# The Influence of Child-Parent and Child-Teacher Relationships on the Academic Performance of Children Aged 10-12 Years

Submitted by

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# Abstract

Academic performance is an important aspect of functioning for all children, particularly during late childhood with the pending transition to high school and subsequent increase in academic demands. Research suggests that it is important for children in late childhood to achieve academically not only to aid their learning as schooling progresses, but also to reduce the likelihood of a range of short and long-term negative outcomes.

Factors which affect academic performance have been explored in previous research, however there has been limited research attention given to how children's relationships in late childhood may influence academic outcomes. While it is recognised that parents and teachers play important roles in children's lives, and that teachers play a leading role in relation to children's acquisition of academic skills and knowledge, the level of influence these key relationships have on academic performance scores in late childhood is largely unknown.

The current study investigated the effect of Child-Parent and Child-Teacher Attachment relationships on academic performance. The sample comprised 158 Australian children (74 males and 84 females) aged 10 years to 12 years 11 months, attending Grades 4 to 6 in state primary schools within the Melbourne Metropolitan Region of Victoria. Participants completed a battery of assessments measuring: verbal intelligence, language ability, child-parent attachment, child-teacher attachment, and academic performance.

Two major research questions were explored: 1) the influence of Child-Parent and Child-Teacher Attachment relationships on Reading, Spelling, and Math Performance; and

2) the moderating effects of Child-Teacher Attachment on academic performance for children with low Child-Parent Attachment.

Results indicated that Language Ability was a strong predictor in all academic areas. Age was a predictor in relation to Reading and Math Performance, and Verbal Intelligence also accounted for unique variance in relation to Reading and Math Performance. After controlling for these variables, Child-Parent Attachment and Child-Teacher Attachment did not significantly influence any of the academic performance areas.

Findings are reviewed in relation to past research, and implications for future research are discussed.

# Declaration of Authenticity

"I, Kate Ellen Screen, declare that the Doctor of Psychology (Clinical Psychology) thesis entitled *'The Influence of Child-Parent and Child-Teacher Relationships on the Academic Performance of Children Aged 10-12 Years'* is no more than 40,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work".

Signature: Date:

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# 1. Literature Review

## 1.1 Introduction

During the latter years of primary school students need to consolidate their learning and develop a strong set of increasingly complex academic skills in order to adapt to the increased academic demands of high school. With numerous studies having demonstrated the strong association between academic underperformance and both short and long-term negative outcomes, the fact that from late childhood onwards students are deemed 'at risk' of academic decline, alienation and disengagement from school (Carrington, 2002; Luke et al., 2002; Trusty & Dooley-Dickey, 1993) is of considerable concern. Despite interventions being devised and implemented to address the pervasive issue of underperformance for this age group, the problem remains. Hence, further exploration of the variables which affect academic performance in late childhood is required, in order to develop interventions to assist students to reach their academic potential.

Currently it is accepted that children's individual characteristics such as: IQ, language ability, age, sex, levels of motivation, and persistence, affect academic performance in late childhood. While, less is understood about the influence of children's key relationships, some research (Carrington, 2002; Preiss & Fráňová, 2006; Trout, Nordness, Pierce, & Epstein, 2003) suggests that social and emotional factors affect both school engagement and academic performance in this age group.

The predominant theory used to conceptualise children's relationships with both parents and teachers is attachment theory. Attachment research suggests that while the child-mother bond plays a predictive role in child-teacher attachment relationships (Howes & Hamilton, 1992), attachment bonds to teachers can occur independently of the primary

attachment bond. Further, some researchers (Mitchell-Copeland, Denham, & DeMulder, 1997) have suggested that the teacher attachment bond can act in a compensatory capacity in cases where maternal attachment is insecure.

It is understood that children's relationships with parents can affect school functioning and there is also some suggestion that teacher relationships can have a similar effect. While there has been some exploration of child-mother and child-teacher attachment and school functioning in areas such as social competence, work habits, frustration tolerance, task engagement, mood and behaviour difficulties, as with most attachment research, the majority of studies to date have focused on preschoolers and children in the early grades of primary school. Very little empirical research has been undertaken in relation to academic performance in late childhood. Of the limited amount of research conducted on academic performance during late childhood, a predominant limitation is the lack of standardised academic measures used to assess academic performance.

To address the current gaps in the literature, the present study examined the influence of child-teacher and child-parent attachment on reading, spelling and math performance in late childhood, using a standardised measure of academic performance. The study also aimed to explore whether child-teacher attachment moderates the association between child-parent attachment and academic performance in cases where child-parent attachment is low.

### 1.2 Development in Late Childhood

Late childhood (10-12 years) involves challenging developmental tasks related to children's physical development and the onset of puberty, psychological changes in thoughts and feelings towards parents and other adults, and increasing academic demands in preparation for the transition to high school.

Cognitive development advances during these years and by 12 years-of-age many children have become able to apply increasingly flexible and abstract thinking to a broad range of issues including social relationships. Problem-solving abilities have increased and many children of this age have also developed a greater capacity for self-regulation (Collins, 1984) and an increased ability to communicate about their feelings and emotions (Mayseless, 2005). During these years children also become better at understanding their own points of view, and also their caregiver's points of view.

As children of this age approach adolescence, separation-individuation processes affect personal development, and children continue to separate psychologically from their parents and develop their understanding of themselves as an individual. It is during this time that they are considered to begin to develop a "sense of autonomy and an individual style of behaviour and thinking" (Jacobsen & Hofmann, 1997, p. 703). While children continue to be strongly influenced by their parents and rely on them for emotional support (Richardson, 2005), they also develop a sense of themselves within the larger context of society, begin to develop stronger ties to their peers, and become more susceptible to peer pressure (Hoffman, Paris, Hall, & Schell, 1988).

In late childhood children spend the majority of their time in school (Hoffman, et al., 1988) and continue to form close bonds with other adults external to their family, such as teachers (Mayseless, 2005). Educational expectations increase in preparation for the transition into secondary schooling and children's functioning at school becomes of great importance in their lives, not only to both parents and teachers, but also to the child who is increasingly able to compare his or her own abilities against those of others students (Hoffman, et al., 1988).

### 1.3 Academic Performance

The terms 'ability', 'attainment', 'achievement' and 'performance' have been used interchangeably in past research to describe aspects of students' academic abilities operationalised as: 1) teachers' ratings of students' abilities in subject areas such as English and Science; and 2) test scores in various subject areas (Conti-Ramsden, Durkin, Simkin, & Knox, 2009; Edwards, 2009; Marsh & O'Mara, 2008; Rohde & Thompson, 2007). For the purposes of the present study the term 'academic performance' refers specifically to students' academic abilities as measured by standardised tests. The term 'academic functioning' has been chosen to refer to other characteristics which are involved in completing academic tasks, such as academic motivation and persistence, and also when teachers have reported on students' academic abilities in subject areas.

In most Western countries children spend a minimum of 8-12 years at school with the primary goal of developing their academic knowledge. Compulsory education is enforced by governments as academic achievement is seen as vital for the development of a skilled society. Across Western countries such as Australia (Carrington, 2002) and America (Trusty & Dooley-Dickey, 1993) children in late childhood have been identified as being 'at risk' of becoming alienated and disengaged from school.

There are some differences in the organisation of the education system in Australia and America that are important to note when considering school based research from the two countries. In Victoria, Australia children start Primary School in a preparatory year, termed 'Prep', at approximately 4-5 years-of-age and then progress through Grades 1 to 6. Prior to this, Australian children typically attend 4-year-old Kindergarten and some children may have also attended 3-year-old Kindergarten. Schooling is broken down into two stages: 1) Primary School - ranging from Grade Prep to Grade 6, and then 2) Secondary School -

ranging from Year 7 to Year 12. American schooling is divided into three stages; Elementary School, Middle School/Junior High, and High School. Children in the United States begin school at 5 years-of-age and may have attended Preschool, also known as Pre-K which would be the equivalent of Kindergarten in Australia. The Australian Primary School grades are fairly consistent with United States Elementary school grades, however important to note is the term 'Kindergarten' in the United States is the equivalent of the 'Prep' year in Australia. In contrast to Australian Secondary schooling, the later grades of schooling in the United States are divided into two distinct sections: 1) Middle School/Junior High - Grades 6 or 7 through to Grade 8 or 9, and 2) High School - Grades 9 or 10 through to 12. The ages for transition into Middle School and High School vary slightly between states (NRIOL, 2011).

Research conducted in America has shown that under-achievement in literacy and numeracy and reduction in connectedness to school begin to emerge from Grade 4 (Trusty & Dooley-Dickey, 1993) and by 12 years-of-age students begin to show the first signs of social alienation, a drop in school engagement and motivation, more frequent discipline problems, and increased beliefs that schooling is not useful (Murdock, 1999). In a report on education in Australia Carrington (2002) noted that despite significant government research and reforms over the past decade, underachievement and alienation in this age group remains a concern and suggested that there needs to be a greater focus on supportive adult socio-emotional relationships and classroom environments across Grades 4 to 6.

In the late childhood years difficulties performing competently in academic areas may have far reaching effects, with academic difficulties considered to rate amongst the most prevalent of reasons for school disengagement (Henry, 2010; Rumberger, 1995). Under-performing individuals of this age are at higher risk of suffering short-term disadvantages and future difficulties such as emotional and social dysfunction (Bachman et al., 2008; Bakker,

Denessen, Bosman, Krijger, & Bouts, 2007), higher likelihood of substance use, and higher likelihood of school disengagement (Maughan, 1995; McGee, Prior, Williams, Smart, & Sanson, 2002; Zhang, Zhao, & Yu, 2009).

Longer-term difficulties associated with poor academic performance include low employability (Dunn, 2010), increased likelihood of depressive symptoms (Feather & Barber, 1983; Winkelmann, 2009), poor marital relationships (Conger & Elder, 1994), increased likelihood of divorce (Yeung & Hofferth, 1998) and subsequent negative effects on the wellbeing and school performance of offspring (McLoyd, 1998).

### 1.4 Factors Influencing Academic Functioning/Performance

As outlined earlier, children in late childhood have an increasing awareness of their own academic progress in comparison to others (Hoffman, et al., 1988). Students who find academically-based learning difficult and subsequently under-perform at school, can find learning at school a stressful and embarrassing process (Dodge, Coie, & Brakke, 1982).

As important foundations for future learning are built in the late childhood years, a positive experience of academic learning can be considered to be of great importance. It is during the latter years of primary school that students consolidate their learning, and develop a set of increasingly complex academic skills in order to adapt to the increased academic demands of secondary school.

There has been considerable research interest in exploring factors which influence academic performance or academic functioning during childhood. Variables that have been explored in previous studies have included sex and age (Galsworthy, Plomin, Dionne, & Dale, 2000; Lynn & Mikk, 2009), socioeconomic factors (Pareja & Lewis, 2006), academic self-concept and resilience (Marsh & O'Mara, 2008; Marsh & Rowe, 1996; Martin & Marsh,

2009), achievement motivation (Wilson & Trainin, 2007) perceptions of competence (Chapman & Tunmer, 1995; Guay, Marsh, & Boivin, 2003), attention (Steinmayr, Ziegler, & Träuble, 2010), childhood disorders such as learning disabilities (Carrington, 2002), emotional stability (Preiss & Fráňová, 2006; Trout, et al., 2003), externalising behaviours (Brenner, Nelson, Allor, Mooney, & Dai, 2008), intelligence (Chiang & Tam, 2004; Di Fabio & Busoni, 2007), and speech and language ability (Curtis, 1980; Hall & Segarra, 2007). Research has established that intelligence (Chiang & Tam, 2004; Di Fabio & Busoni, 2007), and language ability (Curtis, 1980; Hall & Segarra, 2007) are consistent predictors of academic performance.

Research findings indicate that sex and age can influence academic performance. Studies have demonstrated that girls score higher than boys on reading tasks, and consistently display superior skills during the performance of verbal tasks (Galsworthy, et al., 2000). In 2001 and 2006 research involving measurement of reading performance in children at Grade 4 level was conducted by the International Association for the Evaluation of Educational Achievement (IEA) with students from 35 different countries, including Australia. The IEA reported that across all countries girls outperformed boys in reading performance, whereas there was minimal difference between the sexes in math and science performance (IEA, 2007). A recent study by Lynn and Mikk (2009) found that 10 year-old girls outperformed boys of the same age on vocabulary tasks, however, no sex differences were found in relation to reading comprehension in individuals aged 11-18 years.

Studies have also demonstrated that familial factors such as socioeconomic status, changes in parental employment - including mothers' increased workforce participation (Pareja & Lewis, 2006) and individual characteristics such as a student's : 1) capacity to overcome educational adversities; 2) 'academic self-concept', 3) 'perceptions of

competence' (Chapman & Tunmer, 1995; Guay, et al., 2003); and 4) 'achievement motivation' (Wilson & Trainin, 2007) can affect academic performance (Marsh & O'Mara, 2008; Marsh & Rowe, 1996; Martin & Marsh, 2009). Major childhood disorders such as learning disabilities (Carrington, 2002), emotional disturbance (Preiss & Fráňová, 2006; Trout, et al., 2003), attention difficulties (Steinmayr, et al., 2010), and externalising behaviours such as aggression (Brenner, et al., 2008), have all been identified as barriers to learning (Nelson, Benner, Lane, & Smith, 2004).

However, the effect of children's relationships with their parents on academic performance has received minimal research attention. While the child-parent relationship is acknowledged as important for many areas of school-based functioning such as internalising and externalising behaviours (Howes, 2000; Moss, Gosselin, Parent, Rousseau, & Dumont, 1997; Murray & Greenberg, 2006), verbal and literacy development (Bus & van IJzendoorn, 1988; Moss, et al., 1997) and social functioning (Bohlin, Hagekull, & Rydell, 2000; Brumariu & Kerns, 2008; Cassidy, 1999; Contreras, Kerns, Weimer, Gentzler, & Tomich, 2000; Rose-Krasnor, Rubin, Booth., & Coplan, 1996), much less is known about the direct association between the child-parent relationship and academic performance (Deiner, Isabella, & Behunin, 2008; Granot & Mayseless, 2001; Jacobsen & Hofmann, 1997).

Common sense may suggest that as teachers are the main source of educational training for children, a connection between child-teacher relationships and academic performance would also be likely. Although some authors have highlighted the importance of the effect of the child-teacher relationships on school adjustment and academic functioning (Al-Yagon & Mikulincer, 2006; Carrington, 2002; Howes & Hamilton, 1992; Marcus & Sanders-Reio, 2001; Pianta & Stuhlman, 2004) the research to date does not allow for clarity around this issue.

### 1.5 Intelligence and Academic Functioning/Performance in Childhood

As previously mentioned intelligence has been identified by many researchers as a key predictor of academic performance. However, the definition of intelligence varies between theorists. Some define intelligence in an adaptive sense and refer to one's judgement, practical sense, initiative and ability to adapt to a new environment or circumstances (Sternberg, 1998), while others define intelligence within the context of measurable abilities that include memory, perception, attention span, and the ability to learn quickly and perform tasks proficiently (Kaufman & Kaufman, 2004; Wechsler, 2003).

In most previous research exploring academic performance intelligence refers to measurement of 'cognitive ability' which is operationalised as an 'IQ' or 'Intellectual Quotient' score. IQ scores are regarded universally as one of the best indicators of an individual's potential task performance and future learning capabilities (Di Fabio & Busoni, 2007; Duckworth & Seligman, 2005).

IQ testing generally involves measuring two main areas: 1) verbal intelligence - an individual's degree of language development, verbal expression, verbal concept formation and word knowledge, including the understanding of word meanings, and long-term memory; and 2) non-verbal intelligence (often termed 'perceptual reasoning') - an individual's visual perception and visual organisation, non-verbal reasoning and non-verbal concept formation (Kaufman & Kaufman, 2004; Wechsler, 2003). Both cognitive domains are believed to support learning and the ability to process information and knowledge.

Measures of IQ have been available since the 1900s and their validity has made it possible to conduct meaningful research into the associations and consequences of cognitive ability (Duckworth & Seligman, 2005). Through various research studies, verbal, non-verbal, and overall intelligence have all been identified as robust predictors of academic performance

for both males and females in late childhood (Deary, Strand, Smith, & Fernandes, 2007; Di Fabio & Busoni, 2007).

In their prospective longitudinal study of over 70,000 children in England Deary et al. (2007) examined the intelligence of children at 11 years and related it to their academic performance at 16 years-of-age. Results indicated that general intelligence predicted achievement in the 25 academic subjects measured. In particular, intelligence predicted 58% and 48% respectively of the variance in math and English/literacy performance scores.

A number of researchers have explored whether there are predictive differences between the verbal and non-verbal intelligence domains in relation to academic performance. Findings from a longitudinal study involving 445 American students who were tested annually from Grades 1 through 12 on reading performance (including letter-word identification, decoding, and comprehension), full scale, verbal and non-verbal cognitive domains, showed that non-verbal intelligence was a stronger influence on reading performance than verbal intelligence (Ferrer et al., 2007). Unfortunately, the results from this study are grouped according to age brackets which span more than one developmental period (i.e. ages 11-15 spanning late childhood to adolescence), thereby making it difficult to determine the predictive validity of non-verbal intelligence on reading performance for children specifically within the late childhood years. Further, as only reading performance was examined, it is possible that areas such as spelling and math performance are affected differently by the two cognitive domains.

A number of studies have reported contradictory findings to those of Ferrer et al. (2007). In a study involving sixty Taiwanese students in Grades 3 and 5, verbal intelligence was a stronger predictor of academic performance than was non-verbal intelligence for Grade 5 students, while for Grade 3 children both cognitive domains were equally predictive

(Chiang & Tam, 2004). Results from a more recent study (Edwards, 2009) involving 127 students from Preschool to Grade 5 indicated that verbal, but not non-verbal intelligence was significantly correlated with the 'Academic Knowledge' subtest of the Woodcock Johnson Tests of Achievement - Third Edition (WJ-III; Woodcock, McGrew, & Mather, 2001).

Despite some contradictory findings, studies have identified verbal intelligence as a robust predictor of academic performance (Chiang & Tam, 2004; Edwards, 2009).

### 1.6 Language Ability and Academic Functioning/Performance in Childhood

The connection between language ability and academic performance has been long acknowledged (Curtis, 1980), and language ability is understood to be another key predictor of academic performance (Nathan, Stackhouse, Goulandris, & Snowling, 2004). Language ability is often described as an individual's expressive and receptive language skills, and relates to abilities in the areas of semantics, morphology and syntax, and the retrieval and recall of spoken language (Semel, Wiig, & Secord, 2004).

Expressive language can be defined as the ability to communicate and convey messages through speech, while receptive language refers to the ability to listen and comprehend what others say. Children who have poor expressive and/or receptive language can experience difficulty in areas such as: pronouncing words and letter sounds, understanding and processing others' speech at an age appropriate pace, organising their thoughts during conversation and when writing, and communicating verbally (Logsdon, 2009).

As the majority of teaching and learning in primary school classrooms consists of verbally-based instruction and requires language based skills such as reading, writing, speaking and listening, it is not surprising that language difficulties create barriers to

academic learning (Logsdon, 2009). Research into the effects of language on academic functioning has focused predominantly on the early years of schooling, and has shown that a lack of proficient literacy and language skills significantly impacts on even basic classroom functioning such as a child's capacity to follow directions and understand classroom instruction - a main cause of academic failure during the primary grades (Cadima, McWilliam, & Leal, 2010). A longitudinal study conducted by Catts (1993) involved assessing a group of children in Kindergarten who had language delays and following them up later in first and second grade. Findings from the study indicated that a Kindergarten child's language ability was closely related to their reading ability and in particular their reading comprehension skills. In a similar study (Nathan, et al., 2004) seven year-old children ($N$=39) with a history of speech difficulties were compared to a control group ($N$= 35) in relation to academic performance. Results showed that children with speech difficulties had lower scores on reading, spelling and math performance, with spelling performance being an area of particular difficulty. Further studies have also shown that speech and language difficulties are associated with problems with mathematical skills, including those such as rote-counting and math computation (Donlan, 1998; Tallal, Allard, Miller, & Curtiss, 1997).

The association between language ability and academic performance persists throughout the primary school years (Curtis, 1980; Hall & Segarra, 2007) and children with language difficulties are at a significant disadvantage when it comes to attaining age appropriate academic skills (Hall & Segarra, 2007). While less research has been conducted with older students, some longitudinal studies present evidence which suggests that language ability is a key indicator of academic performance throughout the schooling years. For example, Nippold and Schwartz (2002) discovered that children diagnosed with language

disorders in Preschool are likely to experience reading and writing difficulties throughout childhood and adolescence even when they have had treatment. The long-term effects of language difficulties were confirmed in a study conducted in the United Kingdom involving 121 17year-old students with a history of language impairment and 121 students with normal language skills (Conti-Ramsden, et al., 2009). After controlling for maternal education and IQ, language and literacy skills were predictive of educational attainment at the end of compulsory schooling.

Some research has suggested that verbal intelligence and language ability are correlated (Richman & Lindgren, 1980), however these abilities have also been shown to be two separate constructs which contribute independently to academic performance (Snowling, Adams, Bishop, & Stothard, 2001). Richman & Lindgren (1980) assessed patterns of intellectual ability in 81 children and reported that language impairments were associated with verbal deficits as reflected in low scores on the verbal domain of the WISC. Snowling, et al. (2001) measured the academic performance of adolescents aged 16-17 years with a history of speech and language impairment during Preschool. The authors reported that while overall IQ scores were the strongest predictor of educational attainment, when IQ scores were controlled, literacy skills independently predicted achievement, especially for adolescents who had a history of language difficulties.

### 1.7 Understanding Children's Early Relationships

While both IQ and language ability are strong predictors of academic performance, as mentioned earlier, relationships can also influence children's ability to learn and to perform

academically. Children's relationships with significant others, particularly parents, have been explored predominantly via attachment theory, as developed by John Bowlby.

The first attachment relationship, generally formed between an infant and mother, is believed to be of primary importance. Bowlby (1988) posited that the first year of an infant's relationship with their primary attachment figure underpins the infant's understandings and perceptions of the world, themselves, and others. It is through this relationship that an infant forms mental representations - also termed 'internal working models' - which assist them to plan their behaviour, predict outcomes, assess situations in their daily lives, and guide expectations of future relationships (Bowlby, 1988).

Building on Bowlby's work on attachment, Mary Ainsworth developed the first highly-reliable, well-validated measure of attachment. Ainsworth defined attachment relationships as consisting of three fundamental emotional elements: 1) both parties seek proximity to one another during times of stress, 2) the relationship provides either one or both people care and protection, and 3) security, affection and mutual pleasure are typical aspects of the relationship (Marcus & Sanders-Reio, 2001). Using a controlled experimental paradigm, the 'Strange Situation', Ainsworth & Bell (1970) measured the 'Attachment Security' of the relationship an infant had formed to their mother. Observation and coding of an infant's stress responses when their mothers left the room and then the infant's response upon her return allowed them to categorise the attachment relationship. Three types of attachment styles were identified using this technique: 1) secure, 2) ambivalent (later termed 'resistant'), and 3) anxious–avoidant (Ainsworth & Bell, 1970; Ainsworth, Blehar, Waters, & Wall, 1978).

According to attachment theory the securely attached infant's 'internal working model' depicts their caregiver as a reliable source of assistance and comfort, and in line with

this, their representation of themselves is that they are worthy of love and help. Bowlby (1973) suggested that an infant's internal working models of caregiver and self, are generalised to the world, and securely attached infants see the world from a positive and trusting viewpoint. The internal working models of insecurely attached infants are likely to be opposite to those previously described in that such infants may view themselves as unwanted within the context of the world, unable to be loved, and unable to be comforted or helped by others.

Attachment theory has been widely accepted as a framework to conceptualise and understand the relationship between older children and their caregivers but attachment research has been highly concentrated in the developmental spectrum of infancy to preschoolers.

### 1.8 Measuring Attachment in Childhood

It could be considered that one of the reasons for a lack of attachment research in the period of late childhood is the challenge of measuring attachment in this age group. The main reason for this is that the observable attachment behaviours seen in younger age groups are not as evident in late childhood as children are more independent and less reliant on adult presence and support (Kerns, Schlegelmilch, Morgan, & Abraham, 2005). As well-validated measures such as the Strange Situation (Ainsworth & Bell, 1970) and Attachment Q-Sort (Waters & Deane, 1985) cannot be applied to older children there is a gap in the availability of well-validated attachment measures for late childhood.

Over the past decade researchers have attempted to address the challenging task of measuring attachment in older children. As a result, research on attachment in the late childhood years has increased. A range of new attachment instruments have been created,

often by modifying pre-existing measures used with young children, adolescents and adults. Based on the type of process used to collect the data the measures can be loosely assigned to two groups: 1) semi-projective/observational or 2) self-report measures. Both types of measures have strengths and limitations when used for research.

Semi-projective attachment measures include: 1) the Doll Story Completion Task (Granot & Mayseless, 2001), which involves children completing a story using dolls and other items; 2) Family Drawing (Fury, Carlson, & Sroufe, 1997) involving the assessment of children's drawing of their families; and 3) The Separation Anxiety test (Resnick, 1993) which involves pictures depicting separation between a child and caregiver. A more recent attachment measure called the 'Child Attachment Interview' (CAI; Shmueli-Goetz, Target, Fonagy, & Datta, 2008) involves a video-taped semi-structured interview which provides information about relationships with primary caregivers. Scoring data involves training as responses and behaviours are coded from the videotapes.

The above mentioned measures present with some prominent limitations for use in research, including: 1) researchers require specialist training to administer the tests, which may not be available in their country; and 2) administration and scoring procedures are very time-consuming (Shmueli-Goetz, Target, Fonagy, & Datta, 2008). More recently developed attachment measures such as the School-Age Assessment of Attachment (SAA; Crittenden, Kozlowska, & Landini, 2010) also involve training and time-consuming administration and scoring procedures.

In comparison, self-report measures such as the : 1) the Security Scale (Kerns, Aspelmeier, Gentzler, & Grabill, 2001); and 2) People in My Life (PIML; Cook, Greenberg, & Kusche, 1995) - which require children to rate statements which refer to specific attachment figures, have the advantages of taking considerably less time to both administer

and score, and not requiring specialist training. Due to the ease of administration and scoring compared to the available alternatives, these instruments allow for greater amounts of quantitative data to be collected within research time restrictions.

The PIML displays some advantages over the Security Scale. Firstly the PIML provides a continuous measure of attachment (Armsden & Greenberg, 1987) and secondly, it is designed to provide both a positive and negative attachment scale by measuring "internal representations of relationships with parents and peers by measuring the positive affective/cognitive experience of trust in the accessibility and responsiveness of parents and peers and the negative affective/cognitive experiences of anger or hopelessness resulting from unresponsive or inconsistently responsive attachment figures" (Ridenour, Greenberg, & Cook, 2006, p. 1040).

Recent research using the PIML has reported significant results in relation to attachment and attention towards the mother (Bosmans, Braet, Koster, & De Raedt, 2009), externalising behaviours (Ridenour, Greenberg, & Cook, 2006), life satisfaction (Nickerson & Nagle, 2004) and social and emotional adjustment (Murray & Greenberg, 2001). However, due to the lack of attachment research in late childhood, there is little information on the psychometric properties of any attachment measures available for this age group (Shmueli-Goetz, et al., 2008). Additional research on attachment in late childhood would not only provide additional understanding of the effects of attachment on children's daily functioning, but would also add to knowledge about the validity and reliability of attachment measures for this age group.

### 1.9 Attachment to the Primary Caregiver and General Functioning

The primary attachment bond is believed to help infants make sense of new experiences, and so it is important for optimal social and emotional growth (Bowlby, 1973, 1988). Children with a secure emotional attachment to their primary caregiver are predicted to display healthier functioning than insecurely attached children, in a range of areas. As previously mentioned attachment research is highly concentrated in the areas of infancy and early childhood.

Secure attachment to the primary caregiver has been found to positively affect mood stability and social competence. Infants with secure bonds to their mother have been found to not only better manage their own emotional distress, but respond sensitively to others' distress, and internalize appropriate behaviours and emotions (Marcus & Sanders-Reio, 2001; van IJzendoorn & Tavccchio, 1987). Securely attached children's ability to better regulate their emotions has also been linked to children's proficiency in forming and maintaining peer relationships (Cassidy, 1999; Contreras & Kerns, 2000; Contreras, et al., 2000). There is strong evidence that the quality of the maternal-child relationship is related to the child's social adjustment in Kindergarten and Preschool settings (Pianta, Nimetz, & Bennett, 1997). In a study of 111 four year-olds, results indicated that maternal attachment security predicted positive social engagement (Rose-Krasnor, et al., 1996).

Similar findings were obtained in a middle childhood longitudinal study, which reported that at age 8–9 years children who had demonstrated a secure attachment in infancy tended to report less social anxiety and were more popular, positive and socially active at school than children who demonstrated insecure attachment as infants (Bohlin, et al., 2000).

Further research involving 74 Grade 3 children found that secure attachment predicted less social anxiety by Grade 5 (Brumariu & Kerns, 2008). One consequence for

children who have positive expectations of social interactions and more adaptive social skills is the increased likelihood that they may more successfully engage both their peers and adults at school to gain assistance when they require help (Atwool, 2002).

Behavioural disturbances have also been linked to attachment bonds, with infants in secure infant-mother dyads shown to require less discipline (Bus & van IJzendoorn, 1988), and securely attached young children likely to have lower levels of internalising and externalising behaviour problems, than their insecurely attached peers (Moss, et al., 1997; Moss et al., 2006). DeMulder, Denham, Schmidt and Mitchell (2000) found that for both male and female preschoolers, the less securely attached they were to their mother, the more anger and aggression they displayed. For children in their late childhood years, secure attachment to their primary caregiver has been found to reduce the likelihood of conduct problems, delinquency, depression, and anxiety (Howes, 2000; Murray & Greenberg, 2006).

Attachment to the primary caregiver is also thought to positively affect language development. Early parent-child interactions in the home, involving sounds and written words, provide the vital building blocks and scaffolding for literacy awareness and language development (Bus & van IJzendoorn, 1988). Research by Moss, et al. (1997) demonstrated that compared to mothers in insecurely attached dyads, mothers in securely attached dyads used more verbal evaluation and monitoring of their children's development/abilities. Consistent with these findings is research by Bus and van IJzendoorn. (1988) which compared secure versus insecure infant-mother dyads. Findings suggested that securely attached infant-mother dyads not only presented with more positive interactions, but also the instruction provided by mothers varied in quality, with mothers from securely attached dyads providing more reading instruction, and engaging their infants in more reading tasks such as naming letters and spelling words. Results also showed that the infants in secure dyads scored

higher on emergent literacy measures (Bus & van IJzendoorn, 1988). These research studies have demonstrated that in the early years the maternal-child relationship provides an important foundation for children's learning and subsequent academic performance.

There is also some suggestion that a connection exists between maternal attachment and cognitive skills. O'Connor & McCartney (2007a) examined the relationships between maternal attachment patterns and cognitive skills for children at 36 months and later when they had entered Grade 1 using data from a prospective longitudinal study. Results showed that two of the insecure attachment patterns were significantly associated with cognitive skills.

### 1.10 Attachment to the Primary Caregiver and Academic Functioning/Performance

Research findings indicate that securely attached children are more likely to have a positive perception of themselves and others, be more persistent, enthusiastic, engaged in new tasks, and are subsequently expected to have better school adjustment (Atwool, 2002; Sroufe, 1983), social competence (Howes, 2000), and emotional adjustment (Murray & Greenberg, 2006).

Similarly, research focusing specifically on school functioning indicates that better adjustment socially and emotionally to the demands of school and lower levels of anxiety, depression, and behaviour disturbance are all associated with better levels of learning (Brenner, et al., 2008; Luke, et al., 2002; Nelson, et al., 2004; Preiss & Fráňová, 2006; Trout, et al., 2003).

Given the above mentioned effects of a secure attachment to a primary caregiver, one could presume that secure attachment would also have a positive effect on academic performance, simply because it reduces the likelihood of emotional and behavioural

disturbances. Despite this only a few studies have explored the direct link between parental attachment and academic performance. Furthermore, most studies which have explored academic functioning have done so by using teachers' reports for the measurement of academic abilities, or alternatively student's perceptions of academic competence.

The few studies that have explored academic functioning and attachment bonds report significant findings, whether they have used teacher reports or a standardised assessment to gain a measure of academic ability. In a study of Canadian children, Moss and St-Laurent (2001) found that maternal attachment at age six years predicted cognitive engagement, motivation and academic performance (based upon end of year teacher report cards) at eight years-of-age. A limitation of the research is that the scoring systems for students' academic performance varied across schools so that the researchers were required to devise a code to make participants' data suitable for analyses.

Further research conducted by Granot and Mayseless (2001) investigated maternal attachment bonds and academic 'competence' in 113 Grade 4 and 5 Israeli students. Results indicated that children with secure attachments were reported by their teachers to have better levels of interest, concentration, ambition, perseverance, and self-confidence in relation to academically based work, than their insecurely attached peers. Later studies have supported the findings of Granot and Mayseless (2001). In a study which involved 1,019 Argentinean students aged 8-12 years, attachment security was found to predict children's perceptions of academic success and competence (Richaud de Minzi, 2006), and in a more recent study Deiner et al. (2008) reported that in Grades 1, 3 and 5 American students, maternal attachment was significantly related to teacher rated academic competence.

Only two studies which have explored academic performance and parental attachment in middle to late childhood have used standardised measurements of academic performance.

Jacobsen and Hofmann's (1997) longitudinal study measured 108 American children's attachment representations at 7, 9, 12 and 15 years-of-age. Findings indicated that after controlling for social class, gender, and IQ, securely attached children had more favourable outcomes in relation to attention and participation in class as well as grade point average.

One unpublished study (Hughes, 2006) involving 90 Australian children aged 9-12 years (M = 10 years 3 months, *SD* 8 months) used the Wide Range Achievement Test, Third Edition (WRAT-3; Wilkinson, 1993) to measure academic performance in relation to reading, spelling and math. Hughes examined the influence of child-parent and child-peer attachment on academic performance, while controlling for IQ and language ability. The PIML was used to measure child-parent and child-peer attachment and results showed that a sub-scale of the PIML, the Parent Alienation scale, which has been designed to reflect negative cognitions and emotions stemming from inconsistent or unresponsive care, was significantly associated with academic performance, and independently predicted both reading and spelling, but not math performance. While this research considered the effect of peer attachment there have been no Australian studies that have examined the influence of child-teacher attachment on the academic performance of children in late childhood.

### 1.11 Children's Relationships beyond the Home

Over time researchers have come to understand that there is no limit to the number of attachment bonds one individual can have (Cassidy, 1999). Children's relationships with significant others external to the family home, such as teachers, can be understood from a variety of theoretical viewpoints. Fredriksen and Rhodes (2004) reviewed some of the main psychological theories that have been used as frameworks to understand child-teacher

relationships, including: 1) socio-cultural theory; 2) motivational theory; 3) developmental systems theories; and 4) attachment theory.

In their review Fredriksen and Rhodes (2004) suggested that research based on motivational theory (Davis, 2001) has conceptualised teachers as instructors who shape their relationship with a child through expectations and beliefs, while studies from sociocultural perspectives differ in that they see the child-teacher relationship as also affected by the systems within the classroom, school and community (Battistich, Solomon, Watson, & Schaps, 1997). The teacher's interaction and beliefs remain important in developmental systems theory but more emphasis is placed on the influence of the child's individual characteristics such as temperament, abilities, and stage of development, as the precursors to their performance in the classroom (Fredriksen & Rhodes, 2004). In contrast to these three theories attachment theory predominantly views child-teacher relationships as an extension of the child-parent relationship and therefore an individual teacher's responses and behaviours towards a child are highly important (Fredriksen & Rhodes, 2004).

Prominent researchers in the area of parent-child and teacher-child relationships, such as Pianta and colleagues, have measured characteristics derived from attachment theory to explore young children's relationship with their teacher and the effects on socio-emotional development and adjustment to school (Hamre & Pianta, 2001; Murray, Murray, & Waas, 2008; Pianta, et al., 1997; Pianta & Stuhlman, 2004). Pianta, et al. (1997) emphasize that "teacher-child relationships can be characterised by the degree of involvement between teacher and child and by the positive and negative emotional quality of that involvement" (p.266). The widely used Student-Teacher Relationship Scale (STRS; Pianta, 2001) measures relationship characteristics such as warmth and open communication, conflict, and dependency (Split & Koomen, 2009).

In general there is agreement that the child-teacher relationship is important for psycho-social and academic functioning (Birch & Ladd, 1997; Cugmas, 2003; Fredriksen & Rhodes, 2004; Howes, Matheson, & Hamilton, 1994; O'Connor & McCartney, 2007b; Pianta & Stuhlman, 2004). Research exploring the impact of the child-teacher relationship has found significant results in regard to children's functioning in a range of areas.

A limitation to the majority of existing research involving children and their teachers is that the teacher-child relationship is measured from the teacher's perspective and the child's perspective is often overlooked (Al-Yagon & Mikulincer, 2006; Birch & Ladd, 1998; Hamre & Pianta, 2001). As some research has suggested discordance between the child's and teacher's reports of their relationship quality (Murray, et al., 2008) further research exploring the child's perspective seems necessary.

### 1.11.1 The Independent Nature of Children's Relationships beyond the Home.

Children develop a variety of relationships with adults outside the family and it has been claimed that these relationships may also provide important attachment experiences because the adults in these non-parental relationships can also act as attachment figures (Al-Yagon & Mikulincer, 2006). Attachment bonds to teacher, or other adults external to the home, have been conceptualised as an extension of the child-parent relationship (Sroufe, 1983). While many authors (Howes, et al., 1994; Jacobsen & Hofmann, 1997; Learner & Kruger, 1997; O'Connor & McCartney, 2006) have supported the basic concept of attachment theory that the quality of the relationship with the mother will influence the quality of the relationship children form with teachers, there has been some suggestion that these attachment relationships may be more independent than first thought. Al-Yagon and Mikulincer (2006) referred to Bowlby's (1988) idea that while attachment style is shaped

during early interactions, subsequent interactions with significant others throughout life will also count in shaping belief about the supportiveness and accessibility of others. This idea can be understood as a context for two related questions which a few researchers have tried to address: 1) Whether the attachment bond to a professional caregiver is independent and can therefore significantly differ from the primary attachment bond? (Atwool, 2002; Rolfe, 2004; van IJzendoorn & Tavccchio, 1987); and 2) Whether the professional caregiver bond can have a compensatory effect on children's functioning when the primary attachment bond is insecure? (Mitchell-Copeland, et al., 1997).

As according to attachment theory a child's attachment to their primary caregiver is understood to provide a template for future relationships, a child is more likely to develop the same type of attachment with significant others, however this is not always the case (Ainsworth & Bowlby, 1991). Using a sample of 75 infants, Goossens and van IJzendoorn (1990) investigated the quality of attachment to professional caregivers and the associations between these attachment relationships and infant-parent attachments. The infants were observed three times using the Ainsworth Strange Situation and the associations between the three adult attachment figures, mother, father, and professional caregiver were compared. A significant association between paternal and maternal attachments was found, however, interestingly, the quality of infant-professional caregiver attachment was found to be independent of both infant-mother and infant-father attachments. These findings are consistent with those reported by Howes and Hamilton (1992) in relation to two longitudinal studies involving a total of 178 children who were followed from infancy to Preschool. Findings indicated that child-mother and child-teacher attachment bonds were not concordant thereby providing further evidence of the independent nature of child-teacher bonds for some children.

In the Goossens and van IJzendoorn (1990) infant study it was also reported that 50% (*n* = 7) of the infants with insecure parental attachment relationships had developed a secure attachment with their professional caregiver. The authors concluded that secure attachments could develop with a professional caregiver in the absence of secure child-parent attachments, however as the research involved only a small sample and only seven infants had this attachment profile, the ability to generalise these results is limited.

An important methodological issue in regard to studies of attachment bonds with adults outside the family is the choice of an appropriate time to measure the attachment bond. The length of time attachment bonds take to form between a child and professional caregiver is a topic that has received limited attention from researchers. In a number of studies involving fostered or abused and neglected infants (Dontas, Maratos, Fafoutis, & Karangelis, 1985; Stovall–McClough & Dozier, 2004; Stovall & Dozier, 2000) and preschoolers (Howes & Segal, 1993) attachment has been measured in relationships spanning durations as short as two weeks. The rapid (i.e. 2 weeks) formation of attachment bonds reported in the studies involving fostered and adopted infants and toddlers needs to be considered in the context of other characteristics for these specialised samples. Firstly, very young infants will usually accept being held by non-familiar adults, and secondly children with a disrupted background are often non-discriminant in terms of who they approach and who they will turn to for comfort. Interpretation of findings from attachment research involving such specialised samples requires caution as the results are limited in their ability to be translated to all children. In contrast, some studies of infants and toddlers that have not involve fostered, abused or neglected children have reported a longer period of contact with the adult caregiver (e.g., from three months upwards) before measurement of attachment (Barnas & Cummings, 1997; Goossens & van IJzendoorn, 1990; Raikes, 1993).

To date no empirical research has been conducted into the length of time it takes for an attachment bond to form between a child and classroom teacher in late childhood. Current research studies exploring attachment bonds to teachers have often not provided information in their articles about the length of time a child spent with a teacher before an attachment measure was administered (e.g., Howes & Hamilton, 1992). Where studies have specified a period of time before attachment was measured no justification has been provided for the time period selected (e.g., Cugmas, 2003, 2007; Mitchell-Copeland et al., 1997; O'Connor & McCartney, 2006).

As attachment research involving Preschool children and children in the early primary school grades has commonly measured attachment after at least two months contact with a professional caregiver/teacher (Cugmas, 2003, 2007; DeMulder, Denham, Schmidt, & Mitchell, 2000), it might be assumed that for older children an attachment bond has developed sufficiently to be measured after approximately eight weeks with a classroom teacher. This time period has been endorsed by Carollee Howes, a specialist researcher in the area of attachment in middle to late childhood, who has indicated that in middle to late childhood it takes approximately two months for a child to form an attachment bond to his or her classroom teacher (C. Howes, personal communication, 2008).

### 1.12 Child-Teacher Relationships and School Functioning

Teachers spend considerable time with their pupils and are in a unique position to develop beneficial relationships with children. The quality of children's relationships with their school teachers is increasingly recognised as a contributor to school adaptation (Birch & Ladd, 1997; Howes & Hamilton, 1992; Howes, et al., 1994; Pianta, et al., 1997). Furthermore, some researchers have suggested that the bonds a child develops at school can

act as a buffer against stressful life events, and help to promote healthy development (Hawkins & Catalano, 1992; Werner & Smith, 1989). A growing body of evidence supports this claim as child-teacher attachment relationships have been found to be important for children's social and emotional development (Birch & Ladd, 1997; Howes, et al., 1994; Pianta & Stuhlman, 2004). In a study of social competence with peers, the attachment four year old children had to their current and past child care professional was a stronger predictor of social competence than maternal attachment (Howes, et al., 1994).

Children in early childhood with secure teacher attachments have been found to be significantly more likely to engage in joint problem solving and reading tasks, thereby displaying higher levels of collaborative regulation, than their insecurely attached peers (Moss, et al., 1997; Moss, et al., 2006; Moss, St-Laurent, Dubois-Comtois, & Cyr, 2005). In a longitudinal study it was demonstrated that Preschool children who have a warm and open relationship with their teacher have better peer social skills, frustration tolerance, and work habits in the first grade of primary school (Pianta & Steinberg, 1992). A subsequent two year study by Pianta, et al. (1997) explored child-mother and child-teacher relationships as predictors of early school outcomes. The researchers examined children's ($N$ = 55) attachment to the adults in Preschool and their early school abilities when they had progressed to school. Results indicated that teachers' reports of children's frustration tolerance and work habits were related to the reports of the strength of the attachment the children had formed with their Preschool teacher.

A study by Cugmas (2003) involving 22 Kindergarten teachers and 95 Slovenian children aged three to six years found that secure attachment to teachers was positively related to children's socio-emotional functioning (Cugmas, 2003). These results are consistent with earlier research (Skinner & Belmont, 1993) which found that children's

emotional and behavioural engagement along with motivation was associated with their perceived emotional security and relatedness with their primary school teachers.

Murray and Greenberg (2000) conducted a study involving 289 children (mean age = 11.5 years) in Grades 5 and 6 in mainstream education, in order to explore the effects of children's bonding to their teacher and school on their social and emotional functioning. Scores on the PIML teacher attachment subscales: 'Affiliation to Teacher' and 'Dissatisfaction with Teacher', and school connectedness subscales: 'School Bond' and 'School Dangerousness' (measuring children's feelings of school as a dangerous place to be), were analysed together with variables such as social competence, depression, and delinquency. Results indicated that higher scores on 'Affiliation with Teacher' and 'School Bond' were positively associated with higher scores on variables indicating positive social and emotional adjustment. Children with higher scores on 'Dissatisfaction with Teacher' and 'School Dangerousness' had higher levels of negative social and emotional adjustment (Murray & Greenberg, 2000).

Murray and Greenberg (2006) conducted another similar study involving 96 children in Grades 5 and 6 who were receiving special education services for various disabilities, including learning disabilities ($n$=40), health impairments ($n$= 20), emotional and behaviour disorders ($n$ = 18), and mild intellectual disability ($n$ = 18). The study also explored children's perceptions of their relationship with not only their teacher and school, but also their relationships with parent and peers, as well as school connectedness. Results indicated that children's perceptions of their school environment was the strongest predictor of self-rated school competence levels while children's relationship with their peers predicted levels of conduct problems, delinquency, anxiety, and depression. Both parent and teacher attachment scores indicating negative relationships and experiences predicted whether

children were more likely to experience conduct problems, delinquency, anxiety, and depression.

Further research involving the middle to late childhood age group has been conducted by Al-Yagon and Mikulincer (2006) who explored the effect of children's attachment to their teacher on socio-emotional and academic functioning. Participants included 507 Grade 3, 4, and 5 children in Israeli, with ages ranging from 8-11 years. The children completed four self-report measures to assess: loneliness and social dissatisfaction, sense of confidence, general attachment style in close relationships, and children's evaluation of their homeroom teacher as a secure base/child-teacher attachment. Children's academic functioning was measured using one teacher-rated instrument involving a 5 point likert scale, ranging from 1) very low functioning to 5) very high functioning. Results indicated that there was a significant yet only moderate correlation between children's general attachment style and their attachment to their teacher. The authors interpreted this result to mean that while the primary caregiver attachment relationship can influence future attachment bonds, future bonds can differ and relationship-specific bonds can develop according to children's experiences with significant others. The results supported the hypothesis that general attachment patterns and child-teacher attachment would have a positive association with socio-emotional functioning, however only minimal variance of academic functioning was explained by any of the variables measured. While this study explored both attachment style and teacher attachment from the child's perspective a limitation of the study was that academic functioning was measured by teacher report rather than standardised academic tests.

While research involving three to six year-old children (Birch & Ladd, 1997; Cugmas, 2003; Howes, et al., 1994; Moss, et al., 1997; Moss, et al., 2005; Pianta, et al., 1997; Pianta &

Steinberg, 1992; Pianta & Stuhlman, 2004), 7 to 13 year-old students (Murray & Greenberg, 2000; Murray, Greenberg, & Cook, 2006; Skinner & Belmont, 1993), and 16 to 19 year-old students (Learner & Kruger, 1997) has found a positive association between teacher-child relationships and socio-emotional and school functioning, the direct link between child-teacher relationships and academic performance in any group, particularly late childhood, has had minimal exploration to date.

### 1.12.1 Child-Teacher Relationships and Academic Functioning/Performance.

In a longitudinal study of 179 children from Kindergarten to Year 8 Hamre and Pianta (2001) explored the extent to which the relationships children form with their Kindergarten teachers can predict school outcomes in relation to: standardised academic performance scores, academic grades, behaviour problems, and work habits. Both the Teacher-Child Rating Scale (TCRS; Hightower et al., 1986) and the STRS (Pianta, 2001) were employed to measure classroom adjustment and the teacher-child relationship respectively in Kindergarten. The STRS is designed to provide measures of: Closeness, Dependency and Conflict, in order to access both the positive and negative child-teacher transactions; Conflict and Dependency were added to create a Relational Negativity score for each participant.

Results indicated that Relational Negativity in the Kindergarten teacher-child relationship was associated with both behavioural and academic outcomes in Year 8. However, the influence of Relational Negativity was not uniform across class levels. In lower elementary school Relational Negativity predicted grades in language, arts, and math but only accounted for a small amount of the variance. As children moved to higher levels of schooling (upper elementary and middle school) Relational Negativity did not make a unique

significant contribution to grades in these subjects, instead any effect on grade outcomes at these higher levels was mediated by previous performance on tests of basic skills. The authors noted that the quality of teacher-child relationships had a greater influence on behavioural outcomes and that the results were more relevant for those with risk factors related to ethnicity, gender and verbal abilities. The absence of repeated measures of teacher-child relationships as children progressed through school was noted by the authors as an important limitation of the study.

O'Connor & McCartney (2007b) explored similar ideas in the developmental period from early to middle childhood. Their longitudinal study of 880 children in the United States explored the influence of teacher-child relationships from Preschool onwards on reading and math performance of children in Grade 3. Attachment to mother was measured at 36 months using a modified version of the Strange Situation (Cassidy & Marvin, 1992), while teacher-child relationship data was gathered in Preschool, Kindergarten, and Grades 1 and 3 using a subscale of the Student-Teacher Relationship Scale (STRS; Pianta, 1991). Reading and math performance was measured using five subtests from the Woodcock Johnson Psycho-Educational Battery-Revised (WJR; Woodcock & Johnson, 1990). The subtests included Calculation and Applied Problems (math performance) and Comprehension, Word Attack and Letter-Word Identification (reading performance). A range of demographic information and behavioural data was also obtained and used in analyses. The study considered not only the effect of the teacher-child relationship in Grade 3 but also the effect of the change in the quality of the teacher-child relationship across the years. Results indicated that teacher-child relationships and academic performance were positively associated and that this association occurred partly through child engagement in the classroom and partly through the amount of teacher attention to the child. Children reporting higher-quality teacher relationships were

more engaged in the classroom and had higher academic achievement. Teachers gave more attention to children reporting lower quality relationships with the teacher, and teacher attention was negatively associated with academic achievement. The strongest predictors of academic achievement in Grade 3 was early cognitive ability and family factors, but after controlling for these and other contextual variables the quality of the child's relationship with the teacher accounted for variability in children's academic achievement. This well-conducted, comprehensive study used a longitudinal design, sophisticated statistical analyses, and included a large number of relevant variables so that the reported findings regarding the effect of teacher-child relationships can be considered robust. A particular strength of the study was that it explored academic performance using a standardised measure, however the longitudinal design included children at a young age and so similar to most other research in this area, the school-age child's attachment relationships were measured from the adult's, rather than the child's perspective.

### 1.12.2 Compensatory Effects of the Child-Teacher Relationship.

With evidence of the importance of the child-teacher relationships, and the knowledge that attachment bonds can occur independently of the primary attachment bond, researchers have begun to explore whether secure attachments to the classroom teacher can compensate for the effects of insecure parental attachments.

Mitchell-Copeland, et al. (1997) conducted a study in the United States with a sample of 62 preschoolers and investigated social competence and attachment to teachers, using the Attachment Q-Sort (AQS; Walters and Deane, 1985). Four distinct aspects of social competence were measured: 1) the affective balance of positive to negative emotions displayed by a child; 2) pro-social behaviour initiated by a child; 3) peer-rated likeability; and

4) teacher-rated social competence. The researchers found that teacher-child attachment predicted both pro-social behaviour and social competence. Results also indicated that 26 children (41.9%) had an insecure attachment to their mother and this group of children was used as a subsample to explore the potential buffering effects of secure teacher-child attachment. After controlling for sex and socioeconomic status and holding insecure mother-child attachment as a constant, regression analyses based on the subsample indicated that children with a secure teacher attachment - despite an insecure parental attachment - had: 1) higher teacher-rated social competence; 2) were more pro-social; and 3) were more emotionally positive than children who had insecure attachment to both figures. The authors subsequently concluded that a secure attachment to a teacher could partially compensate for the effects of an insecure parental attachment (Mitchell-Copeland, et al., 1997).

While the study by Mitchell-Copeland, et al. (1997) opens a new area of exploration to attachment based research a number of limitations should be noted. Firstly the overall sample size was modest ($N$=62) making the results difficult to generalise. Secondly teachers were asked to rate the children's attachment and also the child's social competence which increased the probability of rater biases. Further, due to the test-retest validity of the measure (.42), the accuracy and validity of preschoolers rating the likeability of other peers is questionable.

In reporting results from a large prospective longitudinal study O'Connor and McCartney (2006, 2007a, 2007b) have suggested the potential for children's relationships to teachers to act as a buffer for negative effects of poor maternal-child attachment. In the previously cited study (O'Connor & McCartney, 2006) of children ($N$=419) in childcare, Kindergarten and Grade 1, early teacher-child relationship had a larger effect on later teacher-child relationship than did the maternal-child relationship, suggesting that early teacher-child

relationships may act in a compensatory way in relation to children's future teacher relationships. In a further publication (O'Connor & McCartney, 2007a) results showed that the quality of teacher-child relationship (measured at 54 months and Grade 1) mediated the association between cognitive skills and one of the maternal attachment patterns (insecure/other). However the authors noted that while their findings showed some significant associations between cognitive skills and some insecure attachment styles, the amount of variance predicted was only 2% and therefore the mediation only accounted for a very small amount of the variance. Also to note is that the relationship between child and teacher was measured from the teacher's perspective and the authors averaged out longitudinal data relating to the teacher-child relationship from children at the two ages (54 months and Grade 1). As the children would have had different teachers at each age the mean score labelled by the authors as teacher-child attachment really reflects two different teacher-child relationships for each child.

In the previously described study (O'Connor & McCartney, 2007b) on the link between teacher-child relationships and academic achievement, results showed that the effect of both quality of teacher-child relationships in Grade 3 and change in quality of teacher-child relationships across the years was influenced by the child's maternal attachment particularly for children with insecure relationships. However a limitation of this study was that the authors combined the childcare and Kindergarten teacher attachment scores.

Further exploration of the potential compensatory effects of the child-teacher relationship is necessary. Clarification of findings from previous studies through future research would be of particular importance for children who do not have a secure attachment relationship with their primary caregiver.

# 2. Rationale, Aims and Hypotheses

## 2.1 Rationale

There has now been a substantial body of research that has used attachment theory to understand children's relationships and in particular to demonstrate the influence of the early mother-child relationship on future outcomes for children. In the past decade there has been increasing research attention devoted to children's relationships with their teachers. Given that attachment theory is the theory most commonly used to understand children's relationships with significant adults, and that past research suggests that attachment theory can be successfully applied as a framework for understanding both child-parent and child-teacher relationships (Nickerson & Nagle, 2004), attachment theory was chosen as a framework for the current research.

Although there have been many significant contributions to attachment research to date, most studies have focused on the parent-child dyad during the formative years spanning infancy to Preschool. Similarly, research that has explored the influence of children's relationship with their teacher has largely been focused on early childhood. Further, measurement of the child-teacher relationship has typically been from the teacher's perspective. There is a paucity of research examining the influence of child-teacher attachment during late childhood and researchers have increasingly identified a need for taking into account the child's perception of the child-teacher relationship (Al-Yagon & Mikulincer, 2006; Birch & Ladd, 1998; Hamre & Pianta, 2001).

Attachment research focusing on children's academic performance is also lacking, and while some research articles report that they have measured 'academic performance' they refer to characteristics such as: academic motivation, persistence, or feelings of competence, rather than academic performance scores. Studies which have attempted to gain an academic

score for participants have often relied on teacher reports of students' scores, or have used end of year grade point averages scored by teachers, rather than drawing upon a standardised measure of academic performance. The use of teacher ratings in place of standardised academic scores introduces the possibility of 'rater bias', reduces the overall validity of the research, and limits the generalisation of findings to the broader population.

While it is understood that parent attachment bonds act as a template for future relationships (Sroufe, 1983), existing research suggests that in some cases the child-teacher attachment style can be independent of the child-parent bond (Goossens & van IJzendoorn, 1990; Howes & Hamilton, 1992). Further, there is some evidence that for some children where the parental attachment is insecure but the teacher attachment is secure, the child-teacher attachment relationship can play a compensatory role (Mitchell-Copeland, et al., 1997), however such research is limited.

To date no study has simultaneously explored the effects of child-parent and child-teacher relationships on academic performance scores in an Australian population in the late childhood years. There have been very few studies that have assessed the child-teacher relationship using the child's report of the attachment bond to the teacher, and there has also been no examination of the potential moderating role of child-teacher attachment in relation to academic outcomes in this age-group. These gaps in late childhood research were addressed by the current study.

### 2.2 Aims and Hypotheses

The current study aimed to investigate the influence of Child-Parent and Child-Teacher Attachment on academic performance after controlling for the influence of Verbal

Intelligence and Language Ability. A further aim was to explore the potential moderating effect of Child-Teacher Attachment.

The two main research questions were:

1. To what extent do Child-Parent and Child-Teacher Attachment relationships influence children's Reading, Spelling and Math Performance?
2. Does attachment to the teacher moderate the relationship between Child-Parent Attachment and academic performance when the Child-Parent Attachment score is low?

To address the first research question three models were developed to explore the relationships between Child-Parent and Child-Teacher Attachment and Reading (Figure 1), Spelling (Figure 2) and Math Performance (Figure 3). The models reflect the relationships between variables according to previous research. The child-parent relationship was expected to be associated with the child-teacher relationship (Sroufe, 1983) and to predict academic performance (Deiner, et al., 2008; Hughes, 2006; Jacobsen & Hofmann, 1997; Moss, et al., 2006; Moss & St-Laurent, 2001; Moss, et al., 2005; O'Connor & McCartney, 2006; Pianta, et al., 1997; Pianta & Steinberg, 1992). Verbal Intelligence and Language Ability were expected to be associated (Richman & Lindgren, 1980) and both were expected to influence children's academic performance (Curtis, 1980). Finally the child-teacher relationship was expected to influence the three academic performance areas of Reading, Spelling, and Math (Birch & Ladd, 1997).

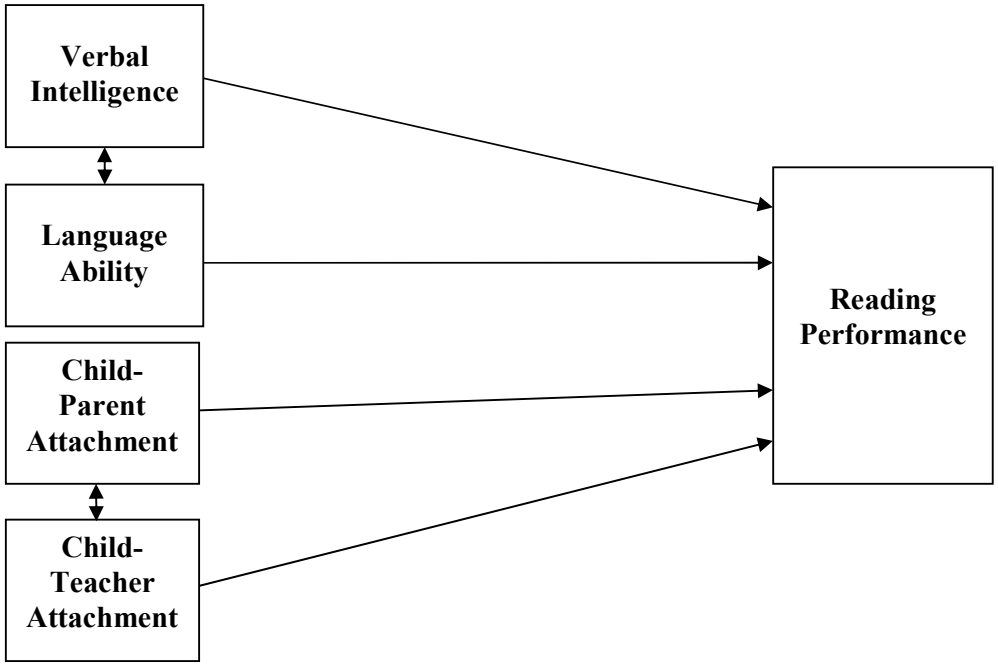


*Figure 1.* Model 1: Factors Influencing Reading Performance in Children Aged 10-12 Years.

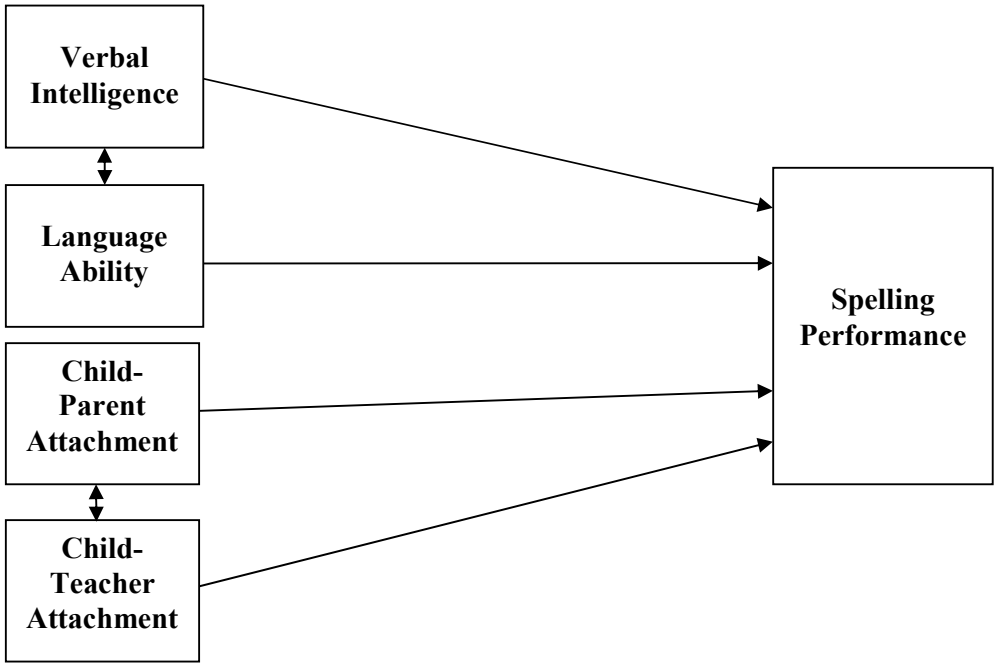


*Figure 2*. Model 1: Factors Influencing Spelling Performance in Children Aged 10-12 Years.

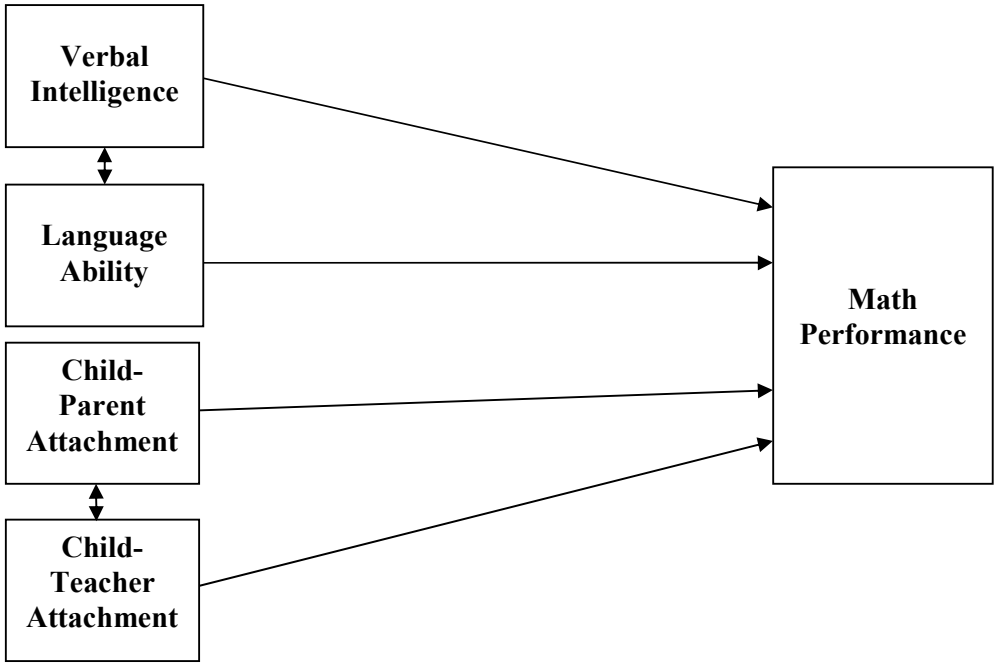


*Figure 3.* Model 3: Factors Influencing Math Performance in Children Aged 10-12 Years

From Models 1, 2, and 3 the following hypotheses were generated:

Hypothesis 1: Child-Parent Attachment will be positively associated with Reading Performance.

Hypothesis 2: Child-Parent Attachment will be positively associated with Spelling Performance.

Hypothesis 3: Child-Parent Attachment will be positively associated with Math Performance.

Hypothesis 4: Child-Teacher Attachment will be positively associated with Reading Performance.

Hypothesis 5: Child-Teacher Attachment will be positively associated with Spelling Performance.

Hypothesis 6: Child-Teacher Attachment will be positively associated with Math Performance.

Hypothesis 7: Verbal Intelligence will be positively associated with Reading Performance.

Hypothesis 8: Verbal Intelligence will be positively associated with Spelling Performance.

Hypothesis 9: Verbal Intelligence will be positively associated with Math Performance.

Hypothesis 10: Language Ability will be positively associated with Reading Performance.

Hypothesis 11: Language Ability will be positively associated with Spelling Performance.

Hypothesis 12: Language Ability will be positively associated with Math Performance.

Hypothesis 13: Verbal Intelligence will be positively associated with Language Ability.

Hypotheses 14-16: Child-Parent Attachment will make a significant contribution to predicting academic performance (in the areas of Reading, Spelling and Math) after controlling for the influence of Verbal Intelligence and Language Ability.

Hypotheses 17-19: Child-Teacher Attachment will make a significant contribution to predicting academic performance (in the areas of Reading, Spelling and Math) after controlling for the influence of Verbal Intelligence, Language Ability and Child-Parent Attachment.

Further hypotheses were generated to examine whether the hypothesised association between Child-Parent Attachment and academic performance in Reading, Spelling and Math was moderated by Child-Teacher Attachment in a sub-sample of children with low Child-Parent Attachment:

> Hypotheses 20-22: Child-Teacher Attachment will moderate the association between Child-Parent Attachment and academic performance (in Reading, Spelling and Math) for children with a low Child-Parent Attachment score (defined as a Child-Parent Attachment score 2 Standard Deviations below the mean).

# 3. Method

## 3.1 Participants

Participants in this study were male and female children aged between 10 and 12 years who were in Grades 4-6 at mainstream state primary schools in the Western Region of Melbourne. The Western Region of Melbourne is an area with very rapid population growth. It is considered culturally and linguistically diverse and caters for more than 710,000 people, including more than 2,500 Indigenous Australians (Department of Education and Early Childhood Development, 2011).

Children with a known disability that could impact on academic performance (e.g. Intellectual Disability, Language and/or Behavioural Disorder), and children who had not yet developed conversational English (due to English being their second language) were not eligible to participate in the study.

## 3.2 Measures

**3.2.1 Demographic Questionnaire (See Appendix A)**. A demographic questionnaire was designed to elicit descriptive information relating to: 1) Family Structure and Household Composition; 2) Parent Occupation; 3) Language(s) Spoken at Home; 4) School Transition – the number of primary schools attended; and 5) Previous Assessments - previous psychological and/or speech and language assessments for learning difficulties.

**3.2.2 Wechsler Individual Achievement Test - Second Edition, Australian Standardised Edition, Abbreviated (WIAT-II Australian-Abbreviated; Pearson, 2007)** (This is a copyright restricted test and therefore is not included in the appendices). In its full form the WIAT-II Australian (Pearson, 2007) provides a standardised measure of academic performance for individuals aged four years through to adults in the areas of written expression, spelling, reading, math, and various comprehension skills. The abbreviated version of the WIAT-II (WIAT-II Australian-Abbreviated**)** was designed as a clinical screening tool and includes three subtests (Word Reading, Numerical Operations and Spelling) from the complete WIAT-II Australian.

The WIAT-II Australian Abbreviated was selected for use due to its brief administration time (10-30 minutes), the ability to compare a child's scores against those of same age peers, and because normative data was available on Australian children.

Standardisation of the WIAT-II Australian Abbreviated was conducted during 2004 and 2005 on examinees aged from 4 through 19 years ($N$= 1,261) with the assistance of 239 examiners and coordinators across Australia. Test-Retest reliability for children aged 10-12 years was .96 (Word Reading), .90 (Numerical Operations), and .93 (Spelling). Internal consistency measured using the split-half measure and corrected by Spearman Brown

formula showed reliability for children aged 10 through 12 years to range from .97 to.97 (Word Reading), .86 to .94 (Numerical Operations), and .93 to.95 (Spelling).

**3.2.3 Kaufman Brief Intelligence Test – Second Edition (KBIT-2; Kaufman & Kaufman, 2004) (**This is a copyright restricted test and therefore is not included in the appendices**)**. The KBIT-2 is a cognitive screening tool which provides a standardised measure of verbal and non-verbal intelligence, and an overall cognitive score, for individuals aged 4 through 90 years. The KBIT-2 brief administration time (15 – 30 minutes) and engaging colourful items make this test a quick and effective way to sustain engagement in the target population, and appropriate to use within a battery of tests.

The Verbal Intelligence score is derived from two scales, Verbal Knowledge and Riddles, and provides a measure of an individual's word knowledge, range of general information, verbal concept formation and reasoning ability. The Non-Verbal Intelligence score is derived from the Matrices scale and provides a measure of an individual's ability to solve new problems by assessing the ability to perceive relationships and complete visual analogies. The IQ Composite score is the sum of the Verbal and Non-Verbal standard scores. Age based standard scores, with a mean of 100 and standard deviation of 15, are available for the IQ Composite, Verbal and Non-Verbal domains. The KBIT-2 measures both fluid (Verbal Intelligence scale) and crystallized (Non-Verbal Intelligence scale) intelligence (Kaufman & Kaufman, 2004).

Due to the minimal cultural content within the items on the KBIT-2 this test is considered more culturally fair than other cognitive assessment tools (Pearson, 2008). Standardisation of the KBIT-2 involved 2,120 examinees aged from 4 through 90 years from the United States. Reliability assessed using the split-half method, test-retest reliability for

children aged 4 through 12 years was .88 (verbal scale), .76 (non-verbal scale), and .88 (IQ Composite score). Internal consistency using the split-half measure and corrected by Spearman Brown formula found reliability for individuals aged four years through 18 years to be .90 (Verbal scale), .86 (Nonverbal scale) and .92 (IQ Composite score).

The KBIT-2 has been measured against a number of other intelligence tests, including two abbreviated IQ tests. When measured against its predecessor the Kaufman Brief Intelligence Test (KBIT) results indicated that despite substantial changes in item content on the KBIT-2 there were large correlations between the two tests. Reported correlations for individuals aged 8 through 14 years were Verbal Intelligence scale .84, Non-Verbal Intelligence scale .79, and IQ Composite .86. When measured against the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999) correlations for individuals aged 7 through 19 years were Verbal Intelligence scales .80, Non-Verbal Intelligence scales .62, and IQ composite scales .81 (Kaufman & Kaufman, 2004).

The KBIT-2 also has moderate to strong correlations with more comprehensive cognitive measures such as the current and previous versions of the Wechsler tests for children. When measured against the Wechsler Intelligence Scale for Children – Third and Fourth Editions (WISC-III & WISC-IV; Wechsler, 1991, 2003) the correlations for individuals aged 6 through 16 years between the KBIT-2 Verbal Intelligence scale and the WISC-III and WISC-IV were .83 and .79 respectively, the KBIT-2 Non-Verbal scale was correlated with the WISC-III (.53) and WISC-IV (.56), and the KBIT-2 IQ Composite correlated with the WISC-III (.76) and WISC-IV (.77).

**3.2.4 Clinical Evaluation of Language Fundamentals – Fourth Edition, Screening Test Australian & New Zealand Language Adapted Edition (CELF-4 Screener; Semel, et al., 2004) (**This is a copyright restricted test and therefore is not included in the appendices**)**. In its full form the CELF-4 (Semel, Wiig, & Secord, 2006) provides a standardised measure of Language Ability for individuals aged 5 to 21 years in the areas of semantics, morphology and syntax, and the retrieval and recall of spoken language.

The CELF-4 Screener acts as a clinical screening tool and takes considerably less time to administer than the CELF-4. The test comprises a number of different language subtests: Word Structure, Concepts and Following Directions, Recalling Sentences, Sentence Assembly, Semantic Relationships, and Word Classes 1 and 2, which are recognised as the more discriminating subtests from the CELF-4 (Pearson, 2009). Items are administered based upon the participant's age and a single Total Test Score is yielded and compared to an age-based Criterion Score. A participant is considered likely to have a language impairment if their Total Test Score is one or more Standard Deviations below the normative mean (Criterion Score) for their age group (Pearson, 2009).

The CELF-4 Screener was selected for use due to its: brief administration time (15 minutes); the availability of an Australian adaptation; and good levels of reliability and validity. When compared with the Core Language Score of the extended version of the CELF-4, scores on the CELF-4 Screener demonstrated good validity ( .75) for individuals aged 9:0-12:11 (Semel, et al., 2004). Further, in children aged between 10 years and 12 years 11 months the CELF-4 Screener correctly identified 85% – 90% of the time those children who had a language disorder. Reliability assessed using the split-half method, test-retest reliability for children aged 9 through 12 years 11 months was $r$ = .90. Internal consistency measured using the split-half measure and corrected by Spearman Brown formula produced a

correlation co-efficient of .72 for children aged 9 years through 12 years 11 months (Semel, et al., 2004).

**3.2.5 People in My Life (PIML; Cook, et al., 1995) (See Appendix B)**. In its full form The People in My Life (PIML) questionnaire, designed to be administered to children aged 10 to 12 years, provides a measure of children's attachment to their parent, teacher, and peers and their connectedness to their school and neighbourhood.

The PIML measures children's internal representations of their relationships with their parents, teachers and peers by assessing: 1) positive cognitive and affective experiences of trust in the accessibility of these key figures, and 2) the negative cognitive and affective experiences of hopelessness or anger resulting from inconsistent or unresponsive behaviour from these figures (Ridenour, et al., 2006).

The PIML was selected over other self-report attachment measures such as the Security Scale (Kerns, et al., 2001), as it provided a measure of both Child-Parent *and* Child-Teacher Attachment. Other reasons for selecting the PIML were the ease and speed of administration (5-7 minutes to complete), and no requirement for specialised training to administer, score, or interpret.

When compared with other self-report attachment measures for this age group such as the Security Scale, the PIML presents as a more in-depth and viable tool to use in the present research for a number of reasons: 1) the PIML has been adapted from the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987) and shares its strong theoretical basis (Hughes, 2006; Ridenour, et al., 2006); 2) the PIML measures attachment to both parents and teachers; 3) the positive and negative scales derived for each attachment figure allow for more detailed examination of the dynamics of the attachment bonds and the effect

they have on the functioning of each individual; and 4) while the Child-Teacher attachment measure has not been used on an Australian population, to the best of the writer's knowledge there is no other self-report assessment for late childhood which provides both Child-Parent and Child-Teacher Attachment measures.

For the present study only Child-Parent and Child-Teacher Attachment were of interest and so a modified version of the PIML (PIML-M) (see Appendix C) which included only the parent and teacher attachment items was used. The items were used in the same order as designed by the PIML authors Cook, et al. (1995) and all items pertaining to peer attachment, and school and neighborhood bonding, with the exception of items 12 - 'When I am away from home, my parents know where I am and who I am with' and 23 - 'I like my class(es) this year', were removed. Items 12 and 23 were administered to provide consistency in the administration format however they were not used in any analyses.

**3.2.6 Modified PIML (PIML-M) - Exploratory Factor Analysis**. As this study modified the original PIML by excluding items which did not relate to either Child-Parent or Child-Teacher attachment, an Exploratory Factor Analysis was chosen to examine the factor structure of the PIML-M with the present sample. The purpose of the analysis was to: 1) determine whether there were any redundant items; and 2) explore factor loadings of the PIML-M items in the current sample.

The final number of participants ($N$=158) met sample size criterion for a factor analysis, with 39.5 cases per independent variable (Tabachnick & Fidell, 2001). Many of the coefficients on the correlation matrix fell at .3 and above. Bartlett's test of Sphericity was statistically significant ($x^2$ (465) = 2273.30, $p$ =.000) confirming the factorability of the

sample/correlation matrix. The sampling adequacy as measured by the Kaiser-Meyer-Oklin value fell at .88, above the recommended value of .6 (Tabachnick & Fidell, 2001).

Maximum likelihood extraction analysis revealed eight factors with eigenvalues above 1 and accounted for 5.5%, 26.9%, 9.9%, 3.7%, 3.9%, 2.6%, 2.6% of the variance respectively and which when totalled explained 53.2% of the variance.

Two, three, four and five factor solutions were explored using Oblimin and Varimax rotation. The two factor solution was chosen due to the substantial break after the second component on the Scree plot, ease of interpretation, and the disordered loadings of the three, four and five factor solutions (Neill, 2008). Figure 4 displays the break after factor two.

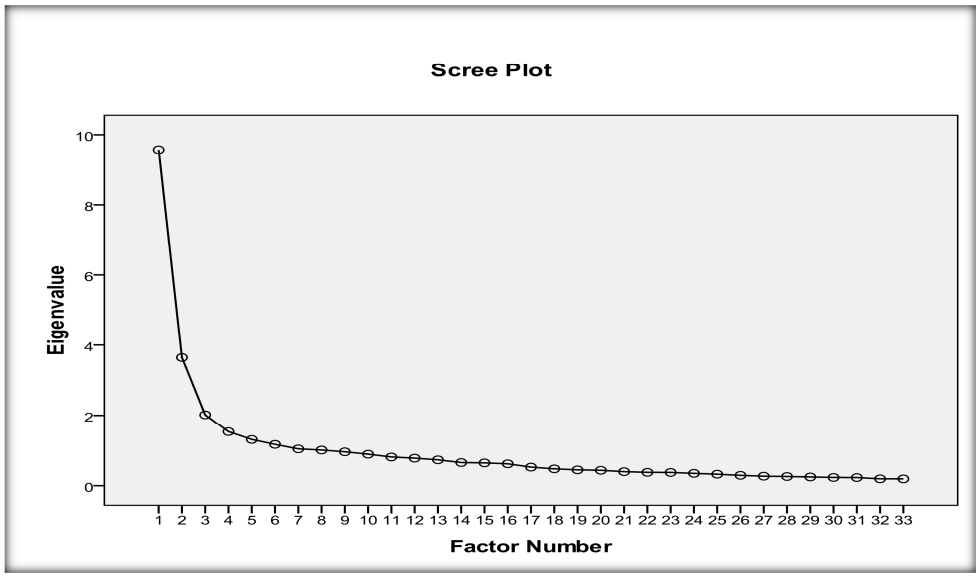


*Figure 4.* Scree Plot of Exploratory Factor Analysis Conducted on PIML-M.

The two factor solution explained a relatively small amount (36.5%) of the variance, with the first factor explaining 26.9%, and the second factor explaining 9.6%. Of the 31 PIML-M items, 29 loaded on one or more of the two factors at .3 and above. Items 15 'My parents don't understand what I am going through these days' and Item 19 'I feel scared in my home' did not load on either of the two factors and thus these items were excluded from further analyses. There was only a marginal difference between Varimax and Oblimin rotation and Oblimin rotation was chosen for the final analysis. The rotated solution produced relatively simple structures for each factor.

Table 1

*Factor Loadings for Exploratory Factor Analysis with Oblimin Rotation of Child-Parent and Child-Teacher Attachment Scales*

| PIML-M Item | Child-Parent Attachment | Child-Teacher Attachment |
|---|---|---|
| 1 | **.65** | -.13 |
| 2 | **.66** | .05 |
| 3 | **.63** | -.03 |
| 4 | **.66** | -.15 |
| 5 | **.45** | -.08 |
| 6 | **.51** | -.00 |
| 7 | **.54** | -.00 |
| 8 | **.50** | -.01 |
| 9 | **.56** | -.06 |
| 10 | **.65** | -.02 |
| 11 | **.65** | -.01 |
| 13 | **.55** | .03 |
| 14 | **.69** | -.05 |
| 16 | **-.51** | -.01 |
| 17 | **-.45** | .01 |
| 18 | **-.56** | -.01 |
| 20 | **.72** | .05 |
| 21 | **.62** | -.05 |
| 15* | -.25 | .11 |
| 19* | -.23 | -.07 |
| 22 | -.14 | **-.90** |
| 24 | .00 | **-.71** |
| 25 | .04 | **-.71** |
| 26 | .06 | **-.71** |
| 27 | .08 | **-.49** |
| 28 | .11 | **.58** |
| 29 | .06 | **.79** |
| 30 | .04 | **-.74** |
| 31 | -.19 | **.39** |
| 32 | .12 | **-.55** |
| 33 | .09 | **-.38** |

*Note.* Factor loadings greater than .35 are in boldface.

* As these items did not load over.35 on either factor they were made redundant for the final analyses.

**3.2.7 Revised Factors**. Factor 1, labelled 'Child-Parent Attachment', thus comprised 18 items, demonstrated good internal consistency (Cronbach's Alpha = .90), and accounted for 26.9% of the variance in the PIML-M. All 18 items had face validity in regard to a child's

attachment to their parent, with items 16, 17, and 18 requiring reverse scoring. Factor 2, labelled 'Child-Teacher Attachment', comprised 11 items, demonstrated good internal consistency (Cronbach's Alpha = .89), and accounted for 9.6% of the variance in the PIML-M. All 11 items showed face validity in regard to a child's attachment to their classroom teacher, with items 28, 29, and 31 requiring reverse scoring.

Table 2 shows item loadings of the revised factors from the current study (PIML-M) compared to results from the factor analysis of the parent attachment and teacher attachment measures conducted by the original authors of the PIML (Ridenour, et al., 2006).

As previously noted the original version of the PIML parent scale comprises 20 items which formed three factors: Trust (10 items), Communication (5 items) and Alienation (5 items) (Ridenour, et al., 2006). In contrast in the current Australian sample 18 parent items loaded on one factor with 2 items regarded as redundant. The original version of the PIML teacher scale comprises 11 items which formed two factors: Affiliation (8 items), and Dissatisfaction (3 items) (Ridenour, et al., 2006). In contrast in the current sample all teacher items loaded on one factor.

In addition to the two redundant items, and the two factor solution, differences were also noted in the alpha levels of the Child-Parent and Child-Teacher Attachment factors in the present Australian sample compared to previous research. The Child-Parent Attachment factor as labelled in the present research displayed a higher alpha level (.90) than any of the three parent attachment scales identified by PIML authors (.87, .76, & .56), while the alpha level for the Child-Teacher Attachment factor was almost identical (.89) to the alpha level for the Affiliation scale (.90) and higher than the alpha level for the Dissatisfaction scale (.68) identified by the original PIML authors (Ridenour, et al., 2006).

Table 2 *Comparison between the Modified PIML (PIML-M) and Original PIML Factors*

| PIML Factor breakdown and alpha levels according to original PIML Factor analysis | PIML-M Factor breakdown and alpha levels according to the current study |
|---|---|
| **Factor label** | **Factor label** |
| **Parent Trust (*a* = .87)** | **Child-Parent Attachment ( *a* =.90)** |
| 1. My parents respect my feelings | **.65** |
| 3. My parents accept me as I am | **.63** |
| 4. My parents understand me | **.66** |
| 5. My parents care about me | **.45** |
| 6. I trust my parents | **.51** |
| 7.I can count on my parents to help me when I have a problem | **.54** |
| 13. My home is a nice place to live | **.55** |
| 14. My parents pay attention to me | **.69** |
| 20. I get along well with my parents | **.72** |
| 21. My parents are proud of the things I do | **.62** |
| **Factor label** | |
| **Parent Communication (*a* = .76)** | |
| 2. My parents listen to what I have to say | **.66** |
| 8. My parents can tell when I'm upset about something | **.50** |
| 9.I talk to my parents when I am having a problem | **.56** |
| 10. If my parents know that something is bothering me they ask me about it | **.65** |
| 11. I share my thoughts and feelings with my parents | **.65** |
| **Factor label** | |
| **Parent Alienation (*a* = .56)** | |
| 15. My parents don't understand what I am going through these days | * |
| 16. I get upset easily with my parents | **-.51** |
| 17. I feel angry with my parents | **-.45** |
| 18. It's hard for me to talk to my parents | **-.56** |
| 19. I feel scared in my home | * |
| **Factor label** | **Factor label** |
| **Teacher Affiliation ( *a* =.90)** | **Child-Teacher Attachment ( *a* =.89)** |
| 22. I like my teacher(s) this year | **-.90** |
| 24. My teachers respect my feelings | **-.71** |
| 25. My teachers understand me | **-.71** |
| 26. I trust my teachers | **-.71** |
| 27. My teachers pay at lot of attention to me | **-.49** |
| 30. I get along well with my teachers | **-.74** |
| 32. My teachers are proud of the things I do | **-.55** |
| 33. There is a teacher at my school that I can count on when I have a problem. | **-.38** |
| **Factor label** | |
| **Teacher Dissatisfaction ( *a* =.68)** | |
| 28. I get upset easily with my teachers | **.58** |
| 29. I feel angry with my teachers | **.79** |
| 31. It's hard for me to talk to my teachers | **.39** |

* Items which did not load over.3 on either factor in the present study and were made redundant for the final analyses.

### 3.3 Recruitment Procedure

**3.3.1 Ethics Approval**. Ethical approval was granted from both the Victoria University Human Research Ethics Committee (VUHREC) (see Appendix D) and the Department of Education and Early Childhood Development (DEECD) (see Appendix E) before recruitment commenced.

**3.3.2 Recruitment of Schools**. Primary schools within the Western Metropolitan Region of Melbourne, Victoria, were approached to participate in the study. Initial contact and liaison with schools occurred via telephone and e-mail. An email was sent to school principals with an attached letter outlining the research (see Appendix F) and including examples of all consent forms and documentation (see Appendices F to K) for parents and children. School principals were able to consider all documentation pertaining to the research before committing to participate in the study. Documentation confirming ethics approval from both the VUHREC and the DEECD was also made available. Principals were informed that all parents/guardians of participating children would receive a written assessment report outlining their child's cognitive, academic, and language results.

A total of 11 schools were contacted and invited to participate in the study. Of the 11, one school did not respond to telephone messages and email contact. Another school declined as the Principal was away and staff were unable to consent to the study. A third school was in the process of merging with another campus and indicated that their current schedule was not conducive to conducting research at that time. Two other schools did not respond in time to be included in the study. The six remaining schools participated in the research.

Once a school Principal had agreed to participate in the study, a school based meeting was arranged between the researcher and various school staff including: the Principal, Assistant Principals, Student Welfare Co-ordinators, and classroom teachers. The meeting

involved discussions about: 1) the focus of the study; 2) testing measures; 3) time frames for children's absence from their classroom; 4) requirements of teachers and parents involved in the study; and 5) criteria for the exclusion of children (e.g. those with known disabilities that impact academic performance, and children who have not yet developed conversational English due to English being their second language).

**3.3.3 Recruitment of Participants**. Assistant Principals and Student Welfare Coordinators acted as the primary contact person at each school, and were involved in coordinating the dispersion and collection of all documentation.

The school contact person provided Invitation Packages to teachers across Grades 4-6 who then distributed the Invitation Packages to children in their class aged 10 to 12 who were eligible to participate. Invitation Packages comprised: 1) a plain language information sheet/letter for parents/guardians outlining the research (Appendix G); 2) a parent consent form (Appendix H); 3) a parent consent form for children's assessment report to be released to their school (Appendix I); 4) a parent demographics questionnaire (Appendix A); and 5) a reply-paid envelope. Children were requested to take the packages home for their parents to consider and return the consent forms to school. Consent forms returned to the school were collected and held by the classroom teachers and made available to the researcher when she visited the school. To protect privacy reply-paid envelopes were provided in the packages for parents who chose to post questionnaires containing personal information directly to the researcher at Victoria University. The researcher's contact details were provided to enable parents to make contact with the researcher as necessary.

### 3.4 Data Collection

**3.4.1 Assessment Procedure**. Each child was required to have signed parent consent before any contact was made by the researcher. Participating children were taken individually from their classrooms by the researcher and escorted to a private, quiet room within the school.

An invitation letter (see Appendix J) containing a plain language summary of the research project, and a consent form (see Appendix K) was provided or read aloud to each child and an opportunity was provided to ask questions about the study before the assessment began. When it was considered by the researcher that the child was comfortable to participate, the child was asked to sign the consent form and the assessment process began. All children indicated their interest in proceeding with the assessment process.
Children were assessed during one or two sessions and each measure was administered according to formalised testing guidelines. The time taken to administer the assessment battery ranged between forty to eighty minutes. Breaks were provided during recess and lunch times, and when requested by the child. Children were given the choice of independently reading the attachment questionnaires or having the researcher read items aloud, however no child required assistance. The order of administering the assessment measures was counterbalanced amongst participants. At the conclusion of testing children were thanked and accompanied back to their classroom. All assessments were administered and scored by the researcher.

**3.4.2 Assessment Reports**. Individual child assessment reports were provided to the school contact person in sealed envelopes and then distributed to children to take home to their parents. All reports were provided to the respective schools within 2 to 12 days following each assessment.

Copies of student assessment reports were only provided to the school contact person when signed parental permission to release the report had been received by the researcher. In cases where the assessment results indicated that a child would benefit from further specialist investigation, written recommendations were included in the report regarding the importance of follow-up testing and/or monitoring of school progress.

**3.4.3 Assessment Timeline**. While it was planned that all data would be collected during Terms 3 and 4 of 2008 this was not possible due to delays in the ethics approval process. Data was instead collected across two school years, during Term 4 in 2008, and Terms 1 and 2 of 2009.

In Term 4 of 2008 Grade 6 children were prioritised for assessment to ensure they had completed their participation in the study before they transferred to secondary education. During Terms 1 and 2 of 2009 children were prioritised for assessment based upon: 1) how long they had been on the assessment waiting list, and 2) how long they had known their classroom teacher. For example children who had only known their classroom teachers for a short time were assessed during the latter part of the data collection period to allow time for the relationship with their teacher to develop.

## 3.5 Design and Statistical Analysis

A cross-sectional design was used to examine factors that contribute to academic performance in primary school children aged 10 to 12 years. The data was analysed using SPSS for Windows Version 17. Hierarchical Multiple Regression Analyses were used to test the three proposed models. The respective outcome variables for the three models were Reading Performance, Spelling Performance, and Math Performance with the predictor variables entered in the following order:

Step 1: Age (co-variate) (Models 1 and 3)

Step 2: Verbal Intelligence

Step 3: Language Ability

Step 4: Child-Parent Attachment

Step 5: Child-Teacher Attachment

Baron and Kenny (1986) define a moderator as being a variable that affects the direction and/or strength of the relation between an independent variable and a dependent variable. Exploration of the potential moderating effect of Child-Teacher Attachment was planned according to the statistical criteria outlined by Baron and Kenny using the equation Y= (constant) + b X + b M + b x (X*M) (Baron & Kenny, 1986). According to Baron and Kenny moderator effects would be indicated by the interaction of the two variables, Child-Parent Attachment and Child-Teacher Attachment, explaining the criterion or outcome variable, academic performance. Using Hierarchical Multiple Regression variables would be entered in the following order:

Step 1: Age (co-variate) (Models 1 and 3)

Step 2: Verbal Intelligence

Step3: Language Ability

Step 4: Child-Parent Attachment

Step 5: Child-Teacher Attachment

Step 6: Child-Parent X Child-Teacher Attachment

**3.5.1 Power Analysis**. An initial power analysis as formulated by Tabachnick and Fidell (2001), and based on the proposed multiple regression models, indicated that a minimum of 82 participants was required for the study ($N > 50 + 8 \times 4$). The final sample of

158 children used in further statistical analyses, exceeded the power requirements necessary for the proposed analyses.

Cohen (1988) has suggested guidelines regarding the size of correlations (small less than .30, medium between .30 and .50, and large .50 or above). These guidelines have been used to interpret the size of correlation coefficients in the reported significant relationships between variables.

# 4. Results

## 4.1 Response Rate

A total of 614 Invitation Packages were distributed. Signed consent forms and demographic questionnaires for 164 children (26.7%) were received with the rate varying between schools from 12.4% to 43.4%. Response rates are displayed in Table 3.

Table 3

*Response Rates for Individual Schools*

| | Forms Distributed | Consent Returned | |
|---|---|---|---|
| School | (*n*) | (*n*) | Response Rate Percentage |
| A | 125 | 39 | 31.20 |
| B | 53 | 19 | 35.84 |
| C | 149 | 34 | 22.82 |
| D | 53 | 23 | 43.40 |
| E | 81 | 10 | 12.35 |
| F | 153 | 39 | 25.49 |
| Total | 614 | 164 | 26.71 |

The distribution of consent forms returned was uneven, with the number of consent forms returned by schools ranging from 10 to 39. While there is no available data to suggest a reason for this it was noted that the teachers in some of the schools seemed very engaged in the research.

All but two of the children whose parents had given permission to participate in the study were considered for entry into the research, leaving a total of 162 children. At School C two children were excluded by the researcher from participating. One child was excluded due to previously knowing the researcher in a different context, and another child was excluded due to a current diagnosis of significant hearing, language and cognitive impairments. The latter child had been inadvertently provided with an Invitation Package by his class teacher.

Completed parental questionnaires were returned from 160 (98.8%) parents of the 162 who had consented for their child to participate in the study. Data for the remaining two questionnaires were provided by the parents to the researcher via telephone. The number of participants assessed within the three grade levels from each school is presented in Table 4.

Table 4

*Participation Rate of Schools and Children According to Grade Level*

| | Grade Level | | | |
|---|---|---|---|---|
| School | 4 (*n*) | 5 (*n*) | 6 (*n*) | Total *n* |
| A | 0 | 3 | 36 | 39 |
| B | 3 | 9 | 7 | 19 |
| C | 0 | 5 | 27 | 32 |
| D | 2 | 10 | 11 | 23 |
| E | 2 | 3 | 5 | 10 |
| F | 10 | 29 | 0 | 39 |
| Total *n* | 17 | 59 | 86 | 162 |

As seen in Table 4 the distribution of children from the three grade levels involved in the study was unequal and ranged from 17 children in Grade 4 to 86 children in Grade 6. There were fewer children from Grade 4 participating in the study as there were fewer Grade 4 children who had turned 10 years-of-age and so met the age criterion for participation in the study.

**4.1.1 Final Sample**. A total of 162 children were assessed, however four children were removed from the final sample due to their KBIT-2 scores indicating a possible Intellectual Disability (IQ Composite below 70). The final sample comprised 74 males and 84 females ($N$ = 158) aged 10 years to 12 years 11 months ($M$ = 11 years 4 months, $SD$ = 9 months). The participating children had been taught by their current classroom teachers for an average of 34.62 weeks ($SD$ = 20.67 weeks; range 7.2 – 98.4 weeks).

There were 38 children (24.1%) who lived in households where English was not the only Language(s) Spoken at Home. In 16 (10.1%) of these households English was not the predominant language spoken. Languages other than English were classified into categories based upon the Australian Standard Classification of Languages (ASCL) (see Appendix L). Of the 38 children: nine spoke an African language, eight spoke a Pacific Austronesian language, eight a Southwest and Central Asian Language, five an Eastern European language, four a Southern Asian language, two a Southeast Asian language, and two spoke a Southern European language (Australian Bureau of Statistics, 2011).

As shown in Table 5 the number of schools children had attended throughout their schooling ranged from 1 to 7.

Table 5

*School Transition - Number of Schools Children Attended*

| School Attended | (*n*) | % |
|---|---|---|
| No other school | 92 | 58.2 |
| One other school | 45 | 28.5 |
| Two others attended | 14 | 8.9 |
| Three others attended | 4 | 2.5 |
| Four others attended | 1 | .63 |
| Five others attended | 1 | .63 |
| Six others attended | 1 | .63 |
| Total *N* | 158 | 100% |

Over half (58.2%) of the children in the present study had attended only their current school. Of the children (41.8%) who had attended more than one school, the majority (28.5%) had attended only one other school before moving to their current school.

## 4.2 Preliminary Analyses

**4.2.1 Missing Data**. Assessments were completed in full by all children. Two children made minor errors on the attachment questionnaire. Missing data were replaced using the Prior Knowledge method. The Prior Knowledge method is a way of replacing missing data when the data set is large and the number of missing data few. The technique involves the researcher using their prior knowledge to make a well-educated guess and replace a missing value (Tabachnick & Fidell, 2001).

Four parental forms were incomplete due to parents experiencing a language barrier. Missing data from these forms were provided by school contact personnel.

**4.2.2 Data Screening and Assumption Testing**. All data were initially screened for outliers. On the Child-Parent Attachment measure two outliers were identified, however these were not removed as it was considered that they reflected the targeted population. The cognitive, language and academic variables did not contain any extreme outliers.

Normality, linearity and homoscedasticity were examined in relation to relevant variables through inspection of histograms and skewness statistics. Data were tested for normality using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Attachment measures, 'Child- Parent Attachment' and 'Child-Teacher Attachment', were the only variables found to be negatively skewed with skewness levels falling at -1.59 and -1.37 respectively. Central limit theorem was considered to be the most important consideration to take into account for the current research. As the sample size well exceeded the minimum number (i.e. 60 participants) to allow for this theorem (Aron & Aron, 1999) and also as interpretation difficulties arise with transformed data (Tabachnick & Fidell, 2001) the data was not transformed. Possible scores on the PIML-M attachment measure range from 18 (weakest attachment) to 72 (strongest attachment) for Child-Parent Attachment and from 11 (weakest attachment) to 44 (strongest attachment) for Child-Teacher Attachment.

**4.2.3 Potential Covariates**. One-way between-groups multivariate analyses of variance (MANOVA) were performed in order to identify whether there were any differences in academic performance based on Reading, Spelling, and Math Performance scores according to demographic variables. The following variables were considered: 1) Sex, 2) Age, 3) Teaching Environment - children who worked with a single teacher ($n$ = 87) versus

those within a team teaching environment ($n$ = 71), 4) School Transition - children who had attended only the one school ($n$ = 92) compared with those who had attended more than one school ($n$ = 66), and 4) Length of Time Spent with Teacher - children who had known their teacher for less than the recommended eight weeks ($n$ =18) versus those who had known their teacher for longer than eight weeks ($n$ =140). The only variable to show a statistically significant result was Age.

A statistically significant difference was found between children aged 10 - 10:11 ($n$ = 60), 11 - 11:11 ($n$ = 65), and 12 - 12:11 ($n$ = 33) on the combined variables, $F$ (6, 306) = 6.90, $p$ = .000; Wilks' Lambda = .78; partial eta squared = .12. Further exploration revealed a statistically significant between-subjects effect size for Reading Performance scores ($p$ = .002) and Math Performance scores ($p$ = .001).

To further explore these results separate one-way ANOVAs were conducted for each of the academic areas. Results confirmed that 10 year-old children had significantly higher Reading Performance scores than 11 ($p$ =.01) and 12 ($p$ =.01) year-old children, and had significantly higher Math Performance scores than 11 ($p$ =.01) and 12 ($p$ =.00) year-old children. Again, no significant differences were noted for Spelling Performance between the three age groups.

A MANOVA indicated that there was were no significant differences on Reading and Math Performance scores between 11 and 12 years old, but 10 year-olds scored significantly higher than either 11 or 12 year-olds in both academic areas. Spelling Performance did not differ significantly between the age groups. Due to these findings Age was included in the analyses as a covariate and entered in Step 1 for testing of the models for Reading and Math Performance.

Data were examined to investigate whether these findings were due to higher intelligence scores for 10 year-olds. A MANOVA indicated that there was no statistically significant difference between the three age groups in relation to Verbal Intelligence, Non-Verbal Intelligence or IQ Composite scores, $F$ (6, 306) = .87, $p$ = .52; Wilks' Lambda = .97; partial eta squared = .02.

A one-way between-groups multivariate analysis of variance (MANOVA) was performed to determine whether there were any age differences in relation to Child-Parent Attachment and Child-Teacher Attachment scores. There was no statistically significant difference between children aged 10 - 10:11 ($n$ = 60), 11 - 1:11 ($n$ = 65), and 12 - 12:11 ($n$ = 33) on the combined variables, $F$ (4, 308) = 1.39, $p$ = .24; Wilks' Lambda = .97; partial eta squared = .02.

Multicollinearity was investigated by inspecting the intercorrelations between the predictor variables (Hair, Anderson, Tatham, & Black, 1998; Tabachnick & Fidell, 2001) entered into the 3 Models (see Table 12). Inspection of data indicated that multicollinearity was not evident; there were no correlations of .90 or above between the independent variables.

### 4.3 Demographic Information

**4.3.1 Student Demographics**. As previously reported four children were removed from the original sample of 162 due to their KBIT-2 scores indicating a possible Intellectual Disability (IQ Composite below 70) resulting in a final sample of 158 children. Child age ranged from 10 years to 12 years 11 months ($M$ = 11 years 4 months, $SD$ = 9 months).

Chi-squared tests were used to determine whether there were significant differences between the number of males and females participating in the study. These analyses revealed that the number of males (74) and females (84) was not significantly different ( $\chi^2$ (1, $N$ = 158) = .63, $p > .05$). As the number of children in the three grade levels, (Grade 4, $n$ =15; Grade 5, $n$ =59 and Grade 6, $n$ = 84) differed significantly ($\chi^2$ (2, $N$ = 158= 47.33, $p < .000$) no comparisons were made across grades. Time spent with current classroom teacher ranged from 37 days to 429 days ($M$= 172.74 days, $SD$ = 102.96 days). Of the 158 children who participated in the study 87 children (55%) were in single teacher classrooms and 71 children (44.9%) were in team teaching classrooms. The number of children in the two teaching environments were not significantly different ($\chi^2$ (1, $N$ = 158) = 1.62, $p > .05$).

Three children (1.9%) were reported by parents to have had a Previous Assessment by either a Psychologist or Speech Pathologist for learning difficulties. Of these children one was reported to have Short-Term Auditory Memory problems, one was reported to experience symptoms of anxiety, and one child was reported by their parent to have an unspecified learning difficulty. Upon examination of their individual assessment scores none of these children presented with discrepancies that would indicate current learning disabilities, (i.e. their academic achievement scores were not two or more standard deviations below their intelligence score) and so the three children were retained in the final sample.

Nineteen children (12.0%) scored below the expected level for their age range on the CELF-4 Screener. As these children's scores on the academic assessments were not

indicative of them having a significant language disability (i.e. their academic scores were not two or more standard deviations below their intelligence score) they were retained in the sample. None of the children with English as a second language had any reported learning difficulties.

### 4.3.2 Family Demographics.

*4.3.2.1 Family Structure and Household Composition*. Family structure and household composition are shown in Table 6. One child had a deceased parent. Of the 33 children (20.4%) who did not live with both parents, 26 children (78.8%) continued to regularly see the parent they did not live with.

Table 6

*Primary Caregiver/s for Each Household*

| Primary Caregiver | (*n*) | % |
|---|---|---|
| Mother and Father | 124 | 78.5 |
| Mother | 22 | 13.9 |
| Mother and Stepfather | 5 | 3.2 |
| Father | 4 | 2.5 |
| Father and Stepmother | 1 | .6 |
| Grandparents | 2 | 1.3 |
| Total *N* | 158 | 100% |

The majority (78.5%) of children in the current sample lived with both parents. The second most common living situation for children was to live with only their mother (13.9%). These results indicate that approximately a quarter (21.5%) of children in the present sample had experienced a separation from one or both of their primary caregivers.

*4.3.2.2 Parent Occupation*. Parents who completed the demographic questionnaire were asked to list their current occupation. As mothers predominantly completed the questionnaires the majority of occupations listed represent mothers' occupations (mothers *n* = 140; fathers *n* = 16; guardians *n* = 3). Parental occupations were classified into categories based upon the Australian and New Zealand Standard Classification of Occupation, 1st Edition, Revision 1 (ANZSCO). ANZSCO categorises occupations into eight areas ranging from Managers to Labourers and also provides an 'average weekly cash earning' summary for the vast majority of occupations (Australian Bureau of Statistics, 2009). The breakdown of parental occupation is displayed in Table 7.

Table 7

*ANZSCO Classifications of Parental Occupations (N=158)*

| ANZSCO Occupation | Other | Parent (*n*) | % |
|---|---|---|---|
| Managers | | 13 | 7.9 |
| Professionals | | 38 | 23.2 |
| Technicians and Trades workers | | 9 | 5.5 |
| Community and personal service workers | | 13 | 7.9 |
| Clerical and administrative workers | | 23 | 14.0 |
| Sales workers | | 1 | 0.6 |
| Machinery operators and drivers | | 2 | 1.2 |
| Labourers | | 14 | 8.5 |
| | Home Duties | 31 | 18.9 |
| | Occupation not disclosed | 14 | 8.5 |

ANZSCO = Australian and New Zealand Standard Classification of Occupation, 1st Edition, Revision 1

Parents' employment ranged from managerial positions to labourers and home duties. The largest percentages of parents either worked as professionals (23.2%), clerical and administrative workers (14.0%), or were responsible for home duties (18.9%) and were not in

the workforce. The number (18.9%) of parents who reported home duties as their occupation is likely due to the majority of the questionnaires (88.6%) being completed by mothers.

**4.3.3 Academic Performance**. All children completed the three subtests: Word Reading, Spelling and Numerical Operations (Math) of the Wechsler Individual Achievement Test – Second Edition, Australian Standardised Edition, Abbreviated (WIAT-II Australian Abbreviated; Pearson, 2007a). Raw scores for each of the three subtests were converted into standard scores. Mean standard scores for the three subtests are shown below in Table 8.

Table 8

*Mean Standard Scores on the Academic Performance Measure - WIAT-II Australian Abbreviated*

| WIAT-II Australian Abbreviated | *N* | *M* | *SD* |
|---|---|---|---|
| Reading Performance | 158 | 102.8 | 12.4 |
| Spelling Performance | 158 | 103.2 | 13.1 |
| Math Performance | 158 | 98.1 | 15.5 |

Note. Scale Mean = 100; *SD* = 15.

The current sample demonstrated some similarities and minor differences in mean scores compared to the WIAT-II (U.S) normative research which was conducted by Semel, et al. (2004) in the United States and included 50 children in each of the three relevant age groups. Means reported for children aged between 10 and 12 were: Reading Performance (Word Reading - *M* = 102.49), Spelling Performance (Spelling - *M* = 102.90), and Math Performance (Numerical Operations - *M* = 103.76). Normative data for the previously outlined age groups was not available for the WIAT-II Australian. However Australian normative data relating to average Reading, Spelling and Math Performance scores was available for a mixed group of 92 (female *n* = 46, male *n* = 46) children and adolescents.

Means reported for the group were: Reading Performance (Word Reading - *M* = 102.49), Spelling Performance (Spelling - *M* = 100.90), and Math Performance (Numerical Operations - *M* = 99.6). The score for Math Performance closely matched Australian normative scores while Reading Performance and Spelling Performance mean scores in the current sample were similar to both Australian and United States normative data.

**4.3.4 Verbal Intelligence**. All children completed the two Verbal subtests of the Kaufman Brief Intelligence Test – Second Edition (KBIT-2; Kaufman & Kaufman, 2004): Verbal Knowledge and Riddles, and the one Non-Verbal subtest: Matrices. Raw scores for the Verbal and Non-Verbal index were converted into standard scores. An overall IQ Composite score was also calculated by adding the three subtest raw scores and then converting this into a standard score. The IQ Composite score was calculated in order to determine if any children had an overall IQ score which may indicate an Intellectual Disability as they would need to be excluded from the final sample. Verbal Intelligence was the only measure of intelligence used for correlation and regression analyses. Mean standard scores for Verbal and Non-Verbal Intelligence and the IQ Composite score are presented in Table 9.

Table 9

*Mean Standard Scores on the Intelligence Measure – KBIT-2*

| KBIT-2 | *N* | *M* | *SD* |
|---|---|---|---|
| Verbal Intelligence | 158 | 96.47 | 11.73 |
| Non-Verbal Intelligence | 158 | 101.23 | 12.80 |
| IQ Composite | 158 | 98.96 | 11.78 |

Note. Scale Mean = 100; *SD* = 15

The mean scores of the present sample fell well within the average range for Verbal, Non-Verbal, and the IQ Composite scores of intelligence. The KBIT-2 has yet to be normed with an Australian sample, however when the current results were compared to the United States normative data of children aged 4 to 12 years (Kaufman & Kaufman, 2004)) some similarities and differences were noted. Australian children scored slightly lower on the Verbal Intelligence scale compared to children in the United States who scored 98.3 on average. Australian children had slightly higher scores on the Non-Verbal and the IQ Composite, with children from the United States on average scoring 96.0 and 96.9 respectively (Kaufman & Kaufman, 2004).

**4.3.5 Language Ability**. All children completed all sections of the Clinical Evaluation of Language Fundamentals – Fourth Edition, Screening Test Australian & New Zealand Language Adapted Edition (CELF-4 Screener; Semel, et al., 2004). The overall raw Total Test Score for each child was calculated and the mean score for each of the three age groups is shown in Table 10.

Table 10

*Mean Scores on the Language Measure – CELF-4 Screener*

| Years and Months | *n* | *M* | *SD* |
|---|---|---|---|
| 10- 10:11 | 60 | 23.77 | 5.06 |
| 11 – 11:11 | 65 | 23.97 | 4.76 |
| 12-12:11 | 33 | 26.42 | 4.65 |

The current sample demonstrated very similar mean scores to those obtained in the CELF-4 Screener normative research conducted in the United States (Semel, et al., 2004).

Based on 50 children in each of the three relevant age groups the scores were, 10-10:11years, *M* = 23.1: 11-11:11years, *M* = 23.9; 12-12:11years *M* = 26.2.

**4.3.6 Attachment**. All children completed the Child-Parent and Child-Teacher Attachment measures from the People in My Life (PIML-M) questionnaire. Mean scores for Child-Parent Attachment and Child-Teacher Attachment are presented below in Table 11.

Table 11

*Mean Scores on the PIML-M Child-Parent and Child-Teacher Attachment Measures*

| PIML-M Scales | *N* | *M* | *SD* |
|---|---|---|---|
| Child-Parent Attachment | 158 | 62.45 | 7.70 |
| Child-Teacher Attachment | 158 | 37.53 | 5.74 |

The current sample demonstrated high scores on both attachment measures with mean scores at the upper end of the range (possible range of scores for Child-Parent Attachment, 18-72; possible range of scores for Child-Teacher Attachment, 11-44) resulting in negatively skewed data.

**4.4 Examination of Variables in Models 1, 2 and 3**

The inter-correlations among the variables for Model 1 (Reading Performance) Model 2 (Spelling Performance) and Model 3 (Numerical Operations – Math Performance) are shown in Table 12.

Table 12

*Intercorrelations between Variables Entered into Models 1, 2 and 3 (Factors Influencing Reading, Spelling and Math Performance)*

| Variables (*N*=158) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Age | 1.00 | -.07 | .02* | -.11 | -.19* | -.27* | -.01 | -.28* |
| 2. Verbal Intelligence | - | 1.00 | .68* | .09 | .12 | .63** | .43** | .47** |
| 3. Language Ability | | - | 1.00 | .07 | .06 | .58** | .52** | .44** |
| 4. Child-Parent Attachment | | | - | 1.00 | .44** | .14 | .14 | .07 |
| 5. Child-Teacher Attachment | | | | - | 1.00 | .16* | .17* | .13 |
| 6. Reading Performance | | | | | - | 1.00 | .79** | .54** |
| 7. Spelling Performance | | | | | | - | 1.00 | .48** |
| 8. Math Performance | | | | | | | - | 1.00 |

* $p<0.05$; ** $p<0.01$.

**4.4.1 Reading Performance**. It was hypothesized that Verbal Intelligence, Language Ability, Child-Parent Attachment, and Child-Teacher Attachment would all be positively correlated with Reading Performance (hypotheses 1, 4, 7, and 10). Results from the correlation analysis are shown in Table 12.

Results indicated a large correlation between Reading Performance and both Verbal Intelligence and Language Ability, while Child-Teacher Attachment was found to have a small positive correlation with Reading Performance. Child-Parent Attachment was not significantly correlated with Reading Performance, but showed a medium sized correlation with Child-Teacher Attachment. Age showed a small positive correlation with Language Ability, and a small negative correlation with Reading Performance, and Child-Teacher Attachment.

*4.4.1.1 Testing Model 1: Factors Influencing Reading Performance*. In order to test the proposed model of Reading Performance (see Figure 1) a Hierarchical Regression Analysis was conducted.

Reading Performance was the outcome variable in the hierarchical regression with the independent variables entered in the following order: Age (Step 1); Verbal Intelligence (Step 2); Language Ability (Step 3); Child-Parent Attachment (Step 4) and Child-Teacher Attachment (Step 5). $R^2$ *change* statistics, *F change* statistics, unstandardised beta coefficients, standardised beta coefficients, and significance levels associated with testing of Model 1 are shown in Table 13.

The inclusion of Age in Step 1 explained 7.8% of the variance in Reading Performance. At Step 2 the inclusion of Verbal Intelligence explained an additional 37.5% of the variance in Reading Performance, and at Step 3 Language Ability explained an additional

8.8%. Examination of the standardised beta coefficients indicated as hypothesised that a high level of Verbal Intelligence was associated with a higher Reading Performance score and similarly that a high level of Language Ability also predicted higher scores on Reading Performance.

The entry of Child-Parent Attachment in Step 4 explained a further 0.2% of the variance in Reading Performance and the entry of Child-Teacher Attachment in Step 5 explained a further 0.1% of the variance. Variables in Steps 4 and 5 did not reliably improve prediction of the outcome variable over and above the variables entered in Steps 1, 2 and 3. These results were contrary to what had been predicted.

The overall model accounted for a total of 54.3% of the variance in Reading Performance. Verbal Intelligence, Language Ability, and Age were the only significant predictors of Reading Performance.

Part correlations were examined and squared in order to give the unique variance in the outcome variable Reading Performance explained by each independent variable. Age (9.6%) and Language Ability (8.4%) were each found to account for the largest proportions of unique variance in the full model, and Verbal Intelligence uniquely accounted for 4.8%.

Table 13

*Hierarchical Multiple Regression for Model 1 (Factors Influencing Reading Performance)*

| | Reading Performance | | | | |
|---|---|---|---|---|---|
| Predictor Variables | *B* | *SEB* | β | *t* | Δ $R^2$ |
| Step 1 | | | | | .08 |
| Age | -.37 | .11 | -.28** | -3.57 | |
| Step 2 | | | | | .38 |
| Age | -.32 | .08 | -.24** | -3.96 | |
| Verbal Intelligence | .65 | .06 | .61** | 10.14 | |
| Step 3 | | | | | .09 |
| Age | -.47 | .08 | -.35** | -5.88 | |
| Verbal Intelligence | .34 | .08 | .32** | 4.01 | |
| Language Ability | 1.07 | .20 | .43** | 5.33 | |
| Step 4 | | | | | .00 |
| Age | -.46 | .08 | -.34** | -5.61 | |
| Verbal Intelligence | .33 | .08 | .31** | 4.02 | |
| Language Ability | 1.07 | .20 | .43** | 5.40 | |
| Child-Parent Attachment | .06 | .09 | .04 | .75 | |
| Step 5 | | | | | .00 |
| Age | -.46 | .08 | -.34** | -5.46 | |
| Verbal Intelligence | .33 | .08 | .31** | 3.98 | |
| Language Ability | 1.06 | .20 | .43** | 5.38 | |
| Child-Parent Attachment | .04 | .09 | .03 | .44 | |
| Child-Teacher Attachment | .07 | .14 | .03 | .54 | |

* $p<0.05$; ** $p<0.01$.

**4.4.2 Spelling Performance**. It was hypothesized that Verbal Intelligence, Language Ability, Child-Parent Attachment, and Child-Teacher Attachment would all be positively correlated with Spelling Performance (hypotheses 2, 5, 8, and 11). Results from the correlation analysis are shown in Table 12.

Results indicated that Spelling Performance had a large correlation with Language Ability, a medium correlation with Verbal Intelligence, and a small correlation with Child-Teacher Attachment. Child-Parent Attachment was not significantly associated with Spelling Performance.

*4.4.2.1 Testing Model 2: Factors Influencing Spelling Performance*. In order to test the proposed model of Spelling Performance (see Figure 2) a Hierarchical Regression Analysis was conducted.

Spelling Performance was the outcome variable in the hierarchical regression with the independent variables entered in the following order: Verbal Intelligence (Step 1); Language Ability (Step 2); Child-Parent Attachment (Step 3) and Child-Teacher Attachment (Step 4). $R^2$ *change* statistics, *F change* statistics, unstandardised beta coefficients, standardised beta coefficients, and significance levels associated with testing of Model 2 are shown in Table 14.

The inclusion of Verbal Intelligence in Step 1 accounted for 19.8% of the variance in Spelling Performance, and Language Ability entered in Step 2 accounted for a further 9.1%. Examination of the standardised beta coefficients indicated as hypothesised that a high level of Verbal Intelligence was associated with a higher Spelling Performance score and similarly that a high level of Language Ability also predicted higher scores on Spelling Performance.

The entry of Child-Parent Attachment in Step 3 explained a further 0.9% of the variance in Spelling Performance, and the entry of Child-Teacher Attachment in Step 4 explained a further 1.3% of the variance. Variables entered in Steps 3 and 4 did not reliably improve prediction of the outcome variable over and above the variables previously entered in Step 1 and Step 2. These results were contrary to what had been expected.

The overall model accounted for a total of 31.1% of the variance in Spelling Performance. Language Ability was the only significant predictor of Spelling Performance.

Part correlations were examined and squared in order to give the unique variance in the outcome variable Spelling Performance explained by each independent variable. Language Ability was found to account for the largest proportion of unique variance (9.4%) in the full model.

Table 14

*Hierarchical Multiple Regression for Model 2 (Factors Influencing Spelling Performance)*

| | Spelling Performance | | | | |
|---|---|---|---|---|---|
| Predictor Variables | *B* | *SEB* | β | *t* | Δ $R^2$ |
| Step 1 | | | | | .20 |
| Verbal Intelligence | .50 | .08 | .45** | 6.11 | |
| Step 2 | | | | | .09 |
| Verbal Intelligence | .19 | .11 | .17 | 1.79 | |
| Language Ability | 1.08 | .25 | .41** | 4.37 | |
| Step 3 | | | | | .01 |
| Verbal Intelligence | .18 | .11 | .16 | 1.67 | |
| Language Ability | 1.08 | .25 | .41** | 4.39 | |
| Child-Parent Attachment | .16 | .11 | .10 | 1.41 | |
| Step 4 | | | | | .01 |
| Verbal Intelligence | .16 | .11 | .14 | 1.51 | |
| Language Ability | 1.10 | .25 | .42** | 4.49 | |
| Child-Parent Attachment | .07 | .12 | .05 | .60 | |
| Child-Teacher Attachment | .28 | .17 | .13 | 1.64 | |

* $p<0.05$; ** $p<0.01$.

**4.4.3 Math Performance**. It was hypothesized that Verbal Intelligence, Language Ability, Child-Parent Attachment, and Child-Teacher Attachment would all be positively correlated with Math Performance (hypotheses 3, 6, 9, and 12). Results from the correlation analysis are shown in Table 12.

Results indicated that Math Performance had a medium correlation with Verbal Intelligence and Language Ability, and a small negative correlation with Age. Neither of the attachment measures, Child-Parent Attachment and Child-Teacher Attachment were significantly correlated with Math Performance.

*4.4.3.1 Testing Model 3: Factors Influencing Math Performance*. In order to test the proposed model of Math Performance (see Figure 3) a Hierarchical Regression Analysis was conducted.

Math Performance was the outcome variable in the hierarchical regression with the independent variables entered in the following order: Age (Step 1); Verbal Intelligence (Step 2); Language Ability (Step 3); Child-Parent Attachment (Step 4) and Child-Teacher Attachment (Step 5). $R^2$ *change* statistics, *F change* statistics, unstandardised beta coefficients, standardised beta coefficients, and significance levels associated with testing of Model 3 are shown in Table 15.

The inclusion of Age in Step 1 explained 7.5% of the variance in Math Performance. The entry of Verbal Intelligence in Step 2 explained 21.4% of the variance in Math Performance, and the inclusion of Language Ability in Step 3 explained a further 6.2% of the variance. Examination of the standardised beta coefficients indicated as hypothesised that a high level of Verbal Intelligence was associated with a higher Math Performance score and

similarly that a high level of Language Ability also predicted higher scores on Math Performance.

The entry of Child-Parent and Child-Teacher Attachment in Step 4 and Step 5 each explained a further 0.1% of the variance in Math Performance. Variables in steps 4 and 5 did not reliably improve prediction of the outcome variable over and above the variables entered in Steps 1, 2 and 3. These results were contrary to what had been predicted.

The overall model accounted for a total of 35.2% of the variance in Math Performance. Verbal Intelligence, Language Ability, and Age were the only significant predictors of Math Performance.

Part correlations were examined and squared in order to give the unique variance in the outcome variable Math Performance explained by each independent variable. Age was found to account for the largest proportion of unique variance (9.6%) in the full model. Language Ability uniquely accounted for 6.3% and Verbal Intelligence 2.3% of the variance in Math Performance.

Table 15

*Hierarchical Multiple Regression for Model 3 (Factors Influencing Math Performance)*

| | Math Performance | | | | |
|---|---|---|---|---|---|
| Predictor Variables | *B* | *SEB* | β | *t* | Δ $R^2$ |
| Step 1 | | | | | .08 |
| Age | -.47 | .13 | -.27** | -3.50 | |
| Step 2 | | | | | .21 |
| Age | -.42 | .12 | -.24** | -3.54 | |
| Verbal Intelligence | .62 | .09 | .46** | 6.72 | |
| Step 3 | | | | | .06 |
| Age | -.57 | .12 | -.34** | -4.76 | |
| Verbal Intelligence | .29 | .13 | .21* | 2.28 | |
| Language Ability | 1.13 | .30 | .36** | 3.76 | |
| Step 4 | | | | | .00 |
| Age | -.58 | .12 | -.34** | -4.77 | |
| Verbal Intelligence | .29 | .13 | .21* | 2.29 | |
| Language Ability | 1.14 | .30 | .36** | 3.76 | |
| Child-Parent Attachment | .06 | .13 | -.03 | -.43 | |
| Step 5 | | | | | .00 |
| Age | -.57 | .12 | -.34** | -4.64 | |
| Verbal Intelligence | .29 | .13 | .21* | 2.26 | |
| Language Ability | 1.14 | .30 | .36** | 3.75 | |
| Child-Parent Attachment | -.08 | .14 | -.04 | -.57 | |
| Child-Teacher Attachment | .09 | .20 | .43 | .43 | |

* $p<0.05$; ** $p<0.01$.

**4.4.4 Moderating Effect of Child-Teacher Attachment.** It was hypothesized that a child's attachment to her teacher would moderate the relationship between Child-Parent Attachment and academic performance (in relation to Reading, Spelling and Math) for children with low Child-Parent Attachment.

The current sample demonstrated high scores on both attachment measures resulting in negatively skewed data. Only three (1.9%) children from the final sample of 158 participants were found to have low (2 Standard Deviations below the mean) Child-Parent Attachment scores and 10 (6.3%) of the participants had low Child-Teacher Attachment scores. Only one participant had both a low Child-Parent and low Child-Teacher Attachment score.

Child-Parent Attachment was not significantly correlated with any of the academic performance areas measured (see Table 12) and therefore Hypotheses 20-22 could not be tested. These non-significant results are considered in detail in the Discussion.

**4.4.5 Post Hoc Analyses.** The amount of variance in academic performance scores explained by Verbal Intelligence was well below levels found in past research (Deary, et al., 2007). Further analyses were undertaken to explore possible reasons for this discrepancy.

As seen in Table 14 when initially entered Verbal Intelligence was a significant predictor of Spelling Performance; however when Language Ability was entered in the following step of the regression analyses the beta value of Verbal Intelligence decreased and became nonsignificant. In contrast, Tables 13 and 15 show that Verbal Intelligence remained a significant predictor of Reading and Math Performance when Language Ability was entered into the regression analyses but the beta value and significance level of Verbal Intelligence in relation to Reading and Math Performance was reduced.

Language Ability was therefore explored as a possible mediator based upon the reduction of Verbal Intelligence beta levels (Baron & Kenny, 1986) when Language Ability was entered in the regression analyses for research Models 1, 2 and 3.

According to Baron and Kenny (1986) the following four key criteria need to be met to confirm a mediation effect:

1) The independent variable must be significantly associated with the dependent variable;
2) The independent variable must be significantly associated with the suspected mediating variable;
3) The mediating variable must be significantly associated with the dependent variable while the independent variable is accounted for;
4) When entered into the model the mediator will reduce the association between the independent and dependent variable.

According to Baron and Kenny (1986) for a fully mediated pathway to be present the association between Verbal Intelligence and the academic performance areas should become non-significant when Language Ability is accounted for in the regression analyses. For a partially mediated pathway to be present the association between Verbal Intelligence and the academic performance areas will be reduced but remain significant. Figure 5 depicts the relationship between the mediating, independent and dependent variables.

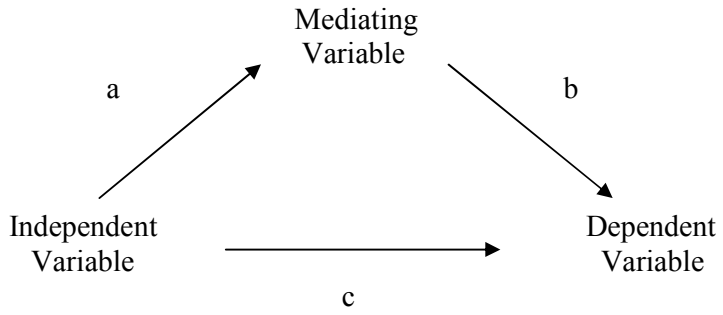


*Figure 5*. Diagram representing a mediation pathway (Baron & Kenny, 1986, p.1176)

Post Hoc analyses were conducted in order to investigate whether Language Ability mediates the effect of Verbal Intelligence on the dependent variables Reading, Spelling and Math Performance. A series of regression analyses using Reading, Spelling and Math as dependent variables were conducted based upon Baron and Kenny's criteria.

The first series of regression analyses tested whether there was a significant association between the independent variable Verbal Intelligence and the individual dependent variables: Reading, $F$ (1, 151) = 98.90, $p$ <.001; Spelling, $F$ (1, 151) = 37.32, $p$ <.01; and Math, $F$ (1, 151) = 44.96, $p$ <.01. Criteria 1 were met as the associations were all found to be significant.

A regression analysis was then conducted and confirmed a significant association between Verbal Intelligence and Language Ability, $F$ (1, 151) = 128.38, $p$ <.01 indicating that Criteria 2 was met.

Regression analyses were then conducted to explore whether Language Ability was significantly associated with the dependent academic variables after accounting for Verbal Intelligence. Criteria 3 was met as a significant association was found for Reading, $F$ (2, 150) = 57.47, $p$ <.01; Spelling, $F$ (2, 150) = 30.44, $p$ <.01; and Math, $F$ (2, 150) = 25.20, $p$ <.01.

In order for Criteria 4 to be met the association between the independent variable Verbal Intelligence and dependent variables Reading, Spelling and Math Performance needs to become either non-significant (indicating full mediation) or reduce in significance (indicating partial mediation) when the mediator variable Language Ability is entered in the regression analyses.

When Language Ability was entered into the respective regression analyses the effect of Verbal Intelligence remained significant for Reading Performance, $F$ (2, 150) = 57.47, $p <$ .01, and Math Performance, $F$ (2, 150) = 25.20, $p <$ .01. A closer examination of the standardised beta coefficients indicated that when Language Ability was entered the beta value for Verbal Intelligence was reduced for both Reading ($\beta$ = .63 reduced to $\beta$ = .45) and Math Performance ($\beta$ = .48 reduced to $\beta$ = .34), indicating partial mediation.

In contrast for Spelling Performance when Language Ability was entered into the regression analysis the effect of Verbal Intelligence became non-significant $F$ (2, 150) = 30.44, $p >$ .05 indicating a fully mediated pathway.

Sobel tests were conducted in order to substantiate the mediation pathways identified by the regression analyses. A calculation tool provided by Preacher & Leonardelli (2006) was used to run individual Sobel tests for Reading, Spelling and Math Performance. Results indicated that Language Ability mediated the effect of Verbal Intelligence on academic scores in relation to Reading Performance ($z$ = 3.05, $p <$ .01), Spelling Performance (z = 4.06, $p <$ .01), and Math Performance (z = 2.06, $p =<$ .05).

The effects of the mediator variable Language Ability on Reading, Spelling and Math Performance with associated standardised beta coefficients and significance levels are shown in Figures 6, 7 and 8 respectively.

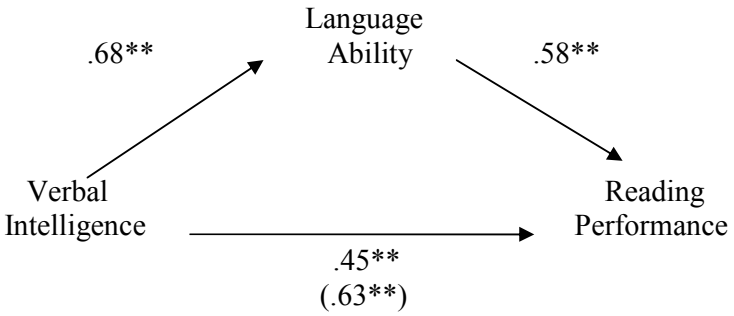


*Figure 6*. Language Ability as a Partial Mediator of the Association between Verbal Intelligence and Reading Performance. * $p<0.05$; ** $p<0.01$.

Note. The standardised beta weight for the direct pathway between the independent variable and the outcome variable is shown in parenthesis.

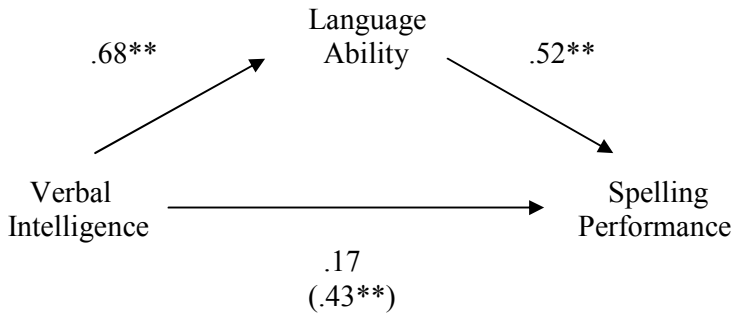


*Figure 7*. Language Ability as a Mediator of the Association between Verbal Intelligence and Spelling Performance. * $p<0.05$; ** $p<0.01$.

Note. The standardised beta weight for the direct pathway between the independent variable and the outcome variable is shown in parenthesis.

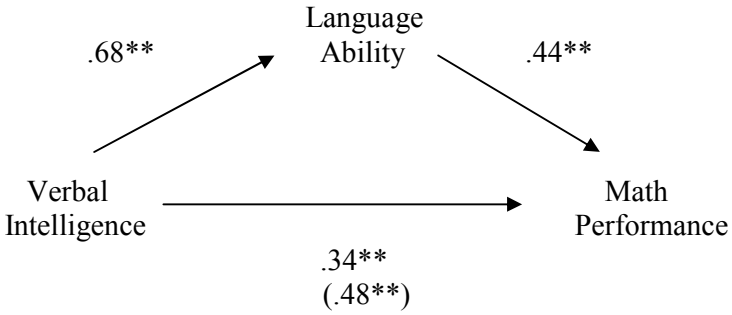


*Figure 8*. Language Ability as a Partial Mediator of the Association between Verbal Intelligence and Math Performance. * $p<0.05$; ** $p<0.01$.

Note. The standardised beta weight for the direct pathway between the independent variable and the outcome variable is shown in parenthesis.

# 5. Discussion

## 5.1 Overview of the Study

The current study aimed to explore the effects of children's relationships with their parents and teachers on academic performance in late childhood. As past research into children's relationships has been undertaken predominantly from an attachment theory perspective an attachment framework was used to conceptualise child-parent and child-teacher relationships in the current study.

Previous research has demonstrated that attachment to parents and teachers can affect children's school functioning in a range of areas. However there is a paucity of research focusing on attachment in late childhood and of the few studies that have been conducted with this age group, the majority have not used a standardised measure of academic

performance and have instead drawn upon teacher ratings of academic functioning. An unpublished Australian study (Hughes, 2006) has explored the effects of parent attachment on academic performance scores in children aged 9-12 years and found modest but significant results. To date no research has been conducted in which Child-Parent and Child-Teacher Attachment relationships have been explored simultaneously in a sample of Australian children in late childhood. The present study was designed to address these gaps in the literature by exploring the effects of both Child-Parent Attachment and Child-Teacher Attachment on children's performance using a standardised measure of Reading, Spelling and Math. A secondary aim of the present study was to explore potential compensatory effects of Child-Teacher Attachment, as has been found in previous research (Mitchell-Copeland, et al., 1997).

**5.2 Summary of Findings**

It was hypothesised that Verbal Intelligence, Language Ability, Child-Parent Attachment and Child-Teacher Attachment would all be positively associated with academic performance as measured by the Reading, Spelling and Math subtests of the WIAT-II Australian Abbreviated. Hypotheses indicating that Verbal Intelligence and Language Ability (as measured by screening tests KBIT-2 and CELF-4 Screener) would be positively associated, and that both of these variables would be independently positively associated with all academic performance areas were supported. Hypotheses that a child's attachment to their teacher would be positively associated with academic performance were supported in relation to both Reading and Spelling, but not Math; weak but significant correlations were found between Child-Teacher Attachment and Reading Performance (.16), and Spelling Performance (.16). Hypotheses that Child-Parent Attachment would be associated with Reading, Spelling and Math Performance were not supported as the Child-Parent Attachment

measure was not significantly correlated with performance scores in any of the academic areas.

As preliminary analyses identified significant associations between Age and Reading Performance and Age and Math Performance, Age was included in the hierarchical regression analyses used to test the proposed models for these two academic areas. The proposed models, with the inclusion of: Age in Step 1, Verbal Intelligence in Step 2, Language Ability in Step 3, Child-Parent Attachment in Step 4, and Child-Teacher Attachment in Step 5, predicted 54.3% of the variance in Reading and 35% of the variance in Math Performance. A hierarchical regression analysis using the same order of entry for the independent variables, but excluding Age, predicted 31.1% of the variance in Spelling Performance. However, results indicated that after accounting for Age, Verbal Intelligence, and Language Ability, Child-Teacher and Child-Parent Attachment scores did not predict a significant amount of the variance in any of the three academic performance areas measured.

Significant predictors of Reading Performance were: Verbal Intelligence (37.5%), Age (7.8%), and Language Ability (8.8%). In the full model for Spelling Performance, Verbal Intelligence and Language Ability were the only significant predictors accounting for unique variance of 19.8% and 9.1% respectively. Verbal Intelligence was found to account for the largest proportion of unique variance (21.4%) in the full model for Math performance with the other significant predictors Age and Language Ability uniquely accounting for 7.5% and 6.2% respectively. As there was no significant association between Child-Parent Attachment and children's academic performance the hypothesis that Child-Teacher Attachment would moderate the association between Child-Parent Attachment and academic performance for children whose Child-Parent Attachment score was low could not be tested.

In the following sections the findings summarised above will be compared to results from previous studies and issues related to the use of screening measures and the availability

of instruments to meet the challenges of measurement of attachment in late childhood will be considered. The lack of significant findings in regard to the effects of children's relationships on academic performance and consideration of past studies in these areas raises two major issues: 1) the concept of attachment in late childhood, and 2) the concept of teachers as attachment figures, which will be the main focus of discussion.

### 5.3 The Influence of Verbal Intelligence and Language Ability

When compared to other research that has explored the effect of intelligence on academic performance previous studies have found that intelligence predicted a greater amount of the variance than that found in the current study. Deary et al. (2007) in a longitudinal study of children aged from 11 to 16 years-of-age, found that intelligence predicted 58.6% of the variance in math performance and 48% of the variance in literacy performance scores as measured by standardised national public examination results. In their study Deary and colleagues measured cognitive ability using a comprehensive measure of intelligence – the Cognitive Abilities Test – Second Edition (CAT2E; Thorndike, Hagen, & France, 1986). The CAT involves 10 subtests which measure verbal, quantitative and nonverbal reasoning abilities. In contrast, the KBIT-2 comprises only three subtests which provide measures of Verbal, Non-verbal abilities and a Overall IQ composite score but only Verbal Intelligence was used as a predictor variable in the current study. It seems possible that although moderate correlations have been reported between the KBIT-2 and a comprehensive measure of intelligence, the WISC-IV, the ability of this screening measure to predict academic performance compared to comprehensive measures of intelligence may be limited.

Furthermore language ability was not measured in the earlier study (Deary, et al., 2007) but in the current study Language Ability was a stronger predictor of academic

performance than Verbal Intelligence in each of the three areas. Verbal Intelligence and Language Ability were highly correlated ($r$ =.68, $p$ <0.01) and so the small non-significant contribution made by Verbal Intelligence may be due to the shared variance between the two variables. To further explore the relationship between Verbal Intelligence, Language Ability, and the three academic performance areas Post Hoc analyses were conducted. Findings indicated that Language Ability mediated the association between Verbal Intelligence and Spelling Performance, and partially mediated the association between Verbal Intelligence and both Reading Performance and Math Performance. The Post Hoc results explain the lower than expected contribution made by Verbal Intelligence to academic performance in the three areas.

Hughes (2006) study explored the effects of both IQ (WISC-IV; Wechsler, 2003) and language ability (CELF-3 Screening test; Semel, Wiig, & Secord, 1998) on academic performance (WRAT-3; Wilkinson, 1993). Her results indicated medium correlations between language ability and academic performance (.42 reading, .38 spelling and, .56 mathematics). While she explored language ability as a potential mediator between attachment and academic performance, and found significant correlations between IQ and language ability, she did not explore language as a potential mediator between IQ and academic performance. No other studies were located that measured simultaneously the effects of both language ability and verbal intelligence on academic performance.

A number of variables including, Sex, Teaching Environment, School Transition, Length of Time Spent with Teacher, and Age were explored as potential covariates in the current study. With the exception of Age, the variables did not significantly influence any of the three academic performance areas. Analysis revealed that in the current sample 10 year-old children performed significantly higher on Reading and Math Performance than either 11 or 12 year-old children. It is possible that the higher Reading and Math Performance scores

obtained by 10 year-olds may simply be an anomaly which would not be found if the study was conducted with a larger sample.

### 5.4 The Effects of Children's Attachment Relationships on Academic Functioning/ Performance

It was expected that both Child-Parent Attachment and Child-Teacher Attachment would make a significant contribution to the three areas of academic performance. There are few published studies which have attempted to explore the direct effect of Child-Parent Attachment on academic performance. A study exploring the direct link between attachment and academic performance scores for children in middle childhood was that of the previously cited study by Moss and St-Laurent (2001). The researchers identified that securely attached children had higher scores on communication, cognitive engagement and mastery motivation, and further that attachment was the single significant predictor of Mastery Motivation and that affective mother-child interaction at age 6 predicted academic performance at age 8. Similarly in another previously cited study, Jacobsen and Hofmann (1997) found that children's attachment representations predicted Grade Point Average. A major difference between these previous studies (Jacobsen & Hofmann, 1997; Moss & St-Laurent, 2001) and the current research was the use of projective tools to measure the attachment bond and also that attachment was measured at much younger ages rather than during late childhood. For example, Jacobsen and Hofmann used a picture based story (Chandler, 1973) depicting a parent-child separation as an attachment measure at age 7 and then used these results to predict academic performance at ages 7, 9, 12, and 15 years. Similarly, Moss and St-Laurent (2001) who also reported a significant link between attachment and academic performance at eight years-of-age used a separation-reunion measure and observation of affective mother-child interaction when children were six years-of-age.

Hughes (2006) found that aspects of Child-Parent Attachment as measured by the PIML Parent 'Alienation' scale independently predicted Reading and Spelling Performance. However as Hughes used a different measure of academic performance (WRAT-3; Wilkinson, 1993) and the full PIML, while the current study used the WIAT-II Australian Abbreviated to measure academic performance and employed a modified version of the PIML (PIML-M), direct comparisons between the studies could not be made.

Previous research has identified that a child's attachment to their parent is linked to areas of functioning such as: persistence, enthusiasm, and engagement in new tasks (Atwool, 2002; Sroufe, 1983), social competence (Howes, 2000), and emotional adjustment (Murray & Greenberg, 2006). When such findings are considered in light of research which indicates that variables such as: better social and emotional adjustment, along with lower levels of anxiety, depression and behavioural disturbance are all associated with better levels of learning and school functioning (Brenner, et al., 2008; Luke, et al., 2002; Preiss & Fráňová, 2006; Trout, et al., 2003), it might be expected that there would be an association between parent attachment and academic performance scores. One possibility for the lack of a direct association between Child-Parent attachment and academic performance scores in the current study is that the effect of Child-Parent attachment on academic performance is indirect. In a study of early child-teacher relationships and later academic outcomes (Hamre & Pianta, 2001) results indicated a link between social processes at the Kindergarten level and academic competence in later schooling. The authors in referring to the consistency of this link across studies suggested that "the quality of teacher-child relationships may reflect the extent to which children are able to engage the instructional resources present in the classroom (Entwisle & Hayduk, 1988)" (Hamre & Pianta, 2001, p634).

Further, much of the previous attachment research has involved bivariate analyses and once other variables such as IQ and language ability are controlled for an association between attachment and variables of interest may be difficult to find.

A major focus of the current study was the influence of Child-Teacher Attachment on academic performance scores but as previously noted this variable did not predict a significant amount of the variance in any of the three academic performance areas measured and bivariate analyses only showed weak significant associations with reading and spelling.

This finding differed from those reported by O'Connor and McCartney (2007b) in one of the few studies to explore the influence of both parent and teacher attachment on academic performance, using a standardised academic measure. The authors found that teacher-child relationships and academic performance were positively associated, and further that positive teacher-child relationships can provide a buffer in relation to academic performance in cases where children have an insecure maternal attachment. However, while there are some similarities between the aims of this study and the current study, in the published study the authors have measured the child's attachment relationships from the adult's, rather than the child's perspective. This may be a potential reason for the difference in the current findings. Another potential reason for the difference in findings is that O'Connor and McCartney capture attachment at earlier ages than the current study; it has been noted that on average the quality of children's relationships with teachers decline with the child's increasing age (Lynch & Cicchetti, 1997; O'Connor & McCartney, 2007b).

In a 2006 study of 507 children in Grades 3, 4 and 5, AlYagon and Mikulincer applied attachment theory to assess the effect of the student-teacher relationship on socio-emotional and academic adjustment. While their results indicated that child-teacher attachment had a positive association with socio-emotional functioning, child-teacher attachment, the child's general attachment style and any of the other variables measured only accounted for minimal

variance of academic functioning. The use of a teacher self-report measure for academic performance rather than standardised academic tests makes the results difficult to compare to the current study findings.

Due to the paucity of research in this area which has employed a standardised academic measure, while exploring teacher attachment from the child's perspective via a self-report measure, there are few studies with which to directly compare the current findings.

### 5.5 The Potential Moderating Effect of Teacher Relationships

The second aim of the current study was to explore whether a child's attachment to their classroom teacher could moderate the relationship between Child-Parent Attachment and academic performance when Child-Parent Attachment score is low. It was hypothesised that attachment to teacher would moderate the association between Child-Parent Attachment and academic performance for children whose Child-Parent Attachment was low (defined as 2 Standard Deviations below the mean). Previous studies involving children ranging from Preschool to Grade 3 have found that a child's attachment to their teacher can act in a compensatory or buffering capacity in relation to: socio-emotional development (Mitchell-Copeland, et al., 1997), future teacher-child relationships (O'Connor & McCartney, 2006) and academic performance (O'Connor & McCartney, 2007b) in cases where attachment to parent is insecure. However, O'Connor & McCartney (2007b) note that this buffering effect is for a particular type of insecure attachment and that the effect is only moderate. Further studies exploring this issue are required.

As Child-Parent Attachment in the current study was not significantly related to student's academic performance scores this hypothesis could not be tested. The majority of children had high scores on the Child-Parent and Child-Teacher Attachment measures; only three of

158 children were found to have low Child-Parent Attachment scores, while 10 children had low Child-Teacher Attachment scores.

In seeking to explain the null findings in the present research consideration needs to be given to the challenges of measuring attachment in late childhood.

Researchers in the area of children's relationships (Leitao & Waugh, 2007; Pianta & Steinberg, 1992; Pianta & Stuhlman, 2004) and attachment bonds (Al-Yagon & Mikulincer, 2006; Howes & Spieker, 2008; Kerns, et al., 2005; Murray & Greenberg, 2006) acknowledge that characteristics such as warmth, closeness and trust are regarded as being important characteristics of a positive teacher relationship (Murray & Greenberg, 2000). Measurement of these characteristics have been incorporated within self-report relationship measures with this age group, such as the Security Scale (Kerns, et al., 2001), the Children's Appraisal of Teacher as a Secure Base Scale (CATSB; Al-Yagon & Mikulincer, 2006), and the PIML (Cook, Greenberg, & Kusche, 1995). In the current study in order to collect quantitative data within research time restrictions a modified version of the PIML (PIML-M), a self-report measure, was used.

While the PIML Parent Attachment measure has been used in previous studies and has shown significant associations with variables such as: life satisfaction (Nickerson & Nagle, 2004), attention towards the mother (Bosmans, et al., 2009), externalising behaviours (Ridenour, et al., 2006), life satisfaction (Nickerson & Nagle, 2004), and academic performance (Hughes, 2006), and the Teacher Attachment scale has shown significant associations with variables such as: social and emotional adjustment (Murray & Greenberg, 2000), and conduct problems, delinquency, anxiety and depression (Murray & Greenberg, 2006), none of these previous studies have utilized the same modified Parent Attachment scale as the present study.

In reviewing the use of the modified PIML (PIML-M) for measurement of Child-Teacher Attachment in the current study it is necessary to consider developmental issues.

### 5.6 Limitations Associated with Children's Developmental Abilities in Late Childhood

While children in late childhood have the ability to understand their own and other's points of view (Mayseless, 2005) and can compare themselves to others (Hoffman, et al., 1988), in her article Dwyer (2005) notes Harter's (1998) idea that "children (in the late childhood years) are still likely to think about themselves and others in terms of opposites (e.g., nice or mean) and fail to detect inconsistencies across representations" (p.157). The concrete nature of thinking in this age group may have affected PIML-M scores in the current study. For example, when faced with Item 13 of the PIML-M 'My home is a nice place to live' children of this age may interpret this in a concrete way and report that their house is a 'nice place to live' if they have nice food and furniture, rather than the item tapping into whether the children feel loved and respected by their parents in the home environment. It may be that even though items of the IPPA were removed or altered in the creation of the original PIML to make the items more comprehendible for a younger audience (Ridenour, et al., 2006), the modifications did not achieve a standard appropriate for the comprehension levels for this developmental stage. It is also possible that similar limitations apply to other self-report measures which have been simplified from measures containing concepts designed for older age groups.

It might also be necessary to question the accuracy of children's answers on self-report measures such as the PIML-M which require a response on a 4-point likert scale because if children are unable to think of themselves and others in terms beyond extremes, such as 'nice' or 'mean', then the accuracy of their responses using this scoring system might be in question. Children's cognition at this age may also be considered as a possible reason

for current and past (Hughes, 2006) research results showing the PIML and PIML-M attachment scores to be negatively skewed, as many children scored aspects of their relationships with their parent and teachers as all good, rather than endorsing the variations which range in between. The skewed results may also have been influenced by social desirability. For example, it is possible that children felt uncomfortable reporting bad or negative things about their parents because they believed it would be socially inappropriate to do so.

### 5.7 The Measurement of Attachment by Self-Report

While discussion of the cognitive stage of development for children within the late childhood years is extremely relevant to the current study, there is also a continuing larger debate between adult attachment theorists about the accuracy of self-report attachment measures (Dwyer, 2005). At the core of this debate is the question of whether it is valid to use self-report attachment measures when such measures all rely on the basic assumption that individuals are capable of accurately describing their own attachment related behaviours, feelings and thoughts (Dwyer, 2005). In contrast to the present study, past research has used projective measures with children of a younger age and it may be that these provide a more accurate measure of attachment than self-report measures used with older children. Attachment data gathered through self-reports and questionnaires are aimed at tapping into individuals' conscious thoughts and feelings towards attachment figures in contrast to projective measures that aim to measure unconscious feelings (Kerns, Tomich, Aspelmeier, & Contreras, 2000). In light of research that has found that both 'avoidant' children (Cassidy, 1988) and also 'avoidant' adults (Cassidy & Kobak, 1988) seem to idealize their attachment related experiences, it is understandable that some theorists remain unconvinced

that individuals of any age can accurately report on their own experiences of attachment relationships.

In retrospect the limitations of direct questioning to measure attachment based constructs for children in late childhood seems evident, and on these grounds projective measures may be considered to be more appropriate for gaining insight into attachment bonds. However, there are varying views on the efficacy of current attachment measures, with some theorists questioning the validity of all existing attachment measures for late childhood. A recent review of the validity of current attachment measures (Crittenden, Kozlowska, & Landini, 2010) commented that "none of the existing assessments have been accepted as reliable, valid, and capable of differentiating well-developing children from those who are psychologically or behaviourally at risk" (p.185). In an earlier argument made by Weinfield (2005) it was noted that while some researchers have examined the correlations between attachment measures as evidence of validity, the question of whether current attachment measures are actually measuring attachment and not other "non-attachment constructs" has gone relatively unaddressed. Weinfield further argued that a main weakness of current attachment measures is that many of the current measures have been "developed by extrapolating from the more abundant theory and measures of attachment during infancy/early childhood or adulthood and they do not place enough emphasis on developmental issues within attachment theory" (2005, p.188). She makes a plea for future research and theory development that puts more focus on the developmental issues of older children and considers how attachment might be more validly measured.

**5.7.1 The Concept of Attachment in Older Children.** As research has demonstrated associations between attachment and various areas of children's functioning, the issues noted above raise the question, if not attachment, what is actually being measured on current

attachment measures for late childhood? Not only do developmental issues seem relevant to this argument but also the issue of whether the bond that exists between parent and child by late childhood is the same construct as the 'attachment' bond which exists between mother and infant. As previously noted, while an infant is totally dependent on their parent or another adult for survival, this is not the case with older children, which suggests that the nature of the relationship may have changed by late childhood. By late childhood it is arguable that parents become more focused on teaching and preparing their children to cope with the world, while children learn to respect their parent's boundaries, rather than the relationship focusing predominantly on parents meeting the infant's physical needs which are essential to survival. The change in correlates of attachment according to the child's developmental phase has been noted by several authors (Al-Yagon & Mikulincer, 2006; Weinfield, 2005).

While Bowlby has indicated that the initial attachment bond continues to affect functioning throughout one's life, interpreting this idea to suggest that the constructs of the initial infant-parent relationship continue to be present in the same form throughout one's life, and further, that these same constructs are measurable throughout life may be considered questionable. It has been suggested that the attachment relationships young children make with caregivers in childcare settings resemble the process of infant-mother attachment figures (Al-Yagon & Mikulincer, 2006) and that even in the first years of school a teacher's role with children may be one of surrogate parent (Howes & Hamilton, 1992).

With increasing age there is less attachment behaviour and so there seems to be a mismatch in attempting to apply infant-based attachment concepts in order to measure attachment in the child-parent relationship. The additional dimensions to the child-parent attachment relationship by late childhood are likely to be at a more representational level (Al-Yagon & Mikulincer, 2006).

While the issues discussed above are relevant to all attachment relationships in late childhood, the concept of Child-Teacher Attachment as examined in the current study requires some specific considerations.

## 5.8 Child-Teacher Attachment

The number of research studies specifically exploring the effects of 'attachment' relationships with teachers, particularly in late childhood, is very limited. While some theorists (Al-Yagon & Mikulincer, 2006; Murray & Greenberg, 2006; Zionts, 2005) have put forward the idea that teachers can fulfill the role of an attachment figure in middle to late childhood most of the teacher-based attachment research for this age group has focused on social competence (Al-Yagon & Mikulincer, 2006; Murray & Greenberg, 2000; Murray & Greenberg, 2006) similarly to the bulk of teacher attachment research in early childhood (Birch & Ladd, 1997; Cugmas, 2003; Fredriksen & Rhodes, 2004; Howes, et al., 1994; Mitchell-Copeland, et al., 1997; Skinner & Belmont, 1993). However, the capacity of teachers to act as 'attachment figures' for children in late childhood could be questionable due to the prescribed roles of teachers in schools, teacher's responsibility for a large number of children, and the temporary nature of the child-teacher relationship.

### 5.8.1 Teachers as Attachment Figures.

There are a substantial number of researchers (Al-Yagon & Mikulincer, 2006; Howes & Hamilton, 1992; Howes, et al., 1994; Moss & St-Laurent, 2001; Moss, et al., 2005; Murray & Greenberg, 2000; Murray & Greenberg, 2006) who have explored the teacher-child relationship from an attachment perspective, and have measured the relationship between teacher and child using key attachment criteria originally categorised from observing the infant-parent bond. Other researchers, for example Hamre & Pianta (2001), Pianta, et al.

(1997), and Pianta & Stuhlman (2004) have measured characteristics derived from attachment theory, but also include a broader spectrum of relationship factors to assess children's relationship with their teachers.

Ainsworth (1991) stated that teacher relationships for early childhood can be conceptualised as secondary attachment bonds and some of the previously cited researchers have referred to attachment like behaviours. In particular, teachers in early childhood can be considered to fulfil some of the functions expected of an attachment figure such as, acting as a secure base for children to explore from, and also providing emotional support and comfort in stressful circumstances (Attili, 1985; Pianta, 1992). However, teachers differ substantially from parents, or what can be termed primary attachment figures, as the bonds children form with them are most often not long-term, they are not exclusive and also not primarily affective (Thijs, Koomen, & van der Leij, 2008).

In a chapter of the 2005 edited book by Kerns and Richardson which focuses on attachment in middle childhood, Zionts (2005) raises the issue of whether teachers can be considered as attachment figures and concludes that "research suggests that teachers can play a pivotal role in providing a 'secure base' in academic settings" (p.248). However Zionts also highlights a number of limitations to the idea of teachers acting as an attachment figure, including that in the traditional view of attachment theory a true attachment figure is someone who maintains a long-standing relationship over many years. As a solution Zionts proposes that schools can structure themselves in such a way that the one teacher remains as a child's classroom teacher throughout several school grade levels.

There are also other important differences between teachers and primary attachment figures, such as parents, in regard to the adult characteristics and behaviors which create an attachment bond as outlined by Bowlby and Ainsworth (Ainsworth & Bell, 1970; Ainsworth, et al., 1978; Bowlby, 1973, 1988). Examination of the role of teachers in a school setting

shows that a teacher's main role during a school day is to present a set amount of work to a classroom of children. One consequence of fulfilling this role in the classroom is that it is not uncommon for children to have to wait long periods and even until the end of an instruction period before the teacher will be available to listen to them individually about a concern. Therefore compared to a parent, the opportunities for sensitively responding to an individual child are very different for a teacher. The limitations for responsiveness that teachers have in a mainstream classroom have been highlighted by O'Connor and McCartney (2006) who have suggested that teachers who work with emotionally disturbed children are likely to do so in smaller classes as this enables them to have more opportunities for individual interaction with students. In contrast, in a mainstream classroom where a teacher may have the responsibility for up to 30 children of the same age, providing sensitive and responsive care can be extremely challenging.

Not only is the teacher's focus on delivering curriculum in school distinctly different from the interactional focus of a parent or grandparent, teachers may also respond differently than relatives to children's injuries and in emergency situations. As noted by Dwyer (2005) children in primary school still "hold their parents' hands when they are nervous, go to their parents when they are sick, and even sit on their parents' lap when they are sad, frightened, or otherwise need comfort" (p. 157). This level of physical reassurance found in relationships between children and other attachment figures such as fathers and grandparents might rarely, if ever, be offered or provided by teachers in the upper primary school years.When a child injures themselves it is the teacher on yard duty, and/or a school nurse, who responds to the child's needs. Even when the classroom teacher is present in the next room, they are not expected to stop their lunch and attend to an injured or upset student. While it is unlikely that children in late childhood would expect their teacher to sit and hold them if they are crying or

upset, it would not be unusual for children to look for such comfort from their parent/s or other relatives.

**5.8.2 Teacher's Role According to Age of Child.** Although there is a prescribed role for teachers, developmental differences in the children that are being taught require some modifications to that role. Most school based attachment research has been conducted in the lower grades of primary school, particularly the prep years, where attachment behaviours from both the teacher and child are more observable. Teachers often provide physical care and comfort to children in the early school years by acts such as helping with shoelaces, opening lunches, and by physically holding a child who experiences separation anxiety when left at school by a parent in the morning. Younger children can become very close to their teacher, and when upset or injured they may not be as easily soothed by other staff members as they are by their class teacher; compared to teachers of older children prep teachers may be more likely to act in a mothering fashion and interrupt their lunch period to attend to an upset student from their classroom.

It seems that the attachment behaviors for both a prep age child and their class teacher are more easily measured and seem more in line with the characteristics of attachment bonds. It is also arguable that there is a level of expectation from both parents and heads of school for the prep teacher's role to be more motherly and nurturing towards such young children in order to help them settle into the school routine. Teachers of lower primary school grade levels are therefore more focused on meeting the physical needs and daily care of children, and in fact it has been suggested that teachers working with young children take on a surrogate parental role (Al-Yagon & Mikulincer, 2006; Howes & Hamilton, 1992). In the upper primary school grades the teacher's role is substantially different and predominantly

falls within the category of a mentor and instructor, and older children as well as their parents are likely to be aware of this.

**5.8.3 The Temporary Nature of Child-Teacher Relationships.** As identified by Zionts (2005) the transient nature of the child-teacher relationship also makes the validity of teachers as 'attachment' figures questionable. By late childhood most children would have experienced changes in teachers from one year level to the next and have awareness that their class teacher is a temporary figure in their lives. Also children are likely to be aware that teachers can leave the school midyear to pursue another job opportunity. The temporary nature of the child-teacher relationship therefore differs greatly from the child-parent relationship which is most often based on permanency, as is the child's relationship with alternate attachment figures such as grandparents. In addition, the child's reaction to the loss of a teacher would arguably be considerably different to the devastation they may feel at the loss of their mother as the primary caregiver, as they know the teacher will be replaced.

These issues may also explain why in the current study Length of Time Spent with Teacher did not influence Child-Teacher attachment scores. Apart from studies involving 'at risk' infants, no other studies have reported such short periods of time for attachment bonds to have formed (Dontas, et al., 1985; Stovall–McClough & Dozier, 2004; Stovall & Dozier, 2000). However, as previously noted the above mentioned studies were on specialized samples of infants. Further, while a shorter period for the development of an attachment bond may be understandable for infants who require almost constant intimate contact and attention from a caregiver, it is difficult to justify within late childhood, as the children no longer rely on adults for survival and there are considerably less one-to-one interactions between child and teacher.

**5.8.4 The Generic Nature of Child-Teacher Relationships.** The replaceable nature of the teacher in the child-teacher relationship may provide another explanation for children in the current sample reporting feeling so positive about their new teacher so quickly. Based upon this idea it is possible that student's positive experiences and feelings about school are carried with them from one teacher to the next.

Early studies by Howes and colleagues (Howes & Hamilton, 1992; Howes, Hamilton, & Phillipsen, 1998; Howes, Phillipsen, & Peisner-Feinberg, 2000) suggested that "children appear to develop models of teacher– child relationships in early childhood and to apply these models to subsequent relationships" (O'Connor & McCartney, 2006, p88). In the previously described longitudinal study by O'Connor & McCartney (2006) it was demonstrated that children's previous relationships with teachers were stronger predictors than maternal attachment of children's current relationships with teachers in Grade 1. It should be noted however that this study measured the child-teacher relationship from the teacher's perspective.

Therefore the significant correlations between the overall Child-Teacher Attachment score and Reading Performance and Spelling Performance found in the current study may better reflect a more generic attitude towards school and teachers in general, rather than representing a true attachment bond with a specific teacher.

A number of issues have been raised that bring into question whether teachers are true attachment figures in children's lives. If teachers cannot validly be assumed to be attachment figures then attachment based questions used to explore and measure the child-teacher relationship in the current study may not be effective in capturing critical elements of the child-teacher dynamic. Relationship measures based solely on attachment based questions could be considered limited as they do not assess for other important characteristics of the child-teacher relationship such as co-operation and understanding (Leitao & Waugh, 2007).

Future research into child-teacher relationships may need to take into account the limitations of considering the teacher as an attachment figure and use a broader theoretical model to assess the relationship dynamic between student and teacher. Alternatively, if researchers are wishing to pursue the concept of attachment in school settings it is important that, in line with attachment theory, consideration is given to the fact that class teachers would also have their own working models, expectations, and beliefs about the teacher-child relationship, including what roles they should perform, for example, being an instructor, caregiver and /or disciplinarian (Split & Koomen, 2009). Teachers necessarily bring into each new relationship their own experiences of being taught as a child, and prior experiences of being a teacher, along with expectations and ideas about how children should interact with teachers (Pianta, 1999).

### 5.9 Limitations and Recommendations

In interpreting the findings of the current study a number of limitations must be noted. Although the response rate for the current research was slightly higher (27% compared to 22%) than in the previous Australian study (Hughes, 2006) study the resulting sample size was still modest when compared to the sample sizes of other studies exploring attachment in middle to late childhood, with numbers of participants ranging from 74 (Brumariu & Kerns, 2008) to 289 (Murray & Greenberg, 2001). Consequently the ability to generalize the findings to broader population is limited.

Researchers (Pareja & Lewis, 2006) have suggested that socioeconomic status and changes in parental employment, including mothers' increased workforce participation, can affect academic performance. A limitation of the current study was that it was not possible to examine the influence of socioeconomic status (SES) on academic performance. SES was unable to be calculated as questions pertaining to employment history within the

demographic questionnaire did not specifically ask for both mother and father occupations. A number of participants provided occupational information for both parents but the numbers were too low to allow for an accurate measure of SES to be made.

While past research in the area of attachment has generally relied on bivariate analyses the current study utilised multivariate analyses. When tested the proposed models explained significant amounts of the variance (31.1%, 35.2%, and 54.3% respectively) in children's Spelling, Math, and Reading Performance scores. Importantly the only variables that made independent significant contributions to the outcome variables were Age, Verbal Intelligence, and Language Ability, while children's relationships with parents and teachers failed to explain any significant variance in the overall models. The percentages of unexplained variance (68.9%, 64.8%, and 45.7%) for Spelling, Math, and Reading mean that for the current sample academic performance in the three domains was being affected to varying degrees by variables not included in the model. There are two issues that may help to account for the unexplained variance.

Firstly, it is possible that other variables such as academic resilience and academic self-concept (Marsh & O'Mara, 2008; Marsh & Rowe, 1996; Martin & Marsh, 2009), attention span (Steinmayr, et al., 2010), achievement motivation (Bandura, 1997; Wilson & Trainin, 2007) and externalising behaviours such as aggression (Brenner, et al., 2008) were affecting the academic performance of children in the current sample. However, as these variables were not measured, it is difficult to determine the extent to which they may have been affecting the participants' performance. Future research may benefit from combining different variables which have not yet been explored in the one study, such as academic resilience, academic self concept, and children's 'relationships' with parents and teachers to further understand the interaction of such variables on academic performance scores.

Secondly, as has been already been discussed the current study employed abbreviated measures of intelligence, language ability and academic performance. While such abbreviated measures may be considered more appropriate to use within a battery of tests with children, compared to the full comprehensive measures they may not have provided as accurate a measure of the constructs. This point is particularly relevant to Verbal Intelligence as measured by the KBIT-2 in the current study and found to predict much less variance in the outcome variables than reported by previous studies (Deary, et al., 2007; Hughes, 2006) which had employed comprehensive measures of IQ such as the CAT or WISC-IV.

## 5.10 Implications

In examining the results from the current study a number of challenges have been raised for consideration in undertaking future studies. The challenges of measuring attachment via self-report measures with this age group have been identified, but it has also been suggested that more fundamental issues need to be considered when conducting future research. In particular, consideration needs to be given to 1) whether a teacher fulfils the criteria of an attachment figure and 2) whether the infant based concepts of attachment theory are appropriate to apply to the relationship that has developed between child and parent by late childhood.

## 5.11 Conclusion

This study explored the effects of emotional aspects of children relationships with parents and teachers on academic performance. It is the only Australian study to simultaneously explore the effects of child-parent and child-teacher relationships on

academic performance in late childhood, and one of the few worldwide to explore the direct effects of attachment on objective measures of academic performance in this age group. The current study is also one of the few studies to use a child self-report measure to explore the child-teacher relationship.

The study involved a reasonable sample size from a hard to reach population - children within schools, and differs from much of the past attachment research in this age group by having employed a multivariate rather than bivariate model of analyses. The study adds to Australian based attachment research and is also among the first to provide correlational data on the KBIT-2, CELF-4 Screener Australian & New Zealand Language Adapted Edition, and WIAT-II Australian Abbreviated, measures.

The current study makes a contribution to the literature by raising important issues about: the nature of attachment bonds, the validity of using attachment theory to conceptualise relationships in late childhood, the validity of exploring attachment in late childhood using a self-report measure, and also the appropriateness of considering teachers as attachment figures.

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# 7. Appendices

Appendix A: Demographic Questionnaire

Appendix B: People in My Life (PIML)

Appendix C: People in My Life – Modified version (PIML-M)

Appendix D: Ethics Approval Letter (VUHREC)

Appendix E: Ethics Approval Letter (DEECD)

Appendix F: Letter to School Principals

Appendix G: Parent/Guardian Plain Language Information Letter

Appendix H: Parent/Guardian Consent Form

Appendix I: Parent/Guardian Release of Information Consent Form

Appendix J: Student Information Sheet

Appendix K: Student Consent Form

Appendix L: ASCL Classifications for Child Participants with a Second Language

## 7.1 **Appendix A**

# Demographic Questionnaire

## PARENT/GUARDIAN QUESTIONNAIRE

**Academic Performance in Middle Childhood: Associations with Child-Teacher and Child-Parent Relationships.**

Dear Parent/Guardian,

Please complete the following questionnaire and post it directly to Victoria University in the replied paid envelope enclosed addressed to Kate Screen.

***Family***

Please circle who your child primarily lives with:

- Two parents/guardians
- One parent (mother)
- One parent (father)
- Other arrangement (please specify)

  _____

If your child lives with one parent, how often do they stay with the other parent?

_____
_____
_____

***School***

If your child has attended more than one school please list them below, and what grades they were in at each of the schools.

_____
_____
_____

***Assessments***

Has your child ever been assessed by a psychologist or speech pathologist?
Yes/No
If yes in what year did this occur?

_____
_____
_____
_____

***Diagnosis***

Has your child ever been diagnosed with physical, behavioural, language, or learning difficulties? Yes/No

If yes, please provide details _____

_____

_____

_____

_____

***Occupation***

Please indicate your current occupation (i.e. home duties, plumber, fitter and turner, waitress, nurse, student etc)

_____

_____

Please indicate if you work full-time or part-time/casual _____

Please list your previous occupation(s)_____

_____

_____

***Language***

Which language is most often spoken at home? _____

Is another language spoken at home? If yes which one(s) _____

Thank-you for taking the time for fill out this questionnaire.

## 7.2 Appendix B

# People in My Life (PIML)

(Cook, Greenberg, & Kusche, 1995)

# PEOPLE IN MY LIFE

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| a. | I like to eat ice cream. ..... | 1 | 2 | 3 | 4 |
| b. | I like to wash dishes. ..... | 1 | 2 | 3 | 4 |

---

| | | | | | |
|---|---|---|---|---|---|
| 1. | My parents respect my feelings. ..... | 1 | 2 | 3 | 4 |
| 2. | My parents listen to what I have to say. ..... | 1 | 2 | 3 | 4 |
| 3. | My parents accept me as I am. ..... | 1 | 2 | 3 | 4 |
| 4. | My parents understand me. ..... | 1 | 2 | 3 | 4 |
| 5. | My parents care about me. ..... | 1 | 2 | 3 | 4 |
| 6. | I trust my parents. ..... | 1 | 2 | 3 | 4 |
| 7. | I can count on my parents to help me when I have a problem..... | 1 | 2 | 3 | 4 |
| 8. | My parents can tell when I am upset about something. ..... | 1 | 2 | 3 | 4 |

**PEOPLE IN MY LIFE** **ID:_____**

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| 9. | I talk to my parents when I am having a problem. ..... | 1 | 2 | 3 | 4 |
| 10. | If my parents know that something is bothering me, they ask me about it..... | 1 | 2 | 3 | 4 |
| 11. | I share my thoughts and feelings with my parents. ..... | 1 | 2 | 3 | 4 |
| 12. | When I am away from home, my parents know where I am and who I am with. ..... | 1 | 2 | 3 | 4 |
| 13. | My home is a nice place to live..... | 1 | 2 | 3 | 4 |
| 14. | My parents pay attention to me. ..... | 1 | 2 | 3 | 4 |
| 15. | My parents don't understand what I am going through these days. ..... | 1 | 2 | 3 | 4 |
| 16. | I get upset easily with my parents..... | 1 | 2 | 3 | 4 |
| 17. | I feel angry with my parents..... | 1 | 2 | 3 | 4 |
| 18. | It's hard for me to talk to my parents. ..... | 1 | 2 | 3 | 4 |
| 19. | I feel scared in my home. ..... | 1 | 2 | 3 | 4 |
| 20. | I get along well with my parents. ..... | 1 | 2 | 3 | 4 |
| 21. | My parents are proud of the things I do. ..... | 1 | 2 | 3 | 4 |

**PEOPLE IN MY LIFE** **ID:_____**

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| 22. | My friends respect my feelings. ..... | 1 | 2 | 3 | 4 |
| 23. | My friends listen to what I have to say. ..... | 1 | 2 | 3 | 4 |
| 24. | My friends accept me as I am. ..... | 1 | 2 | 3 | 4 |
| 25. | My friends understand me. ..... | 1 | 2 | 3 | 4 |
| 26. | My friends care about me..... | 1 | 2 | 3 | 4 |
| 27. | I trust my friends. ..... | 1 | 2 | 3 | 4 |
| 28. | I can count on my friends to help me when I have a problem..... | 1 | 2 | 3 | 4 |
| 29. | My friends can tell when I am upset about something. ..... | 1 | 2 | 3 | 4 |
| 30. | I talk to my friends when I am having a problem. ..... | 1 | 2 | 3 | 4 |
| 31. | If my friends know that something is bothering me, they ask me about it..... | 1 | 2 | 3 | 4 |
| 32. | I share my thoughts and feelings with my friends. ..... | 1 | 2 | 3 | 4 |
| 33. | I like to be with my friends. ..... | 1 | 2 | 3 | 4 |

**PEOPLE IN MY LIFE** **ID:_____**

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| 34. | My friends pay attention to me. ..... | 1 | 2 | 3 | 4 |
| 35. | My friends don't understand what I am going through these days. ..... | 1 | 2 | 3 | 4 |
| 36. | I get upset easily with my friends..... | 1 | 2 | 3 | 4 |
| 37. | I feel angry with my friends..... | 1 | 2 | 3 | 4 |
| 38. | I feel scared with my friends. ..... | 1 | 2 | 3 | 4 |
| 39. | It's hard for me to talk to my friends. ..... | 1 | 2 | 3 | 4 |
| 40. | I get along well with my friends. ..... | 1 | 2 | 3 | 4 |
| 41. | My friends are proud of the things I do. ..... | 1 | 2 | 3 | 4 |
| 42. | I think my friends are a bad influence on me. ..... | 1 | 2 | 3 | 4 |
| 43. | I wish I had more friends. ..... | 1 | 2 | 3 | 4 |
| 44. | If one of my friends asked me to skip school, I would do it. ..... | 1 | 2 | 3 | 4 |
| 45. | If I were at a party and one of my friends offered me some beer, I would drink it. ..... | 1 | 2 | 3 | 4 |

**PEOPLE IN MY LIFE** **ID:_____**

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| 46. | If a friend asked to copy my test, I would let him or her do it. ..... | 1 | 2 | 3 | 4 |
| 47. | Doing well at school is important to my friends..... | 1 | 2 | 3 | 4 |
| 48. | My parents like and approve of my friends.. | 1 | 2 | 3 | 4 |
| 49. | Most mornings I look forward to going to school. ..... | 1 | 2 | 3 | 4 |
| 50. | I feel safe at my school..... | 1 | 2 | 3 | 4 |
| 51. | My school is a nice place to be. ..... | 1 | 2 | 3 | 4 |
| 52. | I like my teacher(s) this year. ..... | 1 | 2 | 3 | 4 |
| 53. | I like my class(es) this year..... | 1 | 2 | 3 | 4 |
| 54. | My teachers respect my feelings..... | 1 | 2 | 3 | 4 |
| 55. | My teachers understand me. ..... | 1 | 2 | 3 | 4 |
| 56. | I trust my teachers. ..... | 1 | 2 | 3 | 4 |
| 57. | My teachers pay a lot of attention to me. ..... | 1 | 2 | 3 | 4 |
| 58. | I get upset easily with my teachers..... | 1 | 2 | 3 | 4 |
| 59. | I feel angry with my teachers. ..... | 1 | 2 | 3 | 4 |
| 60. | I get along well with my teachers. ..... | 1 | 2 | 3 | 4 |

**1992** **PEOPLE IN MY LIFE** **ID:_____**

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| 61. | It's hard for me to talk to my teachers. ..... | 1 | 2 | 3 | 4 |
| 62. | My teachers are proud of the things I do..... | 1 | 2 | 3 | 4 |
| 63. | I like to take part in class discussions and activities. ..... | 1 | 2 | 3 | 4 |
| 64. | I feel sure about how to do my work at school. ..... | 1 | 2 | 3 | 4 |
| 65. | I read better than most other kids my age.... | 1 | 2 | 3 | 4 |
| 66. | Doing well at school is important to me. ..... | 1 | 2 | 3 | 4 |
| 67. | There is a teacher at my school that I can count on when I have a problem. ..... | 1 | 2 | 3 | 4 |
| 68. | Kids in my school have a good chance to grow up and be successful. ..... | 1 | 2 | 3 | 4 |
| 69. | I feel scared at my school. ..... | 1 | 2 | 3 | 4 |
| 70. | There are a lot of drugs and gangs in my school. ..... | 1 | 2 | 3 | 4 |
| 71. | My school is a dangerous place to be. ..... | 1 | 2 | 3 | 4 |

**PEOPLE IN MY LIFE** **ID:_____**

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| **72.** | **My neighbourhood is a nice place to live…..** | **1** | **2** | **3** | **4** |
| **73.** | **A lot of people in my neighbourhood are friendly and helpful.....** | **1** | **2** | **3** | **4** |
| **74.** | **Kids from my neighbourhood have a good chance to grow up and be successful. .....** | **1** | **2** | **3** | **4** |
| **75.** | **I feel scared in my neighbourhood. .....** | **1** | **2** | **3** | **4** |
| **76.** | **Lots of kids in my neighbourhood get into trouble. .....** | **1** | **2** | **3** | **4** |
| **77.** | **There are a lot of drugs and gangs in my neighbourhood. .....** | **1** | **2** | **3** | **4** |
| **78.** | **My neighbourhood is a dangerous place to live.** | **1** | **2** | **3** | **4** |

**PEOPLE IN MY LIFE** **ID:_____**

**79. If you could go as far as you wanted in school, how far would you want to go?**

**_____ drop out of school now.**

**_____ drop out of school before finishing high school.**

**_____ finish high school.**

**_____ finish college.**

**80. How far do you think you really will go?**

**_____ I will drop out of school soon.**

**_____ I will drop out of school before I finish high school.**

**_____ I will finish high school.**

**_____ I will finish college.**

## 7.3 **Appendix C**

# People in My Life - Modified version containing items for Parent and Teacher scales only (PIML-M)

# PEOPLE IN MY LIFE

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| a. | I like to eat ice cream. ..... | 1 | 2 | 3 | 4 |
| b. | I like to wash dishes. ..... | 1 | 2 | 3 | 4 |

---

| | | | | | |
|---|---|---|---|---|---|
| 1. | My parents respect my feelings. ..... | 1 | 2 | 3 | 4 |
| 2. | My parents listen to what I have to say. ..... | 1 | 2 | 3 | 4 |
| 3. | My parents accept me as I am. ..... | 1 | 2 | 3 | 4 |
| 4. | My parents understand me. ..... | 1 | 2 | 3 | 4 |
| 5. | My parents care about me..... | 1 | 2 | 3 | 4 |
| 6. | I trust my parents. ..... | 1 | 2 | 3 | 4 |
| 7. | I can count on my parents to help me when I have a problem..... | 1 | 2 | 3 | 4 |
| 8. | My parents can tell when I am upset about something. ..... | 1 | 2 | 3 | 4 |

**PEOPLE IN MY LIFE** **ID:_____**

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| 9. | I talk to my parents when I am having a problem. ..... | 1 | 2 | 3 | 4 |
| 10. | If my parents know that something is bothering me, they ask me about it..... | 1 | 2 | 3 | 4 |
| 11. | I share my thoughts and feelings with my parents..... | 1 | 2 | 3 | 4 |
| 12. | When I am away from home, my parents know where I am and who I am with. ..... | 1 | 2 | 3 | 4 |
| 13. | My home is a nice place to live..... | 1 | 2 | 3 | 4 |
| 14. | My parents pay attention to me. ..... | 1 | 2 | 3 | 4 |
| 15. | My parents don't understand what I am going through these days..... | 1 | 2 | 3 | 4 |
| 16. | I get upset easily with my parents..... | 1 | 2 | 3 | 4 |
| 17. | I feel angry with my parents..... | 1 | 2 | 3 | 4 |
| 18. | It's hard for me to talk to my parents. ..... | 1 | 2 | 3 | 4 |
| 19. | I feel scared in my home. ..... | 1 | 2 | 3 | 4 |
| 20. | I get along well with my parents..... | 1 | 2 | 3 | 4 |
| 21. | My parents are proud of the things I do. ..... | 1 | 2 | 3 | 4 |

**PEOPLE IN MY LIFE** **ID:_____**

| | | Almost Never or Never True | Sometimes True | Often True | Almost Always or Always True |
|---|---|---|---|---|---|
| 22. | I like my teacher(s) this year. | 1 | 2 | 3 | 4 |
| 23. | I like my class(es) this year. | 1 | 2 | 3 | 4 |
| 24. | My teachers respect my feelings. | 1 | 2 | 3 | 4 |
| 25. | My teachers understand me. | 1 | 2 | 3 | 4 |
| 26. | I trust my teachers. | 1 | 2 | 3 | 4 |
| 27. | My teachers pay a lot of attention to me. | 1 | 2 | 3 | 4 |
| 28. | I get upset easily with my teachers. | 1 | 2 | 3 | 4 |
| 29. | I feel angry with my teachers. | 1 | 2 | 3 | 4 |
| 30. | I get along well with my teachers. | 1 | 2 | 3 | 4 |
| 31. | It's hard for me to talk to my teachers. | 1 | 2 | 3 | 4 |
| 32. | My teachers are proud of the things I do. | 1 | 2 | 3 | 4 |
| 33. | There is a teacher at my school that I can count on when I have a problem. | 1 | 2 | 3 | 4 |

# 7.4 **Appendix D**

## Ethics Approval Letter - Victoria University Human Research Ethics Committee (VUHREC)

VICTORIA UNIVERSITY | A NEW SCHOOL OF THOUGHT

# MEMO

| | | | |
|---|---|---|---|
| TO | Professor Sandra Lancaster<br>School of Psychology<br>St Albans Campus | DATE | 21/08/2008 |
| FROM | Dr. Alan Hayes<br>Acting Chair<br>Victoria University Human Research Ethics Committee | | |
| SUBJECT | Ethics Application – HRETH 08/119 | | |

Dear Professor Lancaster

Thank you for submitting this application for ethical approval of the project:

**HRETH 08/119** Academic Performance in Middle Childhood: Associations with Child-Teacher and Child-Parent Relationships
The proposed research project has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted from 20 August 2008 to 30 April 2010.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious or unexpected adverse effects on participants, and unforeseen events that may effect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date (by **20 August 2009**) or upon the completion of the project (if earlier). A report proforma may be downloaded from the VUHREC web site at: http://research.vu.edu.au/hrec.php

If you have any queries, please do not hesitate to contact me on 9919 4658.

On behalf of the Committee, I wish you all the best for the conduct of the project.

**Dr. Alan Hayes**
Acting Chair
Victoria University Human Research Ethics Committee

# 7.5 **Appendix E**

## Ethics Approval Letter – Department of Education and Early Childhood Development (DEECD)

**Department of Education and Early Childhood Development**

**Office for Policy, Research and Innovation**

2 Treasury Place
East Melbourne, Victoria 3002
Telephone: +61 3 9637 2000
DX 210083

GPO Box 4367
Melbourne, Victoria 3001

SOS003913

Ms Kate Screen and Professor Sandra Lancaster
School of Psychology
Victoria University
McKechnie Street
ST ALBANS 3021

Dear Ms Screen and Professor Lancaster

Thank you for your application of 5 June 2008 in which you request permission to conduct a research study in government schools titled: *Academic Performance in Middle Childhood: Associations with Child-Teacher and Child-Parent Relationships.*

I am pleased to advise that on the basis of the information you have provided your research proposal is approved in principle subject to the conditions detailed below.

1. Should your institution's ethics committee require changes or you decide to make changes, these changes must be submitted to the Department of Education and Early Childhood Development for its consideration before you proceed.

2. You obtain approval for the research to be conducted in each school directly from the principal. Details of your research, copies of this letter of approval and the letter of approval from the relevant ethics committee are to be provided to the principal. The final decision as to whether or not your research can proceed in a school rests with the principal.

3. No student is to participate in this research study unless they are willing to do so and parental permission is received. Sufficient information must be provided to enable parents to make an informed decision and their consent must be obtained in writing.

4. As a matter of courtesy, you should advise the relevant Regional Director of the schools you intend to approach. An outline of your research and a copy of this letter should be provided to the Regional Director.

5. Any extensions or variations to the research proposal, additional research involving use of the data collected, or publication of the data beyond that normally associated with academic studies will require a further research approval submission.

6. At the conclusion of your study, a copy or summary of the research findings should be forwarded to Education Policy and Research Division, Department of Education and Early Childhood Development, Level 2, 33 St Andrews Place, GPO Box 4367, Melbourne, 3001.

Victori
The Place To

I wish you well with your research study. Should you have further enquiries on this matter, please contact Chris Warne, Senior Policy and Research Officer, Education Policy and Research, by telephone on (03) 9637 2272 or by email at <warne.christine.p@edumail.vic.gov.au>.

Yours sincerely

**Dr Jim Tangas**
Acting Group Manager
Education Policy and Research

05/08/ 2008

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# 7.6 **Appendix F**

## Plain Language Letter to School Principals

**RESEARCH INVITATION – For School Principals**

**Academic Performance in Middle Childhood: Associations with Child-Teacher and Child-Parent Relationships.**

Dear ……..,

My name is Kate Screen. I am a registered teacher and a psychologist, and currently a student researcher completing my Doctorate in Clinical Psychology. I also hold a current Working with Children's Permit. I am being supervised by Professor Sandra Lancaster, Department of Psychology, Victoria University, St Albans Campus.

As part of my degree I am undertaking research in the area of relationships and academic achievement in children aged 10-12 years, and I am hoping to invite children of these ages at your school to participate in this study. We are interested in how children's relationships with attachment figures such as their primary caregiver (the adult who cares for them most often at home) and classroom teacher might be associated with the child's academic performance.

Participation in this study is entirely voluntary. It will be explained to both parent and student participants that they do not have to complete all tasks and questions being asked, and that they may withdraw at any time from the research. Parents, who choose to participate in the study, will be given a brief questionnaire to fill in. Students who participate will work with me at a time mutually convenient to the class teacher, and be given a cognitive screening (KBIT-II), academic screening (WIAT-II- Abbreviated) and language screening (CELF-4 screening tool) test. A brief parent report will be written outlining the child's results on these assessments which will be provided to the school if parents consent to sharing this information. Students will also fill in two brief questionnaires with me during the time of their assessments. The estimated time involved would be 1 – 1 ½ hours per child.

Enclosed are samples of the parent/guardian questionnaire, and information and consent forms for both children and parent/guardian which will be used in the study. To undertake this study at your school we would need your support in

distributing information about the study to parents, and a room at the school in which assessments could be conducted.

Please be aware that the information obtained will be treated as ***confidential*** by the researchers, and no identifying details of the student or schools will appear in the report.

If you would like to meet with me or discuss any queries please contact me on 0423 688 634.

Should you have any concerns regarding the manner in which this research project is conducted, please do not hesitate to inform the researchers directly, or the Victoria University Human Research Ethics Committee (Tel. 9919 4710). Please note that results of the research will be available at the end of the project from the Department of Psychology.

Thanking-you in anticipation.

Sincerely,

Kate Screen

Please Note: I have previously worked within the DEECD as a Student Support Services Officer but no schools I have worked in are included in this study. Any children who are known to me would not be included in this study.

# 7.7 **Appendix G**

## Parent/Guardian Plain Language Information Letter

**RESEARCH INVITATION – For Parent/Guardian**

**Academic Performance in Middle Childhood: Associations with Child-Teacher and Child-Parent Relationships.**

Dear Parent/Guardian,

You and your child _____ are invited to participate in a research project being conducted by Kate Screen. Kate is a student researcher completing a Doctorate in Clinical Psychology, under the supervision of Professor Sandra Lancaster, Department of Psychology, Victoria University, St Albans Campus. Kate has a current Working with Children Permit.

We are interested in how children's relationships with attachment figures such as their primary caregiver (the adult who cares for them most often at home) and classroom teacher might be associated with the child's academic performance. The study will be conducted with primary school children aged between 10 and 12 years and has been approved by Victoria University and the Department of Education and Early Childhood Development.

***Benefits of Participating***

Should you and your child choose to participate in the study, your child will receive both a free cognitive screening and academic assessment. Following the assessments you will receive a brief report explaining your child's cognitive and educational strengths and weaknesses.

The report will contain information about your child's skills, which could be used by your child's current and future teachers, for planning and understanding the best way to teach your child. You may wish to provide the school with a copy of the report on your child. We will NOT disclose any information about your child's assessment to the school unless you sign consent agreeing for the school to receive your child's report.

If the results of the assessment indicate that your child has significant difficulties recommendations for further assessment or additional assistance suggestions will be included in their report.

***What is Involved in Participating***

Your child would complete a cognitive, academic, and language screening assessment, and be asked some questions about their relationship with teachers and parents. All tasks would be completed at their school during school hours. The estimated time involved would be 1 – 1 ½ hours.

Before your child is seen at school, you would be required to fill out a brief 5 minute questionnaire about yourself and your child. The completed questionnaire should be mailed directly to Victoria University in the supplied reply paid envelope.

***How The Information You and Your Child Give Will Be Used***

Information gathered from all participants in the study will be combined and will be written up as the thesis requirement for a Doctoral degree. No identifying details of you, your child or school will appear in the thesis. In order to contribute to the current research in this area material from the thesis may also be published in academic journals. You will be provided with a brief report of your child's individual strengths and difficulties and you may choose to have this report also provided to the school.

All of the information obtained will be treated as ***strictly confidential*** by the researchers, and no identifying details of you, your child or school will appear in any of the written publications.

***What If You Change Your Mind***

Participation in the study is voluntary, and you and your child can withdraw from the study at anytime.

***Who Will Be Assessing Your Child***

Kate Screen will be working with your child, under the supervision of Professor Sandra Lancaster. Kate is a registered psychologist and also a qualified primary and secondary teacher who has experience working with children in schools.

***Potential Risks of Participating***

If your child becomes fatigued or uncomfortable at any stage during his/her participation a break will be provided and if necessary assessments will be suspended.

***Privacy and Confidentiality***

All questionnaires and assessments conducted in this study will be strictly confidential. Participants' names will not be disclosed in the research report. All information collected will be kept confidential unless it becomes evident that your child is at risk of harm.

The school does not receive any information from the questionnaires completed by children or their parent/guardian, and will only receive a report on your child's academic and cognitive abilities if you provide signed consent.

***If You Would Like to Participate***

If you would like to participate in the study, please return the enclosed consent forms to your child's class teacher. For further information, please contact Kate Screen directly on: 0423 688 634

Thank you for your time,

Sincerely,

**Kate Screen**
School of Psychology,
University
Victoria University
St Albans Campus
Ph: 0423 688 634

**Professor Sandra Lancaster**
School of Psychology, Victoria

PO Box 1448
Melbourne 8001
Ph: (03) 9919 2397

Please Note: If you have any concerns about the way the study is conducted, you can contact the Secretary, University Human Research Ethics Committee on (03) 9919 4710.

Or via mail at:
Victoria University
PO Box 14428 MCMC
Melbourne 8001

# 7.8 **Appendix H**

## Parent/Guardian Consent Form


## PARENT/GUARDIAN CONSENT FORM

**Academic Performance in Middle Childhood: Associations with Child-Teacher and Child-Parent Relationships.**

- I agree for myself and my child _____ to participate in the above titled study.
- I have read and understood the information provided on the '**Research Invitation**' information sheets.
- I understand that this will involve cognitive, academic and language screening assessments.
- I understand that all information collected will remain confidential, except that if I choose, I can sign and return the '**Release of Results**' consent form, which will allow the school to receive a copy of my child's cognitive screening and academic assessment report.
- I understand that no information collected during this study will be used in a way that could identify me or my child except if my child is at risk of harm.
- I understand that by participating, I am agreeing to complete the '**Parent/Guardian Questionnaire**' enclosed.
- I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at anytime and that this withdrawal will not jeopardize my child's or my current or future involvement with the school or with Victoria University.

Parent/Guardian name (please print): _____

Parent/Guardian Signature: _____

Relationship to student: _____

Date: _____

# 7.9 **Appendix I**

## Parent/Guardian Release of Information Consent Form


## RELEASE OF RESULTS - CONSENT FORM

**Academic Performance in Middle Childhood: Associations with Child-Teacher and Child-Parent Relationships.**

- I agree for a copy of my child's cognitive, academic and language screening assessments, conducted as part of the above study, to be released to his/her current school.
- I understand that the school and I will receive the exact same report.

Parent/Guardian name (please print): _____

Parent/Guardian Signature: _____

Relationship to student: _____

Date: _____

## 7.10 Appendix J

# Student Information Sheet

# RESEARCH INVITATION – For Children

Dear _____,

You have been invited to be part of some research being done by Victoria University. The study is looking at relationships and children's learning.

If you agree to be part of the study you will work with Kate, doing the things written below:

**What Will Happen?**

Part 1

- Looking at, and choosing from pictures
- Answering questions
- Doing a little bit of spelling, maths sums and reading some words aloud.

Part 2

- Answering some questions about your teacher and a parent/guardian

**Where and When?**

- At school
- During class time
- You will still go to lunch and recess breaks with your friends
- It will take about 1 to $1\frac{1}{2}$ hours

**Privacy/Confidentiality?**

Part 1

- Your work for Part 1 will be put into a report and given to your parent(s)/guardian(s). Your parent(s)/guardian(s) may decide to let your teacher see the report too, which may help you.

Part 2

- All of the answers about your teacher and parent will be kept confidential/private.
- Your name will not be used when a large final report is written about all of the children who helped in the study.

**Who is doing the study?**

Kate Screen (student researcher) and Professor Sandra Lancaster (supervisor). Kate will be the person working with you at your school.

Thank-you for thinking about helping us

## 7.11 Appendix K

# Student Consent Form


# CHILD CONSENT FORM

**Academic Performance in Middle Childhood: Associations with Child-Teacher and Child-Parent Relationships.**

- I have read (or had read to me) the '**Research Invitation for Children**' sheet.
- I understand that the work is not about getting everything right, but just working as well as I can.
- I agree to be part of the study, and understand that I will be answering questions, looking at pictures and doing some work that is like school work.
- I understand that the only people who will see my scores are my parents and (if my parent(s)/guardian(s) agree to it, my teachers.
- I know that the work I do is private and my name will not be used - except for on the report for my parent(s)/guardian(s).
- I understand that I can change my mind at any time and not do the study.

Name (please print): _____

Signature (if you have one): _____

Age: _____

Grade: _____

Date: _____

Thank-you for helping us

## 7.12 Appendix L

# ASCL Classifications for Child Participants with a Second Language

ASCL Classifications for Child Participants with a Second Language

| ASCL Language Classification | Languages Relevant to the Current Sample |
|---|---|
| Pacific Austronesian | Fijian<br>Maori<br>Samoan<br>Tongan |
| Southern Asian | Hindi<br>Punjabi |
| Southeast Asian | Karen<br>Burmese<br>Vietnamese<br>Tagalog<br>Filipino |
| Southwest and Central Asian | Kurdish<br>Dari<br>Persian<br>Turkish |
| Southern European | Greek<br>Italian<br>Maltese |
| Eastern European | Russian<br>Macedonian |
| African | Amharic<br>Dinka<br>Somali |

ASCL = Australian Standard Classification of Languages