combined effects of change across multiple contexts. The implementation of appropriate support strategies that minimise effects of adversity and foster resilient outcomes is especially important for children faced with cumulative change across both home and school settings.

7.5 Strengths and Limitations of this Research

This research has a number of strengths but also some limitations. A main strength of this research is the use of a large, nationally representative sample provided by LSAC. The use of large pre-existing data sets can present researchers with opportunities to access representative samples of populations (Boslaugh, 2007). This can also enable the flexibility of examining subgroups of participants while still retaining statistical power (McMillan & Schumacher, 2006), in this case being those of two-biological-parent, single-mother and re-partnered-mother families. The longitudinal nature of the LSAC data set also provided the ability to track patterns of continuity and change over time for young Australian children and their families.

By using secondary data analysis of a representative sample of Australian children, this research addressed previously identified research gaps. A lack of information on the frequency of experience of family transitions for Australian children has previously been noted (de Vaus & Gray, 2003) as has the need for research to examine both home and school context for Australian children experiencing family change (Beausan, Farrell & Walsh, 2012). The current research has addressed both of these gaps by providing insight into family stability and change, along with levels of residential and school mobility for Australian children across middle childhood. Valuable insight into the importance of child relationships with parents, teachers and peers were also gained.

Another strength of this research is the use of multiple informants. Data was utilised that was collected from parents, teachers and children. This was of particular importance for the analyses in Study 3, as it provided data and informants across three contexts of child development begin the individual child, family and school contexts. Child and family demographic variables were provided by mothers, as was maternal health along with the information relating to family instability and social and economic instability variables. Child reported data was utilised to measure child perceptions of parent, teacher and peer relationship quality, while teacher reported data was used to measure child outcomes. By utilising this approach, potential respondent bias is reduced.

The focus on multiple domains of competence is another area of strength for this research. This is of importance as child development trajectories may differ across varying areas of competence (Luthar & Zelazo, 2003). Potentially, the pathways to child risk or resilience may vary across child outcomes. Study 3 therefore examined the effect child and family factors, instability factors, along with school and home support and relationship quality had on four outcomes relating to child adjustment and achievement in school. This research determined differences in the impact these variables had on the four outcome variables examined. This highlights the importance of seeking to identify the differing effects that variables may have across child developmental outcomes, in order to better understand how best to provide children with effective support.

A range of limitations also need to be taken into account when reviewing the findings. Firstly, the use of secondary data sets has many advantages but it also has limitations. The use of secondary data means researchers are restricted to predetermined variables (Gorard, 2003), and often this may mean having access to short versions of measurement instruments as opposed to full item sets which are often used for cost and time efficiency in large survey

studies. The use of a large data set however also provides flexibility and the ability to identify and examine smaller subgroups (McMillan & Schumacher, 2006). For the current research, the opportunity to investigate the trajectories of continuity and change experiences of Australian children outweighed any associated limitations of using secondary data.

For the current research availability of predetermined variables did not cause any difficulties. Ideally, however, child-reported measures on parent, teacher and peer relationships in earlier data collection wave before Wave 4 could have been incorporated into analyses to determine change over time. Analyses could then have also considered timing effects in order to determine if changes in relationship quality were more salient to outcomes at specific ages. These could not be included however as these measures were not all available before this time point, potentially due to the age of the child and the possible threats to the reliability and validity of child self-report data at younger ages. A measure of parental conflict was available in the LSAC and this is a very salient variable affecting child outcomes when changes in family structure occur. However, due to the focus on differing family types and data availability at different waves, as well as limited parent-living-elsewhere data this construct was not included for current analyses. Different descriptive variables also needed to be utilised across waves in relation to school experiences, however, this again was due to the age of the child at these time points.

Another limitation with the use of longitudinal secondary data is the effect of attrition leading to sample bias. In longitudinal studies, attrition occurs over time however the characteristics of participants that leave the sample can be different from the remaining final sample participants. For example, participants that are highly mobile can be more difficult to retain in long term research (Taplin, 2005). This can contribute to biased estimates of the population which in turn can reduce generalisability (Soloff et al., 2003).

For the current research, attrition along with further sample restrictions did lead to slight under representation of particular subsamples of the population. In particular individuals identifying as Aboriginal or Torres-Strait Islander, or as speaking a language other than English and single parent families all had lower frequencies after sample selection than originally presented in the LSAC data and also lower than the available corresponding ABS frequencies (see Chapter 3, Table 3.2). This means that the differences for these groups may have been under estimated. In addition, higher levels of parental education in the final sample compared to ABS frequencies were evident. However, despite these differences the sample remained relatively representative of Australian children.

It should also be noted that due to the nature of the sample direct comparison to other studies can only be made with caution. While slight under-representation of subsamples were evident, the current sample was relatively representative of Australian children. Many studies with a focus on family structure utilise high risk samples in analysis, often with participants being primarily identified as having low income (Ackerman, Brown, D'Eramo & Izard, 2002; Bachman, Coley & Carrano, 2011) or specific ethnicities (Adam & Chase-Lansdale, 2002) or samples selected on different constructs of family structure (Lansford et al., 2006; Martinez & Forgatch, 2002). Differing social policies within countries may also have an effect that is not accounted for in analyses. These factors need to be kept in mind when making comparisons between the findings of the current research and previous studies.

Another limitation of the current research is that a focus on fathers was not included beyond the descriptive analyses of basic demographic information. Analyses only took into account the child's relationship stability with their mothers, along with any residential or school moves or economic decreases that occurred within female-headed households. The lack of focus on fathers did not capture experiences that children may have with their fathers which may be positive or negative in its quality.

Parenting arrangements after separation can vary considerably, ranging from majority care from one primary parent, shared care, and/or limited contact, with the other biological parent. These arrangements potentially change over time (McIntosh, Smyth, Kelaheer, Wells & Long, 2011) Another important factor not addressed in the current research is the impact of parental conflict on child outcomes. This has been found to be higher for children in rigid shared parenting care arrangements (McIntosh et al., 2011). Consideration of the nature of shared care arrangements for children in single-parent households headed by mothers, or in re-partnered families may support children or exacerbate stressful experiences when there are additional regular transitions through shared care arrangements between parents. Greater understanding could be developed about the experiences of children in shared care arrangements with their biological parents across middle childhood and the impact that different arrangements have on child outcomes.

Another potential limitation in the current research is that the measures of instability used are restricted to the years of early school transitions (age 4-5 years) until middle childhood (10-11 years). Previous studies focusing on family structure have also utilised data across the middle childhood years in order to examine the effects on child outcomes (e.g., Milan, Pinderhuges, & Conduct Problems Prevention Research Group, 2006; Magnuson &

Berger, 2009). This approach does provide insight into the impact family structure or family transitions have on children while in school settings as opposed to focusing on experiences before formal schooling.

Potentially this may not result in a loss of captured data for many children. Those born into households where parents are married may not experience many family transitions during early childhood as marital partnerships tend to remain together for longer than other unions (Osborne, Manning & Smock, 2007). However, previous studies have also tracked children's family structure experiences from birth (e.g., Ackerman et al., 2002; Cavanagh & Huston, 2006; Ryan & Claessens, 2012), and by doing so all family transitions are taken into account which may especially be of importance for those children born into families in which there are not two biological parents sharing the care for the child. The data in the LSAC birth cohort would provide the opportunity to explore this research direction with an Australian sample.

In addition tracking children's family structure from birth could also provide further opportunities to examine the presence of any selection effects, the long term implications of these, and also allow for greater focus on possible timing effects which was not addressed in the current research. Differing timing effects on previous or recent family instability on child outcomes have already been found in previous research (Ackerman et al., 2002; Adam & Chase-Lansdale, 2002). Consideration of timing effects could therefore be an important aspect to consider in further research as it was not addressed in the current research.

Another limitation of the current research is that the differing effects of different types of transitions were not considered. Bachman, Coley and Carrano (2011) included in analyses the directionality of transitions in order to identify if parent relationship formation or dissolution had similar effects or if larger impact was evident depending on transition type. For the current research, a change in family structure was counted as a change regardless of if mothers were separating or re-partnering. Additionally all residential and school changes were not noted as different regardless of possible disadvantages or improvement in circumstances.

Residential moves from parental separation often result in children moving to lower quality residences due to decreased economic resources (Feijten & van Ham, 2007; South, Crowder & Trent, 1998), while parental re-partnering is more likely to see residential moves to more affluent neighbourhoods. Similarly with school moves, some of these may present

opportunities for increased resources for example moving to a private school. For the purpose of the current study, an experience of change was regarded as additional stress on a child with the potential to impact on adjustment and achievement, regardless of other potential long term benefits. Considering the effects of directionality of family structure, along with residential, school or economic change was beyond the scope of the current research. This could provide further insight however in future research. More sophisticated analyses could address some of these limitations as will be noted in the next section.

7.6 Directions for Further Research

The current research has provided important insight into the experiences of continuity and change of Australian children across family, home and school contexts. There are however several possible directions for future research that emerge after consideration of the current research methodology and findings. As noted above, considering the effects of directionality of change transitions is one possible area of further research. Differences in the type of family structure transition experienced have been shown to have differing effects on child outcomes (Bachman et al., 2011). Taking account of the directionality of family structure transitions and determining the associated effects on child outcomes with a sample of Australian children would provide valuable insight into an area that is currently lacking.

In addition, so too would research that also examined directionality of residential, school or economic change. This would provide valuable information on specific pathways of continuity and change and the influence they have on developmental trajectories. The results of the current research also highlight the importance of continued research factoring in for other changes associated with parental relationship transitions as opposed to focusing only on family structure. Children's experiences across family, home and school contexts need to be considered in order that effective support can be put in place (Flowerdew & Neale, 2003). Research that considers risk factors across multiple contexts for children therefore needs to continue in order to shed further light on the processes and interactions at play.

Future research could also address the current limitation of the analyses in exploring the continuity and change occurring within mother-headed households. As noted in the previous section, this direction does not take into account the importance of fathers in children's wellbeing and development, or the additional types of change that may occur for children with separated biological parents in shared care arrangements. Australian research using LSAC data has examined the effect of patterns of overnight care and parenting care

patterns on children, finding differing associations with child outcomes for different age groups (McIntosh et al., 2011). Incorporating these factors into future analyses, along with the instability variables considered in the current research, would provide important further insight into the impact that change and continuity occurring in multiple shared care households may have on child development over time.

Another aspect not addressed in the current research is the consideration of the timing effects. Previous research by Ackerman et al. (2002) accounted for time effects on maternal relationship dissolution by classing changes from birth to year 1 as 'past' and changes from the previous two years as 'recent'. Differing effects were found with past changes able to predict child outcomes at year 3 even though no recent stability was present. Adam and Chase-Lansdale (2002) also looked at timing effects and found differing and long lasting effects for those experienced in early childhood compared to those experienced at school age.

Tracking children across into high school settings would also be an important aspect of examining timing effects, and also provide insight into associations with adolescent outcomes. As in the previous studies that found timing effects in middle childhood, timing effects have also been found for adolescents. Research conducted by Lansford et al. (2006) found earlier parental separation was associated with higher adjustment problems while later separations were associated with lower academic achievement. These studies highlight that further investigation taking into account timing effects could provide important additional insight into the impact of family instability on child trajectories.

Taking account of all timing effects could be more readily achieved if tracking changes from the point of the child's birth. In order to do this, future research could utilise the LSAC Birth Cohort in order to address this. Focusing on changes from the child's birth could also allow investigation of other significant changes in children's lives (for example, residential, education or care setting, or change of family economic circumstances), which again would provide more opportunity to examine timing effects of cumulative change on child outcomes.

Tracking children's family structure from birth would also provide opportunities to examine in more detail the presence of any selection effects evident in family demographics and resources. Consideration of selection effects can provide insight into the attributes and resources that foster family stability (Brown, 2010; Hofferth, 2005). Characteristics and resources specific to differing family structures at child's birth could be considered in order

to determine what selection effects were evident for an Australian sample. The current results suggest that selection effects may be a contributing factor given the consistent patterns evident across time. Additional research could confirm this and provide further understanding on the effects these have on the outcomes of Australian children.

Finally, future research should adopt a more critical approach to analysis in order to provide additional understanding on the interactions between variables and the association to child outcomes. More sophisticated models would allow for a more fine grained analysis of the moderators and mediators operating, as influencing factors in family change and stability and the academic achievement and behavioural adjustment of children. This could be potentially achieved through the use of structural equation modelling (SEM) or path analyses. This would enable factors such as selection effects, timing effects, and directionality of change amongst other possible mediators to be included in models thereby better representing, and taking into account, the complex interactions that may occur when considering ecological models of child development.

7.7 Conclusions

In conclusion, this research has made a significant contribution to furthering understanding on the nature of change and continuity experienced by young Australian children through until middle childhood. Findings revealed that the majority of Australian children still reside in two-biological-parent homes, with few experiencing family transitions, although once children were located within single-mother or re-partnered-mother homes the risk for family transitions increased. Clear demographic differences were evident across family structures, suggesting selection effects contribute to the formation of families.

Children in single-mother or re-partnered-mother households were more at risk for lower family income, residential and school mobility. Additionally, these children also reported lower quality of relationships with parents, teachers and peers, with children in single mother homes having the additional risk of mothers with higher levels of psychological distress. Final analyses also revealed that higher levels of residential, school and economic change faced by children resulted in them being more likely to have lower levels of adjustment and achievement.

These findings have lent support to previous family theories relating to selection effects of family structure, and tentative links can also be drawn in relation to attachment

theory and the damaging effects parental separation and subsequent residential and school moves can hold for children's abilities to foster positive relationships with others. Results also indicated the ecological nature of child development with factors across child, family and school contexts impacting on child outcomes, and the child-relationships experienced within these contexts proving important for child adjustment and achievement. Strong evidence is therefore also presented that ecological approaches to understanding child trajectories are needed if understanding of complex processes across differing contexts and domains of child development are to occur. This is vital otherwise adequate government policy and practice relating to the provision of support for at risk children cannot be developed.

While this research has a number of limitations, some of which may be addressed by future research, it has shed important light on the degree of impact that change can have on child adjustment and achievement. Within this research, children in single-mother or re-partnered-mother homes were at greater risk of experiencing multiple transitions across a range of contexts. Findings indicated that across middle childhood, these associated changes may hold more significance than family structure itself. This suggests that in order to foster positive and equitable child outcomes, focus needs to shift away from deficit views of differing family structure and instead seek to minimise the impact of associated changes that may impact on the lives of all children.

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APPENDIX A: REVIEW OF RELEVANT RESEARCH

A.1 The Identification of Research Studies to Inform Methodology

As referred to in Chapter 2, the ecological model and selection of variables included in this research was informed by a range of previous empirical research. The summaries and reviews that follow were completed in order to synthesise the methodological approaches and research findings of key literature relating to the current program of research.

Particular focus was placed on how studies conceptualised and measured parental relationship types and the transitions that occur through relationship dissolution or reformation. Conceptualisation and measurement of any additional changes or cumulative risk indexes were also of interest as was the selection of covariates used in analyses, and the effects these had on results. The results were examined in order to determine which variables have significant contributions towards identifying risk or resilient trajectories of children after experiencing family and associated changes. In order to be included for selection, the studies needed to focus on the impact of family structure on child outcomes. While the majority of studies focused on outcomes for middle childhood, up to 18 years of age was accepted. The outcomes also needed to relate to either child emotional/behavioural adjustment or academic achievement. In addition to this, the studies needed to focus on family transitions. Several studies also dealt with other change variables of interest such as school or home mobility and economic adversity. Finally, the studies needed to be quantitative. This was because the current research is quantitative in nature, therefore by examining these studies they were able to inform its methodological approach.

A total of twelve studies were selected for inclusion. All of these except one provide data on American children, with the exception focusing on Australian children. The majority are sourced from different longitudinal datasets, however, two of the studies utilise samples drawn from the same longitudinal dataset – the National Longitudinal Survey of Youth (NLSY). One study however focused on children aged 6-12 years and academic outcomes (Magnuson & Berger, 2009) while the other focused on children aged birth-12 years and emotional/behavioural adjustment (Ryan & Claessens, 2012). A detailed summary of each study is provided, concluding with a note about the significance and/or limitation of the study contribution. Studies that focused primarily on family transitions are presented first, followed by those that also addressed other types of instability, change or cumulative risk factors. The main area of interest, and child outcomes reported on within each study are provided in

subheadings. Following the detailed summaries is a brief comparison of the included studies, with reference made to how these have informed the current body of research. In addition to this, a summary of the methodology of included studies can be found in Table A.1 at the end of the section.

The studies are organised in the following sections:

- Family transitions
- Family transitions and additional changes in social and economic circumstances
- Comparisons of Studies and Relevance to Current Research

A.1.1 Studies focusing on family transitions

Fagan (2012)

Maternal relationship dissolution and the effects these had on the literacy skills of preschool children were examined by Fagan (2012). Children who experienced parental relationship dissolution from both marriage and cohabitation were compared to those whose parents had stable relationships. Data was used from the birth cohort of an American study - the Early Childhood Longitudinal Survey (ECLS-B). The sample was restricted to the primary caregiver being the biological mother at both time points of interest, when children were 24 months and then 48 months old which left a total of 6450 cases.

Child literacy was measured from 37 items included on the ECLS-B. These items came from a range of instruments, including the Peabody Picture Vocabulary Test-Third Edition (PPVT-III; Dunn & Dunn, 1997) amongst others. Child cognitive ability was measured by the Bayley Short Form-Research Mental Scale (Bayley, 1993). Variables measuring relationship status and change were computed based on maternal-reported data and then coded to determine if relationships were stable, or what transition type had occurred, for example, divorced to non-cohabitation, or divorced to cohabitation. Depressive symptoms of mothers were computed by using 12 items from the Center for Epidemiological Studies Depression Scale-Short Form (Ross, Mirowsky, & Huber, 1983). This was included at both time points. Socioeconomic Status (SES) was constructed on mother and father education, occupation and income, although father variables were not included for single mothers. Maternal involvement in child activities and views on their pregnancy timing (wanted sooner, the right time or later than desired) were also included.

At Time 1 (24 months) children's biological parents were either married or cohabitating. The majority of the sample were Caucasian (49.2%) and at Time 2 most were still in either stable married relationships (82.7%) or stable cohabiting relationships (8.9%). Of parents originally married, 4.4% had divorced and become single, 1% were divorced and cohabiting. Of initial cohabiters, only 2.4% had left cohabiting relationships to become single, and 0.5% had left the initial cohabiting relationship to form new cohabiting relationships.

A series of multiple regression analyses were run to examine differences between children who experienced family transitions and those that did not. Missing data were handled with multiple imputation. Selection effects were accounted for by controlling for child gender, age, cognitive ability and ethnicity. Results indicated that neither divorce nor cohabitation transitions into non-cohabitation households showed any significance to child literacy outcomes. Lower literacy was evident for those whose mothers divorced and were now cohabiting, compared to those in intact married families, and also those that changed to single families from either previous marriage or cohabitation. Stable cohabiting had significantly lower literacy levels than children in stable married families at 48months.

The two groups that showed significance were tested for mediation – those that went from experiencing a divorce into cohabitation and stable cohabiting families. Mediator variables considered included changes in income, change in maternal depression and involvement in child activities, along with pregnancy timing. No change was evident for the divorce to cohabitation group, but decline in SES for the stable cohabiting group mediated the association between poorer literacy outcomes and group status. This study shows that the type of family type and/or transition experienced may lead to differing trajectories. It is important to note, however, the important aspects of the two groups that showed significance. Income mediated the effects for those in stable cohabiting families while the other group experienced two transitions within a two year timeframe (divorce then new cohabiting families) which potentially compounded effects.

Coley and Carrano (2011)

Child behavioural and emotional functioning and the impact of maternal relationship instability were examined by Bachman, Coley and Carrano (2011). This study focused on cumulative instability, the timing of transitions and the direction of the partnership transitions, being either relationship formation or dissolution. Longitudinal data on low-

income American families was used from the Welfare, Children and Families: A Three-city Study. The sample was restricted to children living with biological mothers, so that a focus on maternal relationship stability and instability was possible. Adolescents were also excluded, as were cases without data in Wave 3 leaving a total of 891 cases, with children aged 8 years at Wave 3. Small cases of missing data were dealt with through the use of expectation maximization.

Relationship transition variables were computed based on mother reports of marriages and cohabitations, and measured movements into and out of relationship types. This also counted a change from cohabiting to marriage with the same partner as a transition. Prebirth transitions were also computed (which occurred before the child was born) as were total transitions since the child's birth. Transitions were also coded as recent for those occurring in the 2 years prior to Wave 3 data collection, and early for those from birth up to 2 years prior. Mother reported data on the Child Behaviour Checklist (Achenbach & Rescorla, 2001) was used to measure child behavioural functioning with six subscales of affective, anxiety, somatic, ADHD, oppositional defiant, or conduct problems. Control variables were also included, with child variables being age, gender, and ethnicity, while mother variables were age, education and literacy skills, current relationship status and relationship transitions prior to the child.

Descriptive results at Wave 3 found that 28% were living with intact biological parents, 25% had experienced recent transitions, and 48% had one or more early transitions. Single mothers were more likely to have experienced recent transitions (31%) compared to cohabiting (21%) and married (17%) households. A series of OLS regression models were used to predict child outcomes at Wave 3. The first series looked at total transition, then total entrances, then total exits while the next set of models looked at early versus recent transitions. Results for first OLS regression model found that a higher number of total transitions was associated with higher rates of anxious, somatic and conduct problems and also had a small effect on affective problems for children at 8 years. Children in married families achieved better on nearly all outcome measures whereas children in cohabitating families were not different from those in single families. Partnership exits had more significant associations than entries.

The models looking at early versus recent transitions found that only the recent transitions (occurring from ages 6 to 8) were predictive of child outcomes, with effect sizes ranging from small to moderate. Results indicated that recent partnership formation was

associated with problems with both emotional and behavioural functioning of children, while recent partnership dissolutions were associated with higher levels of behavioural problems. These results highlight that the cumulative effects of transitions may impact on child trajectories, and that the timing of effects may also be critical, however it is important to note the limitation of the sample used in this study being from low income households only.

Cavanagh and Huston (2006)

The association between problem behaviour for children and family instability for children transitioning into the first grade was examined by Cavanagh and Huston (2006). Longitudinal data was used from the NICHD Study of Early Child Care and Youth Development. The selected sample (N=1015) had higher levels of exclusion of single parent families, mothers with less education and African Americans, due to attrition across time.

Child problem behaviour was measured with three indicators, one from teacher reports of externalising behaviours (Teacher Report Form; Achenbach, 1991) and the other two from classroom observations taken while the child was in the first grade. These looked at negative or disruptive behaviours with peers and with teachers. Family instability was based on the total count of the number of changes in household structure from child's birth through to the end of kindergarten. Dummy variables were created from this measuring no transitions through to three or more. A quasi-count variable was also computed that counted 0 as none, through to 3 = 3 or more. These were compared and the quasi-count was found to be the best fit and was therefore used in analyses. Other factors used included as controls or moderators were family structure at birth, maternal depressive symptoms, maternal sensitivity, home environment, income, along with child gender and race and maternal age and education.

Descriptive analyses examining family transitions found that 80% of children were born in married two-biological parent households, 8% to cohabiting parents and 12% to single mothers. At least one transition was experienced from birth to age six for a quarter of the sample. Higher instability levels were found for cohabiting parent families, followed by single mother families and then by two-biological married families. Families with instability tended to have lower levels of maternal sensitivity, home environment scores and income-to-needs ratio, along with higher levels of maternal depression.

Ordinary Least Squared regressions were used to examine associations between child externalising problem behaviour (teacher reports) on family instability, family structure at

birth and family environment along with other control variables. Poisson regression was used to examine the observed behaviour outcomes. Family instability had modest associations with externalising behaviours as reported by teachers as well as negative behaviours with peers, although it was significantly linked to disruptive behaviour. For children experiencing more instability, all three problem behaviours were more prevalent in comparison to those residing in stable families. When considering family structure from birth, children born into married households had less disruptive and negative behaviours towards peers and teachers than either those born in cohabitation or single parent families.

Unconditional linear growth curve models to examine which conditions contributed to child behaviour at the transition into formal schooling, looking at family instability along with maternal depression, parenting behaviours, home environment and income status change. Child behaviour was found to be predicted by the family environment variables. Family structure at birth was also found to moderate associations between family instability and child problem behaviours. Those with instability had higher reported problem behaviours than those in stable families. The emotional, social and material resources in the family contributed to variations in differences in problem behaviours associated with child family instability. This study highlights that particular use of family change variables may be more effective and the strong influence family characteristics have on child outcomes.

Ryan and Claessens (2012)

The associations between children's behaviour problems and family structure change were examined by Ryan and Claessens (2012) with consideration to the moderating effects of timing and marital birth. Longitudinal data was used from the Maternal and Child Supplement of the National Longitudinal Survey of Youth. A sample of 3492 was drawn with relevant data on outcome for children from birth to 12 years of age. Missing data on covariates were handled via the use of multiple imputation. Family structure changes were coded to capture changes from two biological parents to single, two biological parents or blended family to blended, single parent into blended along with another category to capture any other change.

Child behaviour problems were measured with maternal reports of a Behaviour Problems Index (Zill & Peterson, 1986) which contained internalising and externalising subscales. These were combined as initial analyses looking at them separated did not find any meaningful differences. Child age changes were captured through the use of dummy

variables. Developmental periods spanned from infancy/toddlerhood through to preadolescence. Covariates included maternal characteristics such as level of education, self-esteem, locus of control, and age at birth of child. Other variables included income, and a home environment measure. Child characteristics included gender, ethnicity, birth weight and first-born. Time-varying measure of income and home environment measures were used to determine if changes in these explained associations between family structure change and child behaviour outcomes.

Piecewise hierarchical linear models were used to examine changes in family structure and to determine if changes at certain time intervals predicted behavioural changes from the same time intervals and also future changes. Models were run two times so that children born to married parents and children born to unmarried parents could be examined separately. Results found that the family structure changes experienced in the first three years of children's lives had long lasting impacts. For those transitioning from a two-parent to a single parent family, it predicted increases in problem behaviour from age 3/4 through to age 9/10. Higher problem behaviour scores were also evident when children had early changes from two-parent families (either married or non-married) into a blended family although this was non-significant during middle childhood and preadolescences. Findings suggested that early and preschool changes predicted long term child outcomes.

The type of family structure transition resulted in varied outcomes. Early change into single parent families resulted in short and long term effects for children originating from married households with higher problem behaviours remaining even by preadolescence. However, for children from unmarried families, this type of change only resulted in small short term increased problems. The only significant increases in problem behaviour were evident with changes from two biological parents into single parent families.

No long term effects were found for movement into blended families, and for those with an early change into a single parent family and an early change into a blended family, no increases in behaviour problems were evident. Those that moved into blended families from married families during middle childhood were found to have short term positive outcomes. This suggests that there can be benefits to transitions into blended families, depending on timing and potentially other confounding influences not addressed in this study. However, the combined effects of multiple transitions were not considered in this study and the authors also noted that small cell sizes in some comparisons may have reduced statistical power.

Ruschena, Prior, Sanson and Smart (2005)

An Australian study was completed by Ruschena, Prior, Sanson and Smart (2005) which examined the associations between family transitions had on adolescent behavioural and academic outcomes. Family transitions in this study included parental separation, divorce, remarriage and also death. Longitudinal data was used from the Australian Temperament Project (ATP) and another questionnaire sent to a sub-sample aged 17-18 years. This resulted in 151 respondents and 149 from the main study were chosen as a comparison group and matched on gender.

Data tracked children from infancy through to 17-18 years of age. Throughout this time, a range of measures had been used to identify behaviour problems. These were standardised and summed to create a total behaviour problem variable, and externalising and internalising measures were similarly computed. High levels of problems were considered to be one standard deviation above the mean of the entire sample. A measure for behaviour over time was also computed.

Five items were used from parent reports to measure academic and behaviour problems at school for adolescents at 17-18 years. Parent ratings from this time period were also used for temperament. A single item parent report was used to indicate how easy or difficult the adolescent was compared to peers while a sibling relationship scale measured support and conflict from siblings. Measures for attachment to parents, parent-adolescent conflict, and parental marital conflict also included. Six items measured peer relationships (adapted from the Antisocial Peer Associations; Patterson, Reid, & Dishion, 1992) looked at anti-social peers and substance use. Child social skills at age 11-12 and 13-14 were also included from child and parent reports on the Social Skills Rating System (Gresham & Elliott, 1990).

Analyses aimed at examining group differences on outcomes for those who had experienced transitions compared to a control group that had remained with both biological parents. Key variables also considered included the length of time since the transition, child gender and temperament, peer relationships and family characteristics, in order to determine if these helped predict better or worse adjustment for adolescents who had experienced transitions. Analyses of variance (ANOVA) were used to compare groups on behaviour outcomes with only gender differences found in overall problems and internalising problems which were more common in girls. ANOVA which examined if problems were higher in

those that experienced transitions found no significant differences. Multivariate analyses of variance showed significant effects for group type, with parent attachment and teen-parent conflict being different for the group that experienced transitions with the comparison group having higher parent attachment and lower conflict. Gender differences in social skills were evident, with females scoring higher, however no group type effects were present and no differences were found on academic measures.

When comparing a group that had lost a parent through death to a divorce group and a stable group, no significant differences were found on overall behaviour, internalising or externalising problems, family factors or school problems. Linear regressions were then conducted on the transition group to determine which variables predicted outcomes at age 17-18. Included predictors were gender, the number of transitions and years since the last transition was experienced, socioeconomic status, parent ratings of ease or difficulty of the child, parental conflict, parent-teen conflict and antisocial peer association, and temperament. Only gender, parent ratings of ease or difficulty, antisocial peer association, and two dimensions (persistence and approach/withdrawal) from the temperament measure were significant. All of these were measured at age 17-18. Similar results were found for the comparison group, although socioeconomic status was also a predictor in this case. This study is of importance given the use of an Australian sample, and also due to results finding no significant differences between groups on behavioural, emotional, social or academic outcomes. Significant differences were however evident within parent-child attachment and parent-teen conflict. Females however were found to have both greater adaptive and maladaptive behaviours compared to males.

Martinez and Forgatch (2002)

Family structure transitions and associations with the behavioural, emotional and academic outcomes for 238 male children were examined by Martinez and Forgatch (2002). Longitudinal data was used from the Oregon Divorce Study-II to focus on child trajectories from grades 1 to 3. Family transitions included both relationship formation and dissolution, and were inclusive of marriage or cohabitation (of at least three months). All mothers in the sample were separated or divorced at the start of the study, so the minimum count given for family transitions was 1.

Academic outcomes were measured by the Adaptive Functioning T score from the Teacher's Report Form (TRF; Achenbach, 1991) and reading and math achievement scores

from the Woodcock-Johnson Psychoeducational Battery (Woodcock & Johnson, 1989). Acting out or externalising behaviour was measured through the use of TRF externalising scores, along with Parent Report Form of the Child Behaviour Checklist (P-CBCL; Achenbach, 1992), and child observations. Emotional adjustment was measured through the use of maternal reports of child depression, TRF withdrawn scores, a child depression inventory and interviewer observations. Analyses used structural equation models for each outcome using cases with complete data. This resulted in slight variations in samples for each outcome due to listwise deletion. Other variables included in the analyses consisted of parent academic and home skill encouragement, effective parenting, positive parenting, coercive parenting and TV watching.

Results found that higher numbers of transitions resulted in associations with more acting out behaviours, poorer emotional adjustment and poorer academic achievement. These outcomes were however mediated by additional variables relating to parent practices. Academic achievement was mediated by parental academic skill encouragement with more transitions resulting in less encouragement and therefore poorer academic outcomes. Similarly effective parenting mediated associations between acting out behaviour and emotional adjustment again with increased family structure transitions resulting in poorer parenting practices and decreasing child adjustment. This study only focused on children who had already experienced separation, and also did not include girls in analyses, although it does highlight the effect multiple transitions have on child outcomes.

Lansford, Malone, Castellino, Dodge, Pettit and Bates (2006)

Lansford, Malone, Castellino, Dodge, Pettit and Bates (2006) focused on determining if child internalising and externalising problems and academic results were associated with the event and timing of parent relationship dissolutions. Longitudinal American data from the Child Development Project was used with a subsample of biological parents who were married at baseline being selected. The focus was on biological parent relationship dissolution, not subsequent ones. Child trajectories for 194 children were examined from kindergarten through to 10th grade using hierarchical linear models. The target sample consisted of 97 children whom experienced at least one parental divorce and these were matched by gender, ethnicity and socioeconomic status to another group of 97 who remained in intact families.

Timing of parental divorce was used to then extend to one year prior to separation and three years afterwards in order to capture children at comparable points in relation to the separation. Internalising and externalising behaviour scales were used from both mother and teacher reports and summed – for mothers this was measured by items on the Child Behaviour Checklist (Achenbach, 1991) while teachers used the teacher report form of this measure. Grades for mathematics and language arts were collected from school records and combined into an average grade.

After matching was completed, 52% of the sample were male in both groups. Only slight differences were present between ethnicity with the divorced group having 15% African American compared to 13% for the non-divorced group. Measurements for kindergarten socioeconomic status were also very similar with the mean of 38.8 for the divorced group and 39.6 for the non-divorced group. Hierarchical linear models were completed for each outcome variable, with five time points used, starting from the year prior to separations through to three years after. Results found that early parental relationship dissolution had higher associations with negative trajectories of both internalising and externalising problems for children as opposed to later separations. Later separations were more highly related to negative results with academic achievement. This study is unique in its approach and has potentially accounted for selection effects through the matching process, with differences in child outcomes based on experience of parental relationship dissolution still evident.

Magnuson and Berger (2009)

Research conducted by Magnuson and Berger (2009) focused on the state and transitions of family structures and the associations this had for children between the ages of 6 and 12 years on child achievement and behaviour outcomes. American data with a large representative sample was used from the National Longitudinal Survey of Youth (N=3862). Data across cohorts was used, with selection for the sample requiring complete data on an outcome variable across four time points, when children were 6, 8, 10 and 12 years of age. This resulted in slightly different sample sizes for each outcome variable. Multiple imputation was used for missing data on predictor variables.

Academic achievement was measured using child completion of the mathematics and reading recognition subscales from the Peabody Individual Achievement Test (PIAT; Dunn & Markwardt, 1970). The Behavioural Problems Index (Zill & Peterson, 1986) rated by

mothers, was used to measure behaviour problems. Family structures of interest in the study were those with single mothers, social-fathers (which referred to re-partnered mothers either married or cohabitating with a man whom is not the child's biological father), and two biological parent families. Continuous measures showing the amount of time spent in each type of family from when children were aged 6 to 12 years were created. Also dichotomous variables were used to show family structure transitions, and a summary of the total number of transitions was also used.

Hierarchical linear models were used to examine associations, looking specifically at if child outcomes were influenced by proportions of time spent in single mother or mother re-partnered families, if changes in achievement related to family structure stability and transitions and if different transitions created differing trajectories. Control variables consisted of maternal factors including age at child's birth, education, academic aptitude, prenatal smoking and self esteem; child factors including age, gender, ethnicity, birth weight and order, and disability; and household factors including income-to-needs ratio, maternal work hours and the number of children in the household, along with time residing with a grandparent, a single mother or in an urban region.

Descriptive results indicated that from ages 6 to 12 years, 32% of children a family structure transition with a third of these experiencing two or more. The most common transition was into a single parent family (20%) while the next common was moving into a social-father family (16%). The effect of transitions differed according to which family type. Overall, transitions were associated with lower achievement outcomes and higher levels of behaviour problems. Specifically transitions into a single mother household were associated with behaviour, while transitions to re-partnered social-father families were linked to lower levels of reading achievement.

While the general trend was for improved behaviour and achievement over time, this was larger for children who only lived with intact families and in contrast those in social-father families had small increases in behaviour problems. Spending total time in single or re-partnered households was still associated with increased in behaviour problems at each time point. Also for single mother households academic results were associated with lower reading and mathematics levels. It was noted however that potential selection bias was evident as those children who did not experience transitions tended to have older mothers with higher levels of education and household income. Regardless, this highlights that both

structure type and transitions can hold implications for child outcomes during early to middle childhood.

A.1.2 Studies focusing on family transitions and other social changes

Osborne and McLanahan (2007)

Osborne and McLanahan (2007) looked at the partnership changes of mothers from the time children were born to three years of age and the effect this had on child behaviour. Longitudinal data was used from the Fragile Families Study with a sample size of 2 111. Data was collected at three time points, soon after the child's birth, at approximately 1 year of age and then again at 3 years. Transitions were defined as the formation or dissolution of romantic relationships, including marriage, cohabitating, and dating relationships. Child outcomes involved aggressive and anxious/depressed behaviours which were measured with subscales for 2 to 3 year olds from a Child Behaviour Checklist (Achenbach, 1992).

Variables were created which measured the total number of maternal romantic partnership changes. Mediating variables included were the changes in income, the number of residential moves, maternal stress and the quality of mothering, whether a mother's parents were married at 15, her prior relationship history before the birth of the child, and her education, health (including depression) and health behaviour. Child factors included were gender, and indication of low-birth weight. Missing data was handled by dropping cases that had missing on outcome variables, and imputing missing to the mean values of subgroups based on relationship status at birth on control variables.

A series of ordinary least squares regression models were used for analyses. Initially the number of changes and child outcomes were entered, then mother and demographic characteristics along with child birth-weight and gender were added. Next potential mediator variables were added. Results indicated that more partnership changes occurred for children born to unmarried parents and minority parents. Married mothers were more likely to be Caucasian (41%), older (on average by approximately 5 years) and have higher levels of education with one third holding college degrees compared to less than 3% of unmarried mothers. Married mothers also were the only subgroup to have a significant rise in household income over time, reported half the rate of residential moves, had lower levels of maternal stress, and had better mothering behaviours when children were 3 years old.

If a child was born to married parents they were far less likely to experience transitions with 87% remaining in intact families by age 3. This was only the case for 50% of children with cohabitating parents at birth, 30% of those with visiting mothers (which refers to those either dating or not living with partners) and 26% of those in single mother families. Multiple transitions of three or more transitions were experienced more commonly by children born without fathers in the home. For children in visiting mother households 20% had three or more transitions and 30% of single mother households did. This was compared to only 10% of cohabiting households and less than 3% for married households.

Individual transitions were associated with increases in behavioural problems with modest effect sizes, although effects accumulated with multiple transitions. Significantly higher ratings on aggressive behaviour were evident for children born to single mothers as compared to those with married mothers, and these children were also most likely to have multiple transitions. Adding background characteristics of the mother reduced effects as associations for child aggressive and anxious/depressive behaviour were mediated by maternal stress and lower levels of quality mothering. Changes in resources from income or residential change did not mediate the effect on instability on child outcomes. Potentially this was due to little change in resources, or effects cancelling out due to some transitions leading to greater resources and some resulting in fewer.

Ackerman, Brown, D'Eramo and Izard (2002)

The associations between maternal relationship instability and behaviour and academic outcomes of children in the third grade were examined by Ackerman, Brown, D'Eramo and Izard (2002). The sample (N=139) was recruited from American Head Start programs with families facing economic disadvantage, with 58% below the poverty line at the last point of data collection. Longitudinal data was collected on via mothers and teachers when children were in preschool, first and third grade with children aged 8-9 years at Time 3. In this sample, 51% of children were female and 74% were African American.

Relationship instability was based on maternal reports of relationship dissolution from residential men. Past instability was calculated on the number of dissolved maternal relationships from the time the child was born to grade one. Recent instability referred to change over the last two years and chronic instability referred to the total number of changes. The same approach was used for residential moves. Parent maladjustment was also categorised as either past or recent, based on questions around drug and alcohol abuse,

violent or criminal behaviour. A modified Life Experiences Survey (Sarason, Johnson, & Siegel, 1978) was used to capture negative life events. This was collected at each time point and scores were added together to capture total events. Harsh maternal parenting at third grade was measured by the Conflict Tactics Scale (Straus, Hamby, Boney-McCoy, & Sugarman, 1996).

Child verbal ability was measured at first-grade with a Vocabulary subtest from the Stanford-Binet Intelligence Scale (Thorndike, Hagen, & Sattler, 1986) while externalising and internalising behaviours were measured from dimensions of the Teacher Report Form of the Child Behaviour Checklist 4-18 (Achenbach, 1991). Child academic behaviour was measured by a 9 item Academic Competence scale from the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) which incorporated areas such as reading, mathematics, intellectual functioning, as well as academic motivation and parental encouragement.

Measures of chronic adversity across multiple time points were constructed, which included income, residential moves, negative life events, and parental maladjustment. Hierarchical linear regressions were then used to determine if chronic instability predicted externalising and internalising problem behaviours of children. The first block entered consisted of environmental variables, gender and chronic instability, along with an interaction term for total instability and gender. Results found that externalising behaviour was significant for both boys and girls, and internalising behaviours were significant for girls. Maternal education predicted child academic scores whereas chronic instability did not. Harsh parenting was found to be a mediator on the effects of recent instability on behaviour. Independent effects were found for both past and recent experiences of instability. Analyses found that past instability still predicted third grade behaviour even when children had not experienced recent stability, although this was not the case for those that had experienced recent instability.

Analyses then used a person-oriented approach to look at child adaptation in highly unstable families. There were a total of 57 children with a high score of 2 or more on the chronic instability scale. Only externalising behaviours were examined as too few had high levels of internalising behaviours. Multivariate analysis of variances were used to determine differences. Results found that the groups differed on child verbal ability, harsh parenting and recent parent maladjustment. This study provides important insight into the cumulative effects of risk, and also potential protective factors for children in highly unstable families. However, this sample is difficult to generalise from given its small size and that only 12.2%

of families were in intact two biological families and approximately 66% experienced relationship dissolution. Also, the majority of the sample were African American. Scope was increased by including non-marital relationship dissolutions into family transitions, although formation of new partnerships were not noted as a change.

Milan, Pinderhuges and Conduct Problems Prevention Research Group (2006)

Family instability and the association with child internalising and externalising behaviour was examined by Milan, Pinderhuges and the Conduct Problems Prevention Research Group (2006). Family instability was looked at across a 6 year time span for a sample of 369 children, from kindergarten through to grade 5. Longitudinal data was used from the Fast Track project. Baseline demographics found that the selected sample had 51% of children male, 49% of children from ethnic backgrounds, 60% were from low income households, and 40% were in single parent families. A measure of annual family instability was computed and consisted of residential moves, death, divorce/separation, remarriage/cohabitation, temporary parent-child separation, the birth of a sibling or new child entering home, parent job loss or change in parent work hours (20 hour difference). Annual instability was calculated and a cumulative family instability score was also created which summed all events.

The Child Behaviour Checklist was completed by parents and the Teacher Reporting Form was completed by teachers. These were combined and used to create two measures, one for externalising symptoms and one for internalising symptoms. A Diagnostic Interview Schedule for Children (Costello, Edelbrock, & Costello, 1985) was also used from third grade reports to determine any internalising or externalising disorders. Growth curve modelling was used to examine associations between instability and externalising and internalising outcomes. A full-information maximum likelihood method of estimation was incorporated in analyses which was able to handle missing data, however, for the computed instability measures, if data was missing it was treated as a zero value, with cut offs in place for children with more than half of the items missing. While this potentially underestimated results for these children, it still enabled them to be included in the sample.

Results indicated that children averaged one event per year included on the instability measure. Levels of instability tended to decrease as children got older. The average total across the time span was 6.31 events, with a residential move or death of a person the most

prevalent. Growth curve results found that instability was significant in accounting for a small amount of the variability in changes of externalising and internalising behaviours of children. Additionally those children with moderate to high levels of instability had similar levels of maladjustment. Hierarchical regressions were used for examining teacher reports as the same measure wasn't available for each wave. These analyses found that cumulative instability significantly predicted changes in child externalising behaviours as rated by teachers accounting for a small amount of variance, but not for internalising behaviours.

Hierarchical regression was also used to determine if instability predicted child diagnosis of disorders by third grade. Demographic variables, then kindergarten maladjustment measures were entered followed by instability during kindergarten and then instability between first and third grade. Early disruptions in kindergarten were found to significantly predict an externalising diagnosis for children in third grade, whereas cumulative family instability increased chances of internalising disorders. One-way ANOVAs and post hoc tests examined groups consisting of No Diagnosis, Internalising only, Externalising only and Co-morbid (both internalising and externalising). The No Diagnosis and Internalising groups showed no differences on early or cumulative family instability. This was not the case of children in the Externalising or Co-morbid groups. Both had significantly higher levels of instability in early and cumulative instability. The Co-morbid group had significantly higher levels of cumulative instability compared to all other groups, with 90% of the group falling above the median of the whole sample, and 50% of them experiencing two or more risk events per year. This highlights that cumulative risk can have strong implications for child trajectories.

Adam and Chase-Lansdale (2002)

Research conducted by Adam and Chase-Lansdale (2002) examined associations between parental separation, residential moves and adjustment for adolescent girls in low income households. The sample consisted of 267 African American females aged from 15-18 years, as well as their female caregivers, which in the majority of cases was their biological mother. A total of 47.5% lived with only their biological mothers, 7% lived with mothers and another relative, 14% resided in intact two biological parent families, 19% lived with mothers and their new partner (married or cohabitating). The remainder had female caregivers whom were not a biological mother.

Caregiver relationship status was indicated by the use of dummy variables. A caregiver financial strain scale was created using items that captured difficulty. Residential mobility was measured by the number of moves in the last 5 years. Parental separation across children's lives was measured from time-line reports of times they had resided with parental figures. This information was also broken into different variables measuring separations from different caregivers, the length of separation, and the developmental age of child, for example, early childhood, middle childhood and adolescence. Questions around the adolescents' perceived support of people within the family and beyond the family were also used. The quality of parent and peer relationships was measured with scales created from items of the Index of Parent and Peer Acceptance (Armsden & Greenberg, 1987). Neighbourhood problems were measured by 10-item Perceived Quality of Neighbourhood Scale (Korbin & Coulton, 1994) filled in by adolescents.

Outcomes examined included educational outcomes, internalising and externalising problems and sexual behaviour of teens. Academic achievement was measured by participant account of their last report card. School drop-out status was also measured using a dummy variable. Internalising problems focused on depression and anxiety. Depression was measured using the 20 item Center for Epidemiologic Studies—Depression Scale (Radloff, 1977) and anxiety was measured with four items capturing cognitive distress. Externalising problems were measured with a 20 item index from the National Longitudinal survey of Youth and seven items additional items looking at youth defiance. These were then used to create two subscales to measure minor delinquent actives and major delinquent acuties. Sexual behaviour was measured by if teens had engaged in sex before. Outcomes were standardised and summed in order to create a total adjustment index.

Descriptive statistics and hierarchical linear regression analyses were used to look at the family disruption history of parental separation and residential mobility and scores on the problems index. Analyses also looked at the number of residential moves and parental separations in relation to four outcome domains of educational, externalising, internalising and sexual. Correlation between disruption variables and household demographic characteristics, for example residential moves and parental separation, were less likely if caregivers were married. Also those that experienced more moves perceived lower quality relationships with female caregivers, lower family support and poorer neighbourhoods.

Results for the adjustment problem index indicated that the age of child and greater financial strain predicted adjustment problems. When adding in the disruption variables both

moving and parental separation independently contributed to adjustment. The model which examined the role of adolescent perception of relationships, support and neighbourhood, found that increased favourable views on these led to fewer adjustment difficulties. This did not lead to a large reduction in the association between disruption variables and outcomes.

When examining disruption against four separate outcomes, controlling for household demographic and current environment, more frequent home moves were significant in the prediction of worse outcomes in all four outcomes, although internalising problems only reached statistical significance when current environmental variables were not included in the model. Parent separation frequency showed significant association with externalising problems and teen sexual activity with smaller associations to educational outcomes. When examining the effect of the types and timing of separations, it was found that these did impact on adolescent outcomes, with differences being evident based on what stage of development children were in when separations occurred.

Early childhood separations had significant links to education and externalising behaviours as well as sexual behaviour. In comparison, school age separations were significant for externalising and sexual behaviours, while separations occurring for adolescents were significant for only externalizing behaviour problems. These results as a whole are important as they highlight that adolescent perceptions of support and relationships can have a positive effect on adjustment, and similar to other studies, determined that the timing and types of separations can result in differing impacts. These results cannot be generalised to male adolescents however and the sample was not representative as all participants were from low-income households.

A.1.3 Comparisons of studies and their relevance to the current research

Large variations across studies in choices of methodology were evident, however, there were also similarities in the approach to capturing the measurement of change across time and in the constructs used. Longitudinal data was used in each study with all but one utilising data from three or more time points in their analyses. Sample sizes ranged greatly from N=139 through to N=6450. Sample characteristics varied too with variations including the use of only male or female participants, or samples experiencing economic disadvantage, families that were either married or separated at Time 1, or samples that aimed to be representative in nature. The majority of studies however did base the sample around

children residing with their biological mothers. This approach was also utilised for the current research.

Family type was based around marital status for some studies (married, separated, cohabitating) while others classified based on parent status (two biological parents, single parent, re-partnered parent). The use of parent status was adopted for the current research. Family structure transitions were mainly measured across studies through coding for each maternal relationship dissolution or formation. The majority included only changes involving residential men, however, one study did also include dating and non-residential relationships. The current research only focused on changes to partnerships that had residential status.

This information was then used in a variety of ways, looking at either the total number of changes, annual changes or coding for early and recent changes. Similar approaches were used in studies that included other types of change, such as residential or financial or cumulative risk index changes. For the current research, change was looked at across individual waves, however, for the regression analyses the total number of family changes was used (family instability) and the total number of home and school changes and economic decreases (social and economic instability) was used creating a cumulative risk index.

Measurement of academic competence or achievement varied, however, capturing outcomes in reading or literacy levels and mathematics was common. A range of sources were used including school records, child, parent or teacher reports. Measure for behaviour also varied, with constructs for internalising and externalising behaviour being common, relying mostly on teacher or parent reports. Approaches to data analysis most often utilised regression models, followed by hierarchical linear models then growth curve modelling. The current research addressed these outcomes by looking at internalising and externalizing behaviour along with literacy and mathematical skills as rated by teachers. After consideration of the reviewed studies and the LSAC data, hierarchical linear models were chosen as a method of analysis.

Results relating to family types overwhelming pointed towards children in single mother families and re-partnered parent families being more at risk of lower achievement and adjustment. Children born to married parents were found to achieve better on nearly all outcomes in one study (Bachman et al., 2011) and were less likely to face additional risk through experiencing family transitions (Osborne & McLanahan, 2007). Effects over time found that larger improvements in behaviour and achievement were evident for children

residing in intact families (Magnuson & Berger, 2009). In comparison, children born into single mother families were more likely to have multiple transitions and higher ratings of aggression (Osborne & McLanahan, 2007). Residing in a single mother family left children at higher risk of having lower academic achievement and behavioural adjustment (Magnuson & Berger, 2009).

A change from a two parent family to a single family was also found to have effects that persisted over time for problem behaviour (Ryan & Claessens, 2012). In contrast effects for changes into a blended family were found to impact long term on problem behaviour if an early change, with non-significance by middle childhood (Ryan & Claessens, 2012). Magnuson and Berger (2009) found that time in either single or re-partnered families lead to increases in behaviour problems, while a transition into a re-partnered family was also linked to lower reading outcomes. Fagan (2012) also found lower literacy for children in cohabitating re-partnered families, although this was present after transitioning from either a married or single family. These studies clearly show that family types and transitions between them contribute to differential effects on child outcomes. The current research did not address the effects of different transition types.

The timing of family transitions in relation to the stage of child development accounts for some of the variations in trajectories. Early disruptions in families appear to have the strongest long-term effects on child outcomes. Adam and Chase (2002) found that early childhood separations were significant for negative outcomes in education, externalising behaviour and sexual activity in adolescence. School age changes in their study was only significant for external behaviour and sexual activity while changes for adolescents was only significant for externalising behaviour. Lansford et al. found early dissolution to be associated with internalising and externalising behaviour problems but not academic outcomes, although later separations were highly related to academic outcomes. Timing effects were also not addressed in the current research, however, future research could address this by using subsequent releases of LSAC data which will track children across into adolescence.

Early change was also found to contribute to higher problem behaviours with long-term effects by Ryan and Claessens (2012) with different trajectories more likely depending on the type of transition. Milan et al. (2006) found that an early family disruption predicted future risk of externalising diagnoses when children were in third grade. Early instability was also found to predict third grade behaviour by Ackerman et al. (2002) although this was not

the case if recent instability had occurred. Bachman et al.(2011) found that only recent instability contributed to child behavioural outcomes. In this study, this related to children experiencing changes between 6 years to 8 years of age. The results found by both Ackerman et al. (2002) and Bachman et al. (2011) suggest that recent changes for children 8 years old or at a third grade level may also be an important factor in child wellbeing outcomes.

The reviewed research also draws attention to the higher risks for children who experience multiple family transitions or cumulative instability. This supports the need for the current body of research. Osborne and McLanahan (2007) found that while individual family transitions did lead to increased behaviour problems, the effects accumulated with multiple transitions. Higher numbers of family transitions were found to lead to increased ratings of behaviour problems (Bachman et al., 2011; Cavanagh & Huston, 2006) and also to poorer emotional adjustment and academic results (Martinez & Forgatch, 2002). Measures of family instability that also included other risks in addition to family structure change also found that cumulative risk resulted in negative associations with child outcomes.

Cumulative instability was measured by Milan et al. (2006) with a large number of factors including residential moves, death, parental relationship formation or dissolution, temporary parent-child separation, birth of sibling or new child, parent job loss, or a change work hours. They found that cumulative instability increased children's risk of later diagnosis of internalising disorders. In addition to this, those that had experienced higher levels of instability were more at risk of co-morbidity of both internalising and externalising disorders. Together these studies highlight that multiple parental relationship transitions and cumulative instability do place children at greater risk of adverse outcomes. However, Ackerman et al. (2002) used a chronic instability scale consisting of family structure change, residential move, negative life events and parental maladjustment. In this case, chronic instability did not predict child outcomes however maternal education did. This sample was restricted to one experiencing economic disadvantage.

The results found by Ackerman et al. (2002) draw into attention that there are other influential factors that may account for child trajectories with these often relating to family environments, resources or parenting. Ackerman et al. (2002) also determined that harsh parenting mediated the effects of recent instability on child behaviour outcomes. Parenting practices was also found by Martinez and Forgatch (2002) to mediate the effects of family transitions on poorer adjustment. Parental separation and frequent residential change were

found to provide independent contributions to child outcomes (Adam & Chase, 2002). A decline in SES was found to mediate the association between being in a stable cohabitating family and poorer literacy outcomes (Fagan, 2012). The effects of family transitions were also found to be mediated by lower levels of mothering quality and maternal stress (Osborne & McLanahan, 2007). Family environment variables were found to predict child behaviour with family emotional, social and material resources contributing to differences and family structure at birth moderated associations between family instability and behaviour problems (Cavanagh & Huston, 2006).

Another study found no significant differences between adolescents who had experienced family transitions and those still in intact families, however, lower parent attachment and higher teen-parent conflict was evident for those that had experienced instability (Ruschena et al., 2005). Positive perceptions of relationships were found to have protective effects for adolescents in another study, with positive perceptions being associated with fewer adjustment problems (Adam & Chase, 2002). Differences in outcomes were also evident by gender with girls having higher levels of internalising problems compared to boys (Ackerman et al., 2002; Ruschena et al., 2005), and both boys and girls found to have significant levels of externalising problems (Ackerman et al., 2002). One study did not find internalising problems to be significant for girls, although externalising problems were (Adam & Chase-Lansdale, 2002). This sample only used females so gender comparisons are not possible.

These studies all highlight that both family and child level factors play an important part in accounting for variations in child trajectories in the face of family structure transitions and cumulative risks. Child support and relationship quality across home and school contexts have also emerged as being important areas for consideration in risk or resilience trajectories. Ecological models that taken into account the different contexts of child development and the inter-connections between these are therefore an appropriate framework for the current body of research. Additionally, examining these studies has provided significant detail on approaches to measurement of family structure, instability and cumulative risk constructs. These studies have therefore provided valuable methodological models for the current body of research.

Table A.1 Summary of methodology of key literature

Author/s (Year)	Data Source	Sample Range	Sample Description	Change/s	Key Control & Predictor Variables	Outcome Variables	Analyses
Adam & Chase-Lansdale (2002)	Families in Communities (FIC) study.	N=267 15-18 years.	African American female adolescents. Economic disadvantage.	Parental separation variables capturing type, length, age of child. Residential mobility – no. of moves in last 5 years. Financial strain scale.	Household characteristics (caregiver demographics, economic & child age); disruption (moves & separation); perceived environment (parent & peer relationship quality, support, neighbourhood).	Academic achievement; Behaviour - internalising & externalising; sexual behaviour.	Hierarchical linear regression.
Ackerman, Brown, D'Eramo & Izard (2002)	Sample from Head Start programs.	N=139 Preschool-Grade 3.	African American 74%. Economic disadvantage.	Relationship instability, maternal dissolution from residential men – past = child birth to grade 1, recent = over prior 2 yrs, chronic = total. Same for residential moves. Chronic adversity across time: income, residential moves, negative life events and parental maladjustment.	Income; residential moves; negative life events; past & recent parental maladjustment; past & recent instability; maternal education; chronic instability; sex; sex interaction with instability; harsh parenting.	Academic competence; Verbal ability; Behaviour - internalising & externalising.	Hierarchical linear regressions. MANOVA.
Milan, Pinderhuges & Conduct Problems Prevention Research Group (2006)	Study on development and prevention of conduct problems in children.	N=369 K – Grade 5.	Sample from United States of America. Large percentage low income, ethnic or single parent.	Annual family instability – residential moves, death, divorce/separation, remarriage/cohabitation, temporary parent-child separation, birth of sibling or new child, parent job loss, change work hours. Annual and total cumulative family instability.	Annual family instability.	Behaviour – internalising/externalising	Growth curve models. Linear regression.
Bachman, Coley & Carrano (2011)	Three-City Study	N= 891 8 years.	Sample from United States of America. Economic disadvantage.	Mother report relationships transitions. Early/recent transitions.	Marital status; prebirth transitions; maternal age, education, reading; child sex, age, ethnicity; relationship instability.	Behaviour	OLS regression.

Author/s (Year)	Data Source	Sample Range	Sample Description	Change/s	Key Control & Predictor Variables	Outcome Variables	Analyses
Magnuson & Berger (2009)	Maternal and Child Supplement of National Longitudinal Survey of Youth (NLSY)*	N= 3862 6-12 years.	American children.	Single mother, re-partnered or two biological parents: dichotomous to show transitions and total number of transitions.	Maternal age, highest grade, academic ability, smoking; locus control, self esteem; child sex, age, ethnicity, birth weight & order, disability; household income, work hrs, no. of children, time resided with grandparent or single mother.	Academic achievement – mathematics & reading behaviour problems.	Hierarchical linear models.
Fagan (2012)	Early Childhood Longitudinal Survey–Birth	N=6450	Sample from United States of America. 24- 48 months. Two time points.	Mothers married/cohabitating with biological father Time 1; coded changes for Time 2.	Child sex, age, cognition; maternal ethnicity, depression; SES; cognitive stimulation; relationship transitions; pregnancy timing.	Literacy	Multiple regression.
Cavanagh & Huston (2006)	NICHD Study of Early Child Care and Youth Development	N=1015 Birth – Grade 1.	Sample from United States of America. High exclusion of high risk groups, e.g. single mothers.	Family instability – used quasi-count 0-3+	Family structure at birth; family instability; mother education, age; child sex, ethnicity.	Behaviour – externalising and observations	OLS & Poisson regression; Growth Curve models.
Ryan & Claessens (2012)	Maternal and Child Supplement of the NLSY*	N=3492 Birth - 12 years.	Sample from United States of America.	Family transitions measuring across two biological, blended, single, and other.	Maternal grade completion, self esteem, locus of control, cognitive achievement; child sex, ethnicity, birth weight, birth order; household income, home environment; family structure.	Behaviour problems – internalising, externalising.	Piecewise hierarchical linear models.

Author/s (Year)	Data Source	Sample Range	Sample Description	Change/s	Key Control & Predictor Variables	Outcome Variables	Analyses
Ruschena, Prior, Sanson & Smart (2005)	Australian Temperament Project	N=300 Infancy - 17/18 years.	Sample from Australia.	Family transitions – total number and years since last.	Child sex; no. of transitions & years since transition; SES; parent rating of temperament; inter-parental conflict; parent-teen conflict; antisocial peers; reactivity, approach-withdrawal & persistence.	Behaviour problems – total, internalising, externalising; Academic.	ANOVA; MANOVA; Linear regression.
Osborne & McLanahan (2007)	Fragile Families Study	N=2111 Birth-3 years.	Sample from United States of America.	Family transitions (included formation/dissolution of marriage, cohabitating and dating). Total number of relationship changes, change in income and residence.	Maternal age, ethnicity, education; health & maternal parents depression; relationship instability; child sex, birthweight; change in income, residence, maternal stress, mothering quality.	Behaviour - aggressive, anxious/ depressed	Ordinary least squares regression.
Lansford, Malone, Castellino, Dodge, Pettit & Bates (2006)	Child Development Project	N=194 K-10 th grade	Sample from United States of America.	Comparison of intact families to those that experienced separation. Biological parents married at baseline.	Divorce timing; child sex; divorce timing & sex interaction; kindergarten SES; ethnicity; grade at time of divorce.	Academic; – mathematics, language arts. Behaviour – internalising, externalising;	Hierarchical linear models.
Martinez & Forgatch (2002).	Oregon Divorce Study–II	N=238 Grades 1-3	Males from United States of America.	Family transitions. All separated at Time 1.	Family structure transitions – Mod 1 academic skill encouragement – skill, reading, TV watching; Mod 2 effective parenting – positive parenting, coercive discipline.	Academic; Behaviour; Emotional adjustment	SEM.

* **Note:** Sourced from the same longitudinal dataset

APPENDIX B: METHODOLOGICAL DETAILS

Table B.1 Relationship of parents to study child Wave 1

Wave 1		LSAC sample		Restricted sample	
Item	Label	No.	%	No.	%
1	Both biological parents	4130	82.9	3185	87.3
5	1 BP, PLE never cohabited	121	2.4	70	1.9
6	1 BP, PLE never cohabited and is dead	2	0.0	-	-
7	1 BP, PLE lived with P1 before SC	85	1.7	35	1.0
8	1 BP, PLE lived w/ P1 before SC and died	2	0.0	-	-
9	1 BP, PLE lived with P1 since SC	589	11.8	349	9.6
10	1 BP, PLE lived with P1 since SC and died	21	0.4	-	-
11	1 BP, PLE is deceased, don't know history	1	0.0	-	-
12	1 BP relationship history unknown	5	0.1	-	-
15	0 BP, two adoptive parents	9	0.2	9	0.2
18	0 BP, two foster parents	2	0.0	-	-
20	0 BP, one foster, one non-foster	1	0.0	-	-
22	0 BP, other parent type	15	0.3	-	-
Total		4983		3648	

Note: BP = Biological parent; PLE = Parent living elsewhere; P1 = Parent 1; SC = Study child.

Table B.2 Items from outcome scales

Item Label	Value
<i>SDQ Conduct Problems</i>	
10/11 - Teach 23.5 - Temper	1 Not True
10/11 - Teach 23.7 - Obeys requests (reverse coded for scale)	2 Somewhat True 3 Certainly True
10/11 - Teach 23.12 - Often fights/bullies children	
10/11 - Teach 23.18 - Often lies or cheats	
10/11 - Teach 23.22 - Steals	
<i>SDQ Emotional Symptoms</i>	
10/11 - Teach 23.3 - Complained of headaches etc.	1 Not True
10/11 - Teach 23.8 - Often seemed worried	2 Somewhat True
10/11 - Teach 23.13 - Often been unhappy or tearful	3 Certainly True
10/11 - Teach 23.16 - Nervous or easily lose confidence	
10/11 - Teach 23.24 - Had many fears	
<i>ARS Language and Literacy</i>	
10/11 - Teach 19.1 - Conveys ideas when speaking	1 Not yet; 2 Beginning; 3 In progress; 4 Intermediate; 5 Proficient; (-1 Not applicable)
10/11 - Teach 19.2 - Understands and interprets a story read aloud	
10/11 - Teach 19.3 - Strategies to gain information	
10/11 - Teach 19.4 - Reads fluently	
10/11 - Teach 19.5 - Reads and comprehends expository text	
10/11 - Teach 19.6 - Composes multi-paragraph texts	
10/11 - Teach 19.7 - Redrafts writing	
10/11 - Teach 19.8 - Makes editorial corrections	
10/11 - Teach 19.9 - Uses computer for variety of purposes	
<i>ARS Mathematical Thinking</i>	
10/11 - Teach 21.1 - Subtracts numbers	1 Not yet; 2 Beginning; 3 In progress; 4 Intermediate; 5 Proficient; (-1 Not applicable)
10/11 - Teach 21.2 - Reduces fractions	
10/11 - Teach 21.3 - Demonstrates money management skills	
10/11 - Teach 21.4 - Recognises shape properties, area, volume	
10/11 - Teach 21.5 - Uses measurement tools accurately	
10/11 - Teach 21.6 - Understands place value with whole numbers	
10/11 - Teach 21.7 - Estimates reasonably and checks	
10/11 - Teach 21.8 - Uses strategies to multiple/divide	
10/11 - Teach 21.9 - Divides multi-digit problems	
10/11 - Teach 21.10 - Demonstrates algebraic thinking	

Table B.3 Summary of variables missing data >10%

	Missing		Valid N	Raw	SD
	N	Percent		Mean	
ARS M - Demonstrates money skills	890	24.4%	2758	3.44	1.193
ARS M - Reduces fractions	875	24.0%	2773	3.32	1.185
ARS M - Estimates reasonably and checks	836	22.9%	2812	3.47	1.181
ARS M - Divides multi-digit problems	816	22.4%	2832	3.55	1.191
ARS M - Demonstrates algebraic thinking	787	21.6%	2861	3.46	1.164
ARS M - Uses strategies to multiple/divide	782	21.4%	2866	3.56	1.167
ARS M - Uses measurement tools accurately	773	21.2%	2875	3.91	.975
ARS M - Understands place value	768	21.1%	2880	3.89	1.080
ARS M - Subtracts numbers	768	21.1%	2880	4.13	.985
ARS M - Recognises shape properties, area, volume	765	21.0%	2883	3.92	.986
ARS L - Uses computer for variety of purposes	735	20.1%	2913	4.19	.870
ARS L – Reads/comprehends expository text	728	20.0%	2920	3.90	1.010
ARS L - Redrafts writing	713	19.5%	2935	3.66	1.040
ARS L - Strategies to gain information	710	19.5%	2938	4.05	.948
ARS L - Conveys ideas when speaking	710	19.5%	2938	4.19	.903
ARS L - Composes multi-paragraph texts	708	19.4%	2940	3.91	1.027
SDQ C - Steals	708	19.4%	2940	1.02	.172
ARS L - Makes editorial corrections	707	19.4%	2941	3.74	1.027
ARS L - Reads fluently	705	19.3%	2943	4.18	.944
SDQ E - Had many fears	705	19.3%	2943	1.14	.393
ARS L – Understands/ interprets a story	704	19.3%	2944	4.19	.881
SDQ E - Often seemed worried	701	19.2%	2947	1.35	.571
SDQ E - Complained of headaches etc.	700	19.2%	2948	1.15	.432
SDQ C - Often lies or cheats	698	19.1%	2950	1.12	.379
SDQ C - Often fights/bullies	697	19.1%	2951	1.17	.439

Note: Maximum number of variables shown is 25; ARS Mathematical thinking scale items represented by ARS M; ARS Language and Literacy Scale items represented by ARS L; SDQ Emotional Symptoms represented by SDQ E; SDQ Conduct Problems represented by SDQ C.

APPENDIX C: STUDY 1 MATERIAL

Table C.1 Mother marital status and family structure across Wave 1 - Wave 4

Variable (%)	Two Biological Parents	Re-partnered Mother	Single Mother	Total Group
Wave 1 2004	n=3193 (87.5)	n=76 (2.1)	n=379 (10.4)	N3648 (100)
Married	2914 (79.9)	27 (0.7)	N/A	2941(80.6)
De-facto	279 (7.6)	49 (1.3)	N/A	328 (8.9)
Wave 2 2006	n=3098 (84.9)	n=102 (2.8)	n=448 (12.3)	N3648 (100)
Married	2860 (78.4)	46 (1.3)	N/A	2906 (79.7)
De-facto	238 (6.5)	56 (1.5)	N/A	294 (8.0)
Wave 3 2008	n=2989 (82.0)	n=199 (5.5)	n=458 (12.6)	N3648 (100)
Married*	2781 (76.2)	91 (2.5)	N/A	2872 (78.7)
De-facto	208 (5.7)	108 (3.0)	N/A	316 (8.7)
Wave 4 2010	n=2882 (79.0)	n=240 (6.6)	n=526 (14.4)	N3648 (100)
Married	2692 (73.8)	93 (2.5)	N/A	2785 (76.3)
De-facto	190 (5.2)	147 (4.0)	N/A	337 (9.2)

Table C.2 Family structure transition pathways across Wave 1 – Wave 4

Family Structure Stability and Instability Across Waves				N=3648 (% Total Sample)	
WAVE 1 2004	WAVE 2 2006	WAVE 3 2008	WAVE 4 2010	No.	
2 BP 3192 (87.5)	2BP 2BP 3074 (84.3)	2BP 2BP 2BP 2961 (81.2)	2BP 2BP 2BP 2BP 2848 (78.1)	0	
			2BP 2BP 2BP SM 106 (2.9)		1
			2BP 2BP 2BP RPM 7 (0.2)		1
		2BP 2BP SM 102 (2.8)	2BP 2BP SM SM 86 (2.4)		1
			2BP 2BP SM 2BP 2 (0.1)		2
			2BP 2BP SM RPM 14 (0.4)		2
		2BP 2BP RPM 11 (0.3)	2BP 2BP RPM RPM 6 (0.2)		2
			2BP 2BP RPM SM 5 (0.1)		2
	2BP SM 113 (3.1)	2BP SM SM 91 (2.5)	2BP SM SM SM 77 (2.1)		1
			2PB SM SM 2BP 3 (0.1)		2
			2BP SM SM RPM 11 (.03)		2
		2BP SM 2BP 6 (0.2)	2BP SM 2BP 2BP 6 (0.2)		2
		2BP SM RPM 16 (.4)	2BP SM RPM RPM 13 (.04)		2
			2BP SM RPM SM 3 (0.1)		3
	2BP RPM 5 (0.1)	2BP RPM RPM 5 (0.1)	2BP RPM RPM RPM: 5 (0.1)		1
RPM 76 (2.1)	RPM RPM 64 (1.8)	RPM RPM RPM 55 (1.5)	RPM RPM RPM RPM 50 (1.4)	0	
			RPM RPM RPM SM 5 (0.1)		1
		RPM RPM SM 9 (0.3)	RPM RPM SM SM 8 (0.2)		1
			RPM RPM SM RPM 1 (0.0)		2
	RPM SM 12 (0.3)	RPM SM SM 9 (0.3)	RPM SM SM SM 6 (0.2)		1
			RPM SM SM RPM 3 (0.1)		2
		RPM SM RPM 3 (0.1)	RPM SM RPM RPM 3 (0.1)		2
SM 379 (10.4)	SM SM 323 (8.9)	SM SM SM 240 (6.6)	SM SM SM SM 214 (5.9)	0	
			SM SM SM 2BP 1 (0.0)		1
			SM SM SM RPM 25 (0.7)		1
		SM SM RPM 78 (2.1)	SM SM RPM RPM 69 (1.9)		1
			SM SM RPM SM 9 (0.2)		2
		SM SM 2BP 5 (0.1)	SM SM 2BP 2BP 4 (0.1)		1
			SM SM 2BP RPM 1 (0.0)		2
	SM RPM 34 (0.9)	SM RPM RPM 32 (0.9)	SM RPM RPM RPM 29 (0.8)		1
			SM RPM RPM SM 2 (0.1)		2
		SM RPM SM 2 (0.1)	SM RPM SM SM 1 (0.0)		2
			SM RPM SM RPM 1 (0.0)		3
	SM 2BP 23 (0.6)	SM 2BP 2BP 19 (0.5)	SM 2BP 2BP 2BP 18 (0.5)		2
			SM 2BP 2BP SM 1 (0.0)		2
		SM 2BP SM 4 (0.1)	SM 2BP SM SM 3 (0.1)		2
			SM 2BP SM RPM 1 (0.0)		3

Key: Two Biological Parents – 2BP; Re-Partnered Mother – RPM; Single Mother – SM; No. refers to the number of family transitions across waves.

Table C.3 Household characteristics by family structure at Wave 2

Variable	Two Biological Parents (n=3098)	Re-partnered Mother (n=102)	Single Mother (n=448)	Total Group (N=3648)
No. of people in house (%)				
2	0	0	67 (15.0)	67 (1.8)
3	161 (5.2)	19 (18.6)	177 (39.5)	357 (9.8)
4	1373 (44.3)	33 (32.4)	122 (27.2)	1528 (41.9)
5	1062 (34.3)	25 (24.5)	53 (11.8)	1140 (31.3)
6 or more	502 (16.2)	25 (24.5)	29 (6.5)	556 (15.2)
No. of siblings in house (%)				
0	171 (5.5)	20 (19.6)	104 (23.2)	295 (8.1)
1	1455 (47.0)	35 (34.3)	188 (42.0)	1678 (46.0)
2	1038 (33.5)	25 (24.5)	108 (24.1)	1171 (32.1)
3	314 (10.1)	15 (14.7)	34 (7.6)	363 (10.0)
4 or more	120 (3.9)	7 (6.9)	14 (3.1)	141 (3.9)
Biological siblings in home – Yes (%)	2860 (92.3)	48 (47.1)	292 (65.2)	3200 (87.7)
Half or Step-sibling in home – Yes (%)	191 (6.2)	61 (59.8)	70 (15.6)	322 (8.8)

Table C.4 Household characteristics by family structure at Wave 3

Variable	Two Biological Parents (n=2989)	Re-partnered Mother (n=199)	Single Mother (n=458)	Total Group (N=3648)
No. of people in house (%)				
2	0	0	71 (15.5)	71 (1.9)
3	141 (4.7)	30 (15.1)	190 (41.5)	361 (9.9)
4	1274 (42.6)	68 (34.2)	110 (24.0)	1453 (39.8)
5	1039 (34.8)	44 (22.1)	49 (10.7)	1132 (31.0)
6 or more	535 (17.9)	57 (28.6)	38 (8.3)	631 (17.3)
No. of siblings in house (%)				
0	147 (4.9)	33 (16.6)	86 (18.8)	266 (7.3)
1	1367 (45.7)	71 (35.7)	202 (44.1)	1641 (45.0)
2	1012 (33.9)	46 (23.1)	113 (24.7)	1171 (32.1)
3	336 (11.2)	32 (16.1)	37 (8.1)	405 (11.1)
4 or more	127 (4.2)	17 (8.5)	20 (4.4)	165 (4.5)
Biological siblings in home – Yes (%)	2784 (93.1)	11 (55.8)	326 (71.2)	3222 (88.3)
Half or Step-sibling in home – Yes (%)	154 (5.2)	103 (51.8)	74 (16.2)	332 (9.1)

Table C.5 Household characteristics by family structure at Wave 4

Variable	Two Biological Parents (n=2989)	Re-partnered Mother (n=199)	Single Mother (n=458)	Total Group (N=3648)
No. of people in house (%)				
2	0	0	75 (14.3)	75 (2.1)
3	145 (5.0)	26 (10.8)	213 (40.5)	384 (10.5)
4	1247 (43.3)	83 (34.6)	139 (26.4)	1469 (40.3)
5	975 (33.8)	61 (25.4)	62 (11.8)	1098 (30.1)
6 or more	515 (17.9)	70 (29.2)	37 (7.0)	622 (17.1)
No. of siblings in house (%)				
0	150 (5.2)	30 (12.5)	94 (17.9)	274 (7.5)
1	1322 (45.9)	89 (37.1)	229 (43.5)	1640 (45.0)
2	964 (33.4)	65 (27.1)	132 (25.1)	1161 (31.8)
3	328 (11.4)	33 (13.8)	51 (9.7)	412 (11.3)
4 or more	118 (4.1)	23 (9.6)	20 (3.8)	161 (4.4)
Biological siblings in home – Yes (%)	2686 (93.2)	150 (62.5)	378 (71.9)	3214 (88.1)
Half or Step-sibling in home – Yes (%)	109 (3.8)	128 (53.3)	82 (15.6)	319 (8.7)

Table C.6 Child characteristics by family structure Wave 1-Wave 4

WAVE 1 2004				
Variable	Two Biological Parents (n=3193)	Re-partnered Mother (n=76)	Single Mother (n=379)	Total Group (N=3648)
Sex (% male)	1624 (50.9)	41 (53.9)	196 (51.7)	1861 (51.0)
Age mean months (S.D)	56.9 (2.6)	57.4 (2.9)	57.0 (2.6)	56.9 (2.6)
ATSI (%)	63 (2.0)	6 (7.9)	21 (5.5)	90 (2.5)
LBOTE (%)	278 (8.7)	3 (3.9)	23 (6.1)	304 (8.4)
WAVE 2 2006				
Variable	Two Biological Parents (n=3098)	Re-partnered Mother (n=102)	Single Mother (n=448)	Total Group (N=3648)
Sex (% male)	1583 (51.1)	57 (55.9)	221 (49.3)	1861 (51.0)
Age mean months (S.D)	81.8 (2.9)	82.2 (2.6)	82.2 (3.0)	81.8 (2.9)
ATSI (%)	60 (1.9)	6 (5.9)	24 (5.4)	90 (2.5)
LBOTE	265 (8.6)	5 (4.9)	27 (6.0)	297 (8.1)
WAVE 3 2008				
Variable	Two Biological Parents (n=2991)	Re-partnered Mother (n=199)	Single Mother (n=458)	Total Group (N=3648)
Sex (% male)	1523 (50.9)	106 (53.3)	232 (50.7)	1861 (51.0)
Age mean months (S.D)	105.4 (2.8)	105.8 (2.9)	105.7 (2.9)	105.5 (2.8)
ATSI (%)	59 (2.0)	8 (4.0)	23 (5.0)	90 (2.5)
LBOTE	257 (8.6)	7 (3.5)	34 (7.4)	298 (8.2)
WAVE 4 2010				
Variable	Two Biological Parents (n=2882)	Re-partnered Mother (n=240)	Single Mother (n=526)	Total Group (N=3648)
Sex (% male)	1469 (51.0)	130 (54.2)	262 (49.8)	1861 (51.0)
Age mean months (S.D)	129.8 (3.5)	130.2 (3.5)	130.3 (3.5)	129.9 (3.5)
ATSI (%)	56 (1.9)	9 (3.8)	25 (4.8)	90 (2.5)
LBOTE	221 (7.7)	9 (3.8)	33 (6.3)	263 (7.2)

Table C.7 Mother characteristics by family structure at Wave 2

Variable	Two Biological Parents (n=3098)	Re-partnered Mother (n=102)	Single Mother (n=448)	Total Group (N=3648)
Age mean years (S.D)	37.4 (4.8)	32.4 (5.1)	35.8 (6.2)	37.0 (5.1)
ATSI (%)	42 (1.4)	7 (6.9)	18 (4.0)	67 (1.8)
LBOTE (%)	353 (11.4)	7 (6.9)	36 (8.0)	396 (10.9)
Education				
Completed Yr 12 or equivalent (%)	2015 (65.0)	53 (52.0)	207 (46.2)	2275 (62.4)
Highest Qualification (%)				
Postgraduate	220 (7.1)	4 (3.9)	23 (5.1)	247 (6.8)
Grad Diploma	236 (7.6)	3 (2.9)	28 (6.3)	267 (7.3)
Bachelor	590 (19.0)	9 (8.8)	38 (8.5)	637 (17.5)
Adv/Diploma	293 (9.5)	8 (7.8)	34 (7.6)	335 (9.2)
Certificate	785 (25.3)	28 (27.5)	159 (35.5)	972 (26.6)
Other	64 (2.1)	1 (1.0)	6 (1.3)	71 (1.9)
Employment Status (%)				
Employed	2155 (69.6)	74 (72.5)	288 (64.3)	2517 (69.0)
Unemployed	80 (2.6)	5 (4.9)	24 (5.4)	109 (3.0)
Not in labour force	863 (27.9)	23 (22.5)	136 (30.4)	1022 (28.0)
Work Status (%)				
Employed Full Time 30 + hrs (%)	722 (23.3)	31 (30.4)	126 (28.1)	879 (24.1)
Employed Part Time (%)	1399 (45.2)	40 (39.2)	160 (35.7)	1599 (43.8)

Table C.8 Mother characteristics by family structure at Wave 3

Variable	Two Biological Parents (n=2989)	Re-partnered Mother (n=199)	Single Mother (n=458)	Total Group (N=3648)
Age mean years (S.D)	39.3 (4.7)	35.3 (5.1)	38.5 (6.0)	39.0 (5.0)
ATSI (%)	40 (1.3)	7 (3.5)	20 (4.4)	67 (1.8)
LBOTE (%)	346 (11.6)	9 (4.5)	42 (9.2)	397 (10.9)
Education				
Completed Yr 12 or equivalent (%)	1955 (65.4)	95 (47.7)	227 (49.6)	2277 (62.4)
Highest Qualification (%)				
Postgraduate	235 (7.9)	13 (6.5)	23 (5.0)	271 (7.4)
Grad Diploma	246 (8.2)	7 (3.5)	34 (7.4)	287 (7.9)
Bachelor	568 (19.0)	15 (7.5)	51 (11.1)	634 (17.4)
Adv/Diploma	302 (10.1)	20 (10.1)	39 (8.5)	361 (9.9)
Certificate	798 (26.7)	60 (30.2)	176 (38.4)	1036 (28.4)
Other	62 (2.1)	4 (2.0)	8 (1.7)	74 (2.0)
Employment Status (%)				
Employed	2313 (77.4)	154 (77.4)	318 (69.4)	2787 (76.4)
Unemployed	43 (1.4)	4 (2.0)	30 (6.6)	77 (2.1)
Not in labour force	633 (21.2)	41 (20.6)	110 (24.0)	784 (21.5)
Work Status (%)				
Employed Full Time 30 + hrs (%)	897 (30.0)	68 (34.2)	155 (33.8)	1122 (30.8)
Employed Part Time (%)	1404 (47.0)	80 (40.2)	162 (35.4)	1646 (45.1)

Table C.9 Mother characteristics by family structure at Wave 4

Variable	Two Biological Parents (n=2882)	Re-partnered Mother (n=240)	Single Mother (n=526)	Total Group (N=3648)
Age mean years (S.D)	41.4 (4.7)	37.5 (5.1)	40.7 (5.9)	41.1 (5.0)
ATSI (%)	40 (1.4)	6 (2.5)	21 (4.0)	67 (1.8)
LBOTE (%)	379 (13.2)	10 (4.2)	54 (10.3)	443 (12.1)
Education				
Completed Yr 12 or equivalent (%)	1896 (65.8)	121 (50.4)	260 (49.4)	2277 (62.4)
Highest Qualification (%)				
Postgraduate	244 (8.5)	16 (6.7)	35 (6.7)	295 (8.1)
Grad Diploma	249 (8.6)	15 (6.3)	33 (6.3)	297 (8.1)
Bachelor	565 (19.6)	24 (10.0)	52 (9.9)	641 (17.6)
Adv/Diploma	304 (10.5)	20 (8.3)	60 (11.4)	384 (10.5)
Certificate	784 (27.2)	83 (34.6)	203 (38.6)	1070 (29.3)
Other	49 (1.7)	6 (2.5)	7 (1.3)	62 (1.7)
Employment Status (%)				
Employed	2262 (78.6)	184 (76.7)	405 (77.0)	2851 (78.2)
Unemployed	56 (1.9)	4 (1.7)	26 (4.9)	86 (2.4)
Not in labour force	561 (19.5)	52 (21.7)	95 (18.1)	708 (19.4)
Work Status (%)				
Employed Full Time 30 + hrs (%)	996 (34.6)	101 (42.1)	200 (38.0)	1297 (35.6)
Employed Part Time (%)	1256 (43.6)	78 (32.5)	204 (38.8)	1538 (42.2)

Table C.10 Father characteristics by family structure at Wave 2

Variable	Two Biological Parents (n=3098)	Re-partnered Mother (N=102)	Single Mother (n=448)	Father Total Group (N=3200)
Age mean years (S.D)	39.7 (5.7)	35.6 (7.5)	N/A	39.6 (5.8)
ATSI (%)	28 (.9)	3 (2.9)	N/A	31 (1.0)
LBOTE (%)	351 (11.3)	5 (4.9)	N/A	356 (11.1)
Education				
Completed Yr 12 or equivalent (%)	1656 (53.5)	39 (38.2)	N/A	1695 (53.0)
Highest Qualification (%)				
Postgraduate	275 (8.9)	3 (2.9)	N/A	278 (8.7)
Grad Diploma	185 (6.0)	4 (3.9)	N/A	189 (5.9)
Bachelor	483 (15.6)	8 (7.8)	N/A	491 (15.4)
Adv/Diploma	272 (8.8)	7 (6.9)	N/A	279 (8.7)
Certificate	1106 (35.7)	38 (37.3)	N/A	1144 (35.8)
Other	86 (2.8)	4 (3.9)	N/A	90 (2.8)
Employment Status (%)				
Employed	2969 (95.8)	96 (94.1)	N/A	3065 (95.8)
Unemployed	46 (1.5)	1 (1.0)	N/A	47 (1.5)
Not in labour force	83 (2.7)	5 (4.9)	N/A	88 (2.8)
Work Status (%)				
Employed Full Time 30 + hrs (%)	2873 (92.7)	88 (86.3)	N/A	2961 (92.5)
Employed Part Time (%)	95 (3.1)	8 (7.8)	N/A	103 (3.2)

Table C.11 Father characteristics by family structure at Wave 3

Variable	Two Biological Parents (n=2989)	Re-partnered Mother (n=199)	Single Mother (n=458)	Father Total Group (N=3188)
Age mean years (S.D)	41.7 (5.7)	37.7 (7.7)	N/A	41.4 (5.9)
ATSI (%)	27 (0.9)	9 (4.5)	N/A	36 (1.1)
LBOTE (%)	332 (11.1)	7 (3.5)	N/A	339 (10.6)
Education				
Completed Yr 12 or equivalent (%)	1611 (53.9)	65 (32.7)	N/A	1676 (53.2)
Highest Qualification (%)				
Postgraduate	281 (9.4)	8 (4.0)	N/A	289 (9.2)
Grad Diploma	190 (6.4)	5 (2.5)	N/A	195 (6.2)
Bachelor	470 (15.7)	15 (7.5)	N/A	485 (15.4)
Adv/Diploma	276 (9.2)	8 (4.0)	N/A	284 (9.0)
Certificate	1081 (36.2)	60 (30.2)	N/A	1141 (36.2)
Other	79 (2.6)	7 (3.5)	N/A	86 (2.7)
Employment Status (%)				
Employed	2888 (96.6)	185 (93.0)	N/A	3073 (96.4)
Unemployed	28 (0.9)	6 (3.0)	N/A	34 (1.1)
Not in labour force	73 (2.4)	8 (4.0)	N/A	81 (2.5)
Work Status (%)				
Employed Full Time 30 + hrs (%)	2801 (93.7)	179 (89.9)	N/A	2980 (93.5)
Employed Part Time (%)	87 (2.9)	6 (3.0)	N/A	93 (2.9)

Table C.12 Father characteristics by family structure at Wave 4

Variable	Two Biological Parents (n=2882)	Re-partnered Mother (n=240)	Single Mother (n=526)	Father Total Group (N=3122)
Age mean years (S.D)	43.8 (5.7)	39.5 (8.3)	N/A	43.4 (6.0)
ATSI (%)	24 (0.8)	9 (3.8)	N/A	33 (1.1)
LBOTE (%)	378 (13.1)	7 (2.9)	N/A	385 (12.3)
Education				
Completed Yr 12 or equivalent (%)	1556 (54.0)	87 (36.3)	N/A	1643 (53.2)
Highest Qualification (%)				
Postgraduate	288 (10.0)	7 (3.3)	N/A	295 (9.6)
Grad Diploma	193 (6.7)	5 (2.4)	N/A	198 (6.4)
Bachelor	456 (15.8)	19 (9.1)	N/A	475 (15.4)
Adv/Diploma	274 (9.5)	9 (4.3)	N/A	283 (9.2)
Certificate	1035 (35.9)	91 (43.5)	N/A	1126 (36.5)
Other	76 (2.6)	6 (2.9)	N/A	82 (2.7)
Employment Status (%)				
Employed	2749 (95.4)	222 (92.5)	N/A	2971 (95.3)
Unemployed	34 (1.2)	10 (4.2)	N/A	44 (1.4)
Not in labour force	96 (3.3)	7 (2.9)	N/A	103 (3.3)
Work Status (%)				
Employed Full Time 30 + hrs (%)	2639 (91.6)	209 (87.1)	N/A	2848 (91.3)
Employed Part Time (%)	110 (3.8)	13 (5.4)	N/A	123 (3.9)

Table C.13 Family economic circumstances by family structure at Wave 2

Variable	Two Biological Parents (n=3098)	Re-partnered Mother (n=102)	Single Mother (n=448)	Total Group (N=3648)
Main Income Source of Mother (%)				
Wages/Salary	1696 (54.7)	55 (53.9)	187 (41.7)	1938 (52.1)
Government Pension/Allowance	920 (29.7)	39 (38.2)	231 (51.6)	1190 (32.6)
Child Support	1 (0.0)	3 (2.9)	15 (3.3)	19 (0.5)
Mother Weekly Income (%)				
\$2000 or more per week	49 (1.6)	1 (1.0)	5 (1.1)	55 (1.5)
\$1000-\$1999 per week	322 (10.4)	9 (8.8)	61 (13.6)	392 (10.7)
\$500-\$999 per week	790 (25.5)	37 (36.3)	199 (44.5)	1026 (28.1)
Less than \$500 per week	1855 (59.9)	53 (52.0)	171 (38.3)	2079 (57.0)
<i>Missing or N/A</i>	82	2	1	84
Father Weekly Income (%)				
				<i>Father n=3200</i>
\$2000 or more per week	397 (12.8)	3 (2.9)	N/A	400 (12.5)
\$1000-\$1999 per week	1345 (43.4)	32 (31.4)	N/A	1378 (43.0)
\$500-\$999 per week	894 (28.9)	50 (49.0)	N/A	946 (29.6)
Less than \$500 per week	329 (10.6)	13 (12.7)	N/A	344 (10.7)
<i>Missing or N/A</i>	132	4	N/A	136
Combined Income Weekly (%)				
\$2000 or more per week	911 (31.8)	18 (19.1)	16 (3.9)	945 (28.1)
\$1000-\$1999 per week	1480 (51.7)	52 (55.3)	91 (22.4)	1623 (48.3)
\$500-\$999 per week	402 (14.0)	23 (24.5)	177 (43.6)	602 (17.9)
Less than \$500 per week	65 (2.3)	1 (1.1)	122 (30.0)	193 (5.7)
<i>Missing or N/A</i>	235	8	42	285
Family Financial Comfort (%)				
Prosperous/Very Comfortable	940 (30.3)	21 (20.6)	49 (10.9)	1010 (27.7)
Reasonably Comfortable	1569 (50.6)	52 (51.0)	172 (38.4)	1793 (49.2)
Just Getting Along	557 (18.0)	28 (27.5)	200 (44.6)	785 (21.5)
Poor/Very Poor	32 (1.0)	1 (1.0)	27 (6.0)	60 (1.7)
Home Ownership (%)				
Being rented	449 (14.5)	41 (40.2)	242 (54.0)	732 (20.1)
Being paid off	2148 (69.3)	56 (54.9)	149 (33.3)	2353 (64.5)
Owned outright	426 (13.8)	3 (2.9)	23 (5.1)	452 (12.4)

Table C.14 Family economic circumstances by family structure at Wave 3

Variable	Two Biological Parents (n=2989)	Re-partnered Mother (n=199)	Single Mother (n=458)	Total Group (N=3648)
Main Income Source of Mother (%)				
Wages/Salary	1880 (63.4)	108 (55.1)	237 (52.1)	2227 (61.5)
Government Pension/Allowance	582 (19.6)	56 (28.6)	194 (42.6)	832 (23.0)
Child Support	NIL	3 (1.5)	10 (2.2)	13 (.4)
Mother Weekly Income (%)				
\$2000 or more per week	52 (1.7)	6 (3.0)	5 (1.1)	63 (1.7)
\$1000-\$1999 per week	451 (15.1)	23 (11.6)	91 (19.9)	566 (15.5)
\$500-\$999 per week	921 (30.8)	75 (37.7)	221 (48.3)	1218 (33.4)
Less than \$500 per week	1462 (49.0)	86 (43.2)	124 (27.1)	1672 (45.9)
<i>Missing or N/A</i>	<i>103</i>	<i>9</i>	<i>17</i>	<i>129</i>
Father Weekly Income (%)				
				<i>Father n=3188</i>
\$2000 or more per week	512 (17.1)	15 (7.5)	N/A	527 (16.5)
\$1000-\$1999 per week	1360 (45.5)	58 (29.1)	N/A	1421 (44.5)
\$500-\$999 per week	694 (23.2)	89 (44.7)	N/A	785 (24.6)
Less than \$500 per week	268 (9.0)	20 (10.1)	N/A	289 (9.0)
<i>Missing or N/A</i>	<i>155</i>	<i>17</i>	<i>N/A</i>	<i>172</i>
Combined Income Weekly (%)				
\$2000 or more per week	1221 (44.6)	43 (25.3)	15 (3.3)	1281 (38.7)
\$1000-\$1999 per week	1229 (44.9)	98 (57.6)	11 (25.1)	1428 (43.1)
\$500-\$999 per week	240 (8.8)	25 (14.7)	200 (49.6)	466 (14.1)
Less than \$500 per week	43 (1.6)	4 (2.4)	86 (21.3)	139 (4.2)
<i>Missing or N/A</i>	<i>250</i>	<i>29</i>	<i>55</i>	<i>334</i>
Family Financial Comfort (%)				
Prosperous/Very Comfortable	899 (30.1)	40 (20.1)	44 (9.7)	983 (27.0)
Reasonably Comfortable	1463 (48.9)	103 (51.8)	172 (37.6)	1740 (47.7)
Just Getting Along	590 (19.7)	53 (26.6)	212 (46.3)	855 (23.4)
Poor/Very Poor	37 (1.3)	3 (1.5)	30 (6.6)	70 (25.0)
Home Ownership (%)				
Being rented	399 (13.3)	71 (35.7)	238 (52.0)	710 (19.5)
Being paid off	2044 (68.4)	112 (56.3)	156 (34.1)	2286 (62.8)
Owned outright	478 (16.0)	9 (4.5)	32 (7.0)	546 (15.0)

Table C.15 Family economic circumstances by family structure at Wave 4

Variable	Two Biological Parents (n=2882)	Re-partnered Mother (n=240)	Single Mother (n=526)	Total Group (N=3648)
Main Income Source of Mother (%)				
Wages/Salary	1917 (66.7)	140 (58.3)	302 (58.1)	2359 (64.9)
Government Pension/Allowance	474 (16.5)	64 (26.7)	189 (36.4)	727 (20.0)
Child Support	NIL	3 (1.3)	1 (.2)	4 (.1)
Mother Weekly Income (%)				
\$2000 or more per week	72 (2.6)	10 (4.3)	12 (2.4)	94 (2.7)
\$1000-\$1999 per week	555 (20.0)	43 (18.7)	123 (24.2)	721 (20.5)
\$500-\$999 per week	919 (33.1)	88 (38.3)	256 (50.4)	1263 (35.9)
Less than \$500 per week	1012 (36.4)	77 (33.5)	108 (21.3)	1197 (34.0)
<i>Missing or N/A</i>	324	22	27	373
Father Weekly Income (%)				
				<i>Father n=3122</i>
\$2000 or more per week	604 (22.9)	25 (12.3)	N/A	629 (20.1)
\$1000-\$1999 per week	1217 (46.2)	75 (36.9)	N/A	1292 (41.4)
\$500-\$999 per week	547 (20.8)	75 (36.9)	N/A	622 (20.0)
Less than \$500 per week	215 (8.2)	25 (12.3)	N/A	240 (7.7)
<i>Missing or N/A</i>	299	40	N/A	339
Combined Income Weekly (%)				
\$2000 or more per week	1337 (50.3)	70 (32.0)	25 (5.5)	1432 (43.0)
\$1000-\$1999 per week	1028 (38.7)	113 (51.6)	136 (29.8)	1277 (38.3)
\$500-\$999 per week	208 (7.8)	27 (12.3)	218 (47.7)	453 (13.6)
Less than \$500 per week	14 (3.1)	9 (4.1)	78 (17.1)	170 (5.1)
<i>Missing or N/A</i>	226	21	69	316
Family Financial Comfort (%)				
Prosperous/Very Comfortable	937 (32.5)	47 (19.6)	42 (7.9)	1026 (28.1)
Reasonably Comfortable	1463 (50.8)	118 (49.2)	222 (42.2)	1803 (49.4)
Just Getting Along	461 (16.0)	70 (29.2)	229 (43.5)	760 (20.8)
Poor/Very Poor	17 (.6)	5 (2.1)	30 (5.7)	52 (1.4)
Home Ownership (%)				
Being rented	366 (12.7)	73 (30.4)	271 (51.8)	710 (19.5)
Being paid off	1965 (68.3)	141 (58.8)	180 (34.4)	2286 (62.8)
Owned outright	489 (17.0)	17 (7.1)	40 (7.6)	546 (15.0)

APPENDIX D: STUDY 2 MATERIAL

Table D.1 Distance moved in most recent residential shift

Variable (%)	Two Biological Parents	Re-partnered Mother	Single Mother	Total Group N = 3648
Wave 1 2004	n=3193	n=76	n=379	
Distance in Most Recent Move (%)				
Within town	776 (24.3)	38 (50.0)	142 (37.5)	956 (26.2)
Within region	671 (21.0)	17 (22.4)	108 (28.5)	796 (21.8)
Within state	174 (5.4)	13 (17.1)	41 (10.8)	228 (6.3)
Interstate/Overseas	155 (4.9)	15 (19.7)	18 (4.8)	175 (4.8)
N/A	1413 (44.3)	6 (7.9)	70 (18.5)	1489 (40.9)
Wave 2 2006	n=3098	n=102	n=448	
Distance in Most Recent Move (%)				
Within town	903 (29.1)	53 (52.0)	179 (40.0)	1135 (31.1)
Within region	706 (22.8)	26 (25.5)	133 (29.7)	865 (23.7)
Within state	197 (6.4)	12 (11.8)	46 (10.3)	255 (7.0)
Interstate/Overseas	139 (4.5)	4 (3.9)	19 (4.2)	162 (4.5)
N/A	1075 (37.3)	20 (8.3)	132 (25.1)	1227 (33.6)
Wave 3 2008	n=2989	n=199	n=458	
Distance in Most Recent Move (%)				
Within town	972 (32.5)	97 (48.7)	180 (39.3)	1249 (34.2)
Within region	689 (23.0)	67 (33.7)	124 (27.1)	880 (24.1)
Within state	210 (7.0)	20 (10.1)	50 (10.9)	280 (7.7)
Interstate/Overseas	149 (5.0)	10 (5.0)	19 (4.1)	178 (4.8)
N/A	967 (32.3)	5 (2.5)	85 (18.6)	1057 (29.0)
Wave 4 2010	n=2882	n=240	n=526	
Distance in Most Recent Move (%)				
Within town	982 (34.1)	118 (49.2)	223 (42.6)	323 (36.3)
Within region	685 (23.8)	80 (33.3)	161 (30.8)	926 (25.4)
Within state	206 (7.1)	26 (10.8)	36 (6.9)	268 (7.4)
Interstate/Overseas	143 (5.0)	8 (3.3)	22 (4.2)	173 (4.8)
N/A	859 (29.9)	8 (3.3)	81 (15.5)	948 (26.0)

APPENDIX E: CONFIRMATORY FACTOR ANALYSES FOR OUTCOME MEASURES

E.1 Confirmatory Factor Analysis

This appendix presents the confirmatory factor analyses conducted for the four outcomes measures used in predictive analyses for Study 3. Separate analyses were conducted for the SDQ Emotional Problems scale, the SDQ Conduct Problems scale, the ARS Language and Literacy scale and the ARS Mathematical Thinking scale.

Typically CFA research completed on the SDQ has consisted of examining the overall factor structure of the five-factor model utilising all SDQ subscales. For the purpose of this research, the SDQ Emotional Symptoms and Conduct Problems scales were selected as teacher reported measures of child internalising and externalising behaviours respectively. The ARS Language and Literacy, and the Mathematical Thinking scales were selected as teacher reported measures of child academic achievement. Conducting CFA served the purpose of finding the best model fit for the current sample so that the relevant factor weight scores could be obtained. These were then used to create proportional weighted scores to be used in Study 3 analyses. This was completed in order to ensure scale items were proportionally weighted reflecting their contribution to the scale as opposed to other approaches which involve giving equal weighting to all items.

In order to determine appropriate model fit, a range of model fit indices were utilised. These indices and the recommended cut-off values are provided below in Table E.1. The recommendations and criteria for CFA model fit as outlined by Schreiber, Nora, Stage, Barlow and King (2006) were considered when identifying appropriate measures and cut-off values. Further details pertaining to the methodological approach used for the data analyses of this study, such as handling of missing data, are provided in Chapter 3.

Table E.1 Measures of model fit indices

Measures of Model Fit	Cut-Off Values	Sources
<i>Absolute Index</i>		
Chi-square (χ^2)	$p > .05$	Gulliksen & Tukey (1958)
<i>Parsimony-adjusted Index</i>		
RootMean-Square Approximation (RMSEA)	RMSEA $< .06$	Schreiber et al., (2006)
<i>Incremental Fit Indices</i>		
Comparative Fit Index (CFI)	CFI $> .95$	Bentler (1990)
Tucker-Lewis Index (TLI)	TLI $> .95$	Tucker & Lewis (1973)
Goodness-of-Fit (GFI)	GFI $> .95$	Joreskog & Sorbom (1984)
Adjusted Goodness-of-Fit (AGFI)	AGFI $> .95$	Joreskog & Sorbom (1984)
<i>Model Comparison</i>		
Akaike Information Criterion (AIC)	Smallest value	Schreiber et al., (2006)

Throughout the remainder of this appendix, findings for the SDQ Emotional Symptoms models will initially be presented, followed by the SDQ Conduct Problems models. Next the ARS Language and Literacy models will be presented followed by the ARS Mathematical Thinking Models. The results for the factor score weights and corresponding proportionally weighted factor scores will then be presented for each outcome measure. A discussion of the results will then follow.

E.2 Results

E.2.1 Strengths and Difficulties Emotional Symptoms

Model 1 for the SDQ Emotional Symptoms factor is presented in Figure E.1. This also provides results for the squared multiple correlation coefficients and the standardised regression weights. The squared multiple correlation coefficients (R^2) provide an indication of the amount of variance the factor accounts for in the observed variables (Albright & Park, 2009; Schreiber et al., 2006). Items being above >0.5 are seen to reflect the construct well, and between $0.3-.05$ are considered to be weak but adequate. Below $.03$ is considered to be poor. Only one item was strong, being the SDQ-E2 (.59). The weakest item was SDQ-E1 (.20) which suggests this is not a strong item. The standardised regression weights also shown in Figure E.1, should ideally be above 0.5 in order to demonstrate alignment with the factor. All items achieved this except SDQ-E1 (.45). This highlights the importance of determining proportional weighted factor scores given the variation in contribution to factor scores by individual items.

The chi-square goodness of overall fit value for was significant $\chi^2 (5) 156.792, p < .000$ suggesting a lack of fit between the hypothesised model and the data. Chi-square is known to be sensitive to large samples (Ullman, 2006) therefore other fit indices were examined, as shown in Table E.2. The CFI, NFI and GFI were above the desired cut-off of $>.95$ while the AGFI sat just below this. All of these indices suggested model fit, however, the TLI was below this suggested a poor fitting model. The RMSEA being $.091$ was also deemed an unacceptable deviation from the recommended cut-off of <0.06 . The AIC value for the first model was 176.792 .

Due to the poor fit of the TLI and RMSEA, the modification indices were examined. These suggested that the model would improve if a re-specification allowed a co-variance between SDQ-E4 (*Nervous/easily lose confidence*) and SDQ-E5 (*Had many fears*). These items both relate to anxiety and were a co-variance was considered to be theoretically supported. The model re-specification resulted in Model 2 (see Table E.2 for indices). Results of the chi-square goodness of fit suggested the model was an unacceptable fit for the data, $\chi^2 (4) = 64.137, p < .000$. Inspection of other indices indicated support for the model, with the exception of the RMSEA which was still marginally out of range of the desired cut-off of <0.06 . Modification indices for Model 2 suggested a co-variance between SDQ-E1 (*Complained of headaches*) and SDQ-E2 (*Often seemed worried*). Again it was considered to be theoretically sound to allow these items to co-vary and the re-specification was completed.

Model 3 was the final SDQ Emotional Symptoms model. The chi-square goodness of fit statistic was verging on not being significant $\chi^2 (3) = 8.02, p = .046$, however, due to the known sensitivity with large sample size this was not considered an appropriate indicator of model fit. All other model fit indices indicated that the model fit the data well (see Table E.2). The AIC value for the first model was Model 1 (176.792) compared to the final model (32.012) also indicated that Model 3 was a better fit for the data. Model 3 is presented in Figure E.2. The squared multiple correlation coefficients and the standardised regression weights are again presented, with a comparison between Model 1 and Model 3 revealing marginal changes with the addition of the co-variances with the SDQ-E1 item remaining the weakest. Model 6 was accepted and the factor score weights and internal consistency measures are presented later in this chapter.

Table E.2 Fit indices results for SDQ Emotional Symptoms models

	CFI	TLI	NFI	AGFI	GFI	RMSEA
	>.95	>.95	>.95	>.95	>.95	<.06
SDQ E - Model 1	.967	.933	.966	.948	.983	.091
SDQ E - Model 2	.987	.967	.986	.975	.993	.064
SDQ E - Model 3	.999	.996	.998	.996	.999	.021

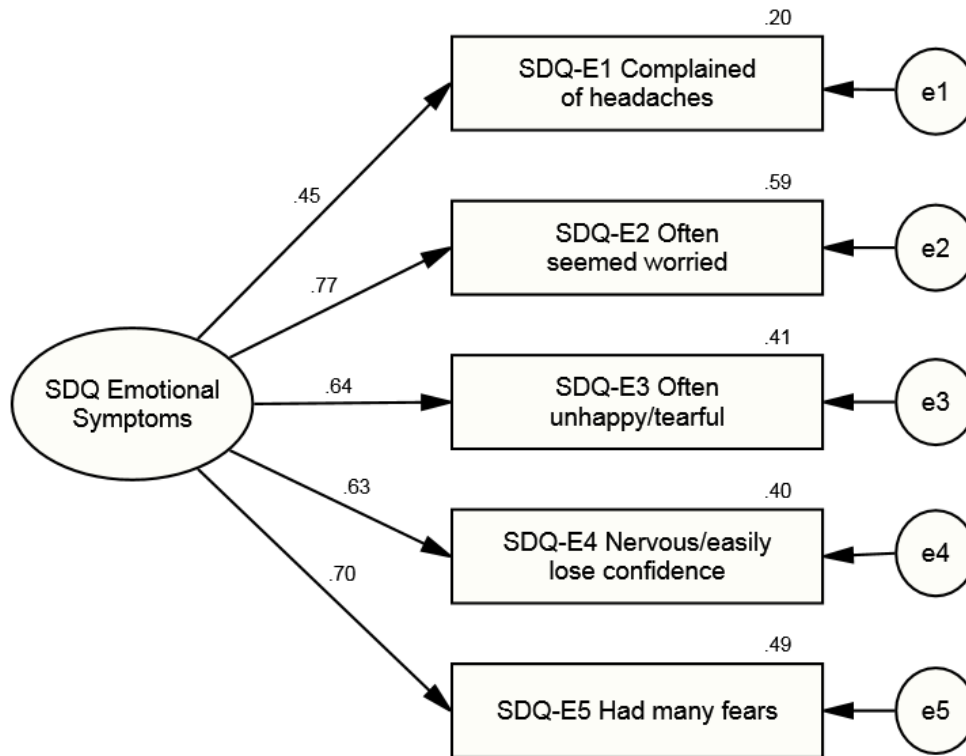


Figure E.1 SDQ Emotional Symptoms model 1

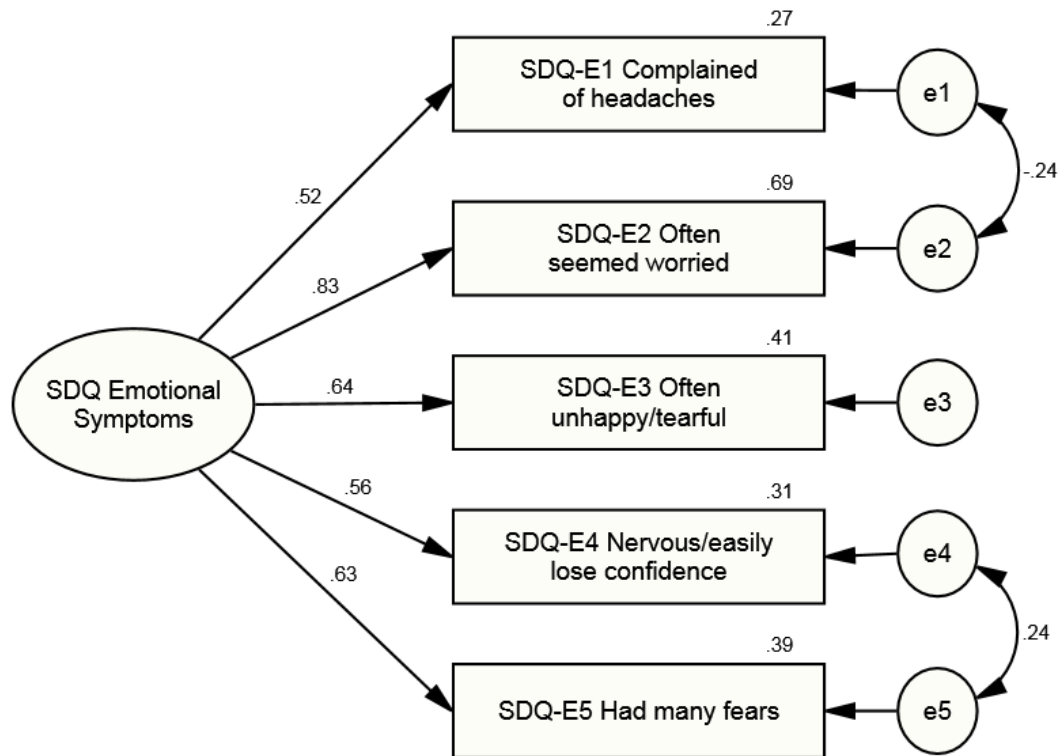


Figure E.2 SDQ Emotional Symptoms model 3

E.2.2 Strengths and Difficulties Conduct Problems

Model 1 for the SDQ Conduct Problems factor is presented in Figure E.3. The squared multiple correlation coefficients and the standardised regression weights are also displayed in the figure. Inspection of the squared multiple correlation coefficients revealed that two items, SDQ-C1 and SDQ-C3, were above the >0.5 indicator for being a good measure of the construct. Another two item falls within the weak but adequate range, while the SDQ-C5 (.12) item reflected a very poor fit and a corresponding low standardised regression weight of .34 which was again indicating more contribution to the factor. This would ordinarily indicate that the item should be dropped, however, the purpose of the current study was to keep all items given that the SDQ is a well used and validated measure. Instead this highlights the need to identify individual variable contributions to factors as opposed to assuming equal weighting.

Inspection of the chi-square goodness of overall fit value for Model 1 of the SDQ Conduct Problems factor was significant $\chi^2(5) 281.976, p < .000$ which suggested a lack of fit between the hypothesised model and the data. Given the sensitivity of chi-square to large samples, the other fit indices were examined. These are presented in Table E.3. The

majority of indices were just below the desired cut-off of $>.95$ including CFI, TLI, NFI, and AGFI which suggested it was an unacceptable model. While the GFI supported the model, the RMSEA being .123 also indicated unacceptable model fit. The AIC value for the first model was 301.976. Due to the suggested poor fit, the modification indices were examined. These suggested that the model would improve if a re-specification allowed a co-variance between SDQ-E4 (*Often lies/cheats*) and SDQ-E5 (*Steals*). These items both relate to deceptive behaviour therefore a co-variance was considered to be theoretically supported.

Re-specification resulted in Model 2 which was the final SDQ Conduct Problems model. The chi-square goodness of fit statistic was verging on not being significant $\chi^2 (4) = 46.875, p < .000$, however, due to the known sensitivity with large sample size this was still not considered an appropriate indicator of model fit. All other model fit indices indicated that the model fit the data well (see Table E.3). The AIC value for the first model was Model 1 (301.976) compared to the final model (68.875) also indicated that Model 2 was a better fit for the data. Model 2 is presented in Figure E.4. The squared multiple correlation coefficients and the standardised regression weights are again presented, with a comparison between Model 1 and Model 2 revealing marginal changes with the addition of the co-variances with the SDQ-E1 item remaining the weakest item.

Table E.3 Fit indices results for SDQ Conduct Problems models

	CFI	TLI	NFI	AGFI	GFI	RMSEA
	$>.95$	$>.95$	$>.95$	$>.95$	$>.95$	$<.06$
SDQ C - Model 1	.944	.887	.943	.909	.970	.123
SDQ C - Model 2	.991	.978	.990	.982	.995	.054

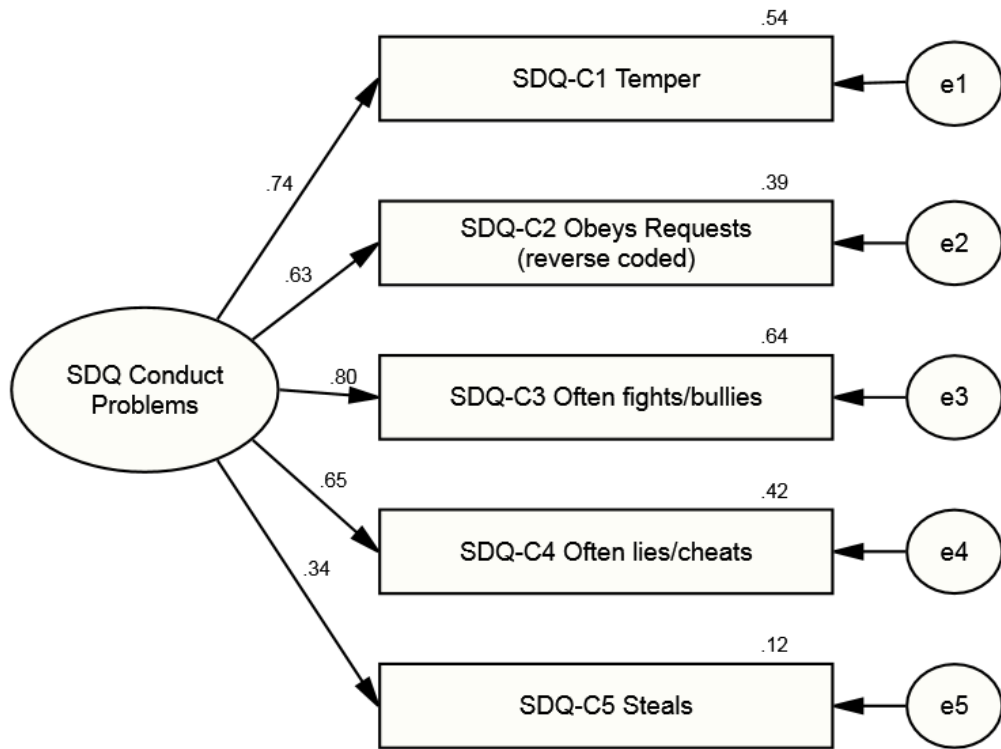


Figure E.3 SDQ Conduct Problems model 1

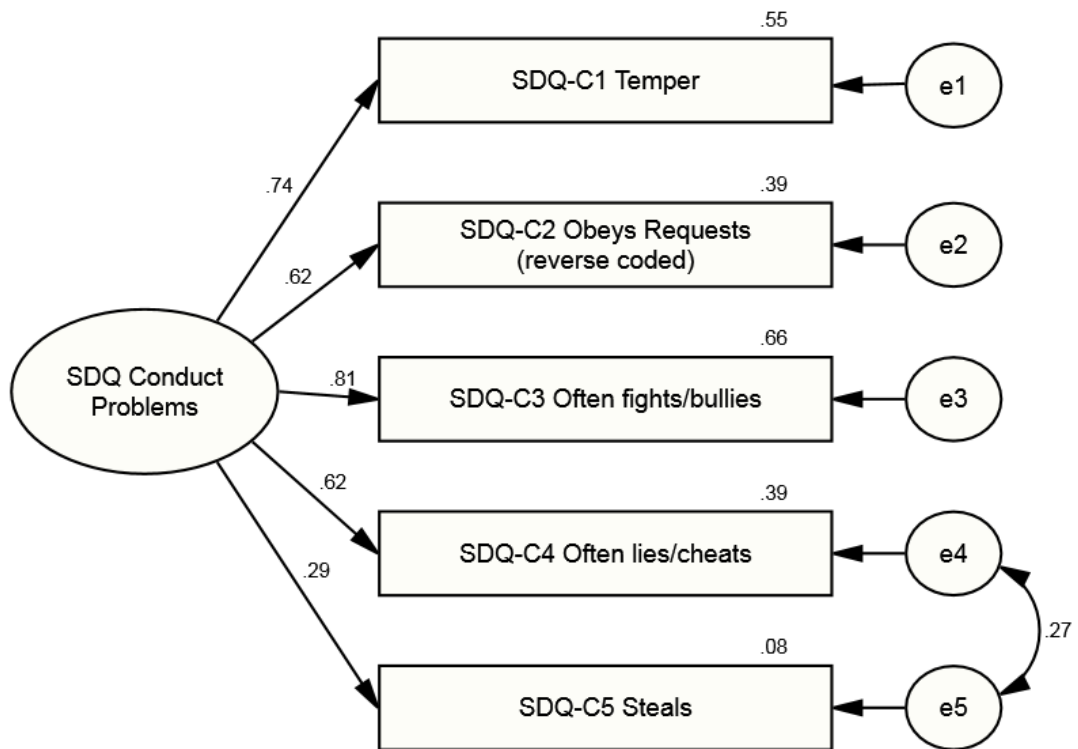


Figure E.4 SDQ Conduct Problems model 2

E.2.3 Academic Rating Scale Language and Literacy

Model 1 is presented in Figure E.5, and also provides results for the squared multiple correlation coefficients and the standardised regression weights. The squared multiple correlation coefficients for Model 1 indicated that the items reflected the construct of the ARS Language and Literacy scale well with all loading above >0.5. The weakest item was ARS-L9 (.63) although this was still above the recommended benchmark for indicating a good measure. The standardised regression weights also shown in Figure E.5, reflect moderate to strong item loadings. Again the lowest item was ARS-L9 (.79) however being well above 0.5 this indicates that all items were reasonably aligned with the factor.

Despite the items being good indicators for the factor, the chi-square goodness of overall fit value for was significant $\chi^2 (27) 2017.573, p <.000$ suggesting a lack of fit between the data and the hypothesised model. Given chi-square sensitivity to large samples other fit indices were examined. These indicated varying results with Table E.4. Most indices were close to the desired cut-off of >.95, including the CFI, TLI and NFI. However, further below indicating a poor model fit were the GFI and AGFI. The RMSEA value was also deemed to be unacceptable as at .142 it was well above the recommended cut-off of <0.06. The AIC value for the first model was 2053.575.

Given the poor fit of a number of indices, the modification indices were examined. These suggested that the model would improve if it was re-specified to allow a co-variance between ARS-L7 (*Redrafts writing*) and ARS-L8 (*Makes editorial corrections*). Both items relate to child editing skills and were a co-variance was theoretically supported. The model re-specification was completed which resulted in Model 2 (see Table E.4 for indices). Results indicated that the model still required further modification. The chi-square goodness of fit suggested the model was an unacceptable fit for the data, $\chi^2 (26) = 1138.342, p < .000$, as was anticipated given the sample size. The CFI, TLI and NFI supported model fit, however, the AGFI, GFI and RMSEA were still below recommended cut-offs. Modification indices for Model 2 suggested a co-variance between ARS-L6 (*Composes multi-paragraph texts*) and ARS-L7 (*Redrafts writing*). Due to both items relating to child writing ability, the co-variance was theoretically sound.

Re-specification resulted in Model 3 (see Table E.4 for indices). Again chi-square goodness of fit had a significant result $\chi^2 (25) = 810.571, p < .000$ suggesting

unacceptable fit. The CFI, TLI, NFI and GFI supported model fit, with AGFI and RMSEA still below recommended cut-offs. Modification indices for Model 3 suggested a co-variance between ARS-L6 (*Composes multi-paragraph texts*) and ARS-L8 (*Makes editorial corrections*). As both items related to child writing ability, the co-variance was theoretically sound and the re-specification was made.

This resulted in Model 4 (see Table E.4). The chi-square result for Model 4 remained significant $\chi^2(24) = 482.760, p < .000$. The other model fit indices remained similar to the previous model, with only AGFI and RMSEA suggesting a poor fit. Modification indices for Model 4 suggested a co-variance between ARS-L1 (*Conveys ideas when speaking*) and ARS-L2 (*Understands and interprets a story read aloud*). Given the link between communicating understanding, this co-variance was considered acceptable.

This resulted in Model 5 (see Table E.4) which also had significant chi-square results $\chi^2(23) = 338.587, p < .000$. All other model fit indices indicated a well fitting model except for the RMSEA which was still marginally too high. Modification indices for Model 5 suggested a co-variance between ARS-L2 (*Understands and interprets a story read aloud*) and ARS-L4 (*Reads fluently*). Given the shared item relationship to reading, this was considered theoretically sound and the final modification was made.

Model 6 was the final ARS Language and Literacy model. The chi-square goodness of fit statistic was still significant $\chi^2(22) = 255.112, p < .000$. While this continued to suggest a lack of fit, due to the large sample size this was disregarded. All other model fit indices indicated a well fitting model (see Table E.4). Model 6 is presented in Figure D.6. The squared multiple correlation coefficients and the standardised regression weights are again presented, showing marginal changes with the addition of the co-variances. The ARS-L9 item remained the weakest item, however, it was still above suggested benchmarks for showing contribution to the scale. Model 6 was accepted, with the relevant factor score weights and internal consistency measures presented further in the chapter.

Table E.4 Fit indices results for ARS Language and Literacy models

	CFI	TLI	NFI	AGFI	GFI	RMSEA
	>.95	>.95	>.95	>.95	>.95	<.06
ARS L - Model 1	.948	.930	.947	.780	.868	.142
ARS L - Model 2	.971	.960	.970	.879	.930	.108
ARS L - Model 3	.979	.970	.979	.909	.950	.093
ARS L - Model 4	.988	.982	.987	.945	.971	.072
ARS L - Model 5	.992	.987	.991	.959	.979	.061
ARS L - Model 6	.994	.990	.993	.968	.985	.054

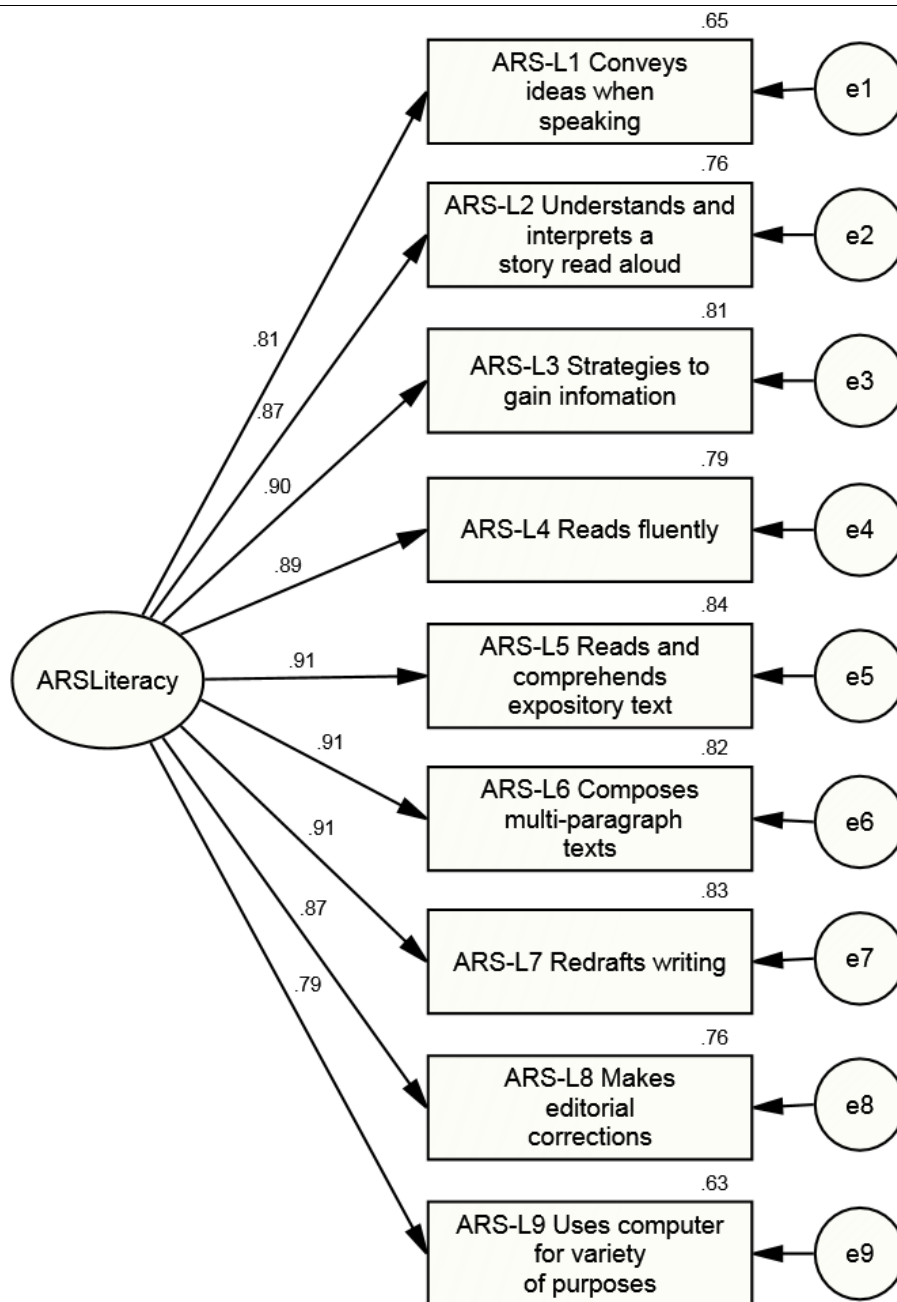


Figure E.5 ARS Language and Literacy model 1

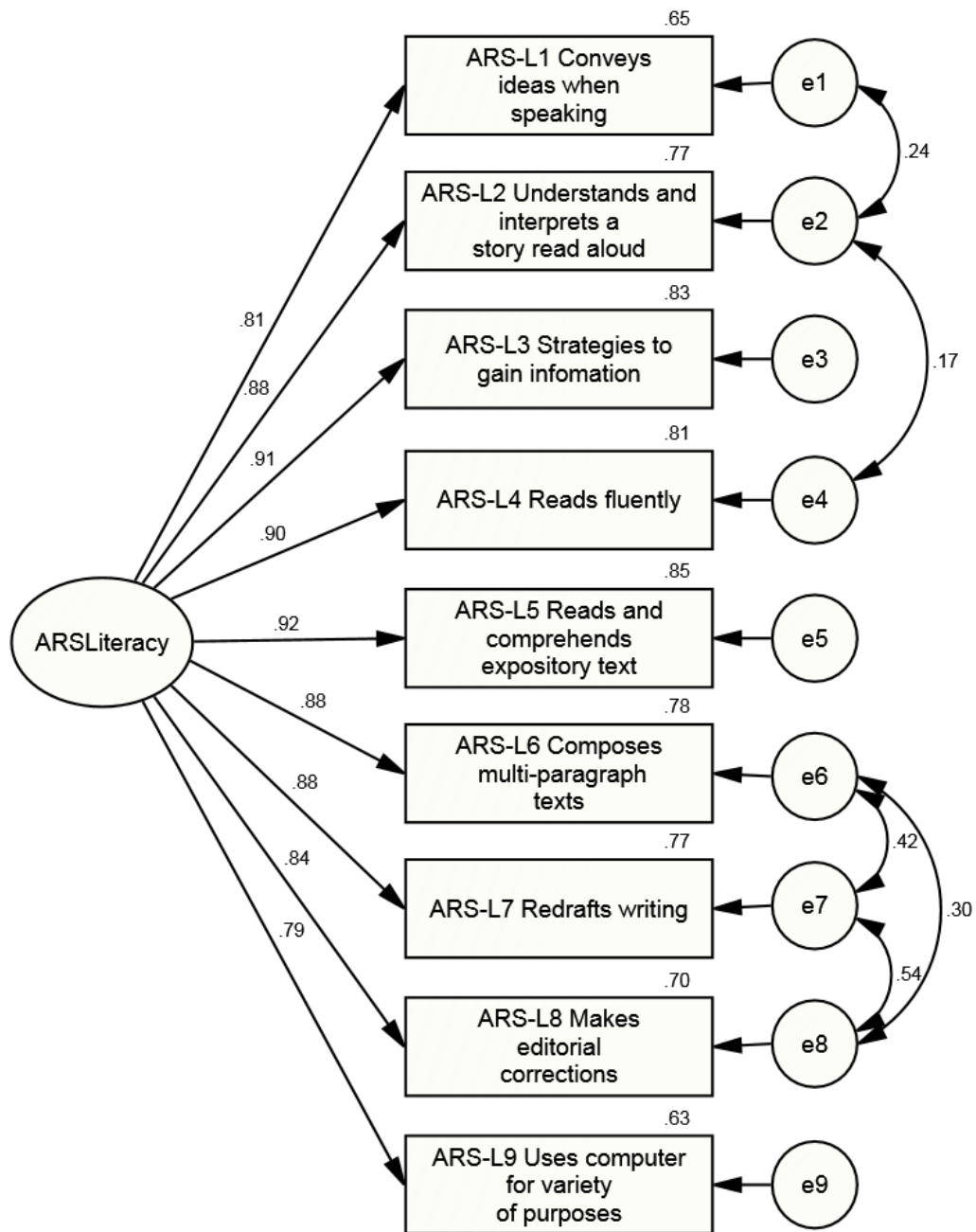


Figure E.6 ARS Language and Literacy model 6

E.2.4 Academic Rating Scale Mathematical Thinking

Model 1 for the ARS Mathematical Thinking factor is presented in Figure E.7. This also displays results for the squared multiple correlation coefficients (R^2) and the standardised regression weights. The squared multiple correlation coefficients for Model 1 indicated that the items reflect the construct of the ARS Mathematical Thinking scale well, given the amount of variance accounted for in the observed variables, with all falling above >0.5 . The weakest item was ARS-M1 (.72) which is clearly still above the recommended bench mark for indicating a good measure. The standardised regression weights reflected strong item loadings with ARS-M1 (.82) ranking lowest but again being above 0.5 indicating all items were well aligned with the factor.

Despite the items being clearly good indicators for the ARS Mathematical Thinking factor, the chi-square goodness of overall fit value for was significant χ^2 (35) 1823.341, $p < .000$. This suggested a lack of fit between the data and the hypothesised model. Due chi-square sensitivity to large samples other fit indices were examined (see Table D.5). Three of the indices, being the CFI, TLI and NFI, suggested model fit. The GFI, AGFI and the RMSEA values however suggested that the data did not fit the model. The AIC value for the first model was 1863.341.

Modification indices were examined due to the poor fit of some indices. These suggested that the model would improve if it was re-specified to allow a co-variance between ARS-M4 (*Recognises shape properties, area, volume*) and ARS-M5 (*Uses measurement tools accurately*). Given both items relate to understanding of measurement the co-variance was considered to be theoretically supported. Model re-specification was completed resulting in Model 2 (see Table E.5). The chi-square goodness of fit indicated a poor fitting model χ^2 (34) =1357.548, $p < .000$. As before, the CFI, TLI and NFI supported model fit, however, the AGFI, GFI and RMSEA did not. Modification indices for Model 2 suggested a co-variance between ARS-M7 (*Estimates reasonably and checks*) and ARS-M8 (*Divides multi-digit problems*). These items were felt to be theoretically linked so the co-variance was allowed.

This re-specification resulted in Model 3 (see Table E.5). Again chi-square goodness of fit had a significant result χ^2 (33) =1038.209, $p < .000$ suggesting unacceptable fit. The CFI, TLI, NFI still supported model fit while AGFI, GFI and RMSEA still remained below recommended cut-offs. Modification indices for Model 3

suggested a co-variance between ARS-M9 (*Divides multi-digit problems*) and ARS-M10 (*Demonstrates algebraic thinking*). These items were felt to be theoretically sound so the re-specification was made with the addition of the co-variance.

This led to Model 4 (see Table E.5). The chi-square result for Model 4 remained significant $\chi^2(32) = 787.193, p < .000$ suggesting poor fit. In Model 4, all other model fit indices suggested good fit, except for AGFI and RMSEA. Due to this the modification indices were again examined, which indicated that a co-variance between ARS-M2 (*Reduces fractions*) and ARS-M3 (*Demonstrates money management skills*) would improve model fit. Again, these items were felt to be theoretically sound and the co-variance was added.

Model 5 (see Table E.5) still resulted in significant chi-square results $\chi^2(31) = 619.516, p < .000$. All other model fit indices indicated a well fitting model except for AGFI and the RMSEA suggested further modification was necessary. Modification indices for Model 5 suggested a co-variance between ARS-M8 (*Uses strategies to multiply/divide*) and ARS-M9 (*Divides multi-digit problems*). These two items were considered to be theoretically sound allowing for the co-variance modification to be made.

Model 6 resulted in a chi-square goodness of fit statistic that was still significant $\chi^2(30) = 514.164, p < .000$. Most of the other model fit indices indicated a well fitting model (see Table E.5), with the AGFI just reaching the cut-off leaving only the RMSEA indicating a poor fit. Inspection of the modification indices indicated that model fit would be improved with the addition of a co-variance between ARS-M1 (*Subtracts numbers*) and ARS-M3 (*Demonstrates money management skills*). As with previous items, this was considered theoretically sound and the co-variance modification was completed.

Model 7 also resulted in a significant chi-square goodness of fit $\chi^2(29) = 429.762, p < .000$. Of the other model fit indices, only the RMSEA continued to suggest a poor fit. Given the importance of the RMSEA however, the decision was made to consider the suggested modification indices. These suggested that a co-variance between ARS-M2 (*Reduces fractions*) and ARS-M9 (*Divides multi-digit problems*) would result in a better model fit. Given this was considered to be in alignment with theory, the modification was made.

Model 8 resulted in another significant chi-square goodness of fit statistic χ^2 (28) =385.039, $p < .000$. As with the prior model, only the RMSEA remained fractionally out of range of the suggested cut-off. Modification indices suggested a co-variance between ARS-M1(*Subtracts numbers*) and ARS-M7(*Estimates reasonably and checks*) would improve model fit. As these items seemed aligned via theory the co-variance was added.

Model 9 was the final model which still had a chi-square goodness of fit statistic which suggested a poor fit χ^2 (27) =334.920, $p < .000$. As with the other factors however this was not considered given the large sample size and chi-square sensitivity. All other model fit indices reached appropriate bench marks (see Table E.5). Model 9 is presented in Figure E.8. The squared multiple correlation coefficients and the standardised regression weights are again presented on the model. Marginal changes across items can be seen in comparison to Model 1, however all items remain well above the suggested benchmarks of 0.5 indicating a well measured factor. Model 9 was accepted, with the relevant factor score weights and internal consistency measures presented further in the chapter.

Table E.5 Fit indices results for ARS Mathematical Thinking models

	CFI	TLI	NFI	AGFI	GFI	RMSEA
	>.95	>.95	>.95	>.95	>.95	<.06
ARS M - Model 1	.961	.949	.960	.849	.904	.118
ARS M - Model 2	.971	.961	.970	.885	.929	.103
ARS M - Model 3	.978	.970	.977	.909	.945	.091
ARS M - Model 4	.983	.977	.983	.929	.959	.080
ARS M - Model 5	.987	.981	.986	.941	.967	.072
ARS M - Model 6	.989	.984	.989	.949	.972	.067
ARS M - Model 7	.991	.986	.991	.957	.978	.062
ARS M – Model 8	.992	.987	.992	.961	.980	.060
ARS M – Model 9	.993	.989	.993	.964	.982	.056

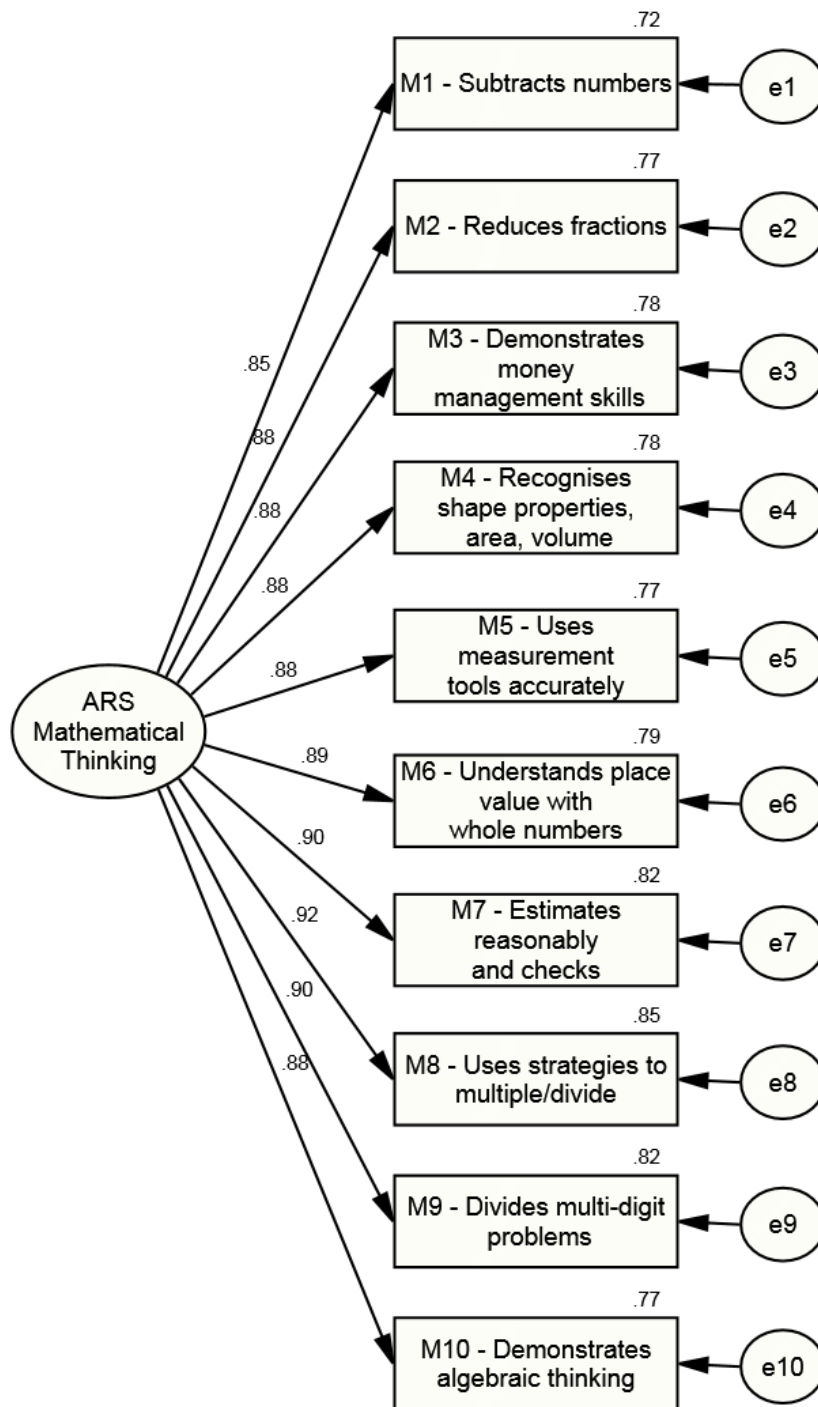


Figure E.7 ARS Mathematical Thinking model 1

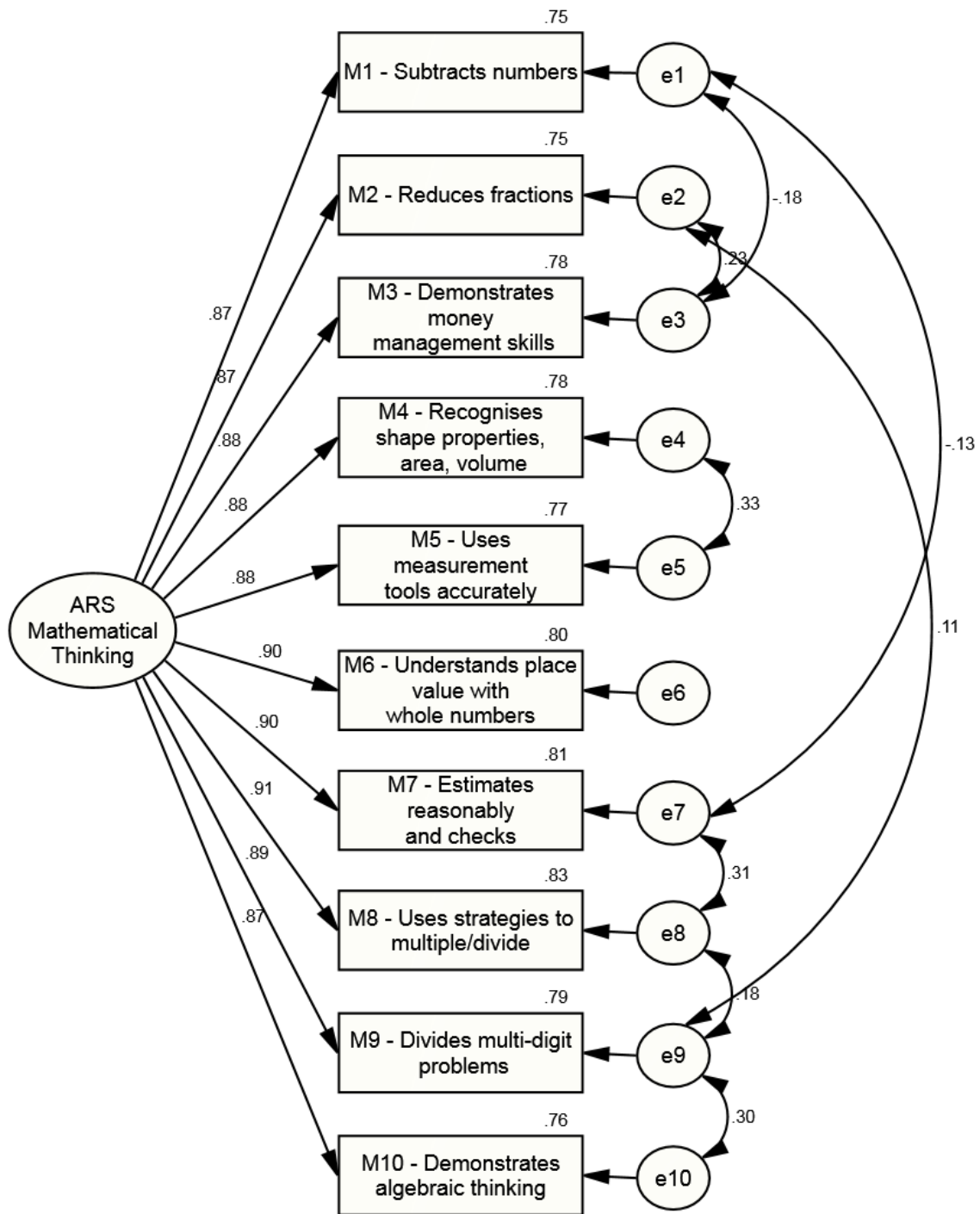


Figure E.8 ARS Mathematical Thinking model 9

E.2.5 Factor Score Weights and Proportional Scales

In order to calculate the proportional scales for each outcome measure, the factor score weights were taken from the final factor models which had demonstrated the best model fit. These are both shown in Table E.6.

Table E.6 Factor scores and proportional weights

Itemised Factor Score Weights and Proportional Weights									
Raw Factor Score Regression Weights from Final CFA Models									
SDQ	SDQ	SDQ	SDQ	SDQ					
E1	E2	E3	E4	E5					
.105	.210	.096	.043	.084					
SDQ	SDQ	SDQ	SDQ	SDQ					
C1	C2	C3	C4	C5					
.227	.121	.329	.157	.035					
ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS	
L1	L2	L3	L4	L5	L6	L7	L8	L9	
.057	.083	.155	.124	.173	.075	.054	.032	.070	
ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS
M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
.127	.052	.099	.081	.076	.112	.104	.076	.058	.066
Proportional Factor Score Regression Weights									
SDQ	SDQ	SDQ	SDQ	SDQ					
E1	E2	E3	E4	E5					
.195	.390	.178	.080	.156					
SDQ	SDQ	SDQ	SDQ	SDQ					
C1	C2	C3	C4	C5					
.261	.139	.379	.181	.040					
ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS	
L1	L2	L3	L4	L5	L6	L7	L8	L9	
.070	.101	.188	.151	.210	.091	.066	.039	.085	
ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS	ARS
M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
.149	.061	.116	.095	.089	.132	.122	.089	.068	.078

As noted by Rowe (2006) and Niclasen, Skovgaard, Andersen, Sømhovd, & Obel (2013) despite the reporting of Cronbach's Alpha being common, this is not appropriate for weighted scores. This is because Cronbach Alpha does not take into account the individual item variance, instead assuming equal contribution of all items.

E.3 Discussion

The purpose of conducting CFA analyses was in order to calculate proportional weighted scores for child outcome variables derived from the factor scores of the CFA models that exhibited the best fit to the data. This required that four separate CFA

analyses be conducted focusing on each outcome variable respectively, the SDQ Emotional Symptoms scale, the SDQ Conduct Problems scale, the ARS Language and Literacy scale and the ARS Mathematical Thinking scale. Overall, all models benefitted from model modifications which allowed for cross-loadings between some scale items.

The SDQ has been widely used across multiple countries and this has led to a number of studies focusing on psychometric assessment of the full measure in order to determine consistency if present across different samples. Studies examining the SDQ measure as reported by parents, teachers or children have found mixed results with many supporting the original five-factor models (Gómez-Beneyto et al., 2013; Hawes & Dadds, 2004; He, Burstein, Schmitz & Merikangas, 2013; Matsuishi et al., 2008; Niclasen et al., 2012; Van Roy, Veenstra & Clench-Aas, 2008), although there have been some reported issues such as factors not being uni-dimensional (Mellor & Stokes, 2007; Richter, Sagatun, Heyerdahl, Oppedal & Røysamb, 2011).

While the current research was only focused on two of the subscales some similar findings and issues were found as noted in prior CFA research on the SDQ. Niclasen, Skovgaard, Andersen, Sømhovd and Obel (2013) also found improved model fit via allowing a cross-load between *Steals from home school or elsewhere* (SDQ-C5) and *Often lies or cheats* (SDQ-C4) on the SDQ Conduct Problems scale. While the study completed by Niclasen et al. (2013) differed in that nearly all items on each subscale were loaded in a range considered good, the SDQ Emotional Symptoms item *Often complains of headaches, stomach-aches or sickness* (SDQ-E1) consistently had a low standardised loading across a number of samples. This item was also the weakest for the SDQ Emotional Symptoms in the current research.

The ARS was developed as an indirect measure of child academic competence as rated by teachers for the Early Childhood Longitudinal Study (ECLS-K) which is conducted in America. The ARS originally included four sub-scales of language and literacy, mathematical thinking, science, and social studies although this was not used for the fifth grade data collection (Pollack, Najarian, Rock, Atkins-Burnett & Hausken, 2005). The ARS was designed to target specific age/grade levels with items changing across waves in order to track child development.

Item selection for the ARS is based on specific criteria including that variables have literature support, are reflective of developmental change, allow for a diverse range

of children to be fairly evaluated and measures constructs easily observable by teachers amongst others. Pilot tests are then conducted and final selections are dependent on item statistics and representativeness (Pollack et al., 2005; Rock & Pollack, 2002). This extensive process for item selection could explain why in the current research the squared multiple correlation coefficients and the standardised regression weights were all above the recommended cut-off of $>.5$ indicating items were adequately measuring the construct of ARS Language and Literacy and ARS Mathematical Thinking.

While ECLS-K presents the ARS items under specific sub-scales the loading of these items has been questioned. McNulty (2006) used a range of techniques to examine possible factor structures of the ARS using ECLS-K Kindergarten and Grade 3 data. For the Grade 3 data, when using oblique promax rotation a three factor solution was the most parsimonious although there were correlations between factors. When based on the strongest loadings, Science and Social Studies items created one factor along with a Mathematical Thinking item, the second factor consisted of all the Language and Literacy items, followed by the third factor which consisted of the remaining Mathematical Thinking items. These results indicate that despite some inter-correlations the items for Language and Literacy and Mathematical Thinking do overall reflect their underlying constructs well. This is supported by the findings for the current research also.

The variations found with the SDQ measures and the ARS measures in previous research perhaps highlight the importance of examining even well established measures when applying them to new samples. Given the differences evident amongst the weight of individual scale items, both in the current and prior research, it also highlights that utilising summed scores across different samples may lead to misleading results. Typically the SDQ and ARS measures are used by calculating a mean summed score from scale items. As noted by DiStefano, Zhu, and Mindrilă (2009) using a summed score means that all items in a given factor or scale are given equal weight which doesn't take into account item loading values. This means that a low loading item will still contribute the same amount as higher loading items.

This can be overcome by using weighted scores which ensure items with the highest loadings have greater effect on factors (DiStefano et al., 2009). Meuleners, Lee, Binns and Lower (2003) used CFA to create composite scores through the use of proportionally weighted factor score regression coefficients. They note that this approach allows for an accurate representation of the contribution made by individual items to the

overall score, minimising measurement error and increasing reliability. This is also supported by Rowe (2002) who notes that computing a scale score through the use of regression weights from one-factor CFA models leads to a reduction of measurement error in items contributing to a scale, and an increase of reliability of the computed scale score. Again, given the variation of individual item contribution in the current research this approach appears appropriate.

While not the scope of this study, prior research has examined the effectiveness of using teacher rated data as opposed to direct child assessments and the correlations between the two. Moderate to large correlations between teacher reports and direct behavioural assessments of preschool children have previously been found (Cabell, Justice, Zucker & Kilday, 2009). Teachers have been found to underrate child cognitive abilities, with factors such as lower socioeconomic or lower achieving context influencing teacher perceptions (Ready & Wright, 2011). Mashburn and Henry (2004) found that teachers with higher levels of education were more consistent with having their ratings align with direct measures for Kindergarten and Preschool children.

Südkamp, Kaiser and Möller (2012) completed a meta-analysis on 75 studies which included correlational data on the relationship between student performance on achievement tests and teacher reports of student academic competencies. Overall they found that the correlation between teacher judgement and achievement tests was positive and reasonably high (.63) however studies where teachers were informed of which achievement area their ratings were required for prior to completing them had higher correlations to actual student achievement. Also importantly, no evidence for differences in teacher judgement of student ratings was found between the areas of mathematics or language arts.

While these previous studies highlight some contributing factors which may impact on the accuracy of teacher ratings, they also demonstrate that there are high correlations between these ratings and direct measures thus providing support for the use of teacher rated child outcome data. In addition to this, teacher ratings have been found to predict future child achievement with similar accuracy to direct tests (Hecht & Greenfield, 2001). Acknowledging concerns over using indirect as opposed to direct measures of child ability, also strengthen the case of using proportionally weighted factor scores in order that the benefits of further reducing measurement error and increasing reliability for outcome measures be utilised.