

School of Nursing and Midwifery

**Age, gender and sociodemographic differences in school
entrants' social and emotional competence.**

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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Abstract

Aim. This research aimed to establish baseline age, gender, and sociodemographic differences in school entrants' social and emotional competence to provide an empirical base for supporting positive responses to normal development in children as they begin school, thereby promoting life-long patterns of health and wellbeing.

Review of Literature. Health priorities for children in a rapidly changing society are shifting due to the changing nature of social and emotional demands, resulting in an increasing complexity of health and developmental problems. Consequently, the role of the school nurse in primary and secondary schools is expanding, with a growing focus on providing support and early interventions for social, emotional, and behavioural issues. Bullying peaks at school entry and is associated with poor outcomes of health and education for children. Supporting the development of empathy in school-aged children has been proposed as a potential solution to the problem of bullying, but pathways of normal development of empathy and aggression are uncertain.

Method. A cross-sectional observational study was conducted using a number of reliable and valid child and teacher questionnaires. Participants comprised a sample of children across Pre-primary, Year One and Year Two classes in an independent school. Statistical analysis was conducted using bivariate analyses and linear regression.

Results. Teacher reported aggression was lower with age as empathy was higher, and girls were more empathic than boys. The higher level of reported empathy was not progressive, rather it occurred between Year One and Year Two, whereas aggression was not significantly lower between Year One and Year Two. There was no gender difference in teacher reported total aggression or covert aggression, and covert aggression was not reported to be higher with age.

Discussion. In the first years of school, aggression lessens while empathy increases indicating that prosocial behaviour is a developmental milestone. Because of this, school nurses must understand the importance of surrounding children with safety in relationships as they begin school; in so doing, supporting developmental pathways of protection.

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Abbreviations

ANOVA	Analysis of variance
CSBS	Child Social Behavioural Scale
DSM IV	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
HPA	Hypothalamic-pituitary-adrenal axis
ICSEA	Index of Community Socio-Educational Advantage value
IECA	Index of Empathy for Children and Adolescents
LSAC	Longitudinal Study of Australian Children
RPLQ	Relational Provisions Loneliness Questionnaire
SAM	Sympatho-adrenal medulla pathway
SEIFA	The Index of Relative Socio-economic Advantage and Disadvantage (a measure of the Socio-economic Indexes for Areas)
SPSS	Statistical Package for the Social Sciences
SSI	School Sentiment Inventory
TRCB	Teachers Ratings of Children's Behaviour
USA	United States of America

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Chapter 1: Introduction

Health priorities for children in a rapidly changing Western society are shifting due to the changing nature of social and emotional demands, resulting in more complex health and developmental problems (Eckersley, 2011; Shonkoff, Boyce, & McEwen, 2009). It is widely recognised that children's early social and emotional competence, and success at school, are very closely related and are important predictors of later physical and mental health and wellbeing (Save the Children, 2009; Stanley, Sanson, & McMichael, 2002). Because of this, the role of the school nurse in primary and secondary schools is expanding with a growing focus on providing support and early interventions for social, emotional, and behavioural issues (Adams & Barron, 2009; Brooks, Kendall, Bunn, Bindler, & Bruya, 2007; Shannon, Bergren, & Matthews, 2010; Wilson et al., 2008).

As members of a multidisciplinary team, which includes teachers, psychologists, social workers, nurses, and chaplains, school nurses advocate for optimal wellbeing in all children and families (Shannon et al., 2010). *Wellbeing* is reflected in physical health and autonomy. Autonomy encompasses mental health, understanding, and children's capacity to pursue opportunities as they present (Doyal & Gough, 1991; Hamilton & Redmond, 2010). This supports children's ability to enjoy school, succeed academically, and contribute positively to their community, and is reflected in the way children adapt as they enter into formal schooling.

A crucial task for children as they enter school is the building of positive peer relationships (Denham et al., 2003; Gordon, 2003). Such relationships contribute to children's sense of worth and belonging. Poor social and emotional adjustment to school exposes children to the risk of long-standing mental health problems and poor school achievement (Schonert-Reichl, Stewart Lawlor, Oberle, & Thomson, 2009). Poor social and emotional adjustment is also associated with the somatic symptoms that give reason for many children to present to the school nurse (Shannon et al., 2010). It is highly desirable for school nurses to be knowledgeable about the normal patterns of social and emotional development, so that they can give children appropriate care. More broadly, in understanding such pathways, the school nurse is able to collaborate with teachers and other professional colleagues in the school community to encourage positive responses to normal development in all children as they begin school, promoting life-long patterns of health and wellbeing.

The literature is clear that social problems peak for children as they enter both primary and secondary school (Commissioner for Children and Young People, 2011).

Bullying, which is a form of aggression that involves the repeated abuse of power in a relationship with deliberate intent to harm an individual or group, peaks at these times and is associated with poor health and educational outcomes (Cross, Erceg, & Hearn, 2007). Supporting the development of empathy in school-aged children has been proposed as a potential solution to the problem of bullying (Gordon, 2005), but pathways of normal development of empathy and aggression are uncertain (Hunter, 2003; Lovett & Sheffield, 2007; Schonert-Reichl et al., 2009). In particular, the development of relational aggression, which is covert or hidden from adults, remains unclear (Putallaz et al., 2007).

Research Aim:

To establish baseline age, gender, and sociodemographic differences in school entrants' social and emotional competence.

Research Questions

- 1) Does the social emotional competence of children differ by age of school entry at Pre-primary, Year One and Year Two?
- 2) Does the social and emotional competence of children differ by gender in Pre-primary to Year Two?
- 3) Does the social and emotional competence of children differ by family sociodemographic characteristics, specifically: socio-economic advantage and disadvantage, maternal education, family structure, and number, age, and gender of siblings.

Thesis Outline

The second chapter of this thesis reviews the literature on children's early social and emotional development and outcomes of health and education. It begins by introducing the role of the school nurse in supporting children's social and emotional development. It then outlines conceptual frameworks that are central to the study before reviewing the literature on children's social and emotional development at school entry. Chapter Three introduces the method of this current research, including study design, population, and procedure. The measures used for data collection, and the method of statistical analyses, are presented. In Chapter Four the results of the research are presented. This includes prevalence data, response fractions and possible response bias, the validity of outcome measures used, and the results of bivariate analyses and linear regression. The final chapter discusses the findings and limitations of this research and proposes recommendations for future research.

Chapter 2: Review of the Literature

Introduction to the Literature Review

For many years school nurses have been assessing the health and development of children at the time of school entry. Increasingly, these assessments have focused on psychological and psychosocial issues that might hinder a child's first learning at school as well as the more obvious issues, such as appropriate vision and hearing (Puskar & Bernardo, 2007). This is because a growing body of literature has identified the importance of the basic developmental processes of emotional, attentional, and social regulation, for early learning and the acquisition of literacy and numeracy (Shonkoff & Phillips, 2000). The subject of attention deficit has become well known and many parents, teachers and health professionals realise that children who are unable to focus their attention in the classroom face learning difficulties (Cleary & Scott, 2011). In comparison to attentional problems, the issue of children's emotional and social development has received less prominence, and yet, these basic processes are continually developing as children begin school, and problems in these domains are likely to have a significant impact on learning and health (Puskar & Bernardo, 2007).

In order to explain the role of the school nurse in supporting children's early development, this review of the literature will first focus on the way in which children's social environment is reflected in their learning and health. Next to family, school is the most important social environment in which children's lives are influenced (Puskar & Bernardo, 2007). Because of this, school nurses must be aware of the wellbeing of children in the context of their social surroundings (Hamilton & Redmond, 2010).

Section Two outlines the conceptual frameworks related to early childhood development that are central to this study, and Section Three outlines the paths by which development is shaped. These paths include biological, psychological and social processes. In understanding the framework, and psycho-neuro-endocrine pathways of development, the reader will see that children are active participants in their own development, but their wellbeing is also shaped by relationships with others, including peers, and by the resources available to them within their environment.

Section Four critically reviews the literature regarding the importance of social and emotional development to learning and to developmental outcomes of wellbeing. The social and emotional development of children has been described as a principal gate-keeper for health, language, and cognitive development (Maggi et al., 2005). Researchers

have, however, disagreed over the core features and definition of emotion regulation and social competence. For this reason, the terms will be discussed, and their use in this study defined, before reviewing their relevance to education and wellbeing.

Section Five critically reviews the literature regarding factors of age, gender, and sociodemographic characteristics in relation to social and emotional development. It focuses on peer relationships, which are crucial to children's social and emotional adjustment to school. Healthy peer relationships promote school success and wellbeing. Conversely, schools are also the place where aggression occurs in the form of bullying. Because peer victimisation is strongly related to depression, loneliness, and anxiety, it is important that physical and emotional safety is ensured for all children in order to support positive trajectories of wellbeing. Runions (2008) however, comments that the way to effect this is unclear.

1. Role of the School Nurse

The primary school nurse works with teachers and parents toward the early identification of, and intervention for, children's health concerns. These concerns are not only related to illness or injury, but also to somatic symptoms, school avoidance, and bullying (Ladwig & Khan, 2007; Shannon et al., 2010; Vernberg, Nelson, Fonagy, & Twemlow, 2011). Children who have difficulty with social and emotional adjustment to school, and children who are bullied or who bully others, have been found to present more frequently to the school nurse with somatic symptoms, illness, and injury in both primary and secondary schools (Shannon et al., 2010). These children account for a disproportionate number of visits and referrals to school health services (Achenbach, 1982; Heyne et al., 2002; Shannon et al., 2010; Vernberg et al., 2011).

In a review of the literature on somatisation, Shannon et al. (2010) found that children who frequently visit the school nurse are more likely to have mental health problems, including depression and anxiety. The two studies most cited by Shannon et al. (2010) were Campo et al. (2002) and Lieb et al. (2002); both defined mental health problems as "mental disorders" and Lieb et al. (2002) categorized such disorders according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM IV) (American Psychiatric Association, 1994) criteria. However, mental health problems in early childhood are often not diagnosed psychiatric disorders, rather, are problems with emotional and social regulation including aggression, fears and anxiety (Royal Children's Hospital Melbourne, 2012; Sawyer et al., 2000). Such concerns in children are associated with an increased risk of bullying and with poorer outcomes of learning, literacy and general development, including physical and mental health in later life (Graziano, Reavis,

Keane, & Calkins, 2007; Repetti, Taylor, & Seeman, 2002; Shannon et al., 2010; Slatcher & Trentacosta, 2012).

Studies in Australia, Britain, and the United States of America (USA) report increasing rates of poor social and emotional wellbeing, anxiety, depression, and peer victimisation in children (Eckersley, 2011; Kessler et al., 2005; Runions, 2008). The World Health Organisation (2005) reports a prevalence rate of approximately 20 per cent for diagnosed disorders of mental health. This prevalence may be underestimated because of symptoms not severe enough to fit diagnostic criteria, or because parents do not access services (Brauner & Stephens, 2006). In a study of the prevalence of mental health disorders in Australian children aged four to 17 years, and using the parent-version of the Diagnostic Interview Schedule for Children Version IV (American Psychiatric Association, 1994), Sawyer et al. (2001) identified 14 per cent of children as having attention, depressive, or conduct disorders of mental health. Anxiety disorders were not included in the assessment. Of the children identified with a disorder of mental health, only 25 per cent had attended a professional service in the previous six months (Sawyer et al., 2001). Silburn and Zubrick (1996) reported a prevalence rate of 17 per cent for significant mental health problems in children aged four to 16 years in Western Australia. Mental health problems included emotional or behavioural problems as identified on the Achenbach Child Behaviour Checklist (Zubrick et al., 1997) by parent or teacher report, and diagnostic categories of disorders including anxiety, depressive and conduct disorders, and somatisation. Only two per cent of these children had attended a mental health service within the past six months. Schools were named as a key place where parents or children reported symptoms (Silburn & Zubrick, 1996). Zubrick et al. (2005) reported a higher prevalence of clinically significant emotional (23.4%; CI 21.45 – 25.6%) or behavioural (33.9%; CI 31.6% - 17.0%) issues among Aboriginal children in Western Australia, and identified problems with peers (27.8%; CI 27.5%-30%) as the second most common issue faced by Aboriginal children in Australia. School nurses have an important role in the accurate identification and appropriate referral of these children (Shannon et al., 2010).

A crucial task for children at school entry is the successful initiation of peer relationships (Denham et al., 2003; Gordon, 2003). Pro-social behaviour contributes to children's capacity to maintain peer relationships that are characterised by a sense of worth and belonging. Such relationships are protective and facilitate wellbeing and school success. On the other hand, children's success as they transition into school can be hindered by emotional distress associated with relational aggression, with school often being the central place in which children encounter bullying (Barker et al., 2008; Cross et al., 2007; Runions, 2008). This is of particular relevance to school nurses, as a strong

association has been found between relational aggression and many of the health symptoms which cause children to present to the school nurse (Price & Gwin, 2007; Williams, Chambers, Logan, & Robinson, 1996). As mentioned previously school nurses often see children with physical health problems that have a psychological basis.

Though identification of health problems and appropriate referral are of vital importance, the increasing burden of mental health in Western societies makes it important that the role of the school nurse extends beyond referral (Shannon et al., 2010; Vernberg et al., 2011). It must also focus on prevention, including facilitating positive responses to normal development in children; promoting life-long patterns of health and wellbeing; and working with children and families to help children adapt to the school environment and achieve school success (Council on School Health Services, 2008). In order to have the most effect, this focus must begin from the time of children's entry into the school environment (Graziano et al., 2007).

In a recent review of the literature on somatic causes of presentation to the school nurse, Shannon et al. (2010) recommended that school nurses examine factors associated with social and emotional stress at school, including bullying and lack of peer support, in order to provide a population-focused effort toward health and wellbeing. This, ideally, would involve support for children at school entry as they adapt to the school environment (Brooks et al., 2007). Despite an increase in research about children's social and emotional development, the evidence base for school nurse interventions remains weak (Brooks et al., 2007; Shannon et al., 2010). Furthermore, to the knowledge of this author, there are no published reports written by school nurses about children's social and emotional development at school entry. It is argued here that nurses should be undertaking research that is relevant to the evidence-base for their own practice. As a school nurse working in this field, the author has had the opportunity to collect and analyse data for primary school children that will contribute to the knowledge and understanding of children's social and emotional development at school entry, and associated pathways of school adjustment.

2. Theory and Conceptual Framework Related to Early Childhood Development

The underlying theory for this study is Bronfenbrenner's Bioecological Model of Development (1979, 1995). This model depicts the relationship between children and the environment in which they spend time. Children's understanding, perception, and motivation are built on their own experience within their environment (Bronfenbrenner, 1979). The *environment* includes the child's relationships with others, beginning with family, and expanding out in broadening circles to the influences of society, including

government policies and overarching beliefs and values. As children interact with their environment, their development is shaped through biological, psychological and social processes and experience becomes “embedded” within the brain and biology (Keating & Hertzman, 1999, p. 220). These interactions may become a source of potential and growth for children, or of risk and dysfunction (Sameroff, 2009; Shonkoff & Phillips, 2000; Zubrick et al., 2009).

Bronfenbrenner (1979) proposed that as children adapt to each new environment, they sustain or restructure their understanding based on the relationships and concepts they encounter in that environment. The way they relate socially and respond emotionally to others is based on the prior understanding they have developed, initially with family, and extending as children enter new relationships. The way children perceive others and interact with them, and the relationships that emerge, are of particular importance to development. Understanding these influences is important because children’s behaviour is not purely a matter of choice; rather it is shaped in a social surround of regulation by others, and the social surround is shaped by not only the history of the family, but also by society (Sameroff, 2009).

The Family and Community Resource Conceptual Framework, developed by Brooks-Gunn and colleagues (Brooks-Gunn, 1995), is nested within the Bioecological Model of Development, and highlights how the resources available to children within their family and community support healthy development. This model is used locally, nationally, and internationally to guide understanding of risk and protective characteristics that impact on children’s development (Zubrick, Williams, Silburn, & Vimpani, 2000). Brooks-Gunn (1995) named five categories of family resources that are critical in terms of child development: income, time, social capital, human capital, and psychological capital.

Social capital is a relational term referring to interactions among people that occur in an atmosphere of trust, providing mutual social support. Social capital stems from family relations. As Bronfenbrenner (1979) identified, the family is the nearest and most influential context to which the infant and young child is exposed, however social capital also includes the relationships within community settings, including schools (Coleman, 1988). In a study that linked the evidence of social capital to health, Carlson and Chamberlain (2003) found that community and public health nurses are able to contribute to the development of social capital within communities in health-related research and practice. *Human capital* and *psychological capital* refer to resources of mental and physical health, knowledge, experience, and skills that caregivers can share with children. Within the Family and Community Resource Framework, families have differing levels of resources in the various domains, and parents will make different decisions regarding the allocation of resources. Constraints on available resources, and parent perceptions about

the importance of particular resources to their children, will influence developmental outcomes (Brooks-Gunn, 1995).

Although the family is the most influential context for children, Bronfenbrenner (1979) named the school as the context next to the family that is most important for children's development. Whether children are able to progress normally in school, or not, may determine their subsequent life course (Bronfenbrenner, 1995). The resource framework proposed by Brooks-Gunn and colleagues (1995) is not confined to family, but extends to schools and the community. Social capital within a school stems from peer relationships and the supportive relationships provided to children by the adults in the school community. Human or psychological capital stems from the experience and knowledge of teachers and pastoral care staff, and the supportive culture of the school environment. Attitudes to learning and relational values are modelled to children by staff and peers, and provide a background on which children build their own understanding.

The decisions a family, school, or community makes about the way they allocate resources can differ according to social class. Social class is sometimes differentiated from socio-economic status in the literature. Kendall (2003) identifies socio-economic status with characteristics that can be acquired by income, education, and occupation, whereas social class is identified with a set of attitudes, beliefs, and values shared by members of a group, irrespective of income. Wohlfarth (1997) also differentiates between social class and socio-economic status, relating social class to locus-of-control, optimism, hope, social standing, and accepted behaviour, which empower people with autonomy. In families of higher socio-economic status, financial resources alone do not provide emotional and social stability, rather it is the cultural attitudes, beliefs, and values of parents and communities that largely determine physical and social environments of support for children in their development (Kendall & Li, 2005). This is because attitudes, beliefs, and values contribute to available social capital, and therefore to emotional and social stability in families and communities.

Beyond family and school, a large body of work provides evidence of a strong relationship between the resources available to children, and outcomes of behaviour, learning, and health at a population level as demonstrated in a social gradient in health (Mustard, 2006). This process, in which differences in psychosocial and material resources available in early childhood act on life long outcomes of development and health, has been named *biological embedding* by Keating and Hertzman (1999). Biological embedding is the "key link" between the social and emotional environment of early childhood and population gradients in health and development (Keating & Hertzman, 1999, p. 11).

Development is shaped within the context of environment, resources, and culture. In considering children's social and emotional development it is important to understand how history, relationships, and biology interact at all levels of the child, family, community, and society (Bronfenbrenner, 1995; Krieger, 2001). The following section briefly outlines the way in which experience contributes to wellbeing through psycho-neuro-endocrine developmental pathways.

3. Psycho-neuro-endocrine Pathways of Development.

Individual patterns of cognitive, emotional, and behavioural response are formed in the brain in psycho-neuro-endocrine pathways as children develop. A great deal of research has focused on stress response and the role of the sympatho-adrenal medulla (SAM) pathway and the hypothalamic-pituitary-adrenal (HPA) axis. These processes will be outlined briefly in this section. Associated biological mechanisms that have been implicated in causal pathways to disordered early development and poor outcomes across the lifespan include: gene-environment interaction, the process of "neural sculpting", nutrition, and environmental exposure to toxic substances, including alcohol, cigarettes and illicit drugs during pregnancy. Neural sculpting refers to the way in which brain development in the growing child is influenced by the environment to which the child is exposed (Centre for Educational Research and Innovation, 2008; Cynader & Frost, 1999). These mechanisms of biological embedding all involve children's experience of early social conditions and help to explain the social gradients seen in many outcomes of development (Kendall, Van Eekelen, Li, & Mattes, 2009).

As mentioned above, two common pathways shaped through children's emotional response to their environment are the HPA axis and the SAM pathway. By these pathways the brain perceives and appraises events by emotional meanings that have been established in the child's brain through past experience (Thompson, Lewis, & Calkins, 2008). The amygdala, hippocampus, and pre-frontal cortex all play a key role in interpreting events that occur in daily life, and in determining appropriate responses which occur without conscious awareness (McEwen, 2004). Within the limbic system, the amygdala is involved in the processing of emotion. Hormones are released in response to stressful stimuli by the amygdala causing protective actions to occur. At the level of the SAM pathway, adrenaline acts quickly to set the fight or flight response in motion; while the HPA axis releases glucocorticoid hormones, such as cortisol, that have a slower immunoregulatory and anti-inflammatory action (Mustard, 2006). Activity at the HPA axis is regulated by several feedback loops, providing a balance to the levels of these hormones circulating in the body at any time.

There is an adaptability or plasticity to the formation of psycho-neuro-endocrine pathways, which enables each child's physiological and behavioural responses to adapt to their specific environment in a process named *allostasis* (Gage, 2004; McEwen, 2004). In times of change or increased stress, higher cortisol levels caused by emotional stimuli to the amygdala can override the normal regulation of the HPA axis. This leads to continuous stimulus for cortisol production from the adrenal gland in an effort to give the body stability through the process of change. This process of allostasis is adaptive in the short term, but if the response persists for too long, allostatic load occurs (Adler & Snibbe, 2003). Increased allostatic load is expressed in diminished cognitive functioning, in behaviour as patterns of response that are dysfunctional, and in health outcomes as vulnerability to disease, thus affecting wellbeing over the course of the lifetime (Adler & Snibbe, 2003; Mustard, 2006; Repetti, Robles, & Reynolds, 2011).

Because of the extensive plasticity of the brain in very early childhood, the physical, psychological and social environments experienced during the early years are very significant to developmental outcomes, including cognition, emotion, and behaviour. However, there is clear evidence that structural changes continue to occur in the brain throughout childhood and adult life, and these changes continue to be influenced by the environment (Gage, 2004). This means that despite early exposure to risk or harm, an enriched environment in later years can have a significant effect on wellbeing (McEwen & Gianaros, 2010; Repetti et al., 2002).

4. The Importance of Social and Emotional Development to Learning and to Developmental Outcomes of Wellbeing

This section reviews the literature on the relationship between social and emotional development, and behaviour, learning, and wellbeing. In an extensive review of the literature on early childhood development, Maggi et al. (2005, p. 29) described social and emotional development as a principal "gate-keeper" for health, language, and cognitive development. The terms "emotion regulation" and "social competence" are commonly used in the literature and yet they have not been uniformly defined (Thompson et al., 2008). As both terms are central to the current research, they will be defined for this purpose (Cole, Martin, & Dennis, 2004). This section of the review will then expand on the relevance of social and emotional patterns of response for education, health, and wellbeing. The social and emotional demands faced by school-aged children in western society are increasing in complexity and placing many children at risk of poor outcomes (Royal Children's Hospital Melbourne, 2012). This project aims to further the empirical understanding of social and emotional development at school entry, because in

understanding such pathways, the school nurse is further able to support positive responses to normal development in children as they begin school, promoting life-long patterns of health and wellbeing (Council on School Health Services, 2008).

Defining emotion regulation and social competence.

Developmental researchers have differed in their opinion as to the necessity to treat emotion and the regulation of emotion as separate constructs for the purpose of research; over the core features and definition of emotion regulation and social competence (DelCarmen-Wiggins, 2008; Hamilton & Redmond, 2010; Hoffman, 2009; Langlois, 2004). The following sub-section will discuss emotion, emotion regulation, and social competence, and define how the terms will be used in this thesis.

Emotions are states of mind that occur in response to an individual person's appraisal of a situation (Izard, 2007). The appraisal is not deliberate; rather an automatic and non-conscious response to a situation that is relevant to the goals or past experience of the person (McEwen & Gianaros, 2010). As such, emotions give meaning to a situation based on a person's past experience, and they motivate behaviour (Izard, 2007; Kappas, 2002). The neural systems that underlie emotional development enable children to develop responses of protective behaviour, and to regulate physical and social responses to others (including empathic response) (Izard, 2007). Emotions therefore develop in response to children's environment, and support children as they adapt and contribute to their own environment. Emotion development is ultimately reflected in social competence (Repetti et al., 2002).

Some researchers have argued that emotion regulation is best viewed as a linear process in which activated emotion is followed by intentional, goal oriented attempts to regulate that emotion, with associated changes in behaviour (Bowie, 2010; Cole et al., 2004; Eisenberg & Spinrad, 2004). Emotion regulation, however, occurs at both conscious and unconscious levels of neurological function (Lewis & Stieben, 2004; Thompson et al., 2008). Emotion is regulated via responses of voluntary control, which are coordinated by structures of the brain such as the prefrontal cortex; and by responses that proceed without conscious awareness in neurological processes including the HPA axis, and the hippocampus (Thompson et al., 2008). The feedback loop between neurological regions of conscious awareness and unconscious reaction determine many aspects of a person's behavioural response to his or her environment (Thompson et al., 2008). The regulation of emotion and associated behaviour is therefore not purely a linear process.

From a review of the literature, Rose-Krasnor (1997, p. 112) found many different definitions of social competence, but a common thread that ran through the definitions was that of "effectiveness in interaction". This refers to social interaction that will support

positive relationships. In peer relationships, social competence will meet the developmental needs of the individual and also of others in the peer group. The development of empathy for others, and the ability to establish and sustain positive relationships, are part of social competence (Gordon, 2005; Hamilton & Redmond, 2010). Friendship is associated with social competence, but Rose-Krasnor (1997) observed that it is important to consider the impact of disruptive friendships on development, such as those that occur in peer groups that bond by engaging in bullying behaviour. It is a consistent finding that children's early social competence is an important predictor of wellbeing (Bowie, 2010; Denham et al., 2003; Shonkoff & Phillips, 2000; Stanley et al., 2002).

On the basis of this review of research-based literature, emotion regulation and social competence will therefore be defined as the ability to experience emotions and to express them in ways that allow individuals to meet goals, including safety and positive adaptation to changes in their environment, and to maintain effective social interactions that support wellbeing in self and others. In the end these are complex concepts with many definitions. In this research project these concepts have been operationalised within a series of tools completed by children and teachers to assess the development of emotional and social regulation such as prosocial behaviour and aggression.

The development of social and emotional patterns of response, and their contribution to learning and wellbeing.

This section reviews the literature on the development of social and emotional patterns of response and related behaviour. It then discusses the effect of these pathways on outcomes of education and public health.

The development of social and emotional regulation and behaviour.

Primary school entry is a period of transition that requires a considerable shift to greater control of social and emotion regulation so that children can function more independently from the family, and adapt to new peer relationships and the formal learning environment. Children's social and emotional response, however, is built into their neurobiology and there is evidence that social and emotion regulation develop through a progressive series of events beginning in utero (Shonkoff & Phillips, 2000). This brain development fits each child to adapt specifically to his or her own social, emotional, and physical environment. Such sculpting of brain pathways is protective for children, allowing them to adapt to their own life story (McEwen & Gianaros, 2010). But for some children, the development of these pathways impedes their ability to adapt to the school environment because of allostatic load, as described in sub-section 3 of this chapter. This process will be further explained in the following sub-section.

There are sensitive periods of development where children's experience will have a particular effect on their development, for example, the attachment relationship with primary caregivers in the first year of life (Shonkoff & Phillips, 2000; Sylva, 1997). Though there is a plasticity to brain pathways, children's attachment in the first year of life does affect social and emotional regulation, behaviour, and cognitive development throughout life (McEwen & Gianaros, 2010; Shonkoff, et al. 2012). This is largely because of the interaction between emotion and neurobiology, at the limbic system in particular (Repetti et al., 2011). Fear, for example, sets the fight or flight response into action at the SAM pathway and increases the response of the HPA axis (Repetti et al., 2011). This unconscious response prepares the child to seek safety (Thompson et al., 2008). Within a secure attachment relationship the child will look for a familiar loved one and feel secure in their care, the stress response at the SAM pathway and HPA axis then subsides and allostasis is maintained. The secure attachment provides a stable foundation on which further social and emotional response is patterned into brain pathways (Tremblay, 2004).

Another sensitive period in social and emotional development occurs at 24 months. Known as “the terrible twos”, and now recognized as a normal developmental peak in aggression, children learn to regulate their behaviour within the secure and consistent limits and nurturing provided by adult carers (Shonkoff et al., 2012; Tremblay, 2004). Peaks in emotion are again recognized by the limbic system, but the neurobiological response at the SAM pathway and the HPA axis are regulated as children practice and learn prosocial behaviour within the secure environment provided by nurturing caregivers (Hertzman, 1999). In an insecure environment, however, the limbic system stays on alert (McEwen & Gianaros, 2010). This response, that was designed to protect, overloads the SAM pathway and the HPA axis and the resulting allostatic load becomes entwined with children's social, emotional, and behavioural response. Instead of emotion regulation built on security, the social and emotional response is neurobiologically biased toward self-protection, fight or flight, and a heightened immune response (McEwen & Gianaros, 2010; Repetti et al., 2011). Learned behavioural responses that were initially protective for children become embedded into the brain, translating into new environments as social and emotional dysregulation (Hertzman, 1999; Thompson et al., 2008). At school entry this can be expressed in behaviour that may be regarded by staff as intentionally naughty.

This behavioural response that is patterned into the brain increases the risk for anger and aggression in middle childhood, and mental health disorders, substance abuse, risky sexual behaviour, and early school leaving in adolescence (Repetti et al., 2011). Problems with impulse control and emotion dysregulation persist into adulthood causing a repeated burden on the stress response system; increasing allostatic load and associated

disease to the cardiovascular, endocrine, immune systems, and mental health (McEwen & Gianaros, 2010; Shonkoff et al. 2012; Taylor, Way, & Seeman, 2011).

One form of behaviour that can be exacerbated from such patterns of social information processing is aggression (Repetti et al., 2011). *Reactive aggression* occurs because the child sees the actions of another as intentionally hostile, even though the actual intent may not have been hostile at all, and he or she reacts in an effort to protect him or her self (Dodge & Coie, 1987). *Proactive* aggression, on the other hand, is aggression with a purpose; the aggressor expects that his or her behaviour will obtain a goal that he or she desires, for example social dominance (Connor, 2002). An example of proactive aggression is bullying (Runions, 2008). Such aggression may be *covert*, or hidden from others, particularly adults (Connor, 2002; Dodge & Coie, 1987). These emotional and behavioural responses to others are based on children's appraisal of a situation in relation to their past experience, and the meanings they have associated with that experience (Cole et al., 2004).

Reactive aggression has been found by Brown, Atkins, Osborne, and Milnamow (1996) to be a defensive response to a perceived threat, fear, or provocation. In this research of 259 boys in third to fifth grade, these authors found that reactive aggression had a significant partial correlation with in-school detentions (partial $r = .31$, $p < 0.001$). Proactive aggression, however, was not significant for in-school detentions (partial $r = 0.14$, $p < 0.07$) suggesting that children who reactively aggress may be more likely to be punished by teachers. Based on the understanding of allostatic load, these are likely to be children that are already at heightened alert for harm and at risk of associated poor long-term outcomes of wellbeing (Repetti et al., 2011; Taylor et al., 2011). Children who initiate aggressive behaviour have also been found to be at risk for poor outcomes of wellbeing, this will be further discussed in the next section.

Physical aggression is a natural part of development, seen in children at two and three years of age (Tremblay, 2004). Prosocial behaviour is learned as children are nurtured in the social surround of caregivers. Empathy is considered to be a principle factor that motivates prosocial behaviour, and empathy has been related to the capacity for self-regulation (Gordon, 2003). Putallaz et al. (2007) found that low levels of prosocial behaviour and empathy were associated with both overt and covert aggression in children at Year Four of school. This would suggest that in order to understand how to promote positive peer relationships among children it is necessary to understand the development of prosocial behaviours, including empathy, rather than focus purely on teaching children to control negative behaviour.

Empathy has been categorised as cognitive, affective, or a combination of both. Affective empathy is the ability to feel with another; cognitive empathy is the use of

cognitive means to understand the perspective of another (Catherine & Schonert-Reichl, 2011; Hunter, 2003). It is believed that cognitive aspects of empathy develop at a later age than emotional aspects, possibly after five years of age (Hunter, 2003). Davis (1983) considered that the cognitive and affective components of empathy are related in that both concern responsiveness to others. This responsiveness results in the development of prosocial behaviour, including children's tendency to be considerate and helpful to others and to form positive relationships (Mustard, 2006; Wake et al., 2008). Furthering the understanding of the developmental relationship between empathy and covert aggression may provide a baseline for continuing research into supporting positive peer relationships at school entry.

The effect of these pathways in relation to schooling and public health.

Children's success at school is important to health at a population level because educational attainment has been found to predict health many years after schooling is completed (Adler & Snibbe, 2003; Mustard, 2006). Academic, social, and emotional trajectories are formed early and remain stable over time (Cummings & Kaminski, 2008; Gouley, Brotman, & ShROUT, 2008; Graziano et al., 2007). Elias and Haynes (2008) report that children in the third year of school should have developed the social and emotional skills that facilitate healthy interaction with peers, and that by the fourth year of school, children's academic trajectories are established. The first years of school are therefore important in determining future outcomes of wellbeing. As previously described, these outcomes track a social gradient in health and development that is determined by neurobiological modelling in response to stress (McEwen & Gianaros, 2010).

The link between health and education is important not only to the individual child and his or her family and community, but also to the economic and social stability of society. There is a personal and public cost of developmental trajectories that do not support human capital (through school success) and social capital (through relationships built on trust). The public cost of early school leaving and loss of education in Australia has been estimated at \$2.6 billion a year in social welfare, prevention of crime, loss of tax revenue, and loss of productivity (Koshland, 2007). The cost to public health would add considerably to this estimate.

Disorders of mental health are the largest contributor to disability in Australian children and young people (Begg et. al, 2007; Commissioner for Children and Young People, 2011). These disorders have been related to the adverse effects of societal and cultural factors, including aggression and bullying, and reduced social cohesion (Eckersley, 2011; Mental Health Council of Australia, 2010). Social rejection at school entry has the capacity to enforce neurological feedback mechanisms that hinder effective emotion regulation and positive social interaction at a crucial time in children's lives,

effecting outcomes of health and wellbeing. These outcomes have been shown to be intergenerational in nature (Cross et al., 2007; Runions, 2008).

Bullying peaks at the transition between pre-school and primary school, and again at the transition to secondary school (Commissioner for Children and Young People, 2011). Bullying may be in the form of overt physical aggression and threats, or it may be covert and relational in nature in which peer relationships are manipulated to cause harm, for example through social isolation or gossip (McLaughlin, Hatzenbuehler, & Hilt, 2009; Runions, 2008). A study of overt and covert bullying which included 4811 children aged nine to 13 years in The Netherlands found that relational victimization was strongly related to depression and loneliness more so than overt aggression (Van der Wal, De Wit, & Hirasing, 2003). In a meta-analysis on the predictors of bullying in school-aged children Cook et al. (2010) found that victimisation is also related to increased risk of suicide, and to early school leaving. Leaving school does not necessarily solve the emotional trauma, as those who are bullied at school are often bullied in the workplace (Cook, Williams, Kim, & Sadek, 2010). Because of the subtle nature of covert aggression, it is more difficult to detect than overt aggression (Cross et al., 2007; Runions, 2008).

As previously stated, the social and emotional demands faced by school-aged children in a rapidly changing society are increasing in complexity (Cross et al., 2007; Shonkoff et al., 2009). In particular, there is a change in the nature of covert aggression, with the advent of communication via virtual social networking. Children are now subjected to bullying in their homes and wherever they have access to mobile technology (Mental Health Council of Australia, 2010). Studies in 2001 estimated that up to 30 per cent of children were chronically victimised by peers (Nansel et al., 2001). International prevalence rates of cyber-bullying have been cited as high as 52 per cent (Mental Health Council of Australia, 2010). Because of the covert nature of relational aggression peer victimisation may remain undetected by school staff and adult caregivers. The influence of such aggression on children can initially remain latent but show its effects later in life, or it can result in somatic symptoms or internalising behaviour (Hamilton & Redmond, 2010; Lauder et al., 2009; Williams, Fredland, Han, Campbell, & Kub, 2009; Zubrick, Silburn, & Prior, 2005).

Bullying harms the person bullying others, as well as the recipient. For example, in a school based self-report questionnaire survey of 4811 children aged nine to 13 in Amsterdam, van der Wal et al. (2003) found that delinquency, depression, and suicidal ideation, were more common in children who bullied others than those who did not bully others. This was true for direct bullying and covert bullying. For example 16 per cent of girls who reported covert bullying towards others reported suicidal ideation, in comparison to five per cent who never covertly bullied others. For boys, these percentages were ten

and four, respectively. However, after adjustment for sociodemographic and confounding variables of children who both bullied others and were also bullied by others, this association persisted only for direct bullying towards others and suicidal ideation. It was found that five per cent of girls who reported *never* to direct bullying towards others reported suicidal ideation, in comparison to 24 per cent who *frequently* bullied others. For boys, these percentages were three and eleven, respectively (Van der Wal et al., 2003). Based on multiple studies in Australia, Cross et al. (2007) report that children who bully others are more likely to be in a peer group with similar behaviours, and to have experienced aggressive behaviour at home or in the community. It was also found that children who bullied others often lacked empathy for the bullied child. At school entry, children with aggressive tendencies are likely to be rejected, excluded or victimised by peers, which in turn serves to aggravate problem behaviours (Runions, 2008).

In a meta-analysis on bullying in the school environment Cook, Williams, Guerra, Kim, and Sadek (2010) commented that the success of bullying interventions have been limited, and any success appears to have been in changing children's knowledge and perceptions, rather than behaviour. This raises the question of how to most effectively support the development of prosocial behaviour at school entry.

Empathy is believed to be a fundamental building block for positive social interaction (Davis, 1983; Hunter, 2003). Children with higher levels of empathy will be less inclined toward covert aggression because of a capacity to consider the viewpoint of other children and respond with prosocial behaviour (Hunter, 2003; Mehrabian & Epstein, 1972). Low empathy is implicated with aggression in primary school age children; and conversely, cognitive and emotional measures of empathy have been associated with low rates of aggression (Bryant, 1982; Hunter, 2003). Fostering the development of empathy at school entry may inhibit aggression by promoting understanding, prosocial behaviour, and self-regulation. For example, the initial results of a program designed to increase emotional understanding and empathy in primary school aged children has shown positive outcomes with reduced rates of aggression and increased prosocial behaviour (Kendall et al., 2006; Mustard, 2006).

Bronfenbrenner (1979, p.53) named school as "the setting carrying primary responsibility for preparing young people for effective participation in adult life". He suggested that schools should provide a "curriculum for caring", where children learn about caring by engaging in it. Based on empirical data, van der Wal, de Wit, and Hirasings (2003) recommended that because relational victimization is strongly related to depression and loneliness - more so than overt aggression - primary school interventions must focus in particular on indirect, or covert, forms of bullying. By furthering the empirical understanding of the development of empathy in relation to covert aggression in children

at primary school entry, an avenue may be provided for supporting protective peer relationships. Positive peer and staff relationships in the first years of a child's schooling have the potential to change trajectories of social and emotional development from risk to protection.

5. Factors Measured in this Study

This section of the literature review will introduce factors that have been used in data collection, describing how age, gender, and sociodemographic factors contribute to the development of emotion regulation and social competence at school entry.

Age.

Adaptive emotion regulation is associated with an increase in prosocial response as children age, and an associated decrease in aggressive behaviour. This sub-section of the paper will review the age related development of behaviour, first outlining normal developmental pathways for aggression.

It is usual in childhood development for physical aggression to peak at ages 24 - 48 months and then follow a normative decline (Runions, 2008; Tremblay, 2004). The ability to inhibit the natural impulse to use physical aggression emerges from three to six years of age, a period of rapid cognitive development (Raaijmakers et al., 2008; Tremblay, 2004). As children develop cognitive awareness they learn to take on roles in relation to behaviour, some will develop a prosocial response, and some continue to physically aggress or learn more subtle forms of covert relational aggression that may go unnoticed by adults (Cross et al., 2007).

School is often the central place in which aggression is located, beginning with the earliest social interactions of children when they start school (Barker et al., 2008; Cross et al., 2007; Runions, 2008). Dodge et al. (2003) reported on two longitudinal studies of 259 and 585 children respectively, beginning at school entry and continuing over three and five years. Findings suggested that peers, in their capacity to accept or reject a child, become an active part of the child's development. Dodge et al. (2003) found that social rejection by peers had an incremental effect on the development of later teacher reported aggression in children. This effect persisted after controlling for previous levels of aggressive behaviour, and was stronger for reactive aggression ($\beta = 0.06$, *NS*), a response to stress or provocation, than for proactive aggression ($\beta = -0.20$, $p < 0.01$). In this study peer acceptance or rejection was measured by asking children to rate how they liked or disliked other children in the class on a five-point scale. However, such a method of peer rating could set the scene for children to consider it normal to dislike others, or

cause individual children to feel threatened socially, rather than promoting a model of peer acceptance. This method of rating social acceptance did not account for the negative peer bonding that may occur in peer groups that engage in covert bullying. Both of the above factors might confound results in a longitudinal study. The studies did not measure relational aggression; peer rejection was instead related to the development of an overt response of aggression.

Research has underlined the importance of distinguishing between covert or relational aggression and overt aggression (Crick & Grotpeter, 1995). It is relevant to ask if children have the cognitive capacity to engage in covert relational aggression at the age of school entry. The literature suggests that children begin to use cognitive means to surmise what another is feeling from five years of age. From eight years of age, children begin to acknowledge internal psychological states (Catherine & Schonert-Reichl, 2011; Hunter, 2003). Younger children, on the other hand, may be more inclined to use external cues to understand or respond to an emotion (Catherine & Schonert-Reichl, 2011). Few studies, however, have measured relational covert aggression before the age of six to eight years.

Based on the peer and teacher report of 65 preschool children, Crick, Casas, and Mosher (1997) found that relational aggression could reliably be distinguished from overt aggression in children aged three to five years, with factor analyses of both teacher and peer reported measures revealing separate factors for each. Analyses of the relation between relational and overt aggression however, showed correlation coefficients $r = 0.76$, $p = <0.001$ for boys, and $r = 0.73$, $p = <0.001$ for girls on teacher assessment. On child nominated measure, analyses of the relation between relational and overt aggression revealed correlation coefficients $r = 0.46$, $p = <0.01$ for boys and $r = 0.37$, $p = <0.05$ for girls, revealing some overlap between both forms of aggression (Crick et al., 1997). Teachers worked as a group to rate aggression, and therefore did not gain the benefit of inter-rater reliability. In analysis of covariance, with relational aggression and overt aggression each used as dependent variables, there was no significant effects due to age group (junior or senior classes) for either teacher or peer report of aggression. This study however, might have lacked statistical power because of a small sample size.

In a cross-sectional study of 145 children aged three to five years and using a relational aggression questionnaire completed independently by two teachers, Bonica, Arnold, Fisher, and Zeljo (2003) also found that relational aggression did occur in this age group. The study demonstrated moderate correlation for inter-rater reliability ($r(93) = 0.36$, $p < 0.001$). In each of three multiple regression analyses to predict language development on relational aggression controlling for age, age was a positive predictor of relational aggression but not significant ($p = 0.08$; $p = 0.34$; $p = 0.14$). Language was a

positive predictor when age was controlled ($p = 0.04$; $p = 0.02$; $p = 0.08$), however this result may have been confounded in that ethnicity and first language spoken at home were not controlled for. The researchers commented that physical aggression has been shown to be associated with language deficits and academic difficulties, but did not include measures of overt aggression. Based on study results, Bonica et al. (2003) proposed that relational aggression requires the aggressor to have an understanding of what would harm another child socially and emotionally. The ability to accurately judge the emotional state of another may assist in this, and this may be facilitated by cognitive development and language skills. The age of participants in the study by Bonica et al. (2003), however, was young (three to five years), and based on the literature, children of this age would be likely to use external skills rather than using cognitive means to respond to others (Catherine & Schonert-Reichl, 2011; Hunter, 2003). The study reported in this thesis measured relational aggression in children aged four to seven years.

Associated with cognitive development is an internalisation of values and norms, with an increased capacity for empathy and moral reasoning (Catherine & Schonert-Reichl, 2011). Empathy is an important factor in prosocial behaviour. Cognitive aspects of empathy develop at a later age than emotional aspects (Hunter, 2003). This may also relate to suggestions that the cognitive ability to surmise what another is feeling begins to develop at five years of age. Hunter (2003) considers that cognitive empathy is unlikely to be sufficiently developed as a measurable construct until after five years of age. The child-report tools used for this study therefore measured affective empathy.

Gender.

There are mixed findings with regard to gender differences in the development of social competence and emotion regulation. Girls are generally expected to be more socially competent, and tend to demonstrate higher inhibitory control and emotion regulation than boys (Knight, Guthrie, Page, & Fabes, 2002; Raaijmakers et al., 2008; Rotenberg, Michalik, Eisenberg, & Betts, 2008; Sallquist et al., 2009). At school entry however, girls tend to have higher verbal skills than boys and tend to learn alternatives to physical aggression more rapidly than boys (Bowie, 2007; Kimura, 2002; Zubrick, Taylor, Rice, & Slegers, 2007). Because of this, it may be that girls appear to be more socially competent and less aggressive, but have in fact learnt to use covert means of aggression from an early age (Bowie, 2007; Crick & Grotpeter, 1995).

In the previously cited study Bonica et al. (2003) found a statistically significant positive correlation between language development and relational aggression in two of three measures of language ($p = 0.02$; $p = 0.04$) when age and socio-economic status were controlled for. This result may have been confounded by the inclusion of participants

from a broad background of mixed ethnicity and socio-economic status. In review of the method and results, the child's first language was not accounted for. As previously stated there was no measure of overt aggression, and therefore no comparison was made between gender or language ability with differentiation between the use of covert or overt aggression.

Crick and Grotpeter (1995) hypothesized that girls are more likely to harm others through relational aggression and purposeful manipulation of peer relationships, whereas boys are more likely to cause harm to peers through physical dominance. This hypothesis was supported in a study of 491 third to sixth grade children, in which girls were found to be significantly more relationally aggressive than boys. It is now well documented that there is an increased tendency for aggression to be covert as girls' age, which can result in significant relational harm and psychopathology (Knight et al., 2002; Kochenderfer & Ladd, 1996).

Though it is understood from the literature that girls are more likely to cause harm to peers by the use of relational aggression, and boys by physical aggression, the age at which this begins is not clear. Bowie (2007, p. 108) quoted an initial study by Fleshback in 1969, which found that in first grade, girls were more likely to respond to an unfamiliar peer with social exclusion than boys. However, recent studies in the USA have found little evidence of gender differences in emotional or social function in children at school entry (Barker et al., 2008; Sallquist et al., 2009). Dodge et al. (2003) found that social rejection acts as a stressor with no difference between effects in boys and girls in grades three to six.

What is important is to continue to develop an understanding of how to intervene to prevent social rejection and to lessen the impact of it on both boys and girls (Dodge et al., 2003). Bowie (2007) highlighted the need for research that measures emotion regulation, overt confrontational aggression, and covert relational aggression in children in order to develop an understanding of psychosocial developmental disorders. Bowie (2010) stressed the importance of using measures of child report, as well as adult report, because the subtle use of relational aggression among peers may not be apparent to adults. This study used measures of child and adult report.

Sociodemographic characteristics.

Sociodemographic factors found to be associated with social and emotional development in children include: family income, occupation, and education (socio-economic status), in particular the mother's education; the number of siblings and birth order; the family type - single, two parent or blended; parental worry and symptoms of depression and anxiety; minority status; and neighbourhood type (Bridges, Denham, &

Ganiban, 2004; Wake et al., 2008; Zubrick et al., 2005b). These factors either are resources, or affect children's access to the resources, that contribute to outcomes of development.

Financial status of the family.

Children of lower income families are more likely to have significant deficits in social and emotional readiness on entering school (Baxter & Hayes, 2007; Bierman et al., 2008; McWayne & Cheung, 2009). In a study of participants of the Head Start Program in the USA, McWayne and Cheung (2009) found that children at the greatest risk for developing emotional and behavioral problems early in life were those living in low-income families in urban environments. However, they did not measure parent and family constructs such as parent education. On the other hand, in a report of the four to five year old cohort of the Longitudinal Study of Australian Children (LSAC), Baxter and Hayes (2007) related differences in developmental outcomes, including social and emotional development, to characteristics of parents, including employment and education levels, rather than directly to income. Children of parents with Bachelor's degrees were found to spend 24 minutes less time watching television than those whose parents had incomplete secondary education; and 30 minutes more time reading and doing achievement related activities (Baxter & Hayes, 2007). Lower social and emotional outcome scores were related to more hours of television watched as shown by bar graph, correlations or odds ratios were not given for this effect. Baxter and Hayes (2007) related these results not only to socio-economic status of parents income, education and occupation, but also to differences in values or beliefs, and the developmental context parents create for their children in the home environment and community.

One potential pathway by which financial status may benefit children includes the information, norms, and expectations associated with the area in which a family lives (Brooks-Gunn, 1995; Kreuter & Lezin, 2002). Examples of norms and sanctions include attitudes to parenting and expectations of school performance. By these pathways the parents' ability to be advocates for their children, to access resources for their family, and to be involved in children's school and community life (thus building social capital), may be facilitated (Brooks-Gunn, 1995; Coleman, 1988).

Using data from the High School and Beyond Study, a national longitudinal study of high school children in the USA, Coleman (1988) cites a lower dropout rate of children from church schools in comparison to public schools as an example of community facilitating positive outcomes of education. Children from independent church schools had a dropout rate of 3.7 per cent in comparison to a dropout rate of 14.4 per cent in public schools (Coleman, 1988). No adjustment was made for parent income, rather Coleman (1988) cited family and community relations as the likely cause of a higher rate of school

finishing. The widely quoted High School and Beyond Study used a stratified national probability sample of over 1100 secondary schools across the USA, with over 58 000 participants (Ehrenberg & Brewer, 1994). Ehrenberg and Brewer (1994) stated that though parents choose where to send their children to school based on resource constraints, those who value education will attempt to reside in a location based on the available school. Parents choosing to send their children to church schools commit to paying school fees, and may allocate resources to allow their children to attend a fee paying school at considerable personal expense, thus demonstrating a commitment to the value of education, or values and beliefs, or a combination of these.

A focus on the *middle class* is important to a normative perspective on social and emotional development because there is a greater concentration of the population in the middle class (Adler & Snibbe, 2003; Mustard, 2006). The research presented in this thesis has been conducted in a fee-paying school that is affiliated with a church in a middle-class locale.

Mother's education.

The level of education attained by the mother is relevant to outcomes of development in children as parental level of education, in particular mother's education, is a key component of human capital (Coleman, 1988; Zubrick et al., 2005b). Mother's education affects attitudes and expectations with regard to health and learning, decision-making power within households, earning potential of families, and autonomy in the workplace (Save the Children, 2009). Zubrick, Silburn, and Prior (2005b) reported that mother's level of education relates to a sense of autonomy and self-efficacy, with a belief by the mother that both the mother and her children will be able to manage challenges. This belief relates to hope (Luthans, Youssef, & Avolio, 2007). Luthans, Youssef, and Avolio (2007) relate hope to independent thinking, internal locus of control, perceived meaningfulness, and autonomy. They also associate hope with an increased capability of self-regulation of emotions and actions, and resilience is associated with an ability to persevere and even reach successful outcomes when faced with adversity or problems (Luthans et al., 2007).

The literature reveals a widely acknowledged association between lower levels of mother's education and physical aggression in children (Campbell et al., 2010; Tremblay, 2004). However, there is no literature on the effect of mother's education on covert or relational aggression in children at entry to primary school. In a longitudinal study of children in years three to six, Werner and Grant (2009) found that mothers were more accepting of relational aggression than physical aggression ($t(102) = -13.36, p < 0.001$), and less likely to attribute responsibility to their children for perpetrating relational aggression than physical aggression. The education level of the mothers was high, with

69 per cent having a Bachelor's degree or higher, however the education level of the remaining 31 per cent of mothers was not stated (Werner & Grant, 2009). Therefore, the association between mother's level of education and relational aggression in children remains unclear.

Number of siblings and birth order.

Sibling status is also known to contribute to the developmental outcomes of children. Evidence suggests that poor academic and health outcomes are associated with a lower birth order, especially in families with larger numbers of children (Bjerkedal, Kristensen, Skjeret, & Brevik, 2007; Downie, Chapman, Orb, & Juliff, 2002; Fabio, Kim, & Chen, 2009). Research has consistently confirmed a negative relationship between the number of children in a family and child achievement. Grawe (2005) attributes this to a reduction in parent time, and a reduction in physical and financial resources.

Using data from the Longitudinal Study of Australian Children, Bradbury (2007) found that in a two-parent household, having four rather than two children lead to a 2.7 point decrease in learning outcomes. Bradbury (2007) related this to the effect of needing to share the resources of time and income between children. However, Bradbury (2007) also found that despite having poorer quality learning outcomes, four to five year old children with more siblings had more advanced social-emotional development. It was proposed that this might be accounted for by a greater need to learn to socialise because of the larger number of children in the home. In a discussion of research describing the contribution of sibling relationships to child development, Brody (2004) observed that peer relationships in young children can be affected positively by sibling relationships that provide a balance between nurturance and conflict, or negatively by sibling relationships marked with conflict and negative role modelling. Brody (2004) proposed that considerable work is needed to understand the role of sibling relationships on development, including social and emotional development.

Family type.

Family type refers to the composition of the family; single parent, two-parent, blended or extended. In a longitudinal study of 1364 participants that followed children from birth through to sixth grade, with a diverse sample in regard to family type including single parent and two-parent families, and families of varying ethnic status, (Campbell et al., 2010) found increased rates of physical aggression in children in relation to family adversity rather than family type. Results were controlled for confounders at sample selection and analysis. Analyses of results were controlled for sociodemographic risk factors, and included measures of child characteristics and parenting, including maternal harshness, conflict and sensitivity. Measures of the parenting behaviour of fathers were not included.

In regard to the findings of Campbell et al. (2010) that family adversity, rather than family type, was associated with increased rates of physical aggression, family adversity is often linked with single parent status, and also with lower socio-economic status and lower maternal education (Campbell et al., 2010; Huston & Bentley, 2010; Save the Children, 2009). Though these are risk factors, they do not predetermine adverse outcomes of development (Campbell et al., 2010). Huston and Bentley (2010) refer to Bronfenbrenner and Vasta (1989) to indicate that social disadvantage and poverty are *social addresses* that summarise contexts such as single-parent families, minority status, and low levels of education. These are associated with life stress, and parental life stress and social support have been reported to be associated with changes in early trajectories of development (Repetti et al., 2002; Sroufe, Coffino, & Carlson, 2010). If single parent status is associated with lower outcomes of social and emotional development in children, it is likely to be through associated life stress, and the availability of resources including time and income. This was supported in the first wave of the Longitudinal Study of Australian Children, in which children aged four to five years were more likely to have positive outcomes in the context of higher maternal education, higher family income, higher parental occupational status, and in the absence of financial stress. Family type (single or two-parent family) and neighbourhood disadvantage did not make unique contributions to child outcomes, suggesting that their influence is mediated through family variables such as income, financial stress and family functioning (Wake et al., 2008). No literature was found relating relational aggression to family structure.

6. Summary

From school entry at Kindergarten to Year Two, social competence is seen in positive peer relationships and successful school adjustment. These in turn facilitate school success and wellbeing (Cummings & Kaminski, 2008). Children's experience of school and school success however, can be encumbered by relational aggression. Children experiencing poor school adjustment may present to the school nurse with somatic symptoms. Meta-analysis has quantified a greater odds ratio of somatic symptoms for children who either bully others, or are bullied, whereas peer social support has been associated with fewer health complaints (Shannon et al., 2010). Beyond somatic symptoms, relational aggression has been associated with many poor outcomes of wellbeing and school success.

The school nurse has been described as a "navigator" for children in the journey of school health (Brooks et al., 2007, p. 227). Studies have suggested that in schools where a registered nurse is present, children presenting with somatic complaints are significantly

more likely to stay at school than be sent home (Shannon et al., 2010). Lifetime trajectories of mental health are formed early, often in childhood. As a member of a multidisciplinary team, the school nurse has an important role in recognising symptoms that require referral, but also in supporting protective trajectories for children by promoting wellbeing.

Because of the plasticity of neurological processes of development, the early years of school provide an opportunity to promote safety in relationship through interventions that facilitate positive peer relationship and reduced rates of aggression. Runions (2008) however, has commented that the most effective way to work toward this in schools is unclear. Research has shown increased prosocial behaviour in children to be associated with reduced rates of aggression. The research to date has largely focused on overt aggression. A recent emphasis has been placed on the need to distinguish between covert and overt aggression, in particular covert relational aggression, which is associated with mental health problems including depression, anxiety, and suicidal ideation. The literature suggests a cognitive element in the development of aggression and empathy, in which children understand the perspective of others rather than just responding to the emotions another child displays. The age at which this shift occurs, and the nature of this shift, is unclear. Furthering the understanding of such development may provide an avenue to support prosocial behaviour at school entry.

With the rapidly changing nature of the social environment, the nature of covert aggression is constantly changing. Few studies have measured relational covert aggression before the age of six to eight years. This research examined the development of covert relational aggression, and empathy, at school entry, in a middle-class population. The aim was to provide a baseline on which to continue further research into supporting the development of positive peer relationships as children start school.

Chapter 3: Research Methods

Design

This was a cross-sectional observational study, conducted at a low fee paying independent school in 2010. The school was in Perth, Western Australia. A number of measures of social and emotional development were individually administered to children attending Pre-primary, Year One, and Year Two classes. Teachers also rated these children on dimensions of social behaviour. Background demographic information was collected for participating children from school records and by parent questionnaire.

Study Population

The school is located in a new suburb of rapid growth approximately 30 kilometres south of the central business district of Perth, Western Australia. Since 2006 the population has grown from approximately 84 to 3, 929 people (City of Armadale, 2011). As with many new and rapidly growing suburbs in Perth, the proportion of school age children is well above the state and national average (Australian Bureau of Statistics, 2006a; City of Armadale, 2011). The 2010 Index of Community Socio-Educational Advantage (ICSEA) value for the school was 1047. The ICSEA value is based on the level of advantage/disadvantage of the census collection districts in which children live, the proportion of Indigenous children enrolled at the school, and the remote or regional status of the school (Australian Bureau of Statistics, 2006b). The average ICSEA value is 1000 with most schools scoring between 900 and 1100 (Australian Curriculum and Reporting Authority, 2010).

The sample of children available for inclusion in the study comprised a convenience sample of 155 children, the number of children in six classrooms across Pre-primary and Years One and Two at the school in 2010. Assuming a difference between means of six points and a common standard deviation of ten points on the majority of measures of social and emotional competence, it was calculated that the study would have 88 per cent power to detect a difference at $p < 0.05$ if there were 108 or more participants. This represented 75 per cent of the sample available for inclusion in the study.

Procedure / Collection of Data

The recruitment of families occurred at the beginning of the school year, in February 2010. First, the researcher was invited by the school principal to use meetings at which parents were introduced to teaching staff, to introduce the study to parents. Parents were given the opportunity to ask questions regarding the study. No record was kept of the number of parents attending the meetings. Second, a letter was sent via the school to the homes of all children in Pre-Primary, Year One, and Year Two. The letter included a parent information sheet (Appendix A), consent form (Appendix B), child information sheet (Appendix C), and parent questionnaire (Appendix D). The school sent the parent information sheet on school letterhead paper, signed by the principal, as a demonstration of the school's support of the study. Parents were asked to return the completed consent form and questionnaire to the school via their child.

Student data collection commenced in early March 2010 and with the exception of one student, who was overseas, was completed by the end of that month. When convenient for the class teacher, the researcher went into the class to administer instruments to the children. Working with individual children, she sat in a quiet corner of the classroom and confirmed with the student their consent to participate in the study. Each question was then read aloud to the child. If a child did not understand a question, the researcher reworded the question at a level appropriate to the developmental stage and language ability of the child. This enabled the researcher to identify and correct misunderstandings and errors. The children were able to ask questions and they received feedback throughout this process. The process of data collection took approximately ten minutes per child. A journal of data collection was kept in order to record any potential issue of the researcher influencing children's answers to questions. The researcher had worked in the school for some time as the school nurse to the secondary school children, although she was generally not known by children in the primary school.

The majority of teachers completed the instruments for every child in their class for whom consent to participate was obtained, in the second school term of 2010. Due to excess workload in Term Two, Year Two teachers completed the instruments in the first two weeks of Term Three. Teachers were offered relief from their teaching duties by the school principal for half of one day to allow them to undertake this task.

Measures

Data were collected regarding the school, the sociodemographic characteristics of participants and their families, the social and emotional understanding of the children, and their social behaviour.

Sociodemographic measures (independent variables).

School.

The ICSEA value of the school (Australian Bureau of Statistics, 2006b), and the number of children in each participating year group was collected.

Sociodemographic characteristics of participants and their families.

Socio-economic Indexes for Areas.

The postcode of each participating child was matched to the Index of Relative Socio-economic Advantage and Disadvantage (labelled as SEIFA) (Australian Bureau of Statistics, 2006b). The index utilised the 21 variables listed in Appendix E (Australian Bureau of Statistics, 2006b). This index is appropriate for indicating relative advantage as well as disadvantage, with higher deciles indicating relative advantage, and it includes measures of education, occupation, and income proposed by Adler and Snibbe (2003) to reflect social position. The same information was also collected for each non-participating family to assess possible response bias.

Child's age.

The age in months of each participating child at the time of the child assessment was obtained from school records, and used as a continuous measure. Data were available for each participating child.

Child's year at school.

The year at school of each participating child was obtained from class lists provided by the school at the time of receiving parent consent. Year group was used as a categorical measure: Pre-primary (0); Year One (1); Year Two (2). Data were available for each participating child.

Child's gender.

The gender of each child was obtained from the parent questionnaire, and used as a nominal measure: Female (0); Male (1).

Family type.

The number of adults living in the child's home, and their relationship to the child, were obtained by parent questionnaire. Data were available for each participating family and used as a categorical measure: Mother alone (0); Father alone (1); Mother and father (2); Extended family living in home (3); Foster care or other care (4).

Mother's age.

Mother's age in years at the time of consent to the study, as documented on the parent questionnaire, was used as a categorical measure: Less than 20 (0); 20 to less than 25 (1); 25 to less than 30 (2); 30 to less than 40 (3); 40 or older (4). Data were available for each participating child. When all data had been collected, it became

apparent that only one mother was in the age group between 25 but less than 30, 55 mothers were aged between 30 but less than 40, and 24 mothers were aged 40 or more. The data were therefore recoded into two categories: 25 but less than 40 (0); 40 years or more (1).

Mother's highest level of education.

The highest level of education completed by the child's mother was also obtained in the parent questionnaire. The data were coded as a categorical measure: Year 12 or less (0); Certificate level I to IV or diploma or associate degree (1); Bachelor's degree or post graduate study including honours, graduate diploma, Master's degree, or doctorate (2). Data were available for each participating child.

Number, age and gender of siblings.

Other data obtained by parent questionnaire were the number of siblings living in the child's home, the age of siblings, the gender of siblings, and the presence of stepsiblings living in the same home. Data for the number of siblings living in the child's home were recorded as a categorical measure: No siblings (0); One or two siblings (1); Three or more siblings (2). Age of siblings was coded as: Older only (1); Younger only (2); Older and younger (3); Same and younger (4); No siblings (5). The code for gender of siblings was: Female (0); Male (1); Both (2); No siblings (3). Stepsiblings living in same home were used as a nominal measure: No (0); Yes (1). Data were available for all participants, however only one child had stepsiblings living in the same home so this data was excluded from final analysis. The coding guide for sociodemographic characteristics is listed in Appendix F.

Social and emotional understanding of children and children's social behaviour (dependent variables).

Data from the following measures were used to construct measures of children's social and emotional adjustment to school. The inventory of measures was compiled and adapted by Dr Kimberly Schonert-Reichl, University of British Columbia, and has been used in the *Roots of Empathy* evaluation in Canada. Each child and teacher questionnaire had previously been used in this age group in Western Australia (Kendall et al., 2006). Appendix G tabulates the instruments used.

Child questionnaires.

Three child questionnaires were included in the study; *My Friends*; *My Feelings*; *My School*.

My Friends.

My Friends comprises seven items from the peer related loneliness subset of questions from the *Relational Provisions Loneliness Questionnaire (RPLQ)* (Hayden-Thomson, unpublished doctoral dissertation, 1989, as cited by Goossens & Beyers, 2002). The original questionnaire, designed in Canada for use with English speaking children, comprised four subscales of seven items each that measured children's sense of belonging in the peer group. Individual subscales included measures of family integration and intimacy, and peer integration and intimacy. Each item was answered on a five-point Likert scale and reverse scored, with higher total scores indicating higher levels of loneliness. Goossens and Beyers (2002) report the *Lack of Peer Intimacy* component of the RPLQ to be reliable with a Cronbach's alpha of 0.78 in ten and 11 year old children. Kendall et al. (2006) showed an alpha 0.69 for the construct of friendship for children in Pre-primary to Year Two. This study used a three-scale measure of the lack of peer intimacy subscale, as used previously in this age group in Western Australia by Kendall et al. (2006), with scores of 0 (No), 1 (Sometimes), and 2 (Yes). A higher score indicates higher levels of peer related loneliness.

My Feelings.

My Feelings comprises eight items adapted from the 21 item scale of the *Index of Empathy for Children and Adolescents (IECA)* (Bryant, 1982), and two items of which at least one is attributed to Eisenberg, Fabes, Schaller, Carlo, and Miller (1991; "I often feel sorry for people who don't have the things I have,") (Eisenberg et al., 1996, p. 198) and "I feel sorry for other kids who don't have toys and clothes". Respondents simply answer Yes (1) or No (0). A higher total score reflects greater affective empathy.

The *IECA* tool was reworded, to be suitable for use by children and adolescents, from the adult version of the *Questionnaire Measure of Emotional Empathy* (Mehrabian & Epstein, 1972), and was scored to reflect differences in affective empathy related to gender and age (Bryant, 1982). Bryant (1982) found that the tool met the minimum requirements for construct validity, significant relationship to aggressiveness among males, and significant test-retest reliability $r(53) = 0.74$ for first graders. The *My Feelings* tool was adapted from the *IECA* and does not have gender specific questions. Eisenberg et al. (1996) reported a Cronbach's alpha for a very similar scale of 0.73 in Kindergarten to Second Grade aged children.

My School Questionnaire.

The *My School Questionnaire* comprises 22 questions from the *School Sentiment Inventory (SSI)*, which measures children's perceptions of the school environment, teachers, and peers. Bogart, Jones, and Jason (1980) attribute the *SSI*, which was composed of 37 questions to Frith and Narikawda (1972). Each question was answered

“yes” or “no”. Ladd (2000) reported that all measures had moderately high levels of internal consistency, with reliability coefficient measures that exceeded 0.82 in children with a mean age of 64 months. Ladd and Price (1987) reported high test-retest reliability with primary school children. The total of the raw scores was used, with higher scores indicating a happier attitude to school. Ladd (2000) grouped questions with the same content and high factor loadings into subscales termed perceived teacher support, (for example, “My teacher listens to what I say”), attitudes towards school activities (for example “I like to sing songs in school”), and school liking (for example, “school is fun”). Each subscale contained a minimum of six items (range of six to eight items), and all four measures had moderately high levels of internal consistency (Kuder-Richardson 20 reliability co-efficients exceeded 0.82) (Ladd, 2000). The tool administered in this study used a four point Likert measure with scores of: NO! (0), no (1), yes (2), or YES! (3). (Each question was read aloud to the children and the researcher asked the children to answer “a lot no, a little bit no, a little bit yes, or a lot yes”, as it was found during the study that children responded with confidence to the questions when asked in that way.)

Teacher questionnaires.

Teacher questionnaires used were: the *Child Social Behaviour Scale*; *Teachers Ratings of Children’s Behaviour*; *Emotion Questionnaire*.

Child Social Behaviour Scale.

The *Child Social Behaviour Scale* (CSBS) (Statistics, Canada, 2008) is based on a tool developed by Dodge and Coie (1987), a teacher rating of aggression that has been used widely. The instrument is designed to measure reactive and proactive aggression. Reactive aggression is a defensive response to a perceived threat, proactive aggression a deliberate behaviour that is a means for obtaining a desired goal. The original *Teacher Ratings of Aggression* developed by Dodge and Coie (1987) was a 12 item tool, scored with a five-point Likert scale ranging from “never” to “almost always”, indicating how frequently each statement applied to the child. Three statements described reactive aggression (for example, “When this child has been teased or threatened, he or she gets angry easily and strikes back”); three described proactive aggression (for example, “This child uses physical force in order to dominate other kids”); and twelve statements described academic and social behaviours in order to disguise the authors primary objective of studying aggression (for example, “This child cooperates well with peers”) (Crick & Dodge, 1996; Dodge & Coie, 1987). The original statements were based on observations of aggression among peer groups of boys (Dodge and Coie, 1987). The internal consistency of each scale of aggression has been found to be high (alpha 0.90) (Crick & Dodge, 1996). The tool used contains reliable measures of overt aggression

(Cronbach's alpha 0.94) from the *Preschool Social Behaviour Scale* (Crick et al., 1997); reliable and stable measures of predatory aggression (Cronbach's alpha 0.73, internal consistency 0.77) (Vitiello, Behar, Hunt, Stoff, & Ricciutu, 1990). Predatory aggression is behaviour that is goal oriented, motivated toward a reward, and executed with planning (Connor, 2002).

The scale used in this study, as previously used in this age group in Western Australia by Kendall et al. (2006), was a three-point Likert measure: Never or Not True (0), Sometimes or Sometimes True (1), Often or Very True (2). A higher score indicated higher levels of the associated behaviour. Prosocial behaviour was scored separately to aggressive behaviour. This enabled the use of each subscale, as well as the *Emotion Questionnaire*, in the analysis of the relationship between prosocial behaviour and aggression.

Teachers Ratings of Children's Behaviour.

The *Teachers Ratings of Children's Behaviour* (TRCB) attributed to Eisenberg and colleagues, was designed to measure the constructs of sympathy/empathy and socially appropriate behaviour (Eisenberg et al., 1996; Harter, 1982). The tool is measured on a four-point Likert scale with scores of Never True (0), Rarely True (1), Sometimes True (2), or Often True (3). Scores on disruptive behavior, or difficulty with social interaction were reversed, and scores relating to socially appropriate behavior were not reversed.

The tool measures children's sympathetic/empathic tendencies (for example, "This child often feels sorry for others who are less fortunate", "This child gets upset when she/he sees another child being hurt" (adapted from Bryant, 1982). "The child usually feels sympathy for others"; "This child usually feels sorry for other children who are being teased"; and "This child rarely feels sympathy for other children who are sad or upset" (reversed; $a = 0.89$)" (Zhou, Valiente, & Eisenberg, 2003). Eisenberg et al. (1996) also measured popularity, associating the same with socially appropriate behaviour in the following measures taken from the teacher rated version of the Perceived Competence Scale for Children (Eisenberg et al., 1998, p. 913): "This child has a lot of friends"; "This child is popular with others his/her age"; "This child finds it hard to make friends"; "This child usually acts appropriately". Alphas for the scale designed for teachers ranged from 0.89 to 0.91, and the scale had an Internal consistency of 0.93 (Harter, 1982). Kendall et al. (2006) report internal consistencies of 0.87-0.92.

Emotion Questionnaire.

The *Emotion Questionnaire*, short version (Rydell, Berlin, & Bohlin, 2003) measures emotionality and emotion regulation as separate constructs. Of twelve questions, two items measure each emotionality aspect of fear, anger, or positive emotions and exuberance, and the regulation of fear, anger, and positive emotion.

Positive emotions and exuberance are studied because effective social functioning is seen in the literature to involve regulation of aroused states of positive and negative emotions (Eisenberg et al., 1996). Questions include: “This child has difficulties quieting down on his/her own”; “This child often becomes sad”; “It is easy for others, for instance a parent, to calm this child down”. Responses may be either Yes (0) or No (1). The scores of questions 1, 2, 4, 5, 6, 8, 9, 10, and 12 were reversed so that high scores indicated high levels of emotionality or high levels of regulatory capacity. Rydell et al. (2003) report test reliability correlation coefficients for emotionality scales from 0.62 to 0.78, and for emotion regulation scales from 0.74 and 0.79. The predictive validity of the short questionnaire in relation to the long version administered was significant with all p values <0.001 .

Statistical Analysis

Response fractions were calculated for each year group. Mean SEIFA of participants and non-participants were compared. The validity of each outcome measure, and subscale, was then assessed. This is described in the following section. The distribution of each scale was also assessed for normality.

Dummy variables were created for linear regression, with comparison categories for year at school, mother’s highest level of education, number of siblings, and SEIFA. The coding for each predictor variable is shown in Table 3.1. Statistical significance was set at alpha 0.05. Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) software, Version 18.

Table 3.1: Dummy Variables

Descriptive variable	Coding
Year Group	
Pre-primary	000
Year One	010
Year Two	001
Mother’s Highest Level of Education	
Year 12 or Less	000
Certificate or Diploma	010
Degree or Post Graduate	001
Number of Siblings	
No Siblings	000
One Sibling	010
Two or More Siblings	001
SEIFA	
3,4,5	000
6,7,8	010
9,10	001

Internal consistency and function of each instrument with data collected.

The internal consistency of the construct scores for each child and teacher instrument was measured using a calculation of Cronbach's alpha. Cronbach's alpha measures how highly the items scoring on each construct covary. While a Cronbach's alpha of 0.9 is considered ideal for demonstrating internal consistency between items, an alpha greater than or equal to 0.7 is generally considered adequate (Allen & Bennett, 2010). The way in which the alpha of each tool was measured is described below.

My Friends.

Using valid results from 80 cases, the Cronbach's alpha for the seven-item *My Friends* questionnaire was 0.51. The alpha did not change significantly if any items were removed from the questionnaire indicating that the tool was not reliable over questionnaire items. The tool was therefore not used in further analysis.

My Feelings.

With valid answers from 77 cases the Cronbach's alpha for the 10-item *My Feelings* questionnaire was 0.33, indicating that the tool was not reliable over questionnaire items. When items 4, 7, 8, and 10 were removed, the Cronbach's alpha increased to 0.64. As the alpha of 0.64 did not meet the minimum requirement of 0.7, the *My Feelings* tool was not used in subsequent analysis.

My School.

With valid results from all 80 cases the Cronbach's alpha for the 22-item *My School* questionnaire was 0.72. Although this can be considered adequate for research purposes, item 21 of the questionnaire had negative scores in all but one question in the inter-item correlation matrix. Item 21 "do you wish you could stay home from school?" was subsequently removed from the questionnaire, and analysis was based on the remaining 21-items. The alpha of the 21-item tool was 0.79. The alpha of each subscale of the tool was calculated. The Cronbach's alpha for school liking, measured by items 5, 6, 10, 15, and 17, was 0.83. This subscale was included in further analysis.

The following three subscales were not used in subsequent analysis because of a poor internal consistency demonstrated by a Cronbach's alpha of less than 0.7. The subscale of perceived teacher support, measured by items 1, 3, and 11 had an alpha of -0.01. Children's perception of the school environment, measured by questions 7, 9, 12, 16, and 22 had an alpha of 0.30. The alpha of peer support, measured by questions 2, 4, 8, 14, 18, 19, and 20, was 0.59.

Child Social Behaviour Scale.

The 33-item CSBS questionnaire contained two major subscales of prosocial behaviour, and aggression. Cronbach's alpha for the ten-item prosocial behaviour subscale was 0.92, with complete data for 79 children. Cronbach's alpha for the 23-item

aggression subscale was 0.90. Although this was adequate for research purposes teachers had reported that they felt questions 26 and 33 were ambiguous and teachers were not confident in answering the questions. These questions asked the teacher to consider if the child was “Careful to protect self when aggressive”, and if the child “Can control own behaviour when aggressive”. Because of teachers’ stated lack of confidence in answering these two questions the data for eight children were missing. By excluding questions 26 and 33 from the tool, the Cronbach’s alpha increased to 0.93, and complete data were available for 80 children. These two questions were therefore excluded from subsequent analysis. The aggression subscale of covert aggression, measured by items 6, 10, 14, 21, 28, and 31, had an alpha of 0.85.

Teachers Ratings of Children’s Behaviour.

With valid answers from 78 cases, the Cronbach’s alpha of the 15-item *TRCB* questionnaire was 0.91. The subscale of teacher rated sympathy/empathy measured by items 2, 3, 4, 6, 7, 10, 12, and 14 demonstrated an alpha of 0.90. With valid answers from all 80 cases teacher rated socially appropriate behaviour as measured by items 1, 5, 8, 9, 11, 13, and 15 had an alpha of 0.88.

Emotion.

Using valid answers from 80 cases, the Cronbach’s alpha of the six-item emotionality subscale of the *Emotion* questionnaire, measured by questions 1, 2, 5, 6, 9, and 10 was 0.58. The alpha of the 6-item emotion regulation scale, using questions 3, 4, 7, 8, 11, and 12 was 0.83. Scores of the emotionality subscale were reversed, and combined with the emotion regulation subscale to give a measure of the complete tool. The internal consistency of the tool using combined subscales was 0.79, which is adequate for valid research. The subscales were therefore not included in further analysis. Appendix H lists the final scoring of each measure. Appendix I shows the distribution of each scale and subscale.

Descriptive statistics (exposure and outcome measures).

Item responses from the child and teacher questionnaires were then used to calculate each child’s score for all constructs listed above. Each instrument was assessed for normality, and for outliers. Univariate outliers were given a raw score either one unit smaller or larger than the next most extreme score in the distribution (Allen & Bennett, 2010).

Sociodemographic variables.

Descriptive statistics of the sociodemographic variables related to the family of each participating child were calculated.

Child predictors.

One-way ANOVAs with post-hoc Bonferroni were used to determine if statistically significant differences existed between mean scores for children in Pre-primary, Year 1, and Year 2 on the various measures of social and emotional development. Independent samples *t* tests were used to determine if statistically significant differences existed between mean scores for males and females on the various measures of social and emotional development. Each group of scores were assessed for homogeneity of variance; and were also assessed for normality before and after transformation for positive skew using natural logarithm or square root or negative skew using square or cube. The *t* test was used despite strong positive skews in aggression as *t* test is considered by Allen and Bennett (2010) to be robust against small to moderate violations of the normality assumption in a sample size of 40 or more with relatively equal group sizes, and the available data fit the same criteria.

Family predictors.

One-way ANOVAs with post-hoc Bonferroni were used to determine if there were statistically significant differences between mean score for the family predictors of SEIFA, adults living in the child's home, highest level of education completed by the child's mother, number of siblings living at home, age of siblings, and gender of siblings on the measures of social and emotional development. Independent samples *t* tests were used to determine if statistically significant differences existed between the mean scores for family predictor age of mother at time of consent to study on the measures of social and emotional development. In the analysis for age of siblings, the variable "same and younger" was removed as this group contained only two children (twins), thus confidentiality would have been compromised by including them. Results were listed by table for the categories of SEIFA, and highest level of education completed by mother, and number of siblings at home, as these are most relevant to this study.

Linear regression models.

The strength of relationships between predictor and response variables was assessed using linear regression models. The assumption of normal distribution for each continuous variable was not met for any of the dependant variables: total aggression, covert aggression, or sympathy/empathy. After adjusting for outliers using one unit higher than the largest non-outlier, natural log, or square root, the Shapiro-Wilk score remained at $p < 0.001$; thus the assumption of normality was still not met. Because of the skewed data in the dependent variables, each scatterplot revealed heteroscedasticity, thus the assumption of homoscedasticity was not met for any of the regression analyses (Allen and

Bennett, 2010, p.180). Review of the literature suggested that violation of the assumptions of normal distribution and homoscedasticity do not invalidate regression, but they may cause the p-value to be underestimated. This effect is minimised by having a larger sample size (Munro, 2005). In assessing for outliers, the Mahalanobis distance was within acceptable limits according to Allen and Bennett (2010, p.180), with little or no difference when adjusted for outliers. The assumption of multicollinearity $r > \text{or} = 0.85$, was assessed by Tolerance and by Variance Inflation Factor (VIF). Each statistic showed a Tolerance measure > 0.2 , and $VIF < 5$, and therefore all results met the assumption for multicollinearity (Allen and Bennett, 2010). The total aggression, covert aggression, and sympathy/empathy scales were therefore used as dependant variables.

Ethics and Consent

Ethics approval was obtained from Curtin University Human Research/Animal Ethics Committee (Approval Number HR 134/2009) on 20 November 2009. The participating school submitted the protocol to ethical review using a process which is based on policy developed by the Education Department of Western Australia (Department of Education and Training, 2009). Written informed consent to participate was obtained from parents. To ensure privacy, the parent information sheet and consent form (Appendices A and B) the child information sheet (Appendix C), and the parent questionnaire (Appendix D) were sent to the parents/guardians via the school. The information sheet included contact details for the researcher (email and phone). The parents returned signed consent forms to the school. No identifying personal information for children, such as address, date of birth, or surname of children was collected. Children and parents were given the right to withdraw at any time without negative consequence or prejudice to their education. The researcher organised to refer children to the school counsellor for immediate attention if it was required, however the need for this did not arise.

Confidentiality and data storage.

To maintain confidentiality, a research identifier (ID) number was assigned to each participating student. No identifying personal information for children, such as surname, address or date of birth was collected. All information collected was identified by study ID number only, and was coded and stored in a locked filing cabinet at the secondary school in the health centre. Study data and original research documents, including consent forms and questionnaires, will be stored in a secure environment for a minimum of five years and will be disposed of in a manner that maintains the privacy and confidentiality of all participants (Department of Education and Training, 2009). The

researcher and supervisors are the only persons who can access this data. Computer data were identified by study number only, and access has been restricted by security password to the researcher and research supervisors. Results will be published in a form that does not allow the public identification of the school or any individual.

Dissemination

As well as presenting them in a thesis, the results of the study will be disseminated by publications in peer-reviewed journals and presentations at local and national conferences. A report of findings was given to the executive committee of the school concerned.

Chapter 4: Results

Prevalence Data

In total, 155 children were invited to participate, and of those 80 were consented to the study by their parents, a response rate of 52 per cent. All children and teachers co-operated with data collection, therefore data were available for 80 children. Table 4.1 shows the number of children participating in the study by year group and gender. Of the total number of children participating 35 per cent were Pre-primary, 30 per cent were Year One, and 35 per cent Year Two. Males and females were equally represented.

Table 4.1: Descriptive Statistics of Participating Children: School Year and Gender

Descriptive variable	Number of participating children	Percent of total number in study
Year Group		
Pre-primary	28	35%
Year One	24	30%
Year Two	28	35%
Gender		
Female	40	50%
Male	40	50%

Note. n = 80

The ages of children by school year group are presented in Table 4.2. The mean age of Pre-primary children was five years two months, Year One children six years two months, and Year Two children seven years two months. There was no overlap in age by year group, with the exception of one 80 month old in each year group of Year One and Year Two.

Table 4.2: Age by School Year Group (in months)

Descriptive variable	Mean age	Minimum age	Maximum age
Year Group			
Pre-primary	62.7	58	68
Year One	74.6	70	80
Year Two	86.9	80	92

Table 4.3 lists the number of children consented to the study in comparison to the number not consented. Approximately 57 per cent of Pre-primary children participated in the study, 46 per cent Year One, and 52 per cent of Year Two. More females than males participated from the total sample.

Table 4.3: Children Consented to Study

Descriptive variable	Total number of children invited to participate	Total number of children that did participate	Percentage that participated by year group and gender
Year Group			
Pre-primary	49	28	57.1%
Year One	52	24	46.2%
Year Two	54	28	51.8%
Gender			
Female	73	40	54.8%
Male	82	40	48.8%

Socio-economic Indexes for Areas of the Index of Relative Socio-economic Advantage and Disadvantage (SEIFA) by postcode was available for 70 of 75 children not consented to the study. The mean SEIFA for participating children was not significantly different to the mean for non-participating children ($t(127) = -0.57, p = 0.57$, two-tailed, $d = 0.04$) (Table 4.4).

Table 4.4: Descriptive Statistics of Participating and Non-Participating Children by SEIFA

Descriptive variable	Total number	SEIFA			
		N	Minimum	Maximum	Mean (SD)
Participants	80	79	3	10	7.73 (2.23)
Non-participants	75	70	3	10	7.53 (2.17)

Note. N = number of children for which SEIFA was identified by residential postcode; SD = standard deviation

Cronbach's alpha was calculated for each scale and subscale of tools used for data collection. The alpha of each measure is listed in Table 4.5. Each measure with an alpha above 0.7 was used in the final analysis, as alpha 0.7 is generally considered adequate for demonstrating internal consistency between items (Allen & Bennett, 2010).

Table 4.5: Descriptive Statistics for Each Tool and Subscale Used in Final Analysis (Dependant Variables)

	Construct Description	Number of cases with valid results	alpha
Child Report			
My Friends	Peer related loneliness	80	0.51
My Feelings	Affective empathy	77	0.64
My School	Attitude to school	80	0.79
School liking	School liking	80	0.83
Peer Support	Perceived peer support	80	0.57
Teacher Report			
CSBS			
Prosocial	Prosocial behaviour	79	0.92
Aggression	Overt, covert, proactive and reactive aggression	80	0.93
Covert aggression	Covert aggression	80	0.85
TRCB			
Socially appropriate behaviour	Socially appropriate behaviour	80	0.88
Sympathy / empathy	Sympathy or empathy	78	0.90
Emotion	Emotion regulation and emotionality total score	80	0.79
Emotionality	Emotionality	80	0.58
Emotion regulation	Emotion regulation	80	0.83

Note. n = 80; alpha = Cronbach's alpha

Table 4.6 shows the descriptive statistics of the sociodemographic exposure variables related to the family of each participating child. The majority of children lived in homes with both their mother and father (90%). There were no children in foster care or other care. Approximately 69 per cent of mothers were aged between 30 and 39 at the time of consenting their children to the study. Of the highest level of education completed by the mother, 15 per cent had completed Year 12 or less; approximately 49 per cent had attained education to certificate or diploma level; and approximately 36 per cent to degree or higher. The majority of children had one or two siblings (75%), approximately nine per cent had no siblings, and 16 per cent had three or more siblings.

Table 4.6: Descriptive Statistics of Independent Variables

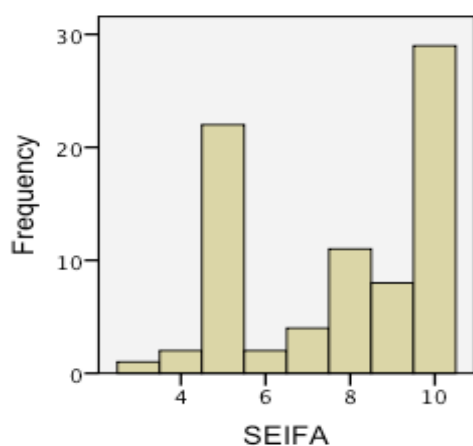
Predictor variable	Frequency	Percent of total number
Adults living in child's home		
Mother alone	5	6.25%
Mother and father	72	90%
Extended family in home	3	3.75%
Mother's age at consent to study		
25<30	1	1.25%
30<40	55	68.75%
40+	24	30%
Highest level of education completed by mother		
Year 12 or Less	12	15%
Certificate, Diploma or Associate Degree	39	48.75%
Bachelor or Post Graduate	29	36.25%
Number of siblings living at home		
No siblings	7	8.75%
One or two siblings	60	75%
Three or more siblings	13	16.25%
Age of siblings		
Older only	31	38.75%
Younger only	26	32.5%
Older and younger	14	17.5%
Same and younger (not included in analysis)	2	2.5%
No siblings	7	8.75%
Gender of siblings		
Female only	27	33.75%
Male only	26	32.5%
Female and male	20	25%
No siblings	7	8.75%

Note. n = 80

Socio-economic Indexes for Areas (SEIFA).

The Index of Relative Socio-economic Advantage and Disadvantage (labelled as SEIFA) according to residential postcode was available for 79 of 80 cases. The mean SEIFA was 7.7 (SD 2.2), the median SEIFA was 8. A higher score indicated relative advantage. As can be seen from Figure 4.1, the data were negatively skewed, with a Shapiro-Wilk statistic of 0.00.

Figure 4.1: Frequency of Each Category of SEIFA



The SEIFA had a bimodal distribution, and for this reason it was recoded into three categories that reflected the distribution: *three, four and five; six, seven and eight; nine and ten*. As shown by Table 4.7 the majority of participants lived in an area of relative advantage according to residential postcode (see Figure 3.1 for reference).

Table 4.7: Descriptive Statistics of SEIFA Recode

Predictor variable	Frequency	Percent of total number
SEIFA		
SEIFA 3,4,5	25	31.25%
SEIFA 6,7,8	17	21.25%
SEIFA 9,10	37	46.25%
Missing	1	1.25%

Note. n = 80

Development

Table 4.8 presents the mean, median, range and standard deviation for each measure of social and emotional development that demonstrated acceptable internal consistency. Table 4.8 shows a wide range of scores, with a high median score, for each measure of attitude to school, school liking, prosocial behaviour, socially appropriate behaviour, sympathy/empathy, and emotion. The highest measured score for aggression was 24 out of a possible 42, and for covert aggression 10 out of a possible 12. The median score for total aggression and covert aggression were 0.

Table 4.8: Descriptive Statistics for Each Instrument and Subscale (Dependent Variables)

	Valid Cases	Mean Score (SD)	Median Score	Range	
				Minimum	Maximum
Child Report					
My School	80	48.7 (8.6)	50	24	63
School liking	80	10.7 (4.4)	12	0	15
Teacher Report					
CSBS					
Prosocial	79	13 (4.8)	14	1	20
Total aggression	80	3.7 (5.8)	0	0	24
Covert aggression	80	1.3 (2.2)	0	0	10
TRCB	78	34.8 (7.5)	36	10	45
Socially appropriate behaviour	80	16.4 (4.0)	17	5	21
Sympathy / empathy	78	18.5 (4.5)	19	5	24
Emotion	80	10 (2.3)	11	0	12

Note. n = 80; SD = Standard Deviation

Child predictors.

Bivariate analyses of child predictors are presented in the following section.

Year at school.

A one-way between groups ANOVA was used to investigate the impact of year at school on each child and teacher measure, results are listed in Table 4.9. The mean score, median score, range, and standard deviation for each measure that required post hoc analysis with Bonferroni are shown in Table 4.10.

One-way between groups ANOVA indicates significantly lower teacher reported aggression by year at school, $F(2, 77) = 5.759$, $p = 0.005$, $\eta^2 = 0.130$, $f = 0.387$. Post hoc analysis with Bonferroni ($\alpha = 0.05$) revealed that the Pre-primary year group, ($M = 6.46$, $SD = 6.32$) had levels of aggression significantly higher than the Year One group, ($M = 2.79$, $SD = 5.45$), and the Year Two group, ($M = 1.71$, $SD = 4.46$), $p = 0.005$, $d = 0.74$. However, there was no significant difference in levels of aggression between children in Year One and Year Two, $p = 1.000$.

The one-way between groups ANOVA showed significantly lower covert aggression between Pre-primary and both Year groups One and Two $F(2, 77) = 12.794$, $p < 0.001$, $\eta^2 = 0.250$, $f = 0.58$. Post hoc analyses showed that Pre-primary children had higher levels of teacher reported covert aggression ($M = 2.79$, $SD = 2.75$), than those in Year One ($M = 0.83$, $SD = 1.49$), and Year Two ($M = 0.32$, $SD = 0.90$). The effect sizes for these comparisons were large, $d = 0.836$ and 1.106 respectively. As with total aggression, there was no significant difference in covert aggression between children in Year One and Year Two, $p = 1.000$.

There was no statistical significance in the one-way between groups ANOVA of teacher reported socially appropriate behaviour and year at school; the sympathy or empathy subscale of the *Teachers Rating of Children's Behaviour* (TRCB), however, was highly significant, $F(2, 75) = 6.590$, $p = 0.002$, $\eta^2 = 0.149$, $f = 0.419$, indicating that teacher reported sympathy or empathy was higher by year at school. Cohen (1988) considered this a large effect. Post hoc analyses showed no significant difference in sympathy/empathy between children in the Pre-primary ($M = 17.18$, $SD = 4.8$) and Year One ($M = 17.42$, $SD = 4.6$) groups, $p = 1.000$. There was, however, significantly higher sympathy/empathy in Year Two ($M = 20.96$, $SD = 3.01$), $p = 0.012$, $d = 0.76$ than Year One.

Table 4.9: Summary of Difference between means, F-values, p-value, η^2 , f, and Cohen's d, for Scores on Year at School by One-way ANOVA

Descriptive variable	F-value	Difference Between Means	p- value	η^2	f	d
Child Report						
My School *	(2, 77) 0.209		0.812	0.005	0.073	
School liking *	(2, 77) 0.269		0.876	0.007	0.083	
Teacher Report						
CSBS						
Prosocial *	(2, 76) 1.543		0.220	0.039	0.200	
Aggression *	(2, 77) 5.759		0.005	0.130	0.387	
PP - Year 1		3.673	0.054			0.55
PP - Year 2		4.750	0.005			0.74
Year 1 - Year 2		1.077	1.000			
Covert aggression * **	(2, 77) 12.794		0.000	0.250	0.58	
PP - Year 1		1.952	0.001			0.84
PP - Year 2		2.464	0.000			1.11
Year 1 - Year 2		0.512	1.000			
TRCB						
Socially appropriate * behaviour	(2, 77) 0.973		0.383	0.025	0.159	
Sympathy / empathy *	(2, 75) 2.783		0.002	0.149	0.419	
PP - Year 1		-0.238	1.000			
PP - Year 2		-3.783	0.005			0.68
Year 1 - Year 2		-3.545	0.012			0.76
Emotion * **	(2, 77) 0.763		0.470	0.019	0.140	

Note. * = Assumption of normal distribution not met; ** = Assumption of homogeneity of variance not met; only the significant relationships show variation by the categorical variable.

Table 4.10: Summary of Means, Median Scores, Range, and Standard Deviation for Each Measure of Difference in Year Group that Required Post Hoc Analysis with Bonferroni.

	Mean Score (SD)	Median Score	Range	
			Minimum	Maximum
CSBS				
Aggression	3.7 (5.8)	0	0	24
PP	6.46 (6.33)	5	0	24
Year 1	2.79 (5.45)	0	0	23
Year 2	1.71 (4.46)	0	0	9
Covert aggression	1.3 (2.2)	0	0	10
PP	2.79 (2.75)	2	0	10
Year 1	0.83 (1.49)	0	0	5
Year 2	0.32 (0.90)	0	0	4
TRCB	34.8 (7.5)	36	10	45
Sympathy / empathy	18.5 (4.5)	19	5	24
PP	17.18 (4.8)	16	8	24
Year 1	17.42 (4.6)	18	5	24
Year 2	20.96 (3.01)	21	12	24

Gender.

Table 4.11 lists the results of Independent Samples *t* test used to investigate the effect of gender on child reported attitude to school and school liking, and of teacher reported aggression, covert aggression, sympathy/empathy, and emotion. No significant effect of gender was shown in any of the above measures. Figures 3 and 4 show the box-plot of the distribution of total aggression by gender, and covert aggression by gender. There were two outliers and two extreme values for covert aggression among the female group, and none in the male group. The effect size, however, was low at $d = 0.13$.

Levene's test was significant for the measure of teacher reported prosocial behaviour by gender, ($F = 11.175$, $p = 0.001$), thus homogeneity of variance was not met. Consequently, Welch's *t* test was used to compare girls' prosocial behaviour to that of the boys. The *t* test was statistically significant, with the female group ($M = 14.08$, $SD = 3.69$) reporting higher levels of prosocial behaviour than the male group ($M = 11.79$, $SD = 5.54$), $t(65.915) = 2.146$, $p = 0.036$, two-tailed, $d = 4.7$.

Table 4.11: Summary of t-value, p-value, Cohen's d-scores of Each Measure by Gender using Independent Samples t test (two-tailed).

Descriptive variable	t-value (df)	p-value	d-scores
Child Report			
My School *	-1.142 (78)	0.315	0.25
School liking *	-0.306 (78)	0.760	0.05
Teacher Report			
CSBS			
Prosocial **	**2.146 (65.9)	0.036	0.50
Aggression *	-0.849 (78)	0.399	0.19
Covert aggression *	0.564 (78)	0.574	0.13
TRCB			
Socially appropriate * behaviour	0.221 (78)	0.826	0.005
Sympathy / empathy *	1.182 (76)	0.241	0.24
Emotion *	0.712 (78)	0.478	0.45

Note. * = Assumption of normal distribution not met; ** = Assumption of homogeneity of variance not met; ** = Welsh's t-test used as assumption of homogeneity of variance not met; df = degrees of freedom.

Figure 4.2: Box-plot Showing Distribution of Total Aggression by Gender

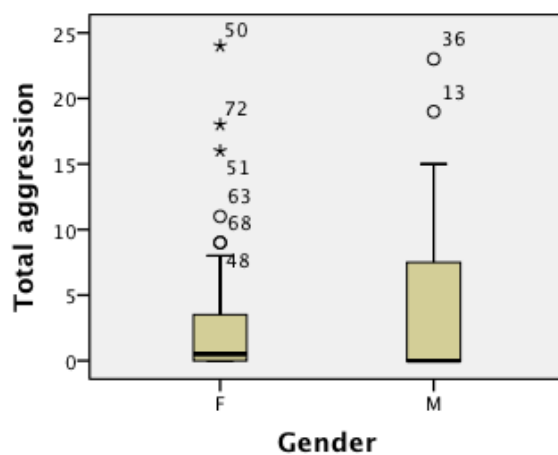
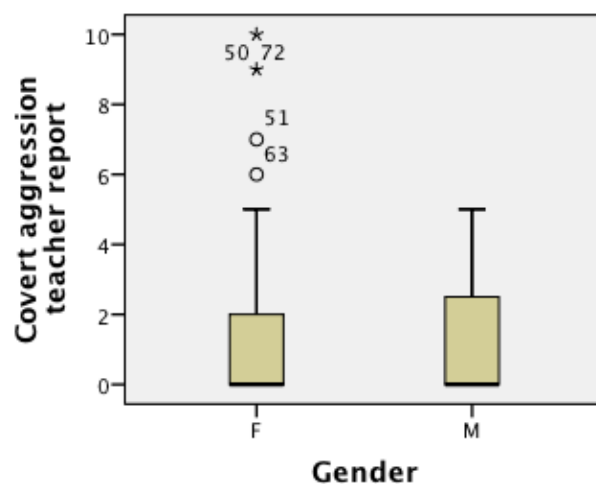


Figure 4.3: Box-plot Showing Distribution of Covert Aggression by Gender



Family predictors.

The two family predictor variables that revealed results of significance in this study were SEIFA, and highest level of education completed by the child's mother. Bivariate analyses for these variables are presented in the following section.

SEIFA.

Results of the one-way between groups ANOVA for the predictor variable SEIFA are shown in Table 4.12. The child report of school liking by SEIFA was statistically significant $F(2, 76) = 3.309$, $p = 0.042$, $\eta^2 = 0.08$, $f = 0.295$, indicating that children's attitude to school was influenced by SEIFA. Post hoc analyses with Bonferroni revealed that children from SEIFA category 3,4,5 ($M = 9$, $SD = 5.42$) reported that they liked school less than those in SEIFA 9,10 ($M = 11.54$, $SD = 3.37$), $p = 0.64$, $d = 0.34$. The ANOVA between SEIFA and teacher report of socially appropriate behaviour (TRCB) did not show any significant difference ($\alpha = 0.05$), $F(2, 76) = 2.766$, $p = 0.069$, $\eta^2 = 0.068$.

Table 4.12: Summary of Difference between means, F-values, p-value, η^2 , f, and Cohen's d, for Scores on SEIFA by One-way ANOVA.

Descriptive variable	F-value	Difference Between Means	p-value	η^2	f	d
Child Report						
My School **	(2, 76) 2.255		0.112	0.056	0.244	
School liking * **	(2, 76) 3.309		0.042	0.08	0.295	
SEIFA 3,4,5 – 6,7,8		-2.706	0.128			0.32
SEIFA 3,4,5 – 9,10		-2.541	0.064			0.34
SEIFA 6,7,8 – 9,10		0.165	1.00			-0.24
Teacher Report						
CSBS						
Prosocial	(2, 75) 1.799		0.173	0.046	0.219	
Aggression *	(2, 76) 0.055		0.946	0.001	0.038	
Covert aggression *	(2, 76) 0.098		0.925	0.002	0.045	
TRCB						
Socially appropriate * Behaviour	(2, 76) 2.766		0.069	0.068	0.27	
Sympathy / empathy *	(2, 74) 0.219		0.804	0.006	0.077	
Emotion *	(2, 76) 0.312		0.733	0.008	0.090	

Note. * = Assumption of normal distribution not met; ** = Assumption of homogeneity of variance not met; only the significant relationships show variation by the categorical variable.

Highest level of education completed by mother.

Table 4.13 lists results of the one-way ANOVA investigating the impact of mother's education on each of the measures. Child reported school liking was significantly related to the highest level of education completed by the child's mother $F(2, 77) = 3.356, p = 0.04, \eta^2 = 0.080, f = 0.295$. Post hoc analysis with Bonferroni revealed that children of mothers whose highest education was Year 12 or less ($M = 8.75, SD = 5.429$) reported a lower attitude to school than children whose mothers had completed a Bachelor's degree or post graduate study ($M = 12.17, SD = 3.140, p = 0.063$). Teacher reported prosocial behaviour of children was significantly related to mothers education level, $F(2, 76) = 3.169, p = 0.048, \eta^2 = 0.077, f = 0.289$. Post hoc Bonferroni analysis revealed a lower level of prosocial behaviour reported in children of mothers with a highest level of education of Year 12 or less ($M = 10.85, SD = 5.823$), than those whose mother had completed at least a Bachelor degree ($M = 12.95, SD = 4.806, p = 0.051$). The teacher report of children's total emotion score by mother's education was statistically significant $F(2, 77) = 4.468, p = 0.015, \eta^2 = 0.104, f = 0.341$. Post hoc analysis with Bonferroni revealed that the total emotion score of children whose mother's highest education was at certificate or diploma level ($M = 9.36, SD = 2.422$), was lower than that of children whose mother had completed a Bachelor degree or higher ($M = 10.93, SD = 1.28, p = 0.011$). Though one-way ANOVAs did not reveal statistical significance at $\alpha = 0.05$, Cohen's f suggested a medium effect of mother's education on child reported attitude to school ($f = 0.258$), and teacher reported covert aggression ($f = 0.255$), and sympathy/empathy ($f = 0.253$).

Table 4.13: Summary of Difference between means, F-values, p-value, η^2 , f, and Cohen's d, for Scores on Highest Level of Education Completed by Mother by One-way Between Groups ANOVA.

Descriptive variable	F-value	Difference Between Means	p-value	η^2	f	d
Child Report						
My School *	(2, 77) 2.567		0.083	0.062	0.258	
School liking * **	(2, 77) 3.356		0.040	0.080	0.295	
Year 12 or Less – Certificate, Diploma		-1.404	0.953			0.229
Year 12 or Less – Bachelor Degree or Higher		-3.422	0.063			0.537
Certificate, Diploma – Bachelor Degree or Higher		-2.019	0.166			0.444
Teacher Report						
CSBS						
Prosocial	(2, 76) 3.169		0.048	0.077	0.289	
Year 12 or Less – Certificate, Diploma		-2.105	0.534			0.312
Year 12 or Less – Bachelor Degree or Higher		-3.914	0.051			0.559
Certificate, Diploma – Bachelor Degree or Higher		-1.809	0.363			0.360
Aggression * **	(2, 77) 1.275		0.285	0.032	0.182	
Covert Aggression * **	(2, 77) 2.500		0.089	0.061	0.255	
TRCB						
Socially appropriate * Behaviour	(2, 77) 1.108		0.335	0.028	0.170	
Sympathy / empathy * **	(2, 75) 2.413		0.096	0.060	0.253	
Emotion * **	(2, 77) 4.468		0.015	0.104	0.341	
Year 12 or Less – Certificate, Diploma		0.718	1.000			0.223
Year 12 or Less – Bachelor Degree or Higher		-0.931	0.695			0.275
Certificate, Diploma – Bachelor Degree or Higher		-1.649	0.011			0.681

Note. * = Assumption of normal distribution not met; ** = Assumption of homogeneity of variance not met; only the significant relationships show variation by the categorical variable.

Number of siblings at home.

As shown in Table 4.14, one-way ANOVA of each dependant variable and the number of siblings living at home revealed no statistically significant result in teacher reported measures. The child reported measures of attitude to school and school liking revealed that children who had one or two siblings living at home reported a more positive attitude to school, than those who had three or more siblings, $F(2,77) = 4.248$, $p = 0.018$, $\eta^2 = 0.100$, $f = 0.332$. Post hoc analysis with Bonferroni showed that children with one or two siblings ($M = 49.85$, $SD = 7.415$) had a more positive attitude to school than children with three or more siblings ($M = 42.54$, $SD = 12.17$), $p = 0.015$, with a medium effect size ($d = 0.657$). Children's school liking was significantly related to the number of siblings $F(2,77) = 6.344$, $p = 0.003$, $\eta^2 = 0.141$, $f = 0.406$. Post hoc analysis revealed that children with one or two siblings ($M = 11.45$, $SD = 3.698$), liked school more than those with three or more siblings ($M = 7.00$, $SD = 5.612$), $p = 0.002$, with a large effect size ($d = 0.812$).

Table 4.14: Summary of Difference between Means, F-values, p-value, η^2 , f, and Cohen's d, for Scores on Number of Siblings Living at Home by One-way Between Groups ANOVA.

Descriptive variable	F-value	Difference Between Means	p-value	η^2	f	d
Child Report						
My School * **	(2,77) 4.248		0.018	0.100	0.332	
No siblings – One or two siblings		0.150	1.000			0.010
No siblings – Three or more siblings		7.462	0.176			0.437
One or two siblings – Three or more siblings		7.312	0.015			0.657
School liking * **	(2, 77) 6.344		0.003	0.141	0.406	
No siblings – One or two siblings		-0.593	1.000			0.083
No siblings – Three or more siblings		3.857	0.143			0.460
One or two siblings – Three or more siblings		4.450	0.002			0.812
Teacher Report						
CSBS						
Prosocial **	(2, 76) 1.518		0.226	0.038	0.203	
Aggression *	(2, 77) 0.134		0.874	0.003	0.055	
Covert Aggression *	(2, 77) 0.239		0.788	0.006	0.078	
TRCB						
Socially appropriate * behaviour	(2, 77) 1.264		0.288	0.032	0.185	
Sympathy / empathy *	(2, 75) 1.664		0.196	0.042	0.214	
Emotion * **	(2, 77) 1.223		0.300	0.031	0.182	

Note. * = Assumption of normal distribution not met; ** = Assumption of homogeneity of variance not met; only the significant relationships show variation by the categorical variable.

Linear Regression

Linear regression models were built for each of the dependant variables total aggression, covert aggression, and sympathy/empathy. Model one for each linear regression included dummy predictor variables and gender ($F = 0$; $M = 1$). Beginning with a model in which each independent variable was entered at once, a backward stepwise regression analysis was conducted to produce to most parsimonious model in which each predictor was controlled for in the one analysis.

Total aggression.

In combination, the variables of gender, year at school, mother's highest level of education, number of siblings, and IRSAD, accounted for 9% of the variability in total aggression, $R^2 = 0.196$, adjusted $R^2 = 0.091$, $F(9,69) = 1.184$, $p = 0.072$. Table 4.15 shows that total aggression was significantly lower between each of Year One ($\beta = -0.345$, $p = 0.012$), and Year Two ($\beta = -0.428$, $p = 0.003$), than it was at Pre-primary, with the greatest difference between Pre-primary and Year Two. In one-way ANOVA there was no significant difference in aggression between Year One and Year Two ($p = 1.000$). Male children were more aggressive than females after adjusting for year at school, mother's education, number of siblings, and SEIFA ($\beta = 0.205$, $p = 0.072$), this difference however was not statistically significance at alpha 0.05. Total aggression by gender using Independent Samples t test (two-tailed) was not statistically significant ($p = 0.339$), Cohen's $d = 0.19$ suggests a small effect of gender on teacher report of total aggression.

Table 4.15: Linear Regression on Dependant Variable "Total Aggression".

Descriptive variable	B [95%CI]	β	t	p
Gender (cf. male)	7.250	0.205	1.825	0.072
Year Group (cf. Pre-primary)				
Year One	-4.322	-0.345	-2.593	0.012
Year Two	-5.151	-0.428	-2.593	0.003
Mother's Highest Level of Education (cf. Year 12 or less)				
Certificate or Diploma	-1.525	-0.132	-0.803	0.425
Degree or Post Graduate	-3.070	-0.257	-1.535	0.129
Number of Siblings (cf. no siblings)				
One Sibling	0.113	0.010	0.048	0.962
Two or More Siblings	-0.284	-0.024	-0.119	0.906
SEIFA (cf. SEIFA 3,4,5)				
SEIFA 6,7,8	0.611	0.044	0.313	0.755
SEIFA 9,10	0.258	-0.024	-0.119	0.865

Note. cf. = comparative category; B = unstandardised regression coefficient; β = standardised regression coefficient; t statistic = proportion of unique variance in criterion

Covert aggression.

The variables gender, year at school, mother's highest level of education, number of siblings, and SEIFA accounted for 21% of the variability in covert aggression, $R^2 = 0.298$, adjusted $R^2 = 0.207$, $F(9,69) = 3.256$, $p = 0.002$. Table 4.16 shows that there was a statistically significant difference in which covert aggression was lower in both Year One ($\beta = -0.451$, $p = 0.001$), and Year Two ($\beta = -0.525$, $p < 0.001$) than in Pre-primary. The one-way ANOVA revealed no significant difference in covert aggression between Year One and Year Two ($p = 1.000$). In linear regression, children of mother's with a bachelor degree or higher were reported to show less covert aggression ($\beta = -0.274$, $p = 0.084$) than children of mother's who had completed a maximum of Year 12 education. Though this result was not statistically significant at alpha 0.05, one-way ANOVA showed a moderate effect of maternal education on covert aggression ($p = 0.089$, $f = 0.255$).

Table 4.16: Linear Regression on Dependant Variable "Covert Aggression".

Descriptive variable	<i>B</i> [95%CI]	β	<i>t</i>	<i>p</i>
Gender (cf. male)	0.324	0.075	0.720	0.474
Year Group (cf. Pre-primary)				
Year One	-2.109	-0.451	-3.627	0.001
Year Two	-2.357	-0.525	-4.054	<0.001
Mother's Highest Level of Education (cf. Year 12 or less)				
Certificate or Diploma	-0.257	-0.060	-0.387	0.700
Degree or Post Graduate	-1.223	-0.274	-1.753	0.084
Number of Siblings (cf. no siblings)				
One Sibling	0.082	0.019	0.098	0.922
Two or More Siblings	-0.014	-0.003	-0.017	0.987
SEIFA (cf. SEIFA 3,4,5)				
SEIFA 6,7,8	0.622	0.119	0.914	0.346
SEIFA 9,10	0.042	0.010	0.079	0.937

Note. cf. = comparative category; *B* = unstandardised regression coefficient; β = standardised regression coefficient; *t* statistic = proportion of unique variance in criterion

Sympathy/empathy.

Gender, year at school, mother's education, number of siblings, and SEIFA, accounted for 16% of the variability in teacher reported sympathy/empathy, $R^2 = 0.256$, adjusted $R^2 = 0.156$, $F(9,67) = 2.565$, $p = 0.013$. Table 4.17 shows that male gender was associated with lower reported sympathy/empathy than female gender ($\beta = -0.226$, $p = 0.042$). Significantly higher sympathy/empathy was reported between Pre-primary and Year Two ($\beta = 0.466$, $p < 0.01$), but not between Pre-primary and Year One ($\beta = 0.062$, $p = 0.636$). Children of mothers who had completed a degree or post graduate qualification were reported by teachers to be higher in empathy than those whose mothers had completed Year 12 or less, but this result did not reach statistical significance at alpha 0.05 ($\beta = 0.304$, $p = 0.066$) as shown in Table 5. In one-way ANOVA there was a moderate effect of maternal education on empathy ($p = 0.096$, $f = 0.253$).

Table 4.17: Linear Regression on Dependant Variable "Sympathy/Empathy".

Descriptive variable	<i>B</i> [95%CI]	β	<i>t</i>	<i>p</i>
Gender (cf. male)	-1.970	-0.226	-2.073	0.042
Year Group (cf. Pre-primary)				
Year One	0.578	0.062	0.475	0.636
Year Two	4.287	0.466	3.492	0.001
Mother's Highest Level of Education (cf. Year 12 or less)				
Certificate or Diploma	1.878	0.216	1.355	0.180
Degree or Post Graduate	2.774	0.304	1.871	0.066
Number of Siblings (cf. no siblings)				
One Sibling	-0.671	-0.077	-0.386	0.701
Two or More Siblings	-0.994	-0.113	-0.572	0.569
SEIFA (cf. SEIFA 3,4,5)				
SEIFA 6,7,8	0.962	0.092	0.669	0.506
SEIFA 9,10	0.720	0.083	0.641	0.525

Note. cf. = comparative category; *B* = unstandardised regression coefficient; β = standardised regression coefficient; *t* statistic = proportion of unique variance in criterion

Chapter 5: Discussion

Introduction

This section will first present a summary of the main findings, before presenting a discussion of the findings with regard to the current literature. Following this, the strengths and limitations of the study will be discussed briefly, conclusions drawn, and recommendations for current school nurse practice and future research made.

Summary of the Main Findings

Population.

The school in which this study was conducted was scored at 105 (on a socio-economic status score ranging from 85-130) for the Years 2009 to 2012, placing the school at the upper end of a low fee paying category in comparison to schools of a high socio-economic status ranking (Department of Education, Employment and Workplace Relations, 2010; ISCA, 2010). Poor outcomes in health and development are not confined to those of lower socio-economic status; there is a gradient effect across the entire population with the highest concentration of people in the middle class (Hertzman, 1999). A preventive focus that concentrates only on children and families of the lowest socio-economic status will therefore neglect developmental outcomes in the majority of the population. For this reason, it is important to include a middle class focus in research on social and emotional development. The sample in this study was representative of a middle class population, providing a normative perspective on social and emotional development at school entry (Adler & Snibbe, 2003; Mustard, 2006).

Social and emotional development.

After adjusting for potential confounding variables, total aggression was found to be lower between Pre-primary and Year Two, and sympathy/empathy to be higher between Pre-primary and Year Two. These results are consistent with the general age related lower aggression and higher empathy reported in other studies (Catherine & Schonert-Reichl, 2010; Hunter, 2003; Tremblay, 2004). An interesting finding, not reported in the literature, was the significantly lower aggression reported for Year One children than Pre-primary children and the significantly higher empathy reported for year Two children than Year One children. In this study, and consistent with recent findings of Catherine and Schonert-Reichl (2010), girls demonstrated higher sympathy/empathy than boys. There were no significant findings in aggression, covert aggression, or empathy in relation to

SEIFA. In regard to maternal education, although no findings of significance were reported at alpha 0.05, there was a moderate effect of maternal education on both covert aggression and empathy, with less covert aggression and higher empathy reported in children of mothers who had completed a higher level of education.

Findings Related to the Extant Literature

Gender and age.

In this study males were reported to be more aggressive (in total aggression) than female children after accounting for age difference, mother's education, number of siblings, and SEIFA. This is a difficult finding to compare as the empirical literature has focused for the most part on physical aggression in boys and antisocial behaviour or relational aggression in girls (Card, Stucky, Sawalan, & Little, 2008; Schaeffer et al., 2006). In a meta-analysis of sex differences in aggression, Archer (2004, 2012) reported higher levels of physical aggression in boys from 17 months and throughout adulthood. On the other hand, indirect aggression is more common in girls, seen as early as three years of age (Archer, 2012; Ostrov, Woods, Jansen, Casas, & Crick, 2004). In a comprehensive study on developmental trajectories of both physical and indirect aggression in children from two to eight years of age, Côté, Vaillancourt, Barker, Nagin, and Tremblay (2007) found that highly physically aggressive children also tended to have high levels of indirect aggression. An overlap in overt and covert aggression in children of this age is supported by Crick et al. (1997), and may account for the finding in the current study that male children were more aggressive in total aggression than female children.

No gender difference was found in relation to covert aggression in this study. This is contrary to the finding in the recent extensive meta-analysis by Archer (2004, 2012) that girls increasingly use indirect aggression from four years of age. This may be related to the small sample size, or to the method of assessment used for the children in this study in relation to children's age (4.8 years to 7.7 years at time of completing the child report questionnaire). Archer (2004) found a difference in mean weighted effect sizes between measurement methods of indirect aggression; in studies of children from one to 11 years of age the largest effect size was found in methods of direct observation, ($d = 0.74$), followed by peer rating ($d = 0.19$), and teacher rating ($d = 0.13$). This suggests that teacher rating may not adequately reflect true levels of indirect aggression in young children, a finding that is supported by Ostrov et al. (2004). Using an observational method of assessment in children aged 44 to 66 months, Ostrov et al. (2004) found that girls were more relationally aggressive than boys, though these findings were not significant, possibly reflecting that the study was underpowered ($N = 60$). The gender

difference in relational aggression reported by Ostrov et al. (2004) did however correlate with peer reports of relational aggression assessed one year later, $r(19) = 0.63$, $p < 0.01$. The teacher rated measure used as the initial measure in this study may therefore account for the lack of gender difference in covert aggression.

The finding that covert aggression was significantly lower between Pre-primary and Year One but not between Year One and Year Two was contrary to what might be expected if covert aggression increases with age as overt aggression decreases (Archer, 2012; Côté et al., 2007). One possible explanation is the small sample size. Another possible explanation is that there may be an overlap between covert and overt aggression at Pre-primary age. As discussed in Chapter 2 of this paper, Crick, Casas, and Mosher (1997) found a positive correlation between overt and relational aggression in children at five years of age. Crick and Grotpeter (1995) also found a strong significant relation between overt and relational aggression ($r = 0.63$) in third to sixth grade children. Therefore, the findings of covert aggression in the current study may be confounded by total aggression at the same age, with a resultant report of high levels of covert aggression in Pre-primary children. A third possible explanation is that children develop the cognitive awareness to hide relational aggression from adults as they age (Knight et al., 2002; Kochenderfer & Ladd, 1996). This is supported by Archer (2004) as shown above, in that teacher rating of indirect aggression showed a small effect size in comparison to measures of direct observation or peer report. In contrast to this, Bonica et al. (2003) and Crick et al. (1997) found that relational aggression is measurable by teachers in children at three to five years of age, however this could be explained in that children of the same age are unlikely to have the cognitive capacity to hide relationally aggressive acts (Catherine & Schonert-Reichl, 2011; Hunter, 2003). The children in the current study were four to seven years of age. The results of this current study, therefore, may not accurately represent developmental patterns of covert aggression; rather, the behaviours that teachers can see reflect children's cognitive awareness to hide them. A fourth possible contributing factor to the reported lower covert aggression in older children than younger children is that some teachers may not recognise relational aggression in children who appear to have high social competence. For example, Ostrov et al. (2004) reported that verbal aggression was positively associated with teacher-rated prosocial behaviour, $r(26) = 0.43$, $p < 0.05$, and also with teacher-rated peer acceptance for girls, $r(26) = 0.68$, $p < 0.001$. In a comprehensive study that controlled for the correlation between overt and relational aggression, Rose, Swenson, and Waller (2004) found that relational aggression was positively associated with peer report of perceived popularity by Grade 7 and 9 students ($p < 0.01$), though not by Grade 3 and 5 students. These findings suggest that relational aggression, which is often more subtle and sophisticated than overt

aggression, shares an important relation with perceived popularity by older students. This type of covert hostility may not be recognised by teachers, who perceive children's interactions differently to children, or may have relational bias (Young, Boye, & Nelson, 2006).

Because relational aggression is subtle and may not be apparent to adults, it is important to include measures of both child and adult report when measuring relational aggression (Bowie, 2007; Cross et al., 2007). Self-report of aggression, however, may not be reliable. For example, in a meta-analytic review of 148 studies on child and adolescent aggression, Card et al. (2008) found that trained observers were the most reliable reporters of direct versus indirect aggression, and that children's self report of both direct and indirect aggression differed in comparison to adult report, and also by gender. As discussed previously, the child reported measures of peer related loneliness, and of empathy were not included in the final analysis in this study because they did not prove to be reliable. Understanding the normal development of covert aggression in primary school aged children is important as this is likely to be a sensitive period for supporting development of prosocial behaviour, thereby decreasing bullying. This poses the question of how to ethically measure covert relational aggression in young children at school entry using child report or peer report.

In the current study, after accounting for gender, mother's education, number of siblings, and SEIFA, empathy was higher in children at Year Two than Pre-primary, but was not significantly different in children of Pre-primary and Year One. Females were more empathetic than males. Covert aggression, on the other hand, was reported to be lower in children at Year One than those at Pre-primary, but no significant difference was found between Year One and Year Two. It cannot be assumed, however, that covert aggression in children at school entry occurs independently of empathy because of a documented correlation between covert and overt aggression (Card et al., 2008; Côté et al., 2007; Crick et al., 1997). The literature reviewed was unclear as to the age at which covert aggression can be measured, and the age at which cognitive aspects of empathy could reliably be measured in children. If there are cognitive aspects to the development of both empathy and covert aggression, it may be that this is a sensitive time to introduce evidence-based interventions in schools that support the development of social and emotional regulation.

A better understanding of the reasons why children behave in the way that they do may potentially help school nurses to support them appropriately and promote social and emotional competence. Because children who have difficulty with peer relationships are known to present more frequently to the school nurse, the nurse is in an ideal position to identify specific developmental issues through the assessment process. Having identified

the issue, the nurse is also well placed to provide emotional support and facilitate the development of adaptive strategies in conjunction with the child's parent and teacher.

Maternal education.

As discussed previously, to the author's knowledge there is no literature reporting on the effect of mother's education on covert aggression in children at primary school entry. In this study, though not statistically significant at alpha 0.05, maternal education was moderately associated with higher empathy and lower reported covert aggression in children, with a medium effect size. The lack of statistical significance may indicate that this study was underpowered. Also in this study, and consistent with the well documented social gradient in outcomes of learning (Wake et al., 2008), higher levels of maternal education were associated with a more positive attitude to school. Stern (2012) attributed a positive correlation between higher levels of maternal education and children's positive attitude to school with the direct involvement of mothers in their children's learning, and this is supported by Baxter and Hayes (2007). Consistent with findings in the Western Australian Child Health Survey (Zubrick et al., 2005b), emotion regulation was higher in children whose mother had completed a higher level of education, reflecting the effect of human capital on outcomes of wellbeing.

School nurses have an important role in supporting school success. School nursing is a specialised practice that supports healthy development in children, and school nurses work actively with families and children to build their capacity to adapt and learn (Council on School Health Services, 2008). As seen in the results of this current study, and supported widely by literature, a mother's understanding is important to developmental outcomes for her children. Children are likely to internalise the values of their parents, and education informs and empowers parents (Werner & Grant, 2009; Zubrick et al., 2000). Werner and Grant (2009) however, found that mothers were less likely to attribute responsibility to their children for perpetrating relational aggression than physical aggression. As a member of a multidisciplinary team the school nurse is positioned to support mothers in their understanding of current issues such as relational aggression, thereby facilitating developmental trajectories of mental health and school success.

Allen (2003) found that fewer children leave school for health reasons in primary schools with a full time nurse, and proposed that this gives children a greater opportunity for academic success. The stage of school entry, beyond vision and hearing screening, is a time when the nurse can work in conjunction with teaching and support staff to recognise signs of relational stressors that may contribute to anxiety, depression, and the onset of other disorders of mental health. Such support can be through identification and referral, however with the increasing burden on children in relation to problems of mental

health, nurses are also in a position to support school success through research and prevention strategies (Council on School Health Services, 2008). Such strategies do not only encompass support for school aged children, but also for the education of families.

Number of siblings at home.

In bivariate analysis in this study, children with one or two siblings at home reported that they were much happier at school than children with three or more siblings. One possible explanation is that children from a larger family do not enjoy the socialisation of the school environment as much as those with fewer siblings, and that this was reflected in children's own report of school liking in this study. On the other hand, Bradbury (2007) and Brody (2004) proposed that children from larger families might learn social skills that are transferred to the school environment. In this study there were no significant findings in regard to teacher reported social and emotional development associated with the number of siblings at home. This differs to the finding by Bradbury (2007) that social-emotional outcomes improved with family size, though learning outcomes were lower with a larger family size. Research has consistently confirmed a negative relationship between the number of children in a family and children's achievement at school (Grawe, 2005). Brody (2004) recommended further research to understand the role of sibling relationships on social and emotional development. Qualitative research asking children to expound on their relationships in play and work at home and school may further such understanding more fully than quantitative research.

Strengths and Limitations of the Present Study

The greatest strength of the study was that a comprehensive range of validated child, as well as teacher, outcome measures was used and children's data were collected in an environment familiar to them. Another strength was that every question was read individually to each child, and children were able to ask questions and receive feedback throughout the process. A strength of the analysis was that the results were adjusted for key family sociodemographic characteristics. With regard to the assessment of sample bias, it was an advantage that some sociodemographic data were available for both participants and non-participants.

The convenience sampling method that was used and the 52 per cent response rate are both limitations. Having said that, the SEIFA by postcode of students was not significantly different between those who participated and those who did not, suggesting that in terms of socio-economic status participants and non-participants lived in similar areas. Two attempts were made through the school newsletter to increase the response rate with minimal success. However, all schools are very busy places and parents are

asked to engage in many different research projects in the course of every school year (Lonergan, 2006). The school principal indicated that the response to this project was very similar to that obtained in other projects run through the school in recent years.

Another limitation was that due to the sample size the study was possibly underpowered with a number of moderately large effect sizes that were not statistically significant. For example the one-way ANOVA of child reported attitude to school by SEIFA revealed an η^2 0.056, suggesting that 5.6% of the variability in the data could be attributed to SEIFA. Cohen (1988) suggests that this could be considered a moderate effect. The results, however, were not statistically significant.

A limitation in the instruments used was that the Child Social Behaviour Scale included reactive, proactive, overt, covert, and predatory aggression, with only two direct measures of overt aggression and six measures of covert aggression. Hence, statistical analysis used two measures of aggression: total and covert. The study would have been strengthened by comparison of overt aggression and covert relational aggression, rather than comparison of total aggression and covert aggression.

Another limitation was that the child report measures of peer-related loneliness and empathy did not meet an adequate Cronbach's alpha to demonstrate internal consistency. However Card et al. (2008) found in a conclusive meta-analysis that children's self-report of both overt and covert aggression differs to adult report, peer report, and the report of trained observers, the latter being the most reliable. Self-report by children therefore seems to be a limitation of many studies of this type; the child report measures of peer-related loneliness and empathy were therefore not included in this study. Further research could include a valid and reliable child reported measure of empathy and of children's tendency toward covert aggression, or beliefs regarding relational aggression, with a measure of cognitive or language development (Bonica et al., 2003). The ethics of sociometric measures of peer report could also be investigated.

Finally, the fact that Year Two teachers were unable to complete instruments until the first weeks of term three was a limitation. One Year Two teacher observed that children had become less aggressive in their behaviour over the first half of the year. The Year Two teacher reports may, therefore, reflect aggression and empathy closer to the average Year Three level rather than the average Year Two level.

Implications For School Nurse Practice

This study showed that children's aggressive behaviour generally was lower in Year One than in Pre-primary and that their empathetic behaviour was higher in Year Two than Year One. The higher level of reported empathy was not progressive, rather it

occurred between Year One and Year Two, whereas aggression was not significantly lower between Year One and Year Two. These findings suggest that the first years at school are a sensitive period for social development. It is important for parents, teachers, and school nurses to know this so that they may support children appropriately at this time. With advanced evidence-based knowledge of children's social and emotional development, school nurses are ideally placed to inform and guide parents and teachers, as well as providing appropriate care for children. Child health nurses have recognised for a very long time that the whole health care system needs to be based on a model of well-care, rather than sick-care (Armstrong, 2004; Duffy, 1988; Schmied et al., 2008). They have also been saying that health care policy and practice should focus on the earliest years of life because this is when trajectories of development are most amenable to change (Olds, 2008). After many years there is a great deal of evidence to support these claims. In fact, the American Academy of Pediatrics is now calling for child health workers to be "front-line guardians" of healthy child development using science based strategies to build strong foundations for health and education (Shonkoff et al., 2012, p. e232). The finding that aggressive behaviour was lower in Year One than Pre-primary and that empathetic behaviour was higher in Year Two than Year One is important for school nurses, who are front-line guardians for supporting health and education in all school children.

School entry is a critical period in development, in which there is separation from primary caregivers, with the added stress of building new relationships with peers and adults, and in which bullying peaks (Commissioner for Children and Young People, 2011). At the same time children of this age are still learning to regulate their behaviour within the context of supportive adult relationships. As potential leaders of the multidisciplinary team of staff who work with children in schools to promote wellbeing, nurses care for young children at a critical period in their social, emotional, and cognitive development. There is potential for nurses to promote the introduction of evidence-based interventions in schools that support the development of social and emotional regulation. An example of such a program that has involved the partnership of nurses, teachers, and members of the community is "Roots of Empathy" (Cain & Carnellor, 2008; Gordon, 2005). The long-term evaluation of such programs will be important, because the effects are likely to be felt over many years and impact upon adolescent and adult health and wellbeing (Kendall et al., 2006; Shonkoff et al., 2012).

Conclusion

School nurses are ideally placed to promote health and wellbeing in children. This study, by a school nurse, provides evidence about children's social and emotional development at the time of school entry that school nurses and others can use to shape their practice delivery. From school entry to Year Two, social competence is seen in positive peer relationships and successful school adjustment. These in turn facilitate the development of literacy and numeracy and ability to learn at school. All too often, however, children's early schooling is hampered by aggressive behaviour. Both children who bully others and those being bullied frequently present to the school nurse with somatic symptoms. While the important role of schools and school nurses in enhancing the wellbeing of children through health promotion and early intervention is highlighted in the current literature, the best way to do this remains unclear (Runions 2008, Shonkoff et al. 2012). It is anticipated that more detailed knowledge and understanding of children's aggression and prosocial behaviour at school entry will facilitate the development of more effective school nurse and teacher interventions.

Further study of developmental patterns of relational aggression and empathy at the age of school entry, using a measure of aggression that clearly distinguishes between covert relational aggression and overt or physical aggression is warranted. Reliable measures of child report of both aggression and empathy must also be included, as covert aggression may be hidden from teachers and researchers. It is recommended that measures of cognitive development and language be included, allowing for analysis of the development of cognitive empathy, covert aggression, and cognitive capacity (Bonica et al., 2003). A relevant question is how to most ethically measure age and gender related development of relational aggression in young children, while promoting wellbeing and positive relationship. Such measurement would ideally include child and adult report of relational aggression.

While more research is required, this study has demonstrated how important it is that school nurses and teachers do not label children at school entry, but instead recognise that behaviour occurs as a result of developmental processes that combine social, biological and neurological pathways. At school entry, aggression is naturally higher, and in the first years of schooling the development of prosocial behaviour is a milestone that affects long-term outcomes of learning and health. Because of this it is important that school nurses, teachers, and support staff, surround children with safety as they begin school, so as to facilitate developmental pathways of protection.

Bibliography

- Achenbach, T. M. (1982). *Developmental psychopathology* (Second.). New York: John Wiley and Sons, Inc.
- Adams, S., & Barron, S. (2009). Use of evidence-based practice in school nursing: Prevalence, associated variables, and perceived needs. *Worldviews on Evidence-Based Nursing*, 6(1), 16–26.
- Adler, N., & Snibbe, A. (2003). The role of psychosocial processes in explaining the gradient between socioeconomic status and health. *Current Directions in Psychological Science*, 12(4), 119–123.
- Allen, G. (2003). The Impact of Elementary School Nurses on Student Attendance. *The Journal of School Nursing*, 19(4), 225–231. doi:10.1177/10598405030190040801
- Allen, P., & Bennett, K. (2010). *PASW statistics by SPSS: A practical guide version 18*. South Melbourne, Australia: Cengage Learning Australia Pty Limited.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders (DSM-IV)* (4th ed.). Washington DC: American Psychiatric Association.
- Archer, J. (2004). Sex differences in aggression in real-world settings: A meta-analytic review. *Review of General Psychology*, 8(4), 291–322. doi:10.1037/1089-2680.8.4.291
- Archer, J. (2012). Sex differences in the development of aggression from early childhood to adulthood. In R. E. Tremblay, M. Boivin, & R. D. Peters (Eds.), *Encyclopedia on Early Childhood Development* (pp. 1–5). Montreal, Quebec: Centre of Excellence for Early Childhood Development and Strategic Knowledge Cluster on Early Child Development.
- Armstrong, F. (2004). More than just bandaids: The emerging role of school nurses. *Australian Nursing Journal*, 11(10), 18–21.

- Australian Bureau of Statistics. (2006a). 4102.0 - Australian Social Trends, 1997.
Retrieved January 9, 2012, from
<http://www.abs.gov.au/ausstats/abs@.nsf/2f762f95845417aeca25706c00834efa/f757d567b9b9b9eeca2570ec001b074e!OpenDocument>
- Australian Bureau of Statistics. (2006b). 2039.0 - Information paper: An introduction to Socio-Economic Indexes for Areas (SEIFA), 2006. Retrieved March 28, 2011, from
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/2039.0Appendix82006?opendocument&tabname=Notes&prodno=2039.0&issue=2006&num=&view=>
- Australian Curriculum and Reporting Authority. (2010). My School. *My School*. Retrieved November 11, 2010, from <http://www.myschool.edu.au/>
- Barker, E. D., Boivin, M., Brendgen, M., Fontaine, N., Arseneault, L., Vitaro, F., ... Tremblay, R. E. (2008). Predictive validity and early predictors of peer-victimization trajectories in Preschool. *Archives of General Psychiatry*, 65(10), 1185–1192.
- Baxter, J., & Hayes, A. (2007). How four year-olds spend their days: Insights into the caring contexts of young children. *Family Matters*, 76, 34–43.
- Begg, S., Vos, T., Barker, B., Stevenson, C., Stanley, L., & Lopez, A. D. (2007). *The burden of disease and injury in Australia 2003* (No. PHE 82) (p. 323). Canberra: The Australian Institute of Health and Welfare. Retrieved from
<http://www.aihw.gov.au/publication-detail/?id=6442467990&libID=6442467988>
- Bierman, K. L., Domitrovich, C. E., Nix, R. L., Gest, S. D., Welsh, J. A., Greenberg, M. T., ... Gill, S. (2008). Promoting academic and social-emotional school readiness: The Head Start REDI Program. *Child Development*, 79(6), 1802 – 1817.
- Bjerkedal, T., Kristensen, P., Skjeret, G., & Brevik, J. (2007). Intelligence test scores and birth order among young Norwegian men (conscripts) analyzed within and between families. *Intelligence*, 35, 503–514.
- Bogart, G. A., Jones, J. W., & Jason, L. (1980). School Sentiment Inventory. *Journal of Community Psychology*, 8(4), 343–352.

- Bonica, C., Arnold, D. H., Fisher, P. H., & Zeljo, A. (2003). Relational aggression, relational victimization, and language development in preschoolers. *Social Development, 12*(4), 551–562.
- Bowie, B. H. (2007). Relational aggression, gender, and the developmental process. *Journal of Child and Adolescent Psychiatric Nursing, 20*(2), 107–115.
doi:10.1111/j.1744-6171.2007.00092.x
- Bowie, B. H. (2010). Emotion regulation related to children's future externalizing and internalizing behaviors. *Journal of Child and Adolescent Psychiatric Nursing, 23*(2), 74–83. doi:10.1111/j.1744-6171.2010.00226.x
- Bradbury, B. (2007). *Child outcomes and family socio-economic characteristics. Final report of the project: LSAC outcomes and the family environment.* (p. 45). Social Policy Research Centre: University of New South Wales.
- Brauner, C. B., & Stephens, C. B. (2006). *Estimating the prevalence of early childhood serious emotional/behavioral disorders: Challenges and recommendations* (Special Report on Child Mental Health) (pp. 303–310). New Orleans: Association of Schools of Public Health.
- Bridges, L. J., Denham, S. A., & Ganiban, J. M. (2004). Definitional issues in emotion regulation research. *Child Development, 75*(2), 340–345.
- Brody, G. (2004). Siblings' Direct and Indirect Contributions to Child Development. *Current Directions in Psychological Science, 13*(3), 124–126.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design.* USA: Harvard University Press.
- Bronfenbrenner, U. (1995). Developmental ecology through space and time: a future perspective. In P. Moen, G. H. Elder, & K. Luscher (Eds.), *Examining Lives in Context: Perspectives on the Ecology of Human Development* (pp. 599–647). Washington, DC: American Psychological Association.

- Bronfenbrenner, U., & Vasta, R. (1989). Ecological systems theory. In *Annals of Child Development: Six Theories of Child Development-Revised Formulations and Current Issues* (6th ed., pp. 187–249). Boston: JAI.
- Brooks, F., Kendall, S., Bunn, F., Bindler, R., & Bruya, M. (2007). The school nurse as navigator of the school health journey: developing the theory and evidence for policy. *Primary Health Care Research & Development*, (8), 226–234.
doi:10.1017/S1463423607000278
- Brooks-Gunn, J. (1995). Children in families in communities: risk and intervention in the Bronfenbrenner tradition. In P. Moen, G. H. Elder, & K. Luscher (Eds.), *Examining Lives in Context: Perspectives on the Ecology of Human Development* (pp. 467–519). Washington, DC: American Psychological Association.
- Brown, K., Atkins, M., Osborne, M. L., & Milnamow, M. (1996). A revised teacher rating scale for reactive and proactive aggression. *Journal of Abnormal Child Psychology*, 24(4), 473–480.
- Bryant, B. K. (1982). An index of empathy for children and adolescents. *Child Development*, 53(2), 413–425.
- Cain, G., & Carnellor, Y. (2008). “Roots of Empathy”: A research study on its impact on teachers in Western Australia. *Journal of Student Wellbeing*, 2(1), 52–73.
- Campbell, Spieker, S., Vandergrift, N., Belsky, J., Burchinal, M., & NICHD Early Childcare Research Network. (2010). Predictors and sequelae of trajectories of physical aggression in school-age boys and girls. *Development and Psychopathology*, 22, 133–150. doi:10.1017/S0954579409990319
- Campo, J. V., Comer, D. M., Jansen-McWilliams, L., Gardner, W., & Kelleher, K. J. (2002). Recurrent pain, emotional distress, and health service use in childhood. *The Journal of Pediatrics*, 141(1), 76–83. doi:10.1067/mpd.2002.125491
- Card, N. A., Stucky, B. D., Sawalan, G. M., & Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender

- differences, intercorrelations, and relations to maladjustment. *Child Development*, 79(5), 1185–1229. doi:10.1111/j.1467-8624.2008.01184.x
- Carlson, E., & Chamberlain, R. M. (2003). Social capital, health, and health disparities. *Journal of Nursing Scholarship*, 34(4), 325–331.
- Catherine, N. A., & Schonert-Reichl. (2011). Children's perceptions and comforting strategies to infant crying: Relations to age, sex, and empathy-related responding. *British Journal of Developmental Psychology*, 29(3), 524 – 551.
doi:10.1348/026151010X521475
- Centre for Educational Research and Innovation. (2008). Understanding the brain: The birth of a learning science. Organisation for Economic Co-Operation and Development. Retrieved from www.oecd.org/dataoecd/39/53/40554190.pdf
- City of Armadale. (2011, October 11). Population and household forecasts. City of Armadale. Retrieved from <http://forecast2.id.com.au/Default.aspx?id=293&pg=5710>
- Cleary, M. J., & Scott, A. J. (2011). Developments in clinical neuropsychology: Implications for school psychological services. *The Journal of School Health*, 81(1), 1. doi:10.1111/j.1746-1561.2010.00550.x
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc.
- Cole, P. M., Martin, S. E., & Dennis, T. A. (2004). Emotion regulation as a scientific construct: Methodological challenges and directions for child development research. *Child Development*, 75(2), 317–333.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *The American Journal of Sociology*, 94(Supplement: Organizations and Institutions: Sociological and Economic Approaches to the Analysis of Social Structure.), S95–S120.
- Commissioner for Children and Young People. (2011). *Report of the Inquiry into the mental health and wellbeing of children and young people in Western Australia*

- (Parliamentary) (p. 194). Western Australia: Commissioner for Children and Young People Western Australia. Retrieved from ccyp.wa.gov.au
- Connor, D. F. (2002). *Aggression and antisocial behavior in children and adolescents: Research and treatment*. New York: The Guilford Press. Retrieved from <http://books.google.com.au/books>
- Cook, C. R., Williams, K. R., Kim, T. E., & Sadek, S. (2010). Predictors of bullying and victimization in childhood and adolescence: A meta-analytic investigation. *School Psychology Quarterly, 25*(2), 65–83. doi:10.1037/a0020149
- Côté, S., Vaillancourt, T., Barker, E. D., Nagin, D., & Tremblay, R. E. (2007). The joint development of physical and indirect aggression: Predictors of continuity and change during childhood. *Development and Psychopathology, 19*(1), 37–55. doi:10.1017/S0954579407070034
- Council on School Health Services. (2008). The role of the school nurse in providing school health services. *The Journal of School Nursing, 24*(5), 269–274. doi:10.1177/1059840508323781
- Crick, N. R., Casas, J. F., & Mosher, M. (1997). Relational and overt aggression in preschool. *Developmental Psychology, 33*(4), 579–588.
- Crick, N. R., & Dodge, K. A. (1996). Social information-processing mechanisms in reactive and proactive aggression. *Child Development, 67*(3), 993–1002.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66*(3), 710–722.
- Cross, D., Erceg, E., & Hearn, L. (2007). *Enhancing children's social and emotional skills: Using evidence-based policy, processes and practices to reduce bullying* (Vol. November). Victoria.
- Cummings, K., & Kaminski, R. (2008). Advances in the Assessment of Social Competence: Findings from a Preliminary Investigation of a General Outcome Measure for Social Behaviour. *Psychology in the Schools, 45*(10), 930–945.

- Cynader, M. S., & Frost, B. J. (1999). Neuronal sculpting by the physical and social environment. In D. Keating P. & C. Hertzman (Eds.), *Developmental Health and the Wealth of Nations* (pp. 153–184). New York: The Guilford Press.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, *44*(1), 113–126.
- DelCarmen-Wiggins, R. (2008). Introduction to the special section: Transformative research on emotion regulation and dysregulation. *Society for Research in Child Development*, *2*(3), 121–123.
- Denham, S. A., Blair, K. A., DeMulder, E., Levitas, J., Sawyer, K., Auerbach-Major, S., & Queenan, P. (2003). Preschool emotional competence: Pathway to social competence? *Child Development*, *74*(1), 238–256.
- Department of Education and Training. Research conducted on Department of Education and Training sites by external parties (2009).
- Department of Education, Employment and Workplace Relations. (2010). Non-Government School SES scores, funding status & levels and remoteness loading - WA. Australian Government. Retrieved from <http://www.deewr.gov.au/Schooling/SchoolingRelatedWebsites/Pages/SchoolsServicePoint.aspx>
- Dodge, K. A., & Coie, J. D. (1987). Social-information processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, *53*(6), 1146–1158.
- Dodge, K. A., Lansford, J. E., Salzer Burks, V. S., Bates, J. E., Pettit, G. S., Fontaine, R., & Price, J. M. (2003). Peer rejection and social information processing factors in the development of aggressive behaviour problems in children. *Child Development*, *74*(2), 374–393.

- Downie, J., Chapman, R., Orb, A., & Juliff, D. (2002). The everyday realities of the multi-dimensional role of the high school community nurse. *Australian Journal of Advanced Nursing, 19*(3), 15–24.
- Doyal, L., & Gough, I. (1991). *A theory of human need*. Houndsmills, Basingstoke (UK): Macmillan.
- Duffy, M. E. (1988). Health promotion in the family: current findings and directives for nursing research. *Journal of Advanced Nursing, 13*(1), 109–117.
doi:10.1111/j.1365-2648.1988.tb01397.x
- Eckersley, R. (2011). A new narrative of young people's health and well-being. *Journal of Youth Studies, (iFirst)*, 1–12.
- Ehrenberg, R. G., & Brewer, D. J. (1994). ScienceDirect - Economics of Education Review Do school and teacher characteristics matter? Evidence from High School and Beyond. *Economics of Education Review, 13*(1), 1–17. doi:10.1016/0272-7757(94)90019-1
- Eisenberg, N., Fabes, R. A., Shepard, S. A., Murphy, B. C., Jones, S., & Guthrie, I. K. (1998). Contemporaneous and longitudinal prediction of children's sympathy from dispositional regulation and emotionality. *Developmental Psychology, 34*(5), 910–924.
- Eisenberg, N., Fabes, R., Murphy, B., Karbon, M., Smith, M., & Maszk, P. (1996). The relations of children's dispositional empathy-related responding to their emotionality, regulation, and social functioning. *Developmental Psychology, 32*(2), 195–209.
- Eisenberg, N., & Spinrad, T. (2004). Emotion-related regulation: Sharpening the definition. *Child Development, 75*(2), 334–339.
- Elias, M., & Haynes, N. (2008). Social Competence, Social Support, and Academic Achievement in Minority, Low-Income, Urban Elementary School Children. *School Psychology Quarterly, 23*(4), 474–495.

- Fablo, T., Kim, & Chen, K. (2009). Alternate models of sibling status effects on health in later life. *Developmental Psychology, 45*(3), 677–687.
- Frith, S., & Narikawda, D. (1972). *Attitude toward school grades K-12*. Los Angeles: Instructional Objectives Exchange.
- Gage, F. H. (2004). Structural plasticity of the adult brain. *Dialogues in Clinical Neuroscience, 6*(2), 135–142.
- Goossens, L., & Beyers, W. (2002). Comparing measures of childhood loneliness: internal consistency and confirmatory factor analysis. *Journal of Clinical Child & Adolescent Psychology, 31*(2), 252–262. doi:10.1207/S15374424JCCP3102_10
- Gordon, M. (2003). Roots of Empathy: responsive parenting, caring societies. *Keio Journal of Medicine, 52*(4), 236–243.
- Gordon, M. (2005). *Roots of Empathy: Changing the World Child by Child*. Ontario: Thomas Allen Publishers.
- Gouley, K., Brotman, L., & Shrout, P. (2008). Construct validation of the Social Competence Scale in Preschool-age children. *Social Development, 17*(2), 380–398.
- Grawe, N. (2005). Family Size and Child Achievement. Carleton College Department of Economics.
- Grawe, N. D. (2005). *Family size and child achievement* (No. 2005-06) (p. 28). Minnesota: Carleton College. Retrieved from <http://apps.carleton.edu/curricular/econ/workingpapers/>
- Graziano, P. A., Reavis, R. D., Keane, S. P., & Calkins, S. D. (2007). The role of emotion regulation in children's early academic success. *Journal of School Psychology, 45*(1), 3–19. doi:http://dx.doi.org/10.1016/j.jsp.2006.09.002
- Hamilton, M., & Redmond, G. (2010). *Conceptualisation of social and emotional wellbeing for children and young people, and policy implications* (A research report for the Australian Research Alliance for Children and Youth and the Australian Institute of

- Health and Welfare) (p. 75). University of New South Wales: Social Policy Report Centre.
- Harter, S. (1982). The perceived competence scale for children. *Child Development*, 53(1), 87–97.
- Hertzman, C. (1999). The biological embedding of early experience and its effects on health in adulthood. *Annals of the New York Academy of Sciences*, 896, 85–95. doi:10.1111/j.1749-6632.1999.tb08107.x
- Heyne, D., King, N., Tonge, B., Rollings, S., Young, D., Pritchard, M., & Ollendick, T. (2002). Evaluation of child therapy and caregiver training in the treatment of school refusal. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(6), 687–695.
- Hoffman, D. M. (2009). Reflecting on social emotional learning: A critical perspective on trends in the United States. *Review of Educational Research*, 79(2), 533–556.
- Hunter, K. R. (2003). *Affective empathy in children: Measurement and correlates*. Griffith University. Retrieved from <http://www4.gu.edu.au:8080/adt-root/public/adt-QGU20040610.135822/index.html>
- Huston, A. C., & Bentley, A. C. (2010). Human development in societal context. *Annual Review of Psychology*, 61, 411–437. doi:10.1146/annurev.psych.093008.100442
- ISCA. (2010). Independent schooling in Australia 2010 snapshot. ISCA Independent Schools Council of Australia. Retrieved from <http://www.isca.edu.au/>
- Izard, C. E. (2007). Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on Psychological Science*, 2(3), 260–280. doi:10.1111/j.1745-6916.2007.00044.x
- Kappas, A. (2002). The science of emotion as a multidisciplinary research paradigm. *Behavioural Processes*, 60, 85–98.
- Keating, D. P., & Hertzman, C. (Eds.). (1999). *Developmental Health and the Wealth of Nations*. New York: The Guilford Press.

- Kendall, G. E. (2003). *Children in families in communities: a modified conceptual framework and an analytic strategy for identifying patterns of factors associated with developmental health problems in childhood* (PhD thesis). University of Western Australia, Perth.
- Kendall, G. E., & Li, J. (2005). Early childhood socialization and social gradients in adult health: A commentary on Singh-Manoux and Marmot's "Role of socialization in explaining social inequalities in health". *Social Science and Medicine*, 61, 2272–2276. doi:10.1016/j.socscimed.2005.08.034
- Kendall, G. E., Schonert-Reichl, K., Smith, V., Jacoby, P., Austin, R., Stanley, F., & Hertzman, C. (2006). *The evaluation of "Roots of Empathy" in Western Australian schools* (p. 35). Perth: Telethon Institute for Child Health Research.
- Kendall, G. E., Van Eekelen, J. A. M., Li, J., & Mattes, E. (2009). Children in harm's way: a global issue as important as climate change. Forum on Public Policy. Retrieved from forumonpublicpolicy.com/spring09papers/archivespr09/kendall.pdf
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV Disorders in the National Comorbidity Survey Replication -- Kessler et al. 62 (6): 593 -- Archives of General Psychiatry. *Archives of General Psychiatry*, 62(6), 593–602.
- Kimura, D. (2002). Sex differences in the brain. *Scientific American*, (Hidden Mind), 32–37.
- Knight, G., Guthrie, I., Page, M., & Fabes, R. (2002). Emotional arousal and gender differences in aggression: A meta-analysis. *Aggressive Behaviour*, 28, 366–393.
- Kochenderfer, B., & Ladd, G. W. (1996). Peer Victimization: Manifestations and Relations to School Adjustment in Kindergarten. *Journal of School Psychology*, 34(3), 267–283.
- Koshland, E. (2007). Addressing issues of social and learning capital. In *Building Social Capital in an Educational Context: A CSE Symposium* (Vol. July, pp. 7–10). Victoria: Centre for Strategic Education.

- Kreuter, M. W., & Lezin, N. (2002). Implications for community-based health promotion. In R. J. DiClemente, R. A. Crosby, & M. C. Kegler (Eds.), *Emerging Theories in Health Promotion Practice and Research: Strategies for Improving Public Health*. San Francisco: Jossey_Bass. Retrieved from <http://books.google.com.au/books>
- Krieger, N. (2001). Theories for social epidemiology in the 21st century: an ecosocial perspective. *International Journal of Epidemiology*, 30(4), 668–677.
- Ladd, G. W. (2000). Having friends, making friends, and being liked by peers in the classroom: Predictors of children's early school adjustment. In P. K. Smith & A. D. Pellegrinin (Eds.), *Psychology of Education: Major Themes* (Vol. Three). London: RoutledgeFalmer. Retrieved from <http://books.google.com.au/books>
- Ladd, G. W., & Price, J. M. (1987). Predicting children's social and school adjustment following the transition from preschool to kindergarten. *Child Development*, 58(5), 1168–1189.
- Ladwig, J., & Khan, K. A. (2007). School avoidance: Implications for school nurses. *Journal for Specialists in Pediatric Nursing*, 12(3), 210–212.
- Langlois, J. H. (2004). Editorial: Emotion and emotion regulation from another perspective. *Child Development*, 75(2), 315–316.
- Lauder, W., Burton, C., Roxburgh, C. Mi., Themessel-Huber, M., O'Neill, M., & Abubakari, A. (2009). Psychosocial health and health-related quality of life in school pupils 11-18 years. *Journal of Clinical Nursing*, 19, 1821–1829. doi:10.1111/j.1365-2702.2008.02653.x
- Lewis, M. D., & Stieben, J. (2004). Emotion regulation in the brain: Conceptual issues and directions for developmental research. *Child Development*, 75(2), 371–376.
- Lieb, R., Zimmermann, P., Friis, R. H., Höfler, M., Tholen, S., & Wittchen, H.-U. (2002). The natural course of DSM-IV somatoform disorders and syndromes among adolescents and young adults: a prospective-longitudinal community study. *European Psychiatry*, 17, 321–331.

- Lonergan, J. (2006). How to engage parents - and how to evaluate that engagement. Australian Parents Council. Retrieved from www.familyschool.org.au/pdf/howtoengageparents.pdf
- Lovett, B. J., & Sheffield, R. A. (2007). Affective empathy deficits in aggressive children and adolescents: A critical review. *Clinical Psychology Review, 27*, 1–13. doi:<http://dx.doi.org/10.1016/j.cpr.2006.03.003>
- Luthans, F., Youssef, C. M., & Avolio, B. J. (2007). *Psychological capital: developing the human competitive edge*. New York: Oxford University Press. Retrieved from <http://books.google.com.au/books>
- Maggi, S., Irwin, L. G., Siddiqi, A., Poureslami, I., Hertzman, E., & Hertzman, C. (2005). *Knowledge Network for Early Childhood Development. Analytic and strategic review paper: International Perspectives on Early Child Development*. World Health Organisation.
- McEwen, B. S. (2004). Structural plasticity of the adult brain: how animal models help us understand brain changes in depression and systemic disorders related to depression. *Dialogues in Clinical Neuroscience, 6*(2), 119–134.
- McEwen, B. S., & Gianaros, P. J. (2010). Central role of the brain in stress and adaptation: Links to socioeconomic status, health, and disease. *Annals of the New York Academy of Sciences, 1186*, 190–222. doi:[10.1111/j.1749-6632.2009.05331.x](https://doi.org/10.1111/j.1749-6632.2009.05331.x)
- McLaughlin, K. A., Hatzenbuehler, M. L., & Hilt, L. M. (2009). Emotion dysregulation as a mechanism linking peer victimization to internalizing symptoms in adolescents. *Journal of Consulting and Clinical Psychology, 77*(5), 894–904. doi:[10.1037/a0015760](https://doi.org/10.1037/a0015760)
- McWayne, C., & Cheung, K. (2009). A picture of strength: Preschool competencies mediate the effects of early behavior problems on later academic and social adjustment for Head Start children. *Journal of Applied Developmental Psychology,*

- In Print*. Retrieved from
<http://www.sciencedirect.com.dbgw.lis.curtin.edu.au/science>
- Mehrabian, A., & Epstein, N. (1972). A measure of emotional empathy. *Journal of Personality, 40*, 525–543.
- Mental Health Council of Australia. (2010). Inquiry into cyber-safety. Parliament of Australia Joint Select Committee on cyber-safety. Retrieved from
www.aph.gov.au/house/committee/jsc/subs/sub_52.pdf
- Munro, B. H. (2005). *Statistical methods for health care research* (Fifth.). Crawfordsville: Lippincott Williams & Wilkins.
- Mustard, J. (2006). Early child development and experience-based brain development - The scientific underpinnings of the importance of early child development in a globalized world (p. 74). Presented at the The World Bank International Symposium on Early Child Development – A Priority for Sustained Economic Growth & Equity,, The Canadian Institute for Advanced Research.
- Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psycho-social adjustment. *Journal of the American Medical Association, 285*(16), 2094 – 2100.
- Olds, D. L. (2008). Preventing child maltreatment and crime with prenatal and infancy support of parents: The nurse-family partnership. *Journal of Scandinavian Studies in Criminology and Crime Prevention, 9*(sup 1), 2–24.
 doi:10.1080/14043850802450096
- Ostrov, J. M., Woods, K. E., Jansen, E. A., Casas, J. F., & Crick, N. R. (2004). An observational study of delivered and received aggression, gender, and social-psychological adjustment in preschool: “This White Crayon Doesn’t Work . . . ”. *Early Childhood Research Quarterly, 19*, 355–371.
 doi:10.1016/j.ecresq.2004.04.009

- Price, & Gwin, J. F. (2007). *Pediatric nursing: An introductory text* (10th ed.). United Kingdom: Elsevier. Retrieved from <http://books.google.com.au/books>
- Puskar, K. R., & Bernardo, L. M. (2007). Mental health and academic achievement: Role of school nurses. *Journal for Specialists in Pediatric Nursing, 12*(4), 215–223. doi:10.1111/j.1744-6155.2007.00117.x
- Putallaz, M., Grimes, C. L., Foster, K. J., Kupersmidt, J. B., Coie, J. D., & Dearing, K. (2007). Overt and relational aggression and victimization: Multiple perspectives within the school setting. *Journal of School Psychology, 45*, 523–547. doi:<http://dx.doi.org/10.1016/j.jsp.2007.05.003>
- Raaijmakers, M., Smidts, D., Sergeant, J., Maassen, G., Posthumus, J., Van Engeland, H., & Matthys, W. (2008). Executive functions in preschool children with aggressive behavior: Impairments in inhibitory control. *Journal of Abnormal Child Psychology, 36*, 1097–1107.
- Repetti, R. L., Robles, T. F., & Reynolds, B. (2011). Allostatic processes in the family. *Development and Psychopathology, 23*, 921 – 938. doi:10.1017/S095457941100040X
- Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: Family social environments and the mental and physical health of offspring. *Psychological Bulletin, 128*(2), 330–366. doi:10.1037//0033-2909.128.2.330
- Rose, A. J., Swenson, L. P., & Waller, E. M. (2004). Overt and relational aggression and perceived popularity: Developmental differences in concurrent and prospective relations. *Developmental Psychology, 40*(3), 378–387. doi:10.1037/0012-1649.40.3.378
- Rose-Krasnor, L. (1997). The nature of social competence: A theoretical review. *Social Development, 6*(1), 111–135.
- Rotenberg, K., Michalik, N., Eisenberg, N., & Betts, L. (2008). The relations among young children's peer-reported trustworthiness, inhibitory control, and preschool adjustment. *Early Childhood Research Quarterly, 23*, 288–298.

- Royal Children's Hospital Melbourne. (2012). *Children's mental health* (Policy Brief No. 24) (p. 4). Centre for Community Child Health.
- Runions, K. (2008). A multi-systematic school-based approach for addressing childhood aggression. *Australian Journal of Guidance and Counselling*, 18(2), 106–127.
- Rydell, A.-M., Berlin, L., & Bohlin, G. (2003). Emotionality, emotion regulation, and adaptation among 5- to 8-year-old children. *Emotion*, 3(1), 30–47.
- Sallquist, J., Eisenberg, N., Spinrad, T., Reiser, M., Hofer, C., Zhou, Q., ... Eggum, N. (2009). Positive and negative emotionality: Trajectories across six years and relations with social competence. *Emotion*, 9(1), 15–28.
- Sameroff, A. (2009). The transactional model. In *The Transactional Model of Development: How Children and Contexts Shape Each Other* (p. 290). Washington, D C: American Psychological Association.
- Save the Children. (2009). *State of the world's mothers 2009: Investing in the early years*. Connecticut: Author. Retrieved from www.savethechildren.org/publications/.../state-worlds-mothers-report-2009.pdf
- Sawyer, M G, Arney, F. M., Baghurst, P. A., Clark, J. J., B W Graetz, Kosky, R. J., ... Zubrick, S. R. (2001). The mental health of young people in Australia: key findings from the child and adolescent component of the national survey of mental health and well-being. *Australian and New Zealand Journal of Psychiatry*, 35(6), 806 – 814. doi:10.1046/j.1440-1614.2001.00964.x
- Sawyer, Michael G, Kosky, R. J., Graetz, B. W., Arney, F., Zubrick, S. R., & Baghurst, P. (2000). The national survey of mental health and wellbeing: the child and adolescent component. *Australian and New Zealand Journal of Psychiatry*, 34(2), 214 — 220. doi:10.1046/j.1440-1614.2000.00729.x
- Schaeffer, C. M., Petras, H., Ialongo, N., Masyn, K. E., Hubbard, S., Poduska, J., & Kellam, S. (2006). A comparison of girls' and boys' aggressive–disruptive behavior trajectories across elementary school: Prediction to young adult antisocial

- outcomes. *Journal of Consulting and Clinical Psychology*, 74(3), 500–510.
doi:10.1037/0022-006X.74.3.500
- Schmied, V., Homer, C., Kemp, L., Thomas, C., Fowler, C., & Kruske, S. (2008). *The role and nature of universal health services for pregnant women, children and families in Australia*. Penrith, New South Wales.
- Schonert-Reichl, K. A., Stewart Lawlor, M., Oberle, E., & Thomson, K. C. (2009). *Identifying indicators and tools for measuring social and emotional healthy living: Children ages 5 to 12 Years* (Prepared for the Public Health Agency of Canada) (p. 41). Ottawa, Ontario: University of British Columbia. Retrieved from <http://educ.ubc.ca/research/ksr/schonert-reichl.html#scholarlypub>
- Shannon, R. A., Bergren, M. D., & Matthews, A. (2010). Frequent visitors : Somatization in school-age children and implications for school nurses. *The Journal of School Nursing*, 26(3), 169–182. doi:10.1177/1059840509356777
- Shonkoff, J. P., Boyce, W. T., & McEwen, B. S. (2009). Neuroscience, molecular biology, and the childhood roots of health disparities: Building a new framework for health promotion and disease prevention. *McEwen*, 301(21), 2252–2259.
doi:doi:10.1001/jama.2009.754
- Shonkoff, J. P., Garner, A. S., & THE COMMITTEE ON PSYCHOSOCIAL ASPECTS OF CHILD AND FAMILY HEALTH, COMMITTEE ON EARLY CHILDHOOD, ADOPTION, AND DEPENDENT CARE, AND SECTION ON DEVELOPMENTAL AND BEHAVIORAL PEDIATRICS. (2012). The Lifelong Effects of Early Childhood Adversity and Toxic Stress. *Pediatrics*, 129(1), e232–e246.
doi:10.1542/peds.2011-2663
- Shonkoff, J. P., & Phillips, D. A. (Eds.). (2000). *From neurons to neighborhoods: The science of early childhood development*. Washington, D C: National Academy Press.
- Silburn, S. R., & Zubrick, S. R. (1996). WA Child Health Survey: Methodology and policy implications. Presented at the Fifth Australian Family Research Conference,

- Brisbane: Australian Institute of Family Studies. Retrieved from <http://www.aifs.gov.au/conferences/aifs5/silburn.html>
- Slatcher, R. B., & Trentacosta, C. J. (2012). Influences of parent and child negative emotionality on young children's everyday behaviors. *Emotion*, (Advance online publication), 12. doi:10.1037/a0027148
- Sroufe, L. A., Coffino, B., & Carlson, E. A. (2010). Conceptualizing the role of early experience: Lessons from the Minnesota longitudinal study. *Developmental Review*, 30(1), 36–51.
- Stanley, F., Sanson, A., & McMichael, T. (2002). New ways of causal pathways thinking for public health. In *Children's Health and Development*. Australian Institute of Family Studies.
- Statistics, Canada. (2008). National Longitudinal Survey of Children and Youth (NLSCY). Retrieved October 11, 2010, from <http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=4450&lang=en&db=imdb&adm=8&dis=2#a2>
- Stern, M. (2012). *Evaluating and promoting positive school attitude in adolescents*. New York: Springer.
- Sylva, K. (1997). Critical periods in childhood learning. *British Medical Bulletin*, 53(1), 185–19.
- Taylor, S. E., Way, M. W., & Seeman, T. E. (2011). Early adversity and adult health outcomes. *Development and Psychopathology*, 23, 939–954. doi:10.1017/S0954579411000411
- Thompson, R. A., Lewis, M. D., & Calkins, S. D. (2008). Reassessing emotion regulation. *Child Development Perspectives*, 2(3), 124–131.
- Tremblay, R. E. (2004). Decade of Behavior Distinguished Lecture: Development of physical aggression during infancy. *Infant Mental Health Journal*, 25(5), 399–407.

- Van der Wal, M. F., De Wit, C. A. M., & Hirasing, R. A. (2003). Psychosocial health among young victims and offenders of direct and indirect bullying. *Pediatrics*, *111*, 1312–1317. doi:10.1542/peds.111.6.1312
- Vernberg, E. M., Nelson, T. D., Fonagy, P., & Twemlow, S. W. (2011). Victimization, aggression, and visits to the school nurse for somatic complaints, illness, and physical injuries. *Pediatrics*, *127*, 842–848. doi:10.1542/peds.2009-3415
- Vitiello, B., Behar, D., Hunt, J., Stoff, D., & Ricciuti, A. (1990). Subtyping aggression in children and adolescents. *The Journal of Neuropsychiatry and Clinical Neurosciences*, *2*(2), 189–192.
- Wake, M., Sanson, A., Berthelsen, D., Hardy, P., Mission, S., Smith, K., & Ungerer, J. (2008). *How well are Australian infants and children aged 4 to 5 years doing? Findings from the Longitudinal Study of Australian Children Wave 1* (p. 111). Commonwealth of Australia. Retrieved from <http://www.fahcsia.gov.au/research/prp36/sprp36.pdf>
- Werner, N. E., & Grant, S. (2009). Mothers' cognitions about relational aggression: Associations with discipline responses, children's normative beliefs, and peer competence. *Social Development*, *18*(1), 77–98. doi:10.1111/j.1467-9507.2008.00482.x
- Williams, Chambers, M., Logan, S., & Robinson. (1996). Association of common health symptoms with bullying in primary school children. *British Medical Journal*, *313*, 17–19.
- Williams, J. R., Fredland, N., Han, H.-R., Campbell, & Kub, J. E. (2009). Relational aggression and adverse psychosocial and physical health symptoms among urban adolescents. *Public Health Nursing*, *26*(6), 489–499.
- Wilson, P., Furnivall, J., Barbour, R. S., Connelly, G., Bryce, G., Phin, L., & Stallard, A. (2008). The work of health visitors and school nurses with children with psychological and behavioural problems. *Journal of Advanced Nursing*, *61*(4), 445–455. doi:10.1111/j.1365-2648.2007.04505.x

- Wohlfarth, T. (1997). Socioeconomic inequality and psychopathology: are socioeconomic status and social class interchangeable? *Social Science and Medicine*, *45*(3), 399–410.
- World Health Organisation. (2005). *Child and adolescent mental health policies and plans*. Geneva.
- Young, E. L., Boye, A. E., & Nelson, D. A. (2006). Relational aggression: Understanding, identifying, and responding in schools. *Psychology in the Schools*, *43*(3), 297–312. doi:10.1002/pits.20148
- Zhou, Q., Valiente, C., & Eisenberg, N. (2003). Empathy and its measurement. In S. J. Lopez & C. R. Snyder (Eds.), *Positive Psychological Assessment: A Handbook of Models and Measures* (pp. 269–284). Washington, DC: American Psychological Association.
- Zubrick, S. R., Silburn, S. R., Gurrin, L., Teoh, H., Shepherd, C., Carlton, J., & Lawrence, D. (1997). *Western Australian Child Health Survey: Education, Health, and Competence* (No. ISBN 0 642 17239 0). Perth, Western Australia: Australian Bureau of Statistics and the TVW Telethon Institute for Child Health Research.
- Zubrick, S. R., Silburn, S. R., & Prior, M. (2005b). Resources and contexts for child development: Implications for children and society (IELHSS). In S. Richardson & M. Prior (Eds.), *No Time to Lose: The Wellbeing of Australia's Children* (pp. 161–200). Carlton, Victoria: Melbourne University Press. Retrieved from <http://search.informit.com.au.dbgw.lis.curtin.edu.au/fullText;dn=388081246388820;res=IELHSS>
- Zubrick, S. R., Taylor, C. L., Lawrence, D., Mitrou, F., Christensen, D., & Dalby, R. (2009). The development of human capability across the lifecourse: Perspectives from childhood. *Australasian Epidemiologist*, *16*(3), 6–10.
- Zubrick, S. R., Taylor, C. L., Rice, M. L., & Slegers, D. W. (2007). Late language emergence at 24 months: An epidemiological study of prevalence, predictors, and covariates. *Journal of Speech, Language, and Hearing Research*, *50*, 1562–1592.

Zubrick, S. R., Williams, Silburn, S. R., & Vimpani, G. (2000). Indicators of social and family functioning. Department of Family and Community Services.

Every reasonable effort has been made to acknowledge the owners of copyright material. I would be pleased to hear from any copyright owner who has been omitted or incorrectly acknowledged.

Appendix A: Parent Information Sheet.

(Printed on XXX College letterhead paper)



PARENT INFORMATION SHEET

Study Title: Age, gender and sociodemographic differences in school entrant's social and emotional competence.

Research Team; Helen Nelson (School Nurse - XXX College Secondary School, Master's degree student), Dr Garth Kendall, Prof Linda Shields (supervisors).

We are investigating how age, gender, and family differences, such as the number of siblings a child has in the first years of school, impact on a child's social and emotional development. The study aims to gain a better understanding of how children can best be supported in building healthy friendships as they start school, which will help them achieve their learning potential.

Parents and children in Pre-primary, Year One and Year Two are invited to participate in the study. As a participant, your child will be asked to complete four very brief questionnaires that have been designed especially for this purpose. The school nurse will help them to understand the questions and write their answers. It is anticipated that the questionnaires will take about twenty minutes to complete.

In addition, your child's classroom teacher will complete three brief questionnaires about your child's development and we would like your permission to access information about your child's age, the first language they spoke, and the language your child speaks in at home, from school records. We also ask that you complete the attached Parent Questionnaire and return it to school with the Consent Form.

The questionnaires will be identified only by a study number and information given will be confidential. The completed copies will be stored in a locked filing cabinet and accessed only by the researcher and her supervisors. If the results of the study are published no child will be identified by name.

Participation in this study is completely voluntary. As a parent you are free to withdraw your child at any time without prejudice or negative consequences. Your child is also free to withdraw at any time without prejudice or negative consequences.

The researcher will be available by phone call or appointment to answer or clarify any questions.

This research has been reviewed and given approval by XXX College Executive. This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number HR 134/2009). If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845 or by telephoning 9266 2784 or by emailing hrec@curtin.edu.au. If you would like

further information about the study please contact the Investigator Helen Nelson on 0419 954 708 or Supervisor Dr Garth Kendall on (08) 9266 2191. In the event of any questions or concerns of an ethical nature in relation to the intentions of this study you are welcome to contact the Secretary, Human Research Ethics Committee, Curtin University on 9226 2784 or hrec@curtin.edu.au or in writing C/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth WA 6845);

Helen Nelson
School Nurse
[REDACTED]

[REDACTED]
Principal of Primary
[REDACTED]

Appendix B: Consent Form



CONSENT FORM

Study Title: Age, gender and sociodemographic differences in school entrant's social and emotional competence.

Research Team; Helen Nelson, Dr Garth Kendall, Prof Linda Shields.

I have been provided with the parent information sheet and understand the intentions of this study.

I understand I may withdraw my child from the study or my child may withdraw from the study at any time without prejudice or negative consequence to my child.

I understand that in the event of this work being published, my child as a participant will not in be in any way identifiable.

I know that I can contact the researcher Helen Nelson on 9394 9173 if I have questions or concerns.

I am aware that Curtin University Human Ethics Committee and the Executive of XXX College have given ethical approval for this research to be conducted. I am aware that in the event of my having any concerns or complaints regarding this study, I can contact the Chair of the Curtin Human Research Ethics Committee (9266 1009) on a **confidential basis**.

Parent Statement

I(Print full name of parent)
understand the intentions of the study and know that I have the opportunity to ask questions at any time.

I agree for my child(Print name of child) to participate in the study.

I understand that my child's participation in this study is voluntary and I, or my child, can withdraw at any time without in any way causing prejudice or negative consequence to my child.

I give my permission for data held in school records about my child's family to be accessed for this study.

Signature..... Parent

Signature..... Researcher

Date.....

Appendix C: Child Information Sheet

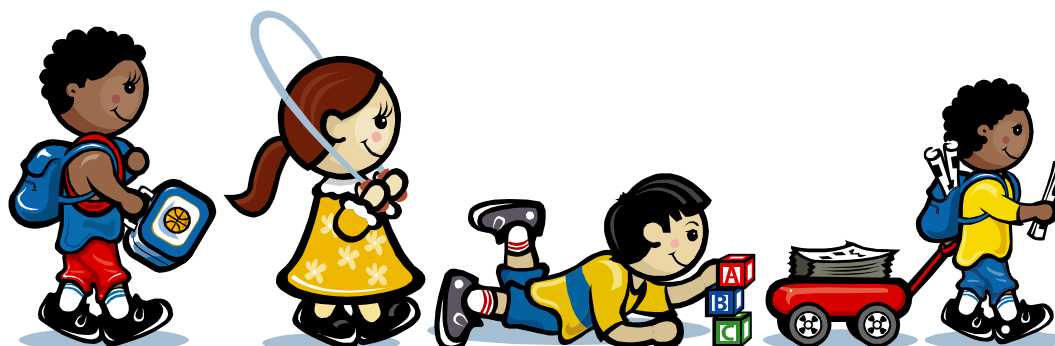


CHILD INFORMATION SHEET

We are trying to find out how children learn to help and care for each other at school and we would like you to help us.

If you agree to join in we will ask you to answer some questions about how you feel about school. We will help you read and understand the questions.

We will also ask your teacher about how you are at school.



Study Title: Age, gender and sociodemographic differences in school entrant's social and emotional competence.

People doing the project: Helen Nelson, Dr Garth Kendall, Prof Linda Shields.

Appendix D: Parent Questionnaire.

PARENT QUESTIONNAIRE

Study Title: Age, gender and sociodemographic differences in school entrant's social and emotional competence.

MY CHILD'S FAMILY

1. How many adults and children live in your home? (Please include yourself. Children less than one year of age: age = months.)

First name	Age years	Age months	Sex M/F	Relationship to you
e.g. Diane	31		F	Myself
e.g. Brian	34		M	Partner
e.g. Karyn	5		F	Daughter
e.g. Cameron		11	M	Son
.....
.....
.....
.....
.....
.....
.....
.....

About Mum

2. What was the highest year of school you completed?

Year 12 (or equivalent)	<input type="radio"/>
Year 11 (or equivalent)	<input type="radio"/>
Year 10 (or equivalent)	<input type="radio"/>
Other, not included above (please specify)	

	Yes	No
3. Have you completed a course of study for a trade certificate, diploma, degree or any other educational qualification?	<input type="radio"/>	<input type="radio"/> You have finished

If you answered yes please continue on next page.

4. What educational qualification(s) have you completed? (Please mark all that you have completed)			
Certificate level I	<input type="radio"/>	Certificate level II	<input type="radio"/>
Certificate level III	<input type="radio"/>	Certificate level IV	<input type="radio"/>
Certificate level – don't know level	<input type="radio"/>	Diploma (2 years full-time or equivalent)	<input type="radio"/>
Associate degree	<input type="radio"/>	Advanced diploma (3 years full-time or equivalent)	<input type="radio"/>
Bachelor degree but not honours	<input type="radio"/>	Honours bachelor degree	<input type="radio"/>
Graduate certificate	<input type="radio"/>	Graduate diploma	<input type="radio"/>
Masters degree	<input type="radio"/>	Doctorate	<input type="radio"/>
Other – Title of course		Description	
.....			
Length of course (full-time equivalent)		Qualification (e.g. RN)	
.....			

Thank you very much, we appreciate the time you have spent completing this questionnaire. Please return this form to school together with the Consent Form.

Appendix E: Variables Included in the Index of Relative Socio-economic Advantage and Disadvantage.

(Australian Bureau of Statistics, 2006b)

- % People aged 15 years and over with no post-school qualifications
- % Occupied private dwellings with no internet connection
- % People with stated annual household equivalised income between \$13,000 and \$20,799 (approx. 2nd and 3rd deciles)
- % Employed people classified as Labourers
- % Households paying rent less than \$120 per week (excluding \$0 per week)
- % People aged under 70 who have a long-term health condition or disability and need assistance with core activities
- % Employed people classified as Machinery Operators and Drivers
- % People (in the labour force) unemployed
- % One parent families with dependent offspring only
- % Households renting from Government or Community organisation
- % Employed people classified as Low Skill Community and Personal Service Workers
- % Occupied private dwellings requiring one or more extra bedrooms (based on Canadian National Occupancy Standard)
- % Occupied private dwellings with no car
- % Occupied private dwellings with four or more bedrooms
- % People aged 15 years and over at university or other tertiary institution
- % Households paying mortgage greater than \$2,120 per month
- % Households paying rent greater than \$290 per week
- % People aged 15 years and over with an advanced diploma or diploma qualification
- % Employed people classified as Professionals
- % Occupied private dwellings with a broadband internet connection
- % People with stated annual household equivalised income greater than \$52,000 (approx 9th and 10th deciles)

Appendix F: Coding Guide

My Child's Family

1. ID
ID Number (begins with 101)
101, 102, 103, ...
2. Aagemnths
Age of child in months at time of questionnaire
48, 49, 50, ...
3. Schoolyr
Year at school
PP = 0, Year 1 = 1, Year 2 = 2
4. Sex
Sex of child
F = 0, M = 1
5. Adulthm
Adults living in child's home
Mother alone = 0, Father alone = 1, Mother and Father = 2, Extended family living in home = 3, Foster or other care = 4
6. Aagemum
Age of mother at time of consent to study
25 < 40 = 0; 40+ = 1
7. Schlmum
Highest level of education completed by mum
Year 12 or less = 0; Certificate level I to IV or Diploma or Associate Degree = 1; Bachelor Degree or Post graduate study including Honours, Graduate diploma, Masters degree, or Doctorate = 2.
8. Siblings
Number of siblings living at home
No siblings = 0, 1 or 2 siblings = 1, 3+ siblings = 2
9. Sibage
Age of siblings (same, older, younger)
Same = 0, Older only = 1, Younger only = 2, Older and younger = 3, same and younger = 4, no siblings = 5
10. Sibsex
Sex of siblings (female, male, both)
Female only = 0
Male only = 1
Female and male = 2
No siblings = 3
11. Stepsib
Stepsiblings living in same home
No = 0, Yes = 1

Appendix G: Instruments Used for Data Collection.

Subscales of the *My School* Questionnaire

Question	Measure of:	Scoring
1. Is your teacher interested in the things you do at home?	Perceived teacher support	
2. When you are trying to do your schoolwork, do the other children bother you?	Perceived peer support	Reverse
3. Does your teacher care about you?	Perceived teacher support	
4. Do other children get you into trouble at school?	Perceived peer support	Reverse
5. Do you like being at school?	School liking	
6. Would you be happier if you didn't have to go to school?	School liking	Reverse
7. Are the grown ups at school friendly toward the children?	School environment	
8. Are the other children in your class friendly toward you?	Perceived peer support	
9. Are you scared to go to the office at school?	School environment	Reverse
10. Is school fun?	School liking	
11. Does your teacher like to help you with your work when you need help?	Perceived teacher support	
12. Are the rooms in your school nice?	School environment	
13. Do you like to sing songs with your class?	Attitudes toward school activities	
14. Do you like the other children in your class?	Perceived peer support	
15. Would you like to be somewhere other than school right now?	School liking	Reverse
16. Do other people at school really care about you?	School environment	
17. Do you like to come to school every day?	School liking	
18. Do you feel lonely at school?	Perceived peer support	Reverse
19. Do you have your own group of friends at school?	Perceived peer support	
20. Do your classmates listen to what you say?	Perceived peer support	
21. Do you wish you could stay home from school?	School liking	Reverse
22. Are there a lot of things to do at school?	School environment	

Subscales of the *Child Social Behaviour Scale* Questionnaire.

1. Shows sympathy to someone who has made a mistake. (BEH-Q20 NLYSC Cycle 7, Book 1)	Prosocial	
2. Will try to help someone who has been hurt. (BEH Q-23)	Prosocial	
3. Gets into many fights. (BEH Q-27)		Used in total aggression
4. Threatens or bullies other children to get his/her own way. (PSBS)	Overt	
5. Volunteers to help someone clear up a mess that someone else has made. (BEH Q-28)	Prosocial	
6. When mad at someone, tries to get others to dislike that person. (BEH Q-30)	Covert	
7. Destroys things belonging to his/her family, or other children. (BEH Q-33)		Used in total aggression
8. When teased or threatened, he/ she gets angry easily and strikes back.	Reactive aggression	
9. If there is a quarrel or a dispute, will try to stop it. (BEH Q-34)	Prosocial	
10. When mad at someone, becomes friends with another as revenge. (BEH Q-39)	Covert	
11. Offers to help other children (friend, brother or sister) who are having difficulty with a task. (BEH Q-44)	Prosocial	
12. Claims that other children are to blame in fights and feels like they started the trouble.	Reactive aggression	
13. When another child accidentally hurts him/her (such as by bumping into him/her), assumes that the other child meant to do it, and reacts with anger and fighting	Reactive aggression	
14. When mad at someone, says bad things behind the other's back. (BEH Q-49)	Covert	
15. Comforts a child (friend, brother or sister) who is crying or upset. (BEH Q-22)	Prosocial	
16. Plays mean tricks. (Australian Bureau of Statistics, 2006b)	Proactive aggression	
17. Threatens people.	Proactive aggression	
18. Spontaneously helps to pick up objects which another child has dropped (e.g., pencil, book). (BEH Q-57)	Prosocial	
19. Is cruel, bullies, or is mean to others.	Proactive aggression	
20. Uses physical force, or threatens to use force, to dominate other children.	Proactive aggression	
21. When mad at someone, says to others, "Let's not be with him/her." (BEH Q-62)	Covert	

22. Kicks, bites, hits other children. (PSBS)	Overt	
23. Plans aggressive acts. (Brown et al., 1996)	Predatory aggression (Proactive)	Used in total aggression
24. Helps other children (friend, brother or sister) who are feeling sick. (BEH Q-71)	Prosocial	
25. Will invite bystanders to join in a game. BEH Q-66	Prosocial	
26. Careful to protect self when aggressive. (Vitiello et al., 1990)	Predatory aggression	Not used
27. Gets other children to gang up on a peer that he/she does not like.	Proactive aggression	
28. When mad at someone, tells the other one's secrets to a third person. (BEH Q-72)	Covert	
29. Picks on smaller kids. (Vitiello et al., 1990)	Proactive aggression	
30. Has hurt others to win a game. (Brown et al., 1996)	Proactive aggression	
31. Hides aggressive acts. (Brown et al., 1996)	Predatory aggression (Covert)	Used in total aggression
32. Takes the opportunity to praise the work of less able children. (Is in tool by Cunningham – The brief child and family interview. Canada)		Used in total prosocial
33. Can control own behaviour when aggressive. (Vitiello et al., 1990)	Predatory aggression	Not used

Subscales of the Teachers' Ratings of Children's Behaviour Tool.

Question	Measure of:	Scoring
1. This child finds it hard to make friends.	Popularity (Socially appropriate behaviour) (Vitiello et al., 1990)	Reverse
2. This child <u>does not</u> get anxious when he/she sees another child who is hurt or upset.	Sympathy/Empathy	Reverse
3. This child usually comforts others who are hurt or upset.	Sympathy/Empathy	
4. This child often feels sorry for others who are less fortunate.	Sympathy (Harter, 1982)	
5. This child usually acts appropriately.	Harter, 1982(Socially appropriate behaviour)	
6. This child does not usually feel sympathy for others.	Sympathy/Empathy	Reverse
7. This child usually feels sympathy for others.	Sympathy/Empathy	
8. This child is popular with other his/her age.	Popularity (Socially appropriate behaviour) (Eisenberg et al., 1996, p. 98)	
9. This child often gets in trouble because of the things he/she does.	Socially appropriate behaviour	Reverse
10. This child usually feels sorry for other children who are being teased.	Sympathy/Empathy	
11. This child has a lot of friends.	Popularity (Socially appropriate behaviour) (Harter, 1982)	
12. This child rarely feels sympathy for other children who are upset or sad.	Sympathy/Empathy	Reverse
13. This child is usually well-behaved.	Socially appropriate behaviour	
14. This child gets upset when she/he sees another child being hurt.	Sympathy – adapted from Bryant (1982) (Harter, 1982)	
15. Compared to other children this child's age, the child has very good social skills.	Socially appropriate behaviour	

Subscales of the *Emotion* Questionnaire.

Question	Measure of:
1. This child becomes angry and falls in a bad mood.	Emotionality
2. When angry or in a bad mood, this child reacts strongly and intensely.	Emotionality
3. It is easy for others, for instance a parent, to calm this child down.	Emotion regulation
4. This child has difficulties calming down on his/her own.	Emotion regulation
5. This child often gets happy, excited and in an exuberant mood.	Emotionality
6. When in an exuberant mood, this child reacts strongly.	Emotionality
7. It is easy for others, for instance a parent, to make this child quiet down.	Emotion regulation
8. This child has difficulties quieting down on his/her own.	Emotion regulation
9. This child often becomes sad.	Emotionality
10. When sad, this child reacts strongly and intensely (e.g. cries, screams).	Emotionality
11. It is easy for others, for instance a parent, to make this child feel better (e.g. by comforting, distracting or talking through).	Emotion regulation
12. This child has difficulties finding something to make him/herself feel better.	Emotion regulation

Appendix H: Final Scoring of Measures.

	Possible Scores between	Relevance of score	Questions reversed	Questions included in measure	alpha
My School	0-63	63 = happier attitude toward school	2,4,6,9,15,18 0→3 1→2 2→1 3→0	All but 21	0.79
School liking	0-15			5,6,10,15,17	0.83
CSBS					
Prosocial	0-20	20 = higher level of prosocial behaviour		1,2,5,9,11,15,18, 24,25,32	0.92
Total aggression	0-42	42 = higher level of aggressive behaviour		3,4,6,7,8,10,12, 13,14,16,17,19, 20,21,22,23,27, 28,29,30,31	0.93
Covert aggression	0-12			6,10,14,21,28,31	0.85
TRCB	0-45		1,2,6,9,12 0→3 1→2 2→1 3→0		0.91
Socially appropriate behaviour	0-21	21 = higher level of prosocial behaviour		1,5,8,9,11,13,15	0.88
Sympathy / empathy	0-24	24 = greater levels of sympathy/empathy		2,3,4,6,7,10,12, 14	0.90
Emotion					
Emotion regulation	0-12	12 = higher level of emotion regulation	1,2,3,5,6,7,9, 10,11 0→1 1→0	3,4,7,8,11,1,2, and reverse scores of questions 1,2,5,6,9,10	0.79

Appendix I: Normality Distribution of Measures Included in the Final Analysis.

	Valid Cases	Skew (Std.error)	Kurtosis (Std.error)	Shapiro-Wilk Significance
My School	80	-0.922 (0.269)	0.757 (0.532)	0.00
My school adjusted for outliers	80	-0.312 (0.269)	-0.703 (0.532)	0.053
School liking	80	-0.877 (0.269)	-0.281 (0.532)	0.00
CSBS				
Prosocial	79	-0.395 (0.271)	-0.534 (0.535)	0.015
Total aggression	80	1.79 (0.269)	2.72 (0.532)	0.00
Covert aggression	80	1.95 (0.269)	4.016 (0.532)	0.00
TRCB				
Socially appropriate Behaviour	80	-0.871 (0.269)	0.235 (0.532)	0.00
Socially appropriate behaviour adjusted for outliers	80	-0.603 (0.269)	0.597 (0.532)	0.00
Sympathy / empathy	78	-0.720 (0.272)	0.148 (0.538)	0.00
Emotion				
Total emotion regulation	80	-1.9 (0.269)	4.588 (0.532)	0.00