

**ANXIETY SYMPTOMS AND BEHAVIOURAL INHIBITION IN YOUNG SOUTH
AFRICAN CHILDREN: A FOLLOW-UP ON PARENT AND TEACHER REPORTS**

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DECLARATION

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ABSTRACT

The present study is a first follow-up assessment by means of parent and teacher reports in a cohort study conducted by Wege (2014). The study examined the long-term relationship between anxiety symptoms and behavioural inhibition in young South African children with the inclusion of parental overprotection as a moderator variable.

The aims of the study were to determine whether the relationship between the anxiety symptoms and behavioural inhibition profiles of the 2012 cohort of young South African children changed within a one year follow-up period, while simultaneously assessing the role of parental overprotection. Parent and teacher reports included a *Biographical Questionnaire for Parents*, the *Behavioural Inhibition Questionnaire*, the *Revised Preschool Anxiety Scale*, and, the *Parental Overprotection Measure*.

A total of 59 children of who 25 were female and 34 male were reported on. They were 3 years old (n = 3), 4 years old (n = 16), 5 years old (n = 22), 6 years old (n = 14) and 7 years old (n = 4).

In keeping with previous findings, a positive correlation remained between anxiety symptoms and behavioural inhibition, even after one year. The moderating effect of parental overprotection was less strong than predicted. Nonetheless, a non-significant trend in the hypothesised direction was found: the relationship between behavioural inhibition and anxiety was strongest when simultaneously there were high levels of parental overprotection. The only significant difference found between scores of the initial study and that of the present research was that parents reported significantly lower levels of behavioural inhibition at the one year follow-up. Although at a non-significant level, both parent and teacher reports of anxiety indicated higher levels of anxiety at the year follow-up. Results need to be interpreted with caution in view of the smaller number of participants in the cohort study.

OPSOMMING

Die huidige studie is deur middel van ouer- en onderwyserverslae gedoen en is 'n eerste opvolgassessering van 'n kohortstudie deur Wege (2014). Die langtermynverband tussen angssimptome en gedraginhibisie by jong Suid-Afrikaanse kinders is ondersoek en oorbeskerming deur ouers is ingesluit as moderatorveranderlike.

Die doelwitte van die studie was om deur middel van ouer- en onderwyserverslae te bepaal of die verband tussen die angssimptome en gedraginhibisieprofiel van die 2012-kohort jong Suid-Afrikaanse kinders verander het oor die verloop van een jaar. Terselfdertyd is die rol van oorbeskerming deur ouers bepaal. Die ouer- en onderwyserverslae wat gebruik is, was die *Biographical Questionnaire for Parents*, die *Behavioural Inhibition Questionnaire*, die *Revised Preschool Anxiety Scale*, en die *Parental Overprotection Measure*.

Altesaam 59 kinders van wie 25 meisies en 34 seuns was, het aan die studie deelgeneem. Hulle was 3 jaar oud ($n = 3$), 4 jaar oud ($n = 16$), 5 jaar oud ($n = 22$), 6 jaar oud ($n = 14$) en 7 jaar oud ($n = 4$).

In ooreenstemming met vorige bevindings was daar selfs 'n jaar later 'n positiewe korrelasie tussen angssimptome en gedraginhibisie. Die temperende effek van oorbeskerming deur ouers was minder as wat voorspel is. Nogtans is 'n onbeduidende neiging in die rigting van die gestelde hipotese gevind: die verhouding tussen gedraginhibisie en ang was die sterkste wanneer daar terselfdertyd 'n hoë vlak van oorbeskerming deur die ouers was. Die enigste beduidende verskil tussen tellings van die aanvanklike studie en dié van die huidige studie was dat die ouers met die opvolg 'n jaar later beduidend laer vlakke van gedraginhibisie gerapporteer het. Hoewel onbeduidend, het beide die ouers en die onderwysers hoër vlakke van ang gerapporteer tydens die opvolgondersoek. Weens die klein aantal deelnemers behoort die resultate met omsigtigheid geïnterpreteer te word.

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CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE PROBLEM

Chapter 1 will include the introduction and background to the present study on early childhood anxiety and behavioural inhibition as well as a statement of the research problem. The introduction and statement of the research problem will be followed by a motivation for the present study as well as a layout of the aims and objectives. Thereafter key terminology relevant to this study—*anxiety, behavioural inhibition, parental overprotection and young South African children*—will be defined to provide the reader with context and clarity. Finally Chapter 1 will describe the outline of the thesis and conclude with a chapter summary.

1.1. Introduction and statement of the research problem

One of the current and prominent mental health problems in children is the prevalence of anxiety disorders (Kessler, Chiu, Demler, & Walters, 2005). Findings on the prevalence of anxiety symptoms among South African children (Burkhardt, Loxton, & Muris, 2003; Muris et al., 2006) also support this notion.

A better understanding of the unique risk factors involved in this form of psychopathology is needed to provide effective prevention and early intervention for those who suffer from anxiety. Frequently children and adolescents have symptoms of anxiety (Craske, 1997) and a significant minority of them are able to receive clinical diagnosis for an anxiety disorder (Muris, Merckelback, Mayer, & Prins, 2000). Anxiety disorders are the most common type of child psychopathology (Rapee, Schniering, & Hudson, 2009) and often lead to impaired daily functioning and other severe mental health problems such as depression and conduct disorder in later life (Bittner et al., 2007; Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012).

Despite the reality of anxiety in young children, there is limited research on this age group, both internationally and in South Africa (e.g., Broeren & Muris, 2008; Egger & Angold, 2006; Loxton, 2009; Muris et al., 2006). Little is known about the anxiety problems of young children of approximately 2 to 7 years old and few children are given the necessary treatment (Campbell, 2006; Egger & Angold, 2006). These findings are concerning as early recognition of anxiety symptoms could enable practitioners to identify and manage these symptoms and, as a result, prevent later clinical severity (Edwards, Rapee, Kennedy, & Spence, 2010). In order to recognise clinical anxiety in young children, more research is needed that explores the risk factors involved in the development of anxiety symptoms.

Studies have shown that behavioural inhibition is a potentially prominent risk factor in the development of anxiety (e.g., Biederman et al., 1993; Chronis-Tuscan et al., 2009; Muris, Van Brakel, Arntz, & Schouten, 2011). Behavioural inhibition, found in about 10 to 15% of children (Fox, Henderson, Marshall, Nichols, & Ghera, 2005), is a temperamental trait that inclines an individual to react with fear and withdrawal towards new and unfamiliar people and situations (Kagan, Reznick, & Snidman, 1987). Research has shown that discovering behavioural inhibition in early childhood can reduce the risk of an anxiety disorder (Ballespí, Jané, & Riba, 2012; Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2005).

From these findings it is evident that exploring the relationship between anxiety symptoms and behavioural inhibition in young South African children could be beneficial in aiding anxiety prevention in South Africa (Loxton, 2009; Muris et al., 2006). The present study aimed to address the need to strengthen literature in this field by contributing to a first follow-up cohort study of research done by Wege (2014) and intended to examine the longer-term effects of the relationship between anxiety symptoms and behavioural inhibition in young South African children. In addition, this study wished to assess parental overprotection

as a potential moderating factor in the relationship between anxiety symptoms and behavioural inhibition in young South African children.

1.2. Motivation for the study

There appears to be a significant lack of international and South African research on anxiety in young children (e.g., Broeren & Muris, 2008; Campbell, 1995; Loxton, 2009; Muris et al., 2006). By determining the possible link between anxiety symptoms and behavioural inhibition, we can broaden our understanding of the development of anxiety in young children (Fox et al., 2005). As an extension of a cohort study (Wege, 2014), the present study wished to add to the scientific knowledge base by exploring the longitudinal effect on the relationship between anxiety symptoms and behavioural inhibition in young children within the South African context with the inclusion of parental overprotection as a potential moderator variable. Longitudinal studies make valuable and beneficial contributions to literature since they allow for the measurement of change over time and possibly provide an explanation for such change (Harris & Butterworth, 2012; Menard, 2008). According to our knowledge the present study was the first follow-up South African cohort study on anxiety research in young children and it is hoped that the results will contribute to the development and implementation of a greater anxiety prevention project in the Department of Psychology at Stellenbosch University. This study was therefore worthwhile as it did not only attend to a gap in literature by being scientifically relevant, but was also socially relevant to the South African context (Loxton, 2009; Muris et al., 2006).

1.3. Aims and objectives

The primary aims of this study were to assess the parent and teacher reports of anxiety symptoms and behavioural inhibition in a one year follow-up on a cohort of young children (age 3 to 7 years); to determine whether parental overprotection is a moderating variable in

the relationship between anxiety symptoms and behavioural inhibition; and finally to establish the difference between parent and teacher reports from the 2012 dataset with parent and teacher reports from the 2013 dataset.

1.4. Defining key terminology

The main terminology used in the present study will be defined for clarification purposes.

1.4.1. Anxiety is usually defined in literature as an emotional state that is related to fear (Sweeney & Pine, 2004) and consists of cognition (e.g. worry), behaviour (e.g. avoidance), emotion (e.g. scared) and physiological (e.g. increased heart rate) responses (Headley & Campbell, 2013; Morris & March, 2004). Most frequently it is described as feelings of uneasiness, nervousness and apprehension and is usually accompanied by bodily discomfort such as nausea and palpitations (Barlow, 2002). It can also be referred to as a reaction of anticipation and fearfulness towards a distinct threat that might not present any real threat or danger (Gregory & Eley, 2007). Although most authors agree that anxiety is a normal part of child development and that children usually outgrow these fears during the different developmental stages (e.g. fear of darkness, monsters, strangers), anxiety is no longer considered part of normal development when the child's anxiousness becomes disproportionate to the level of threat (Muris, 2007; Sweeney & Pine, 2004).

For the purposes of this thesis a distinction will be made between *anxiety symptoms* and *anxiety disorders*. The term anxiety symptoms will refer to the construct measured and will be defined as the physiological, psychological, and cognitive manifestations of anxiety. The term anxiety disorders will refer to the more severe manifestation of anxiety symptoms. When the anxiety symptoms are developmentally inappropriate and cause clinically significant impairment in the child's daily functioning, a clinical diagnosis of an anxiety disorder is made according to the diagnostic criteria of the *Diagnostic and Statistical Manual of Mental*

*Disorders*¹ (5th ed., DSM-5) (American Psychiatric Association, 2013; Campbell, 2006).

Therefore, the present study aims to measure the relationship between anxiety symptoms and behavioural inhibition in young South African children. This relationship has shown to encourage the development of a clinically significant anxiety disorder later in the child's life (Broeren et al., 2008; Muris, 2007).

It is also important to note that anxiety is made up of many constructs and can be classified into different subtypes. These subtypes can be examined separately and may include, for example, generalised anxiety, separation anxiety, social anxiety and specific phobias (American Psychiatric Association, 2000).

1.4.2. Behavioural inhibition refers to a specific temperament that can be identified in early childhood and is often characterised as severe shyness in children (Coplan, Arbeau, & Armer, 2008). The definition most frequently used for the term behavioural inhibition is the persistent inclination to show extreme fearfulness, withdrawal, and avoidance towards new and unfamiliar stimuli (Kagan, Reznick, & Snidman, 1988) and this definition will be used for the purposes of this study. Behavioural inhibition has separate dimensions, consisting of both social and non-social domains. Children's behaviour can be measured within six domains of behavioural inhibition: situations involving unfamiliar adults; unfamiliar peers; public performance; separation; unfamiliar situations; and activities that involve risk-taking (Bishop, Spence, & McDonald, 2003).

1.4.3. Parental overprotection is characteristic of a parenting style that refers to caregivers' tendencies to prevent their children from experiencing potentially threatening situations or to come into contact with fearful stimuli. Parental overprotection has been described by Thomasgard and Metz (1993) as a parent's predisposition to be significantly vigilant and

¹ It has been noted that at the time of the present study, a fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* exists. However, the anxiety report measure (PAS-R; Edwards et al., 2010) used in the present study is based on the fourth edition of the DSM.

watchful of their child, does not separate from the child easily, discourages independent behaviour in the child and is extremely controlling. This definition described by Thomasgard and Metz (1993) will be used for the purposes of this study. Parental overprotection reflects protective behaviour that is excessive and disproportionate to the child's developmental stage. Research has shown that high levels of this parenting style can have outcomes of negative psychosocial development and internalised behaviour in a child (Hullmann, Wolfe-Christensen, Meyer, McNall-Knapp, & Mullins, 2010; Thomasgard, Metz, Edelbrock, & Shonkoff, 1995). In the present study parental overprotection will be predicted as a moderating variable in the relationship between anxiety symptoms and behavioural inhibition where the child is encouraged to avoid specific situations, which in turn could increase levels of avoidant and anxious behaviour.

1.4.4. Young South African children is a construct that will be used throughout this study. The term refers to South African children from 3 to 7 years old (Illingworth, 2013; Louw & Louw, 2014).

Generally the term *young children* refers to children in the early childhood stage of approximately 2 to 6 years old (Berger, 2008). According to Newman and Newman (2009), an American-based perspective, a division can be made in early childhood which encompasses toddlerhood (2 to 3 years old) and the early school age period (4 to 6 years old).

Children from the initial study (Wege, 2014) who were initially within the age range of 2 to 6 years old were assessed in a follow-up assessment one year later. Therefore the children in the present study will now be 3 to 7 years old. Consequently, for the purposes of this study the term *young children* will refer to children from 3 to 7 years of age. It is important to note that the seven-year-olds in the present study are in the beginning stages of middle childhood when entering formal school (Louw, Louw, & Kail, 2014).

The present study was conducted in the Stellenbosch region, which is situated in the Western Cape province of South Africa. Stellenbosch is considered a semi-rural area, with the most prominent languages being Afrikaans, Xhosa, and English. In this way, the participants and children assessed in this study were selected in order to reflect the demographics of the Western Cape area.

It is important to consider that the South African context is a unique context. Due to the history of apartheid South Africans have had to come to terms with numerous political and economical effects such as violence, poor living conditions, poor health facilities, and poor education—which have brought about various inequalities between racial groups and socio-economic backgrounds (Biersteker & Robinson, 2000; Muris et al., 2006; Neves & Toit, 2013). Despite South Africa's efforts to transform and overcome the awareness of class, race, gender-bias and poverty, the majority of South Africans still live in poverty and in environments that threaten their well-being (Kehler, 2013). It is important to bear in mind that the cohort of children who were examined in the present study represents a mixture of races and cultures in South Africa. Therefore these children might be living in varying backgrounds and might experience different daily stressors that in turn could influence the levels of anxiety symptoms found in each child (Barbarin, Richter, & De Wet, 2001; Muris et al., 2006).

The present study was a follow-up on the same group of children as used in Wege's (2014) study. As described by Wege (2014), this cohort of children represents a variety of socio-economic backgrounds, language groups, and culture groups.

1.5. Outline of thesis

Chapter 1 of this thesis introduces the background to the research problem of the present study. This chapter also highlights the motivation for the study and briefly points out the primary aims and objectives. In order to provide further clarity, key terminology such as

anxiety, behavioural inhibition, parental overprotection and young South African children are defined. Chapter 1 is concluded with the outline of this thesis and chapter summary.

Chapter 2 presents the literature review on anxiety and behavioural inhibition in young children. The chapter examines important past research findings and simultaneously highlights gaps in the childhood anxiety literature. Chapter 2 also illustrates the close relationship found between anxiety symptoms and behavioural inhibition and mentions various moderating factors that could contribute to the strength of this relationship.

The theoretical framework which has been used as the foundation for the present study will be discussed in depth in Chapter 3. This discussion includes contextualising the developmental stage of the sample of young children in the present study and presenting the different perspectives on child development in order to provide sufficient background to the reader. Bronfenbrenner's ecological systems theory and how it is used in application to the topic of this thesis will be emphasised in order to give shape and meaning to the collected data.

The methodology used in the present study will be discussed in Chapter 4. All three measurement tools, the *Preschool Anxiety Scale (Revised)*, the *Behavioural Inhibition Questionnaire* and the *Parental Overprotection Measure* will be discussed as well as the research design, research hypotheses, participants, research procedure, and other relevant constructs used for the methodology of the present study.

Chapter 5 will present the findings rendered. These results will be illustrated by displaying parent and teacher reports. A discussion of these findings will then be presented in Chapter 6.

Conclusions are made and the general findings will be highlighted in Chapter 7. This chapter will include the critical overview of the study as well as recommendations for future studies.

1.6. Chapter summary

Chapter 1 has orientated the reader by means of a general introduction and a statement of the research problem. A motivation for the study and a brief overview of the employed aims and objectives for the research followed. Thereafter key terminology and important concepts were defined. Chapter 1 concluded with a description of the thesis outline and a summary of the chapter.

A review of the current literature on early childhood anxiety and behavioural inhibition will follow in Chapter 2.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

This chapter provides a review of literature covering anxiety in young children as well as literature on the temperament of behavioural inhibition. The prevalence, development and assessment of anxiety and behavioural inhibition in young children are discussed. The next section of this chapter focuses on literature exploring behavioural inhibition as a risk factor for the development of anxiety symptoms. The following literature review highlights a number of moderating factors that have shown to significantly contribute to the relationship between anxiety symptoms and behavioural inhibition, placing special emphasis on parental overprotection.

2.2. A review of literature on anxiety in young children

As mentioned in Chapter 1, anxiety may be defined as a reaction of anticipation and fearfulness towards a distinct threat that might not present any real or present danger. These negative feelings result in bodily discomfort such as nervousness and uneasiness (Barlow, 2002; Gregory et al., 2007).

Although anxiety is found in most young children it has often been described as momentary and fleeting (Craske, 1997). Due to more recent findings the seriousness of anxiety in young children has been reconsidered and psychologists are now paying more attention to early signs of anxiety symptoms in order to prevent the development of a clinical anxiety disorder (Muris, 2007).

According to the DSM-IV-TR clinically significant anxiety found in childhood and adolescence may be distinguished by the following subtypes: generalised anxiety disorder,

social phobia, specific phobia, separation anxiety disorder, obsessive-compulsive disorder, panic disorder, panic disorder with agoraphobia, acute stress disorder and post-traumatic stress disorder (Mash & Wolfe, 2013). Despite the controversy over measuring anxiety in the early years of life, research suggests that preschool anxiety symptoms are significantly high and may be categorised in the same way as that of older children (e.g. Eley et al., 2003; Sterba, Egger, & Angold, 2007).

2.2.1. Prevalence of anxiety in young children. From epidemiological studies conducted in the past few years, it is evident that anxiety disorders are of the most common psychological problems amongst children and adolescents with community prevalence rates varying from 2.2% to 9.5% (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Rapee et al., 2009). There is a growing awareness that anxiety is a serious and familiar mental health problem amongst the earlier years of childhood. Cartwright-Hatton, McNicol and Doubleday (2006) found that anxiety in pre-adolescent children was more than fairly common, with the rate of diagnosis at a minimum of 2.6% and a maximum of 41.2% in early and middle childhood. Two other studies found that the prevalence estimates for anxiety disorders and internalising problems in preschool children were around 10 to 15% (Briggs-Gowan, Carter, Irwin, Watchtel, & Cicchetti, 2004; Egger & Angold, 2006)—again confirming that anxiety symptoms in young children need to be assessed and monitored.

In a more up-to-date review on the global prevalence of anxiety disorders which looked at 87 studies in 44 countries it was found that culture, conflict, economic status, age and gender were the most important contributing factors to the variability of prevalence rates of anxiety globally (Baxter, Scott, Vos, & Whitford, 2013). The prevalence rates of childhood anxiety in South Africa are known to be much higher than those of other countries (Burkhardt et al., 2003; Muris et al., 2006; Muris, Schmidt, Engelbrecht, & Perold, 2002). This is not particularly surprising as South Africa is a country with some of the highest rates of violence

in communities, in households and interpersonally, affecting the young children who regularly witness and experience such violent behaviour (Liang, Flisher, & Lombard, 2007).

In the Western Cape Province of South Africa, Muris et al. (2002) found that between 22% and 25.6% of school children between 7 and 13 years old had anxiety symptoms. These prevalence rates are considerably high and indicate that a large number of children in South Africa have anxiety problems. Their study revealed that South African children expressed significantly higher levels of anxiety symptoms in comparison with Dutch children. Findings from this study show that race influenced the level of anxiety, with Coloured and Black² (now referred to as 'African' according to the South African Constitution) children having elevated levels of anxiety in comparison with White children (Burkhardt et al., 2003; Muris et al., 2006; Muris et al., 2002). The implication therefore is that anxiety levels in young South African children is in fact higher than in other countries and needs critical attention. Factors such as culture, conflict, economic status, gender and age may also be contributing to these high prevalence rates, as predicted by Baxter et al. (2013).

2.2.2. Development of anxiety in young children. The limited literature on the developmental patterns of anxiety symptoms in early childhood suggests that for most young children anxiety symptoms are not significantly impairing and disappear with time (Craske, 1997). However, for the minority of children this is not the case and the development of their anxiety symptoms show moderate stability that lingers into adulthood (Sweeney & Pine, 2004). More recent findings confirm that anxiety symptoms and anxiety disorders in young children develop both chronically and unchangingly if not treated (Karevold, Roysamb, Ystrom, & Mathiesen, 2009; Mian, Wainwright, Briggs-Gowan, & Carter, 2012).

² In post-apartheid South Africa, and in accordance with the Constitution, the term 'black' is used to refer to people from the African, Coloured, Indian, and (more recently) Chinese communities of South Africa. The terms, 'Coloured and Black' are controversial in South Africa and have been referred to in this thesis for the sole purpose of reporting the descriptions of previous articles and to distinguish between racially different South African communities that exist as a result of the country's political past. These terms are not used with the intention to be discriminatory.

The developmental sequence of normal anxiety is to some extent predictable in its course, being influenced by the age of the child. Young children most frequently suffer from separation anxiety when they are separated from an important attachment figure such as their mother or father. They also experience anxiety when entering a dark or unfamiliar place. Older children more frequently experience anxiety when exposed to issues related to interpersonal and social identification such as social humiliation, rejection or embarrassment (Barrett, 2000). It has been noted that there is somewhat of a heterotypic continuity in the way in which anxiety symptoms manifest, suggesting that anxiety develops according to a consistent underlying developmental process but the way in which the anxiety symptoms are expressed often depends on the developmental stage of the child (Feng, Shaw, & Silk, 2008).

The maintenance and development of anxiety in young children cannot be reduced to one single cause, but rather to the contribution of a number of influences that are likely to keep anxiety consistent and even intensified as the child gets older (Muris, 2006). In a recent longitudinal study exploring the developmental patterns of various types of childhood anxiety symptoms, it was found that the developmental trajectories of anxiety symptoms in preschool children were significantly diverse and heterogeneous (Broeren, Muris, Diamantopoulou, & Baker, 2013). They also found that most children's anxiety symptoms remained relatively stable over time, indicating that efforts need to be made to reduce these symptoms through various means of intervention, assessment and treatment. In order to prevent and treat anxiety disorders effectively we need to improve our understanding of the development of anxiety symptoms in early childhood (Bell, 1986).

2.2.3. Assessment of anxiety in young children. The significant prevalence rates and stability of anxiety in young children is evident from recent literature (e.g., Bufferd, Dougherty, Carlson, & Klein, 2011; Dougherty et al., 2013) showing that without identification and

treatment at a young age, anxiety symptoms will continue to develop and have impairing effects.

There is a significant lack of research on anxiety symptoms in young children (Campbell, 1995; Egger et al., 2006), more specifically in young South African children (Loxton, 2009). Certain challenges in assessing early childhood anxiety symptoms may be largely explained by the limited research within this age group. One of these challenges involves the debate about the suitability of using the same diagnostic criteria for assessing anxiety symptoms of both older children and young children (e.g. Egger et al., 2006). Certain academics have argued that preschool anxiety symptoms, unlike the anxiety symptoms of older children, can be presented in a more uni-dimensional model (rather than multi-dimensional) that only becomes distinct and disorder-specific over time (e.g. Mian, Godoy, Briggs-Gowan, & Carter, 2012).

Emerging evidence shows that standard diagnostic criteria may be used with children from a very young age. Mian et al. (2012) explored the assessment of 2- and 3-year-old children's anxiety symptoms. They found that, despite the children's young age, their symptoms could consistently be grouped into separate, diagnostic-specific categories confirming that early childhood anxiety symptoms may in fact be differentiated into diagnostic categories like generalised anxiety, obsessive-compulsive symptoms, separation anxiety and social phobia. Mian et al. (2012) examined the factor analyses on parent-reported anxiety symptoms in 2- and 3-year-old children and found that these anxiety symptoms were consistent with the diagnostic categories in the DSM-IV-TR. These results imply that measurement tools for assessing young children's anxiety symptoms must account for the different subtypes of anxiety.

Another obstacle in assessing anxiety symptoms in early childhood is the difficulty encountered to assess the internal feelings of young children (Warren, Umylny, Aron, &

Simmens, 2006). This is perhaps since young children often struggle to express very abstract and complex feelings such as anxiety. Luby, Belden, Sullivan, and Spitznagel (2007) explored the contribution that pre-schoolers made to the diagnosis of their depression and anxiety. They found that pre-schoolers were able to report on very basic symptoms of depression and anxiety but were less useful as informants on more complex and abstract symptoms of anxiety. The inability to rely fully on young children's self-reports has been solved by making use of parent and teacher report measurement tools, which have recently shown to be both reliable and valid in recognising anxiety symptoms in young children (Edwards et al., 2010).

Combining multiple informants in the assessment of young children's anxiety symptoms is useful to improve the accurate identification of the problem (Tarullo, Richardson, Radke-Yarrow, & Martinez, 1995). Parents and teachers can assess the child's behaviour because they tend to observe the child over a longer period of time within a variety of settings and developmental stages, making it easier to report on any problems they may perceive in the child. In addition to this, it is usually the parents and teachers who refer the child for assessment and are also most likely to be the adults who will be involved in the child's treatment (Fonseca & Perrin, 2001). One of the first and most commonly used parent and teacher report measures of this kind is the *Child Behaviour Checklist* (CBCL; Achenbach, 1991a, b) which measures behavioural problems in children from 4 to 18 years old by means of 118 specific problems. The parents and teachers must indicate the degree to which the child suffers from each problem on a scale which ranges from 0 (*not true*) to 2 (*often true*).

A more recent and psychometrically sound parent and teacher report measurement tool that is particularly designed for anxiety problems only is the *Revised Preschool Anxiety Scale*, also referred to as *The Childhood Concerns Survey* (PAS-R; Edwards et al., 2010). This parent and teacher report specifically measures anxiety symptoms in young children and is a revised version of the *Preschool Anxiety Scale* (PAS; Spence, Rapee, Macdonald, & Ingram,

2001). The PAS consists of 30 items measuring DSM-defined anxiety disorders in the subcategories of social anxiety, generalised anxiety, separation anxiety, specific fears and obsessive-compulsive disorder. Parents and teachers rate the child's anxiety symptoms on a scale ranging from 1 (*not true at all*) to 4 (*very often true*). Some studies reveal low to modest levels of agreement amongst different informants such as parents and teachers (Ballespí et al., 2012), but it does not necessarily reflect low validity or low reliability. It could instead reflect the different perspectives of the informants and the fact that they observe the child in different situations and contexts (Fonseca & Perrin, 2001). Teachers will report more accurately on a child's behaviour and adaption to school settings whereas parents will provide a more accurate depiction of the behaviour in other social and interpersonal settings within the home or amongst strangers.

2.2.4. Gender and age as variables. Studies on childhood anxiety have shown significant gender and age differences in anxiety levels amongst children (e.g., Costello et al., 2003; Muris, 2007; Rapee et al., 2009). In line with these findings, a South African study by Muris et al. (2002) found that girls reported more anxiety symptoms than boys and younger children reported significantly more anxiety symptoms than older children.

While some studies show significant gender and age differences in anxiety levels of children (e.g., Costello et al., 2003; Muris et al., 2002; Rapee et al., 2009), others demonstrate non-significant or unclear findings (e.g., Egger et al., 2006; Edwards et al., 2010; Spence et al., 2001). Although Wege (2014) found no significant gender differences in anxiety levels, significant age differences were found in anxiety levels as reported by teachers. Consequently the present follow-up study sets out to shed more light on the understanding of the effects of gender and age on anxiety levels in young South African children.

2.2.5. Risk factors. Due to varying developmental trajectories of anxiety symptoms found in young children, it is possible that the identification of anxiety symptoms may be most

effectively achieved by also assessing risk factors which may be encouraging the development of such anxiety. Current research supports this notion. Even though there is limited research on young children's anxiety symptoms, existing literature suggests that the aetiology of anxiety problems in young children may be best understood by means of dynamic and multifactorial models that consider a variety of risk factors (Muris et al., 2011; Pahl, Barret, & Gullo, 2012; Van Brakel, Muris, Bögels, & Thomassen, 2006). Risk factors that have been found to be particularly prominent in the development of anxiety include a range of genetic-based vulnerabilities and environmental influences (Muris, 2007). For example, children whose parents suffer from an anxiety disorder are seven times more vulnerable to developing anxiety symptoms than children with non-anxious parents (Biederman et al., 2006). The influence that parents have on their child's anxiety does not only consist of genetic vulnerabilities but also extends to insecure attachment, parental negative affect, parental stress and other parental behaviours such as overprotection and excessive control (Mcleod, Wood, & Weisz, 2007; Pahl et al., 2012). Negative life events, violence exposure and socio-demographic factors have also shown to increase the risk of developing anxiety symptoms in a young child (Briggs-Gowan et al., 2010; Mian et al., 2011).

In a recent longitudinal study Broeren et al. (2013) explored the developmental patterns of various types of childhood anxiety symptoms. They found that the developmental trajectories of anxiety symptoms in preschool children were significantly diverse and heterogeneous. These varying developmental patterns of anxiety symptoms in young children perhaps again provide evidence that a number of risk factors and moderating factors are involved in anxiety in young children. They also found behavioural inhibition, which is a childhood temperament, to be a strong predictor of high social anxiety trajectory. This may

suggest that the temperament of behavioural inhibition could be one of the most prominent and reliable means to identify anxious young children—specifically socially anxious children.

Research on early childhood anxiety indicates that more attention needs to be shown towards the anxiety symptoms of young children. The high prevalence rates provide support for this concerning issue—especially amongst young South African children from the Western Cape. The limited research on the development of anxiety in young children shows that there is a variety of influences that may contribute to the stability of anxiousness throughout childhood. In order to minimise the prevalence rates of anxiety presently found in children, better assessment options are needed. Assessing young children for anxiety symptoms is difficult for a number of reasons, mostly because these symptoms are internalised and difficult for young children to express. However, assessment challenges have been overcome by effective parent and teacher reports. Recent literature indicates that assessing anxiety symptoms at an early age and exploring prominent risk factors could assist in significantly reducing the levels of anxiety found in young children. The next section of this literature review focuses on one of the most prominent risk factors discovered in childhood anxiety research—the temperament of behavioural inhibition.

2.3. A review of literature on behavioural inhibition in young children

A child's temperament will have an influence on the way in which they see the world and the way they adapt to it (Rothbart, Ahadi, & Evans, 2000). It is therefore understandable that a temperament such as behavioural inhibition in a child, defined by severe shyness and fearfulness, becomes a common risk factor in the development of an anxiety disorder. In the following section a brief overview of the current literature on behavioural inhibition will be given which will include the prevalence, aetiology, development, and assessment of this temperament. This will be followed by the emerging literature on behavioural inhibition as a risk factor for anxiety symptoms. Lastly, the chapter briefly highlights certain moderating

variables that may contribute to levels of anxiety and behavioural inhibition found in young children, placing particular emphasis on parental overprotection as moderating variable.

2.3.1. Prevalence and aetiology of behavioural inhibition in young children. Behavioural inhibition is a temperament that has been characterised as a child's inclination to be unusually shy and fearful of novel and unfamiliar social and non-social situations (Garcia-Coll, Kagan, & Reznick, 1984; Kagan, Reznick, Snidman, Gibbons, & Johnson, 1988). This temperament can be found in approximately 10 to 15 % of children and is identifiable in an individual as early as infancy (Kagan, Reznick, & Snidman, 1988).

Moehler et al. (2008) found that infant crying to unfamiliar stimuli at four months of age significantly determined behavioural inhibition in the second year of life. The ability to detect behavioural inhibition as early as infancy provides possible support for the notion that it is a biologically-based temperamental disposition which can be observed in the behavioural characteristics of a child (Kagan, Reznick & Snidman, 1988). Behavioural inhibition has been found to be moderately heritable, particularly in children suffering from extreme levels of behavioural inhibition (Dilalla, Kagan, & Reznick, 1994). This temperament is accompanied by behaviour such as vigilance, wariness, withdrawal and extreme social reticence (Rubin, Hastings, Stewart, Henderson, & Chen, 1997). Behavioural inhibition is also sometimes linked to personality constructs such as high neuroticism and low effort control (Muris et al., 2006; Van der Linden, Vreeke, & Muris, 2012; Vreeke & Muris, 2012).

Behaviourally inhibited infants and pre-schoolers have shown to have a larger amount of right, rather than left, frontal cortical activity on the electroencephalogram (Fox, Henderson, Rubin, Calkins, & Schmidt, 2001). Studies have also revealed that children suffering as a result of this temperamental trait have a heightened startle response with a higher heart rate and lower heart period toward fearful and stressful stimuli than uninhibited children (Calkins, Fox, & Marshall, 1996; Schmidt, Fox, Schulkin, & Gold, 1999). Kagan, Reznick and

Snidman (1988) hypothesised that behavioural inhibition is based on higher reactivity of the basolateral and central nuclei of the amygdala. When inhibited and uninhibited children are compared, variations in the excitability of neural circuits in the limbic system are evident (Kagan & Snidman, 1991). Inhibited children also have chronically high sympathetic arousal, which leads to the assumption that inhibition occurs when there is a lowered threshold to arousal in the amygdala (Kagan, Reznick, & Gibbons, 1989). Adolescents with a behaviourally inhibited temperament show increased amygdala activation in response to fear stimuli (Schwartz, Wright, Shin, Kagan, & Rauch, 2003). A study by Perez-Edgar et al. (2007) compared the amygdala responses to emotionally suggestive faces in both inhibited and uninhibited young adolescents. Results indicated that behaviourally inhibited adolescents who had been inhibited from infancy had increased amygdala responses toward emotional faces in comparison to uninhibited participants' responses. These research findings support Kagan, Reznick and Snidman's (1988) views on the role that the amygdala plays in the temperament of behavioural inhibition.

It seems then that behavioural inhibition can affect a child on both a behavioural and cognitive level. This in turn could possibly impact the child's social and psychological well-being. As behaviourally inhibited children get older they often struggle in peer relationships and do not take part in different forms of child play (Fox et al., 2005; Fox, 2010). It therefore seems important that identifying the development of behavioural inhibition and assessing this temperamental trait could be pivotal in managing the way in which it influences the child's daily functioning.

2.3.2. Development of behavioural inhibition in young children. Behavioural inhibition is reported to be relatively stable in its development during toddlerhood and preschool, through to middle childhood (Kagan, Reznick, Snidman, Gibbons, & Johnson, 1988). Studies on the stability of behavioural inhibition show that this temperament is moderately stable from

infancy to early childhood (Fox et al., 2001) as well as from early to late childhood (Asendorpf, 1994) but decreases slightly in stability on the continuum from infancy to adolescence (Kagan, Snidman, Kahn, & Towsley, 2007).

Even though behavioural inhibition is essentially defined by the consistent inclination to respond with fearfulness and withdrawal towards novel stimuli, research suggests that this temperament is observed through varying behavioural characteristics at different ages. For example, toddlers who are behaviourally inhibited tend to withdraw from strangers and unfamiliarity, clinging to caregivers and engaging in minimal speech (Garcia-Coll et al., 1984). At preschool age behaviourally inhibited children demonstrate severe shyness, social reticence and often a subdued nature (Kagan et al., 1987; Rubin, Burgess, & Hastings, 2002). During elementary school behavioural inhibition can be identified most easily through the observation of group situations where inhibited children are frequently described as being outside of the group (Kagan, Reznick, Snidman, Gibbons, & Johnson, 1988). The development of behavioural inhibition in later childhood and adulthood is not as easily identifiable as in the younger years of life. The temperament can however still be singled out by individuals who are more cautious, less extraverted and more socially isolated and wary than those who are not inhibited (Gest, 1997). It seems then that assessment tools for behavioural inhibition need to be age specific.

Rubin et al. (2002) found that the development of behavioural inhibition was influenced and moderated by the style of parenting. Maternal control and parental criticism increased the levels of behavioural inhibition in children from the age of two to four. Other factors that may contribute to the stability of this temperament include social competence and attentional control (Asendorpf, 1994; Muris et al., 2011). Behaviourally inhibited children who display sensitivity towards error monitoring are also more likely to remain stable in their inhibition. However, the level of behavioural inhibition may in fact decrease by improving a child's

social skills and helping them manage their ability to control their attention and error monitoring (Fox, 2010). It appears then that there are possible moderating variables that may also influence the development of behavioural inhibition.

2.3.3. Assessment of behavioural inhibition in young children. It is believed that temperamental constructs are best assessed in young children before other factors and influences affect the way in which the temperament is presented in the child (Hirshfeld-Becker et al., 2008). It is important to assess and measure behavioural inhibition as accurately as possible from as early as toddlerhood. Research has supported the notion that behavioural inhibition is a temperament that is identifiable in the first years of life (Fox et al., 2001), confirming that such early assessment is possible.

A behaviourally inhibited temperament can be measured in a number of ways from standardised observation procedures to self-report and parent report measures of toddlers and young children. Originally the temperament of behavioural inhibition was only assessed through observations where the child would be exposed to a number of unfamiliar social (e.g. an unknown adult) and non-social (e.g. an unknown game or mystery box) stimuli and measured by their consistent reactions towards this unfamiliarity (Hirshfeld-Becker et al., 2008). Indicators of inhibition during these observations would include hesitancy in approaching unfamiliar people and objects, limited amount of interaction or play, keeping close distance to caregivers, and avoidant behaviour. Observations of this kind are quite extensive, costly and time-consuming and different laboratories use alternative procedures in observing, which makes comparisons of results difficult (Rothbart & Bates, 2006).

Currently more cost-effective and less time-consuming methods have been developed to assess behavioural inhibition in young children. Third party reports from a variety of informants such as parents and teachers include pencil-and-paper instruments and questionnaires. This enables the researcher to keep record of a child's development in

longitudinal studies. Certain limitations do come with using report measures such as interpretation bias, reference bias, understanding the questions, and abiding to social desirability (Kim et al., 2011). Due to these limitations the use of report measures, specifically the use of parental reports in measuring and assessing behavioural inhibition, has been criticised (Kagan et al., 1991). Most researchers nowadays combine the use of both parent report measures and additional informants' observations (such as school teachers') to obtain a more comprehensive understanding of a child's temperament (Mangelsdorf, Schoppe, & Burr, 2000; Rothbart & Bates, 2006).

There are limited questionnaires that have been specifically designed to assess childhood behavioural inhibition and many of these report measures have not been validated for their reliability and validity to accurately assess behavioural inhibition in a child.

According to Kim et al. (2011) the most validated report measures that have been designed to assess behavioural inhibition are the *Behavioural Inhibition Scale* (BIS; Muris, Meesters, & Spinder, 2003) and the *Behavioural Inhibition Questionnaire* (BIQ; Bishop et al., 2003). The BIS only assesses behavioural inhibition within the social context. However, a recent study explored the components of behavioural inhibition in preschool-aged children and found that this temperament needs to be measured as a multidimensional construct where both the social and non-social components are considered (Dyson, Klein, Olino, Dougherty, & Durbin, 2011). The BIQ was specifically designed to address this issue and prevents findings from being influenced by the bias that behavioural inhibition is a risk factor for social anxiety rather than general anxiety (Broeren & Muris, 2010). It is for this reason that Wege (2014) used the BIQ as a measurement tool for behavioural inhibition and, as a result of its reliable findings, the BIQ will also be used in the present study.

2.3.4. Gender and age as variables. Investigating gender and age differences in behavioural inhibition needs further attention as findings are quite ambivalent. Previous findings on the

effects of gender and age are not clear or consistent. Significant gender differences for behavioural inhibition were found for only two of the subscales of the BIQ in a study assessing 3- to 5-year-old children (Bishop et al., 2003) where girls were rated as more inhibited in performance and adult situations than boys. In contrast, Kim et al. (2011) and Rapee et al. (2009) have found no significant overall gender differences in inhibition.

Significant age differences have been found for behavioural inhibition in a sample of children aged 4 to 7 years old in a study by Broeren and Muris (2010) where the oldest children were found to exhibit the highest levels of behavioural inhibition in performance situations. Wege (2014), however, found no significant age or gender differences for behavioural inhibition in her South African study. This may suggest that the effects of gender and age on behavioural inhibition need further exploration.

To condense what has been discussed thus far, behavioural inhibition is a temperament that has shown to be closely linked to the development of childhood anxiety and is evident in young children. A number of variables such as genetics, neurotic personality traits and cognitive deficits could account for the development of such a temperament. Assessing and monitoring behavioural inhibition are important in encouraging optimal daily functioning and minimising excessive shyness. As with anxiety symptoms, the observable traits of behavioural inhibition are influenced by the age of a child and its relatively stable development is moderated by variables such as parental control and overprotection. In order to monitor the impact behavioural inhibition will have on a child's anxiety levels, early assessment of the temperament by means of various parent and teacher reports is advised.

According to the literature that has been discussed, measuring and identifying behavioural inhibition at an early age seems to be important in reducing the risk of anxiety disorders (Ballespí et al., 2012; Rapee et al., 2005). The following is a brief review of

literature examining childhood behavioural inhibition as a risk factor for anxiety symptoms in young children and the conditions that might moderate this relationship.

2.4. Anxiety symptoms and behavioural inhibition in young children

Research has shown that there is a strong relationship between anxiety symptoms and behavioural inhibition in young children (e.g., Biederman et al., 1993; Chronis-Tuscano et al., 2009; Muris et al., 2011). These studies show that children who have a temperament defined as behaviourally inhibited are at a greater risk of developing an anxiety disorder in later life. In the past 20 years a number of studies revealed an increased prevalence of anxiety symptoms amongst behaviourally inhibited children (Fox et al., 2005; Hirshfeld-Becker et al., 2008). These findings confirm that behavioural inhibition may be considered a prominent risk factor in the development of anxiety symptoms. Some researchers suggest that this temperament is associated with a wide range of anxiety-related symptoms and disorders (Biederman et al., 1993; Broeren et al., 2010; Muris, Merckelbach, Wessel, & Van de Ven, 1999) whereas others argue that behavioural inhibition is a more specific risk factor for social anxiety disorders (Biederman et al., 2001; Chronis-Tuscano et al., 2009; Gladstone, Parker, Mitchell, Wilhelm, & Malhi, 2005).

An important series of longitudinal studies by Biederman et al. (1993) were conducted over three years. They examined anxiety symptoms in two independent samples of behaviourally inhibited preschool children—one sample being clinically identified at a general hospital in Massachusetts and the other sample being epidemiologically identified from a previous longitudinal study. Results of Biederman et al. (1993) follow-up studies showed that preschool children who were initially identified as having a behaviourally inhibited temperament were significantly more likely to develop an anxiety disorder than those children who were considered uninhibited.

A more recent and larger longitudinal study, following 261 children aged 5 to 8 years old, showed that behavioural inhibition should primarily be viewed as a specific factor for the development of social anxiety (Muris et al., 2011). There might be methodological issues that could have influenced these findings, as noted by the authors. Muris et al. (2011) used the BIS which only assesses the social aspects of behavioural inhibition. Had the authors made use of the BIQ, which measures both the social and non-social aspects, the findings of the study might have been strengthened. Recent studies that attend to this methodological issue by using the BIQ instead of the BIS, still produce results indicating that an inhibited temperament is strongly associated with high levels of social anxiety trajectories in early childhood (Broeren et al., 2013). This provided the rationale for using the BIQ as an assessment tool in the study by Wege (2014) and in the present follow-up study.

The South African study by Wege (2014) confirms international findings of a significant relationship between anxiety symptoms and behavioural inhibition. In this study results showed that there was a significant positive relationship between PAS-R scores and BIQ scores as reported by both parents and teachers. No significant gender differences were found in either anxiety symptoms or behavioural inhibition scores. Age differences were found for generalised anxiety scores as reported by teachers where older children (aged 4 to 6) had higher generalised anxiety scores than the younger children (2- to 3-year-olds). This finding may highlight the increasing development of anxiety levels in young children and perhaps provide further motivation for the present follow-up study to monitor the anxiety levels in this cohort of children.

2.4.1. Moderating variables. Although it is clear from the presented research that behavioural inhibition acts as a significant risk factor in the development of anxiety symptoms, specifically social anxiety symptoms, not all children who have behaviourally inhibited temperaments develop anxiety disorders (Fox, 2010). This suggests that there are also a

number of moderating variables at play that might result in an inhibited child developing anxiety symptoms (Muris et al., 2011; Pahl et al., 2012).

Some studies explored a more diverse approach to understanding the development of anxiety symptoms in childhood and its interaction with behavioural inhibition (Manassis, Hudson, Webb, & Albano, 2004; Van Brakel et al., 2006). These researchers found that various factors such as parental anxiety, parental control, stressful life events and insecure attachment, in combination with behavioural inhibition, contributed to higher anxiety levels and continuity of anxiety symptoms. Recent studies have shown similar findings, with both the levels of anxiety and behavioural inhibition being influenced by the above mentioned moderators (Martin et al., 2007; Muris et al., 2011; Pahl et al., 2012).

Cognitive processes such as information processing and attention bias have also been found to be significant moderators in the continuity of behavioural inhibition and anxiety (Fox, 2010). Behaviourally inhibited children who show heightened orientating towards threat and more error monitoring will most likely remain more stable in behavioural inhibition and develop anxiety disorders during early adolescence (Fox, 2010). A study by White, McDermott, Degnan, Henderson, and Fox (2011) found that high levels of inhibitory control increased anxiety problems for behaviourally inhibited children but that high levels of attention shifting served as a protective factor in reducing levels of behavioural inhibition.

2.4.2. Parental overprotection. Sufficient evidence suggests that parental overprotection is a significant moderator in the development of anxiety symptoms in young children (Bögels & Brechman-Toussaint, 2006; Edwards, Rapee, & Kennedy, 2010; Thomasgard & Metz, 1997). This finding was confirmed for older South African children (Muris et al., 2006) and in interaction with behavioural inhibition, may promote anxious behaviour (Mcleod et al., 2007; Rapee, 1997). Research has shown that parents who overprotect their children may not encourage the child to approach unfamiliar and difficult situations which may prevent the

development of essential problem-solving skills (Appleton, 2010). Literature reports parental overprotection to be an important moderator to assess due to the significant role parents have been found to play in the treatment and prevention of anxiety in young children (Barnish & Kendall, 2005).

Parental overprotection has recently been shown to contribute to either behavioural inhibition or anxiety, or both (Dougherty et al., 2013; Muris et al., 2011) and it is believed that this moderator might provide some helpful insight into interpreting the relationship between anxiety and behavioural inhibition in young children.

A recent meta-analysis study found that even after controlling for moderators, behavioural inhibition was still considered the most significant predictor of social anxiety (Clauss & Blackford, 2012). Therefore, even though parental overprotection will be measured and monitored, the present study will focus on behavioural inhibition as the prominent risk factor in the development of anxiety symptoms in young children.

In summary, this section provides evidence that behavioural inhibition is a prominent risk factor in the development of anxiety, more specifically social anxiety in young children. Such findings have brought about some debate as to whether behavioural inhibition determines general anxiety or social anxiety and it is important to use a measurement tool that does not fall bias to measuring only social anxiety. This section has also provided literature which indicates that the level of behavioural inhibition is significantly influenced by a number of moderating variables which include various cognitive processes and parental influences. One of the most significant moderators in both the level of anxiety and behavioural inhibition is parental overprotection, which will be assessed as a moderating variable in the present study.

2.5. Chapter summary

From the above literature review, it is apparent that there is much evidence to suggest a significant relationship between anxiety symptoms and behavioural inhibition in young children, which has also been confirmed in a South African study by Wege (2014).

Replicating these findings amongst young children in South Africa in a follow-up assessment might significantly impact our understanding of anxiety in young children, leading to more effective prevention and intervention programmes that can be specifically designed for South African parents and their children. The present study wishes to contribute by means of a follow-up assessment as part of a current longitudinal study (Wege, 2014), which explores the relationship between anxiety symptoms and behavioural inhibition in young South African children. In an effort to obtain a broader understanding of the development of anxiety symptoms in these children, the potential moderating factor of parental overprotection will also be assessed.

Chapter 2 began by discussing literature on the two main constructs for the present study—early childhood anxiety and the temperament of behavioural inhibition.

A review of studies followed, which provides strong evidence for the significant role that behavioural inhibition plays in the development of anxiety symptoms in young children.

Chapter 2 ended identifying moderating variables that have shown to influence both the levels of anxiety symptoms and behavioural inhibition, placing particular emphasis on parental overprotection.

The subsequent chapter will provide a theoretical framework on which the present study is based.

CHAPTER 3

THEORETICAL FRAMEWORK

3.1. Layout and purpose of theoretical framework

This chapter discusses theoretical frameworks most suitable in explaining and understanding the development of anxiety symptoms in young children.

The chapter will begin by contextualising the developmental stage of the sample of children in the present study. A brief description of perspectives on development, namely the contextual perspective, the biological perspective and the social perspective will follow. The contextual perspective will build the main theoretical foundations for the present study, placing particular emphasis on the ecological systems theory of Bronfenbrenner (1979, 1989). Bronfenbrenner's theory will be used as an organising model in which the different viewpoints or foci of development are incorporated into a holistic and working structure. The biological influence of child temperament and the social influence of attachment (Bowlby 1958, 1973) will be discussed as contextual factors influencing the development of young children and will essentially feed into Bronfenbrenner's ecological systems. The theoretical background on both temperament and attachment has been described to provide a background to the constructs pertinent to this study and to illustrate how these different aspects of development interact with the child and his or her world of contextual influences. Relevant developmental theories, the psychosocial theory of Erikson (1963), the social learning theory of Bandura (1977) and the cognitive developmental theory of Piaget (1972) are examined. These developmental theories all focus on different aspects of development considered important influences in Bronfenbrenner's ecological systems theory.

The theoretical frameworks to be mentioned in this chapter are meant to give shape to the collected data (Louw et al., 2014; Shaffer, 2002). The importance of examining multiple

theories is imperative since there is no single way to understand or interpret human behaviour and no theory is comprehensive. Although this chapter weighs more heavily on the contextual perspective, the researcher presents multiple developmental theories and perspectives on interpreting development in young children and the theories that may be suitable in explaining anxiety symptoms and behavioural inhibition in young South African children.

3.2. Contextualising the developmental stage of young children

This section contextualises the developmental stage of the present study's cohort of 3- to 7-year-old children. The initial study (Wege, 2014) assessed a sample of children who were 2 to 6 years old. One year later these children, now 3 to 7 years old, were assessed in the present follow-up study. The present study's sample consists predominantly of children in the early childhood phase—about 2 to 6 years old (Louw, Louw, & Kail, 2014). However, although the majority of our sample (47 children) falls in the early childhood developmental stage, some of the 6- and 7-year-olds in our sample (12 children) entering formal school are about to enter middle childhood, which is the age group 6 to 11 years old (Louw et al., 2014).

During early childhood cognitive and social development is heightened. Children continually expand their cognitive and social structures by means of their daily experiences (Illingworth, 2013). The growth and development of a young child can be significantly influenced by nutrition, genetic-biological factors, medical problems as well as environmental difficulties (Mash et al., 2013; Newman & Newman, 2009; Santrock, 2006). The role of genes, parenting and schooling has been found to be particularly significant in this age group. Middle childhood is also considered a critical period for developing on a cognitive, social and emotional level as these years are focused on formal education and adjusting to new social environments (Louw & Louw, 2014; Mash et al., 2013).

3.3. Contextual perspective on child development

Since the present study is conducted in South Africa, it is important to keep an African focus in mind. According to the African perspective, the community plays a significant role in guiding the behaviour of individuals and encourages a collective existence in contrast to an individual existence emphasised by the Western perspective (cited in Louw et al., 2014).

Although there are limited theories on the African perspective, Nsamenang (1992), one of the few theorists from the African perspective, believes it is important to incorporate Bronfenbrenner's contextual perspective into understanding human development from an African perspective. The contextual perspective will therefore be considered an important theoretical framework in interpreting the findings of the present study.

The contextual perspective emphasises the importance of the culture and community as influential factors in a child's development (Du Plessis, 2006; Meyer, Loxton, & Boutler, 1997). The contextual perspective does not only consider the direct environmental influences on a child such as parents, teachers and siblings, but also considers the indirect environmental influences such as extended family, schooling, television and surrounding institutions (Thomas, 2000). Bronfenbrenner (1979) presented these contextual factors and environmental influences in an early model known as the ecological systems theory. This theory has been influential in the field of child and youth care (Derksen, 2010). There are essentially two versions of the ecological systems theory developed by Bronfenbrenner (1979, 1989) and he continually adapted and developed his theory throughout his life (Bronfenbrenner, 2005; Tudge, Mokrova, Hatfield, & Karnik, 2009). His earlier version of the ecological systems theory (Bronfenbrenner, 1979) focused on the *contextual* influences in comparison to his later versions, which focused more on the *processes* of human development (Bronfenbrenner, 1989). For the purposes of this study, aspects of both versions will be mentioned, with particular emphasis on the earlier version (Bronfenbrenner, 1979).

3.3.1. *Bronfenbrenner's ecological systems theory.* The early model presents contextual influences affecting the child in four concentric systems (Bronfenbrenner, 1979).

The first and innermost system, the *microsystem*, refers to the child's immediate environment, influencing the child on all levels (Craig, 1999). The microsystem would be the child's parents, teachers, friends, home or school environment. This system would have the most significant influence on the development of a young child (Bronfenbrenner, 1979). In application, sometimes the parent's own anxiety of leaving the child or exposing the child to any harmful experiences is projected to such an extent that parental overprotection influences the child to develop behaviour of withdrawal and anxiety in unfamiliar situations (Jacob & Sheshadri, 2013).

The *mesosystem* is the second level in the ecological systems theory. This system is the interrelationship amongst microsystems, such as between the child's home and their school environment. Home and school environments that are hostile in nature or continually changing and full of unrest often result in negative mental health effects on children (Illingworth, 2013; Mash et al., 2013).

The *exosystem*, outside of the mesosystem, involves the social environment that indirectly influence a child's daily functioning. In application, a stressful workplace or financial situation for a parent will have a negative impact on the child as both limited resources and parental anxiety affect child development (Bronfenbrenner, 1979; Thomas, 2000).

The *macrosystem*, the outermost level of the child's environmental influences, comprises the cultural norms and values of the child's community that have an impact on all other systems within the concentric structure (Bronfenbrenner, 1979).

The *chronosystem*, is the level which considers the influence of time, both on an external and internal (physical) level. This may involve the death of a parent or even the physiological changes of the growing child (Bronfenbrenner, 1989). The concept of time forms part of Bronfenbrenner's later work. The most significant difference in his later work compared to his earlier theory was Bronfenbrenner's focus on the processes of human development, which is displayed in his Process-Person-Context-Time model (PPCT; Bronfenbrenner, 2005). Although this PPCT model will not be discussed in depth in this chapter, it has the potential to form part of an important theoretical foundation in future follow-up assessments for this cohort study as, being longitudinal, it will be more effective to examine the interrelated influence of processes, person and context over time.

In the next section, more theoretical context is given on childhood temperament and attachment since these constructs will play a role in the overall findings of the present study.

3.4. Biological perspective: The influence of temperament

The biological perspective postulates that child development is determined according to various biological factors. The German physician Griesinger (1817-1868), one of the forefathers of this perspective, argued that abnormal behaviour such as clinical anxiety is as a result of illness or disease to the brain (cited in Nevid, Rathus, & Green, 2008). The biological perspective does not ignore the power of environmental influences but proposes that such influences have a subordinate role in determining the behaviour and development of a child (Shaffer & Kipp, 2013). In application, theorists with this biological perspective would explain anxiety and behavioural inhibition symptoms in young children as predominantly genetic predisposition. Genetic studies have shown that children have an increased risk of developing anxiety symptoms if their parents have a history of anxiety or depressive disorders (Beesdo, Knappe, & Pine, 2009; Eley et al., 2003; Lieb et al., 2000). Studies also show that the temperament of behavioural inhibition is moderately heritable, particularly in children

with extreme levels of behavioural inhibition (e.g. Dilalla et al., 1994). Children who are inhibited can be identified as early as infancy and may display different biological correlates to children who are not inhibited (Fox et al., 2005; Kagan et al., 1989; Moehler et al., 2008; Perez-Edgar et al., 2007). The biological perspective would argue that these research findings provide sufficient evidence to suggest that behavioural inhibition relates to a biologically-based temperament.

Temperament may play a vital part in the way in which a child psychosocially adjusts to his or her environmental influences (Illingworth, 2013; Mash et al., 2013). Temperament may be described as the natural behaviour a person displays when reacting to certain stimuli. It can also be referred to as an individual's personality, which involves their emotion and expression (Louw et al., 2014). According to developmental psychologists temperament can be viewed as a person's moderately stable, characteristic manner of reacting and adapting to their environment and family group (Thomas & Chess, 1977).

In a longitudinal study Thomas and Chess (1977) explored different childhood temperaments from as early as infancy. In their research it became apparent that the temperaments in babies could be grouped into three clusters, namely the easy child, the difficult child and the slow-to-warm-up child. These three clusters were then further investigated by Rothbart, Ahadi, Hershey and Fischer (2001) who derived more detailed labels for infant temperaments, namely *positive affect and approach*, *negative affect*, and *effortful control*. Positive affect and approach describes infants who are easy in temperament, confident in new situations, happy and highly active. Negative affect describes the temperament of a baby who is often sad, angry or fearful and highly reactive to negative and surrounding stimuli. The effortful control temperament describes those infants who display perceptual sensitivity, low-intensity pleasure and frequently act out inhibitory control.

The interaction between a young child's temperament and their environment is termed as *goodness-of-fit*, which indicates that the healthy and optimal development of a young child will be significantly determined by how well a baby's temperamental traits coincide with their surroundings and environmental influences (Shaffer & Kipp, 2013; Thomas et al., 1977). A child with a negative affect or effortful control temperament who was brought up in a particularly violent society or by controlling parents may have a greater chance of developing emotional and behavioural problems such as anxiety, depression or aggression than a child with a positive affect and approach temperament.

Culture has also shown to influence the goodness-of-fit between a child's temperament and environment (Bowie et al., 2013). For example, behavioural inhibition is more positively perceived in Eastern cultures than in Western cultures (Chen, Chen, Li, & Wang, 2009). If the child's temperament does not meet with the child's cultural expectations it may result in anxious behaviour.

The present study focuses on the temperament of behavioural inhibition and believes this temperament to be a risk factor in the manifestation of anxiety symptoms in young children. Extreme levels of behavioural inhibition seem to show significant continuity from toddlerhood into early and middle childhood, causing psychosocial difficulties (Rubin et al., 1997). The impact that behavioural inhibition will make on a child's development will again be determined by the goodness-of-fit (Thomas et al., 1977). Consequently, environmental and contextual influences will largely predict whether or not an inhibited child may develop anxiety symptoms.

Research supports the phenomena that temperament and personality play a significant role in a child's development. Vreeke and Muris (2012) confirmed these findings in a study examining behavioural inhibition, the Big Five personality traits and anxiety symptoms in non-clinical and clinically anxious children. This study found that introversion was most

significantly linked to an inhibited temperament for both non-clinically and clinically anxious children. They also found that parents of clinically anxious children rated their children with higher levels of neuroticism and behavioural inhibition but lower levels of extraversion, compared to parents of non-clinically anxious children. High levels of behavioural inhibition and neuroticism showed to be unique and significant risk factors for anxiety symptoms in children. Vreeke et al. (2012) found the temperament of behavioural inhibition to have the most considerable predictive power in determining anxiety problems in children—even when controlling for neuroticism and extraversion.

Another recent study exploring how anxiety disorders and behavioural inhibition relate to temperament was conducted by Van der Linden et al. (2012). These authors explored the relationship between General Factor of Personality (GFP), behavioural inhibition and anxiety symptoms in pre-schoolers. They found that GFP, which is best defined as the effectiveness to interact with others, is a relevant construct in anxiety proneness and low levels might contribute to the development of anxiety symptoms in young children.

Two temperamental factors considered to influence psychopathology in childhood are the reactive temperamental dimension of emotionality, and the regulative temperamental dimension, effortful control (Derryberry & Rothbart, 1997; Rothbart, 1989). In a study by Rydell, Berlin, and Bohlin (2003) exploring emotionality, emotion regulation and adaption among 5- to 8-year-old children, they found that high fear emotionality and low fear regulation predicted internalising problem behaviour. Insufficient regulation of positive emotions and enthusiasm contributed to a crucial part of maladaptive behaviour in this study. It was later re-confirmed that high emotionality (also known as neuroticism) and low levels of effortful control significantly contribute to the development of internalising disorders such as anxiety and should be included when assessing emotional functioning in childhood (Muris & Ollendick, 2005). A recent study exploring the neural correlates of emotion-based cognitive

control in adults with childhood behavioural inhibition found that the brain regions underlying cognitive control processes were differentially influenced by childhood inhibition and that these inhibited children showed deficient emotion regulation (Jarcho et al., 2013).

It is evident that temperament plays an important role in a child's psychosocial adjustment and may impact a child's reaction to different environmental influences. Differences in temperamental styles in children, as discussed in the beginning of this chapter, may be explained by different biological and genetic make-up as emphasised by the biological perspective. Parental overprotection may be one particularly significant influencing factor in determining the severity of behavioural inhibition levels in a child. The present study is therefore motivated to consider the effects of this parenting style on behavioural inhibition and anxiety symptoms in the present study's cohort of children.

3.5. Social perspective: The influence of attachment

Attachment is also a significant factor in predicting a young child's psychosocial development (Mash et al., 2013). Theorists have provided different models for the explanation and meaning of attachment behaviour in young children. John Bowlby (1958) developed an attachment theory, which emphasised the importance of a positive, protective and trusting relationship during the earliest years of a child's life. Attachment has been generally distinguished as secure or insecure attachment. Secure attachment describes those children who are confident, cry less and deal with separation from the mother in a healthy manner. Three types of attachment patterns were identified as insecure attachment namely, *anxious-avoidant* attachment, *anxious-resistant* attachment, and *disorganised* attachment (Newman et al., 2009; Senior, 2002). Anxious-avoidant attachment results in babies who cry a lot and are distressed by separation from the mother. This insecure attachment bond is as a result of rejection by the mother or caregiver who does not engage in physical comfort or contact with the baby. The baby avoids the caregiver in order to protect him or herself from further maternal rejection.

Anxious-resistant infants have mothers who are not consistent in the way they respond to their infant's distress or attachment-seeking behaviour. Anxious-resistant babies show frustration because they are unable to predict their caregiver's receptiveness. Disorganised attachment exists when a child is insecure, confused and fearful in the presence of the caregiver.

The stronger and more secure the attachment bond between a mother and her baby, the easier it is for the child to be separated from the mother (Bowlby, 1973; Mash et al., 2013). These children are supposedly more secure and therefore more readily open to explore new and unfamiliar environments. The attachment theory proposes that a secure attachment relationship with parents will allow the child to develop the ability to regulate fear and anxiety in threatening environments (Bowlby, 1973; Thompson, 2001). Emerging evidence supports the attachment theory's views. Research shows that the security of attachment will have an influence on the emotional, cognitive and social development of the child (Cassidy & Shaver, 2008). Although children still desire close proximity and closeness with their caregiver during early childhood, they need to learn to move away from their secure base without feelings of anxiousness, particularly when these environments are non-threatening (cited in Shaffer & Kipp, 2013). In middle childhood the parent-child relationship changes again. Children then spend less time with their parents and need to learn how to cope on their own. Therefore the combination of the parent-child attachment and parenting style will play a role in the social skills and competence of the child. The *authoritative parenting style* which is characterised by fair discipline, appropriate boundary setting and warmth has been found to assist such parented children in their social competence (cited in Louw et al., 2014). The opposite, *parental overprotection*, has been labelled an unhealthy parenting style for a child's social development due to the encouragement of avoidant behaviour to novel or unfamiliar situations (Thomasgard et al., 1997).

There are a number of interacting factors that may influence a child's attachment with their mother or caregiver in an interactive process. These factors include responses from the mother in accordance with attachment-seeking behaviours from the baby, the mother's personality and her relationship with the baby, the child's temperament, the mother's presence, psychosocial factors and post-partum depression in the mother (Cassidy et al., 2008; Hudson, Dodd, & Bovopoulos, 2011; Mash et al., 2013). A mother's temperament will also contribute to the attachment bond. A warm and sensitive mother's positive response towards her baby's crying, suckling, smiling and clinging will most likely produce a strong attachment bond between her and her child (Mash et al., 2013). However, if a child has a difficult temperament, which does not produce a goodness-of-fit in accordance with the parent's temperament, it may present difficulties in the child's level of attachment with the caregiver (Thomas et al., 1977; Vaughn, Bost, Van IZendoorn, 2008). All these factors interact with one another and contribute to the level of attachment found between child and caregiver.

Weak attachment bonds between the child and caregiver have shown to result in behavioural and emotional problems from very early in the child's life. Attachment can influence the level of behavioural inhibition and anxiety symptoms found in young children (Shamir-Essakow, Ungerer, & Rapee, 2005). Shamir-Essakow et al. (2005) examined the association between insecure attachment, anxiety symptoms, and behavioural inhibition in 3- to 4-year-old children. They found that the highest levels of anxiety symptoms were displayed in those children who were both behaviourally inhibited and insecurely attached to mothers who were anxious. These results were later confirmed in a recent study conducted by Stevenson-Hinde, Shouldice and Chicot (2011).

Improving parental anxiousness and encouraging parental involvement could contribute largely to improving the attachment bond between the child and the caregiver and to lower levels of anxiety in early childhood. In a review on attachment literature, Brumariu and Kerns

(2010) confirmed that ambivalent and disorganised attachment were significant risk factors for anxiety. Children who are classified as having disorganised and insecure attachment with their caregivers at age 5 to 7 exhibit significantly more anxiety symptoms two years later than those children with secure attachment bonds (Moss et al., 2006).

From the above findings it is clear that the social influence of the child-caregiver attachment bonds, in addition to the temperamental traits and biological make-up of a child, significantly impact on the development of the child and may lead to elevated anxiety levels. The child-caregiver attachment styles interact with temperament and family environment in a complex manner and should be identified and monitored (Hudson et al., 2011; Ollendick & Benoit, 2012). Therefore parental overprotection might influence the severity of a child's temperament as well as their attachment development. Muris et al. (2006) found that perceived overprotective parental behaviours were significantly positively correlated with rejection and anxiety symptoms in South African children and youths. As a result parental overprotection will be considered a contributing factor toward both the levels of behavioural inhibition and anxiety symptoms for the purposes of the present study.

Various developmental theories that provide a basis to interpret behaviour in young children are discussed next. Each developmental theory contributes to understanding a different domain of development in young children and highlights distinctive contextual factors within Bronfenbrenner's ecological systems theory. Understanding the developmental course of anxiety symptoms in young children is crucial in improving existing preventive interventions for anxiety (Barrett, 2000; Bell, 1986).

3.6. Developmental theories

3.6.1. Erikson's psychosocial developmental theory. Erikson (1963) believed that children advance by means of their capability to acclimatise to their environment and are continually

shaped by cultural and social factors within these environments. Erikson (1968) proposed eight stages of psychosocial conflicts that children must overcome. In these eight stages, children need to resolve different tasks at varying points in their development. Therefore, at each stage of development demands are made on the child by their significant others, the society and social groups. Erikson (1968) argues that children need to resolve psychosocial conflicts in each of these stages in order to achieve optimal development throughout their life. Although the age range of the children in the present study is slightly arbitrary due to the limited number of children, they may be divided according to *early childhood* (n = 47) and *middle childhood* (n = 12).

Initiative versus guilt is the psychosocial conflict during the early childhood phase (Erikson, 1968). The 3- to 6-year-olds (n = 47) in the present study are in this phase. In this phase young children have to solve the struggle between investigating their environment whilst simultaneously realising that their actions will have an effect on themselves and on others. Therefore children of this age learn to control their curiosity while acquiring the ability to interpret other people's emotions. Most importantly, children in this psychosocial phase need to learn how to feel secure that their parents are there for them even if they are not physically present (Erikson, 1968). Consequently, attachment to the parent may have an influence on a child's level of curiosity. According to Erikson's psychosocial theory children who display anxiety symptoms or severe shyness may be struggling to resolve this psychosocial conflict by acting out avoidant behaviour rather than inquisitiveness. If the child is unable to let go of this avoidant behaviour there is an unresolved psychosocial conflict and an increased chance of developing an internalising disorder later in life.

The middle childhood phase involves the psychosocial conflict of *industry versus inferiority*. The formal school-going 6- to 7-year-olds (n = 12) in the present sample are in this phase. Erikson (1968) suggests that children are required to develop a sense of

competence at useful skills and tasks during this developmental stage. These skills and tasks include adapting to a new school environment, making new friends, learning to play by the rules and functioning on an academic level. Some children may have certain anxieties or withdrawal symptoms if they show difficulties in mastering these tasks. A negative concept of the self and the child's social environment will allow for feelings of worthlessness that may prevent the child from resolving this psychosocial conflict of performing. In extreme cases, these feelings of inferiority may result in the child completely withdrawing and developing a social anxiety disorder. Schooling in the lower socio-economic areas of South Africa may lack in certain resources. This may have a damaging impact on the academic performance of the child due to outcomes of disorganisation and poor adaption in the school setting. South African studies have shown that children from lower social economic areas have more anxiety symptoms than children from higher socio-economic backgrounds (Muris, et al., 2002; Muris et al., 2006). Consequently a child's social environment can shape the nature of their development.

3.6.2. Bandura's social learning theory. Bandura (1977), an American psychologist, was the father of the social learning theory, which proposes that children learn through observation and model the behaviour they observe. Therefore, from the viewpoint of the social learning theory, anxiety symptoms or shyness is the result of a learnt response. Anxiety may also occur due to experiencing a stressful life event or living in a violent society. Research has shown that stressful life events significantly contribute to the development of anxiety (Dougherty et al., 2013; Muris et al., 2011) and environmental factors such as negative information and violent behaviour make young children more susceptible to feelings of anxiousness (Murray, Creswell, & Cooper, 2009). Behavioural inhibition could also be influenced by these factors considering that temperament interacts with environmental events and parenting styles to

significantly impact personality characteristics later in life (Mezulis, Hyde, & Abramson, 2006).

Many South African children are exposed to very violent living conditions due to the fact that South Africa has some of the world's highest rates of domestic abuse, community violence and interpersonal violence (Liang et al., 2007). These realities may explain why South African children's levels of anxiety symptoms are significantly higher in comparison to Western samples (Broeren et al., 2008; Burkhardt et al., 2003; Loxton, 2009; Muris et al., 2002; Muris et al., 2006). According to the social learning theory, anxiety levels found in children could be a result of a learnt response to negative stimuli and negative environments.

3.6.3. Piaget's cognitive developmental theory. The Swiss psychologist Piaget (1971, 1972) emphasised the importance of how children make meaning of their world through different phases of cognitive processing. In the *pre-operational* phase (2- to 7-year-olds), relevant to the 3- to 6-year-old children in the present study, young children must begin to create ideas and thoughts about things around them and slowly use language to identify and communicate. The *concrete operational* phase (7- to 11-year-olds), relevant to the 7-year-old children in the present study, requires that children begin to develop the ability to think logically, solve problems, classify their thoughts and acquire the skill to hold a brief conversation (Piaget, 1972). These are the basic cognitive developing stages the children in the present study will need to overcome according to Piaget's learning theory.

From a cognitive-developmental perspective it could be argued that anxiety and behavioural inhibition symptoms are largely accounted for by deficient cognitive performance and processing. Gale, Hatch, Batty, and Deary (2009) found that lower cognitive performance in childhood significantly predicted psychological distress in adulthood. Cognitive processes, specifically inhibitory control and attention shifting, are significant moderators in both anxiety symptoms and behavioural inhibition. High levels of attention shifting can decrease

the risk of anxiety in children who are highly inhibited. Increased levels of inhibitory control can become a risk for a behaviourally inhibited temperament (Fox, 2010; White et al., 2011).

A recent study explored the different cognitive vulnerability profiles of highly anxious and non-anxious children (Marques, Pereira, Barros, & Muris, 2013). They found that both judgment and interpretation bias played a significant role in contributing to anxiety disorders in school children. The effectiveness of cognitive-behavioural therapy in the treatment of anxiety symptoms also provides sufficient evidence for the importance of cognition in the development of anxiety (Barrett, 2000; James, James, Cowdrey, Soler, & Choke, 2013; Muris, 2007). This may imply that more efforts need to be made to design prevention programmes that attempt to restructure anxiety-promoting cognitions, such as cognition errors and threat interpretations, and to rather encourage cognitions that provide a more positive sense of control. Loxton (2009) showed that South African children displayed the ability to carry out coping styles from a young age, highlighting the importance of early detection of anxiety symptoms and children at risk in South Africa.

3.7. Chapter summary

This chapter begins with an introduction and purpose to the present study's theoretical framework followed by the context of the age group of children involved in the present study. Then a discussion of the African perspective on child development follows. The contextual perspective is introduced and Bronfenbrenner's ecological systems theory is used as the main framework for contextualising anxiety and behavioural inhibition in young South African children. Literature on temperament and attachment is reviewed and the constructs relevant to this thesis explained.

Developmental theories applicable to the present study are briefly explained. The developmental theories discussed in this chapter include, Erikson's psychosocial theory, Bandura's social learning theory and Piaget's cognitive developmental theory.

CHAPTER 4

RESEARCH METHODOLOGY

The present study examined the longer-term effects of the relationship between anxiety symptoms and behavioural inhibition in a follow-up cohort of young South African children. The layout and methods employed for data collection and data analysis are discussed. The discussion begins with the present study's research design, the hypotheses, the participants and an overview of the measuring tools used for obtaining the data. The psychometric properties of these measuring instruments are highlighted. An overview of the research procedure that was carried out, the data analysis methods that were rendered and ethical aspects relating to research are presented in this chapter.

4.1. Research design

The present study was the first-follow up cohort study (Susser, Schwartz, Morabia, & Bromet, 2006) on research done by Wege (2014). The initial study's data (Wege, 2014) was collected in 2012 and the first follow-up parent and teacher reports of the present study were collected in 2013. The data was collected in a quantitative manner, making use of questionnaires that were completed according to a cross-sectional time dimension (Cresswell, 2003). The present study obtained normative data, which was collected at one time only. The choice of a quantitative design was motivated by the need to test hypotheses and measure the independent and dependent variables in detail—which is applicable using a quantitative method of design. Additionally, multiple third-party quantitative report measures (i.e. parent and teacher questionnaires) have been shown to be most successful in assessing behavioural and emotional traits in children who are considered too young to accurately verbalise such complex feelings themselves (Edwards et al., 2010a; Luby et al., 2007; Warren et al, 2006). Lastly, this follow-up study motivates a quantitative research design as the best method

maintaining consistency in assessment with Wege's (2014) quantitative study and, therefore, allowing for statistical comparisons.

The research design focuses on exploring the correlations between two variables (Cresswell, 2003), namely anxiety symptoms and behavioural inhibition in young children, with the moderating effects of parental overprotection. Correlational studies attempt to measure the relationship between two variables (Graziano & Raulin, 2004). Although causation cannot be determined with a correlational research design, the advantage is that it provides information concerning the degree of the relationship between the variables being studied. If two variables are correlated, it is possible to predict one of them based on the other.

The present study's research design was not only correlational in nature but also exploratory since both internationally and in South Africa there is a lack of research on anxiety in young children (e.g., Broeren et al., 2008; Campbell, 1995; Loxton, 2009; Muris et al., 2006). At the time during which the present follow-up study was conducted, it was the first South African cohort study on anxiety in young children.

4.2. Research hypotheses

The primary aims of this study were to assess the parent and teacher reports of anxiety symptoms and behavioural inhibition in a one-year follow-up on a cohort of children; to determine whether parental overprotection is a moderating variable in the relationship between anxiety symptoms and behavioural inhibition; and finally to compare the difference between parent and teacher reports from the 2012 dataset with parent and teacher reports from the 2013 dataset. More specifically, in order to achieve this aim the following objectives of the present study were sought:

- to conduct a follow-up assessment on children's levels of anxiety and behavioural inhibition symptoms by means of parent report

- to conduct a follow-up assessment on children's levels of anxiety and behavioural inhibition symptoms by means of teacher report
- to assess whether parental overprotection moderates the effect of behavioural inhibition on anxiety symptoms
- to establish whether there was a difference between parent and teacher reports obtained in the 2012 dataset (Wege, 2014) with parent and teacher reports collected in the present follow-up study in 2013.

The following five hypotheses were predicted for the present study:

Hypothesis 1

(H₁): There is a significant positive correlation between young children's anxiety symptoms and behavioural inhibition scores, as reported by parents in the first follow-up cohort.

Hypothesis 2

(H₂): There is a significant positive correlation between young children's anxiety symptoms and behavioural inhibition scores, as reported by teachers in the first follow-up cohort.

Hypothesis 3

(H₃): Parental overprotection has a moderating effect on anxiety symptoms and behavioural inhibition scores, as reported by parents in the first follow-up cohort.

Hypothesis 4

(H₄): There is a significant difference between anxiety symptom scores collected in 2013 and anxiety symptom scores collected in 2012.

Hypothesis 5

(H₅): There is a significant difference between behavioural inhibition scores collected in 2013 and behavioural inhibition scores collected in 2012.

4.3. Participants

The cohort of children in this study were initially recruited by Wege (2014) in 2012 by means of convenience sampling at a pre-primary school, a preschool and a day care facility in the Stellenbosch district. The parents and teachers of those 107 non-clinical children from 2 to 6 years old who participated in Wege's study and were still residing in the Stellenbosch district were invited to participate in the present follow-up study in 2013. Some of the teachers were new to the study because 45 of the original 107 children enrolled in their first year of formal school in 2013.

Seventy-seven of the original cohort of 107 children could be traced for the follow-up study. Thirty children from the original cohort could not be identified or had moved to areas and schools outside of the Stellenbosch district. Out of the 77 traceable children, 27 had entered formal school and 50 were still attending the same pre-primary school, preschool and day care facility as during Wege's study. Therefore 77 parent and teacher reports were distributed to the seven schools involved. The final sample for the present follow-up study consisted of 59 parent reports and 59 teacher reports. This indicates that there was an approximate response rate of 76.6 %. Of the parents who gave reports, 80 % were mothers and 20 % were fathers.

The children who were reported on are from a multi-cultural background and all the schools as well as the day care facility involved are multi-lingual, with both English and Afrikaans as the languages of instruction.

Displayed in Table 4.1 are the biographical details on the 59 children who were assessed for the present follow-up study.

Table 4.1

Demographic Characteristics of the Group of Children Reported on by Parents and Teachers (N=59)

Total sample		<i>n</i>	Percentage
Gender:	Boys	34	57.6
	Girls	24	42.3
Ages:	3 years	3	5.1
	4 years	16	27.1
	5 years	22	37.3
	6 years	14	23.7
	7 years	4	6.8

According to Table 4.1, the age range of the children who were reported on in the present study ranged between 3 years old (5.1%; $n = 3$), 4 years old (27.1%; $n = 16$), 5 years old (37.3%; $n = 22$), 6 years old (23.7%; $n = 14$) and 7 years old (6.8%; $n = 4$). Of these 59 children, 25 (42.3%) were female and 34 (57.6 %) were male. There was a more or less equal distribution of English- and Afrikaans-speaking children, with 27 children speaking English as their mother tongue and 25 speaking Afrikaans as their mother tongue. There were seven children whose mother tongue was either Xhosa or Arabic. All children in this cohort were instructed in either English or Afrikaans at their schools, with 35 children instructed in English and 24 children instructed in Afrikaans.

Out of the 59 children reported on for this study, only 12 of the children had entered formal school and 47 of them were still attending the original pre-primary school, preschool and day care facility as during the study by Wege (2014). Although Wege divided the cohort into two age categories, namely 2- to 3-year-olds and 4- to 6-year-olds for the first assessment, it was decided against for the present follow-up study as it is believed that the age range of the children is slightly arbitrary due to the limited number of children in this study.

The two age groups would also have been significantly uneven if the cohort were divided into the different age groups.

4.4. Measuring instruments

Questionnaires were administered to participants in their languages of choice, namely English or Afrikaans.

4.4.1. Biographical questionnaire for parents. The consenting participants were asked to fill out a short biographical questionnaire to measure important variables such as the child's age, gender, mother tongue and language of instruction.

4.4.2. Revised Preschool Anxiety Scale (PAS-R; Edwards et al., 2010). In order to compare the 2012 and 2013 datasets, the cohort of children's anxiety symptoms were again measured by means of the 28-item *Revised Preschool Anxiety Scale*, also referred to as *The Childhood Concerns Survey* (PAS-R; Edwards et al., 2010). This scale was also used in the initial study by Wege (2014). Permission to use the PAS-R was obtained from Professor Ronald Rapee (R. Rapee, personal communication, March, 30, 2011) for the initial study conducted by Wege (2014) and extended approval was obtained for the present follow-up study.

The revised version is based on the *Preschool Anxiety Scale* (PAS; Spence et al., 2001), which is a 30-item, parent and teacher report questionnaire. The PAS is specifically designed for measuring DSM-defined anxiety symptoms in young children between the ages of 2 and 6 years old in the subcategories of social anxiety (7 items), generalised anxiety (7 items), separation anxiety (5 items), specific fears (9 items) and obsessive-compulsive disorder (2 items). The anxiety items in this scale were carefully chosen based on prevailing literature in order to be consistent with categories of anxiety as represented in the DSM-IV-TR (American Psychiatric Association, 2000). The PAS (Spence et al., 2001) was modified due to the overlap between some of the anxiety categories that were found. In order to ensure that the

anxiety symptoms of young children were better represented, the revised version developed more specific boundaries between these anxiety categories (Edwards et al., 2010). This revised scale consists of 28 items ranging from 0 (*not at all true*) to 4 (*very often true*). Scores on the PAS-R subscales are added up to calculate the total score. High total scores indicate high levels of anxiety symptoms. All of these subscales on the PAS-R, excluding the obsessive-compulsive subscale, were found to be both valid and reliable in measuring a broad range of anxiety symptoms in pre-schoolers (Edwards et al., 2010). The two items relating to the obsessive-compulsive subscale were therefore left out of the PAS-R in order to obtain better psychometric properties.

More specific psychometric properties from the study by Edward et al. (2010) reveal the subscales of the PAS-R to have moderate to good internal consistency with an alpha coefficient ranging between .72 and .92. Furthermore, the cross-informant reliability was found to range between .60 and .75 and the test-retest stability between .60 and .75. The high stability relates to anxiety symptoms reported by both mothers and fathers over a 12-month period, which indicates an overall good reliability and validity of this measurement tool. The factors on these subscales showed to cluster into groups that reflect the groupings of anxiety symptoms as described by the DSM-IV, providing further evidence of the strong psychometric properties of the PAS-R. This scale is regarded as the only existing scale used to measure anxiety symptoms in young children of the age group who participated in the present follow-up study (Edward et al., 2010).

In a recent study the psychometric properties of the PAS-R also showed to be satisfactory (Broeren et al., 2013). The PAS-R subscales in this study displayed good internal consistency with a Cronbach alpha at .87 for generalised anxiety, .90 for social anxiety, .76 for separation anxiety and .72 for specific fears. The obsessive-compulsive subscale showed low reliability at a Cronbach alpha of .54 and was not included in the data analysis (Broeren et al., 2013). In

the South African study conducted by Wege (2014) a Cronbach alpha at .86 for the total score was obtained.

The present study made use of the PAS-R in order to collect parent and teacher reports of anxiety symptoms in young children. However, some of the items found on the PAS-R were not relevant for teachers as it was initially designed as a parent report measure. The teachers were still requested to fill in the PAS-R to the best of their ability as they were considered valuable informants who spent a large amount of time with the children. The teacher reports were used to further substantiate the parent reports on anxiety symptoms and behavioural inhibition.

4.4.3. Behavioural Inhibition Questionnaire (BIQ; Bishop et al., 2003). As in the first study conducted by Wege (2014), the cohort of children were measured for behavioural inhibition by means of a 30-item, parent and teacher report scale called the *Behavioural Inhibition Questionnaire* (BIQ; Bishop et al., 2003), which has been found to be both reliable and valid in measuring temperamental characteristics such as shyness, fearfulness and withdrawal in young children between the ages of 2 and 6 years old (Bishop et al., 2003; Broeren et al., 2010; Kim et al., 2011).

Permission to use the BIQ was obtained from Professor Peter Muris (P. Muris, personal communication, March 30, 2011) for the initial study by Wege (2014) and extended approval was obtained for the present follow-up study.

The BIQ, measuring both the social and non-social domains of behavioural inhibition, assesses three areas: social novelty, situational novelty, and physical challenges. Social novelty consists of 14 items of the scale and is measured in three contexts, namely adults (4 items), peers (6 items), and performance situations (4 items). The area of situational novelty

consists of 12 items and is assessed in the context of preschool/separation (4 items) and unfamiliar situations (8 items). The area of physical challenges consists of 4 items.

The 30 items on the BIQ are rated on a scale from 1 (*hardly ever*) to 6 (*almost always*). Once reverse scores are recoded, the total sum of scores will equal the total level of behavioural inhibition. A high score will equal a high level of behavioural inhibition. The psychometric properties of this measurement tool displays satisfactory internal consistency, cross-informant agreement, generates a multiple-factor model in keeping with the predicted structure of social and non-social elements of behavioural inhibition, and is a reasonable fit for data according to the confirmatory factor analysis for both the parent and teacher report versions (Bishop et al., 2003; Broeren et al., 2010; Kim et al., 2011). The Cronbach alpha for the total scores and subscales on the BIQ were found to be greater than .70 illustrating good internal consistency. Good internal consistency was also found for the South African study conducted by Wege (2014) where the total BIQ scale obtained a Cronbach's alpha of .09. The BIQ test-retest stability over 12 months proved to be satisfactory with r coefficients ranging from .58 to .79. In addition, a significantly strong agreement was found between the reports of mothers and fathers with a .69 to .84 range. The agreement between parents and teachers was slightly less convergent but still acceptable with an r coefficient ranging from .43 to .62. BIQ scores were also found to positively correlate with scores from various temperamental questionnaires as well as the observational ratings of behavioural inhibition in laboratories (Bishop et al., 2003; Broeren et al., 2010; Kim et al., 2011).

Bishop et al. (2003) were confident that parents and teachers were capable of being accurate informants in reporting behavioural inhibition and these parent and teacher reports of significantly high behavioural inhibition levels could be used effectively in identifying young children who are at risk of developing anxiety disorders.

4.4.4. *Parental Overprotection Measure* (POM; Edwards, Rapee, & Kennedy, 2007). Parental overprotection was assessed using the newly added *Parental Overprotection Measure* (POM; Edwards et al., 2007), consisting of 19 items that were taken from an existing parental rearing questionnaire. The POM does not assess parental control but rather parental overprotection. Parental overprotection is rated from 0 (*not at all*) to 4 (*very much*) and these items are designed so that it is not the parental attitudes and beliefs that are assessed, but rather the parents' behaviour in potentially threatening situations. A high score will indicate a high level of parental overprotection. Items on the POM have been found to have high levels of both internal consistency and test-retest reliability over a 12-month period (Vreeke, Muris, Mayer, Huijding, & Rapee, 2013). The scale has also proven to be valid in measuring parental overprotection by means of significant correlations between mothers' POM scores and scores obtained from observations of maternal overprotective behaviour whilst their children carry out potentially mildly-threatening tasks (Edwards, 2007). Psychometric properties of the POM in a recent study produced Cronbach's alphas of .89 at time 1 and .90 at time 2 with a test-retest correlation of .78 (Vreeke et al., 2013) confirming the high internal consistency and test-retest reliability of this scale.

Permission to use the POM and translate it from English to Afrikaans was obtained from Professor Ronald Rapee (R. Rapee, personal communication, May 13th, 2013). The POM had to be translated from English into Afrikaans. The translation of the POM was done using the Brislin (1980) back-translation method by a registered clinical psychologist who is fluent in both English and Afrikaans.

4.5. Research Procedure

The research was conducted in phases. These three phases include firstly, the permission and administrative phase, secondly, the data collection phase and lastly, the data analysis phase.

During the first phase the permission and administrative process involved building the foundations to the study by writing up a research proposal to be presented to the Research Ethics Committee: Human Research (Humanities) Stellenbosch University in order to gain ethical approval to conduct the study. Ethics approval was sought for the follow-up study with a request added for using the additional *Parental Overprotection Questionnaire* (POM; Edwards et al., 2007). Permission was obtained from Professor Rapee to use the newly added measure (the POM) and also to translate it into Afrikaans. The other measures remained the same as in the study by Wege (2014).

Once ethics approval to conduct the study (protocol number HS966/2013) was confirmed, the Western Cape Education Department was approached and permission was obtained (see Addendum A). The schools involved were also approached to obtain written permission from everybody concerned. Information letters were sent out via the schools to the parents and teachers of the cohort of children who took part in 2012, inviting them to participate in the follow-up assessment (see Addendum B, Addendum C). The questionnaires in both English and Afrikaans were forwarded to the parents and teachers who gave their consent to participate (see Addendum D, Addendum E).

The data were collected during the second phase of the research process in the months of August and September 2013 as part of the Western Cape Department of Education's stipulations set out in granting permission for the study to be conducted on these young children. Data collection was cross-sectional in nature and collected in a quantitative manner in which each parent and teacher received a set of questionnaires. All participants (parents and

teachers) recruited for the follow-up assessment gave written informed consent to participate in the present study. Participants were asked to complete the questionnaires, and were requested to complete it within one week. Once completed, the questionnaires were collected in person by the researcher. Both the parents and the teachers received the *Preschool Anxiety Scale-Revised* (PAS-R; Edwards et al., 2010) and the *Behavioural Inhibition Questionnaire* (BIQ; Bishop et al., 2003). Parents received two additional questionnaires, namely a biographical questionnaire and the *Parental Overprotection Measure* (POM; Edwards, et al., 2007). All questionnaires were provided in both English and Afrikaans, the official languages of instruction at all the involved schools.

The last phase of the research process was to analyse the collected data. This data analysis was done using the statistical package for social sciences (SPSS, Field, 2005).

4.6. Data analyses

Data analyses were undertaken using the Statistical Package for Social Sciences (SPSS, Version 16.0) in order to compute descriptive statistics, reliability tests, correlation coefficients and a regression analysis. In addition to this, mean scores in the 2013 dataset were compared with mean scores in the 2012 dataset to determine whether there have been any increases in anxiety levels and behavioural inhibition scores amongst the cohort of children over a one-year period. Parental overprotection scores were also assessed for any moderating effects on the parent-reported anxiety symptoms and behavioural inhibition scores.

Firstly, a reliability analysis (Cronbach's alpha) was conducted to assess the internal consistencies of all the total scales of the present study's three report measures. Following this, a descriptive data-analysis was performed to determine the means and standard

deviations of gender and age. Additionally, an analysis of variance (ANOVA) was carried out to test and compare any significant effects for age or gender.

Regarding the main analysis, the relationship between the parent and teacher reported PAS-R and BIQ sub-scores and total scores were analysed by means of the Pearson Product-moment correlation. This test was conducted in order to determine the direction and vigour of the relationship between anxiety symptoms and behavioural inhibition in young children (Field, 2005). A stepwise regression analysis was conducted in order to gain a more detailed understanding of the association between the PAS-R subscales and BIQ subscales, whilst controlling for gender and age.

In order to measure any significant difference between scores from the 2012 dataset with scores in 2013 (Field, 2005) an analysis of variance (ANOVA) was carried out. Finally, a regression analysis was undertaken in order to ascertain whether parental overprotection acted as a moderator variable in the predicted relationship between anxiety symptoms and behavioural inhibition.

The Bonferonni correction was considered to control the error rate and reduce the chance of type one error. However, due to the debate against the Bonferonni correction—it increases Type two errors (Perneger, 1998)—as well as the small sample size of the present study, it was decided that statistical corrections would not serve to provide more accurate findings.

A substitution method was used for handling missing data. This strategy for dealing with missing data involves substituting some sort of plausible guess and imputing a value from the concerned measurement scale (Schafer & Graham, 2002). The researcher detected a pattern in the data set and believed that missing values were not at random but rather reflected a lack of knowledge about certain questions. It may be argued that these ignorant responses are also

important because they are responses that occurred and need to be taken into account when analysing the data.

The researcher recognises that interpreting imputed data as though it were completed data may produce certain biases such as underestimated standard errors and overestimated test statistics (Allison, 2001; Schafer & Graham, 2002). However, due to the present study's small sample size for the follow-up, enough cases needed to be retained in order to have sufficient power to detect effects in the data analyses (Roth, 1994). In examining data by means of SPSS, missing data is a problem because cases will be excluded from the analysis if it is missing any variable included in the analysis. Therefore, all missing values received the value of zero for the data analyses and this method will be applied to both the 2012 and the 2013 datasets for the sake of consistency.

4.7. Ethical consideration

Ethical clearance was obtained from the Research Ethics Committee: Human Research (Humanities) of Stellenbosch University (protocol number HS966/2013) in August 2013. Permission from the Western Cape Education Department was obtained also in August 2013. Parents and teachers who participated in the initial study in 2012 (Wege, 2014) and the new teachers of the children who entered their first year of formal school in 2013, were invited to be part of the follow-up assessments. Parents and teachers needed to give their consent to participate by means of completing an informed consent form (Vithal & Jansen, 2010). They were also informed that they have the right to withdraw their participation at any time during the study.

Anonymity and confidentiality was upheld throughout the study (Vithal & Jansen, 2010). Completed surveys will be kept in a secure location for a minimum period of 5 years. For confidentiality purposes results were used for research purposes only and, the names of the

involved schools withheld during the reporting of the present study. Numbers were used to replace the participant's names and no identifiable information was used when reporting the findings of the study. This study did not involve any harmful procedures nor physical risk, stress or personal discomfort. Precedence was given to the participants' ethical rights throughout the study (Robert-Holmes, 2011). Participation was voluntary and these participants had the right to withdraw at any point in the study without any consequences. Participants needed to give consent to participate by means of completing an informed consent form.

Participants were also invited to contact the researchers after the study, if they had any further questions in relation to the research project.

4.8. Chapter summary

Chapter 4 describes the methodological procedures that were implemented in the present study. Firstly, a brief introduction to the chapter and its organisation is presented.

The primary aims of the present study are reiterated for purposes of clarity and followed by a discussion of the research design of the present study. The predicted hypotheses are stated, followed by a description of the demographic details of the involved participants. An explanation of the measuring instruments that were used in order to collect the data for the present study is given. The procedure for data collection was described. A description of the statistical procedures taken to analyse the data then followed. Lastly, the ethical considerations that were carried out throughout data collection and data analysis were highlighted.

In the subsequent chapter the results of the data analysis will be reported.

CHAPTER 5

RESULTS

5.1. Introduction

In Chapter 5 the main results of the present study are conveyed. These results were obtained by means of quantitative data analysis of parent- and teacher-reported scores on anxiety, behavioural inhibition and parental overprotection of a cohort of young South African children. The chapter begins with a description of the demographic characteristics of the sample followed by a preliminary analysis, which includes reporting the reliability analysis of the questionnaires and the descriptive statistics of the aforementioned variables. The main analysis, which aims to test the predicted hypotheses for the present study, will then be discussed. This section includes the correlational analysis of the variables mentioned above as well as a test of the moderation effects of parental overprotection on the relation between anxiety symptoms and behavioural inhibition. Finally, a comparative analysis will present the differences in scores between the initial study and the follow-up study with regard to anxiety symptoms and behavioural inhibition scores according to parent and teacher reports. The chapter ends with a summary of the main findings of the study.

5.2. Demographic characteristics of the sample

A final sample of 59 children, of whom 25 (42.3%) were female and 34 (57.6%) were male, were reported on by parents and teachers for the present follow-up study. The children in this cohort ranged between the ages of 3 years old (5.1 %; $n = 3$), 4 years old (27.1%; $n = 16$), 5 years old (37.3%; $n = 22$), 6 years old (23.7 %; $n = 14$) and 7 years old (6.8%; $n = 4$) with a mean age of 5 years ($SD = 1.0$). These characteristics are presented in order to contextualise the present sample and provide a foundation within which the present study's results can be interpreted (see Table 4.1).

5.3. Reliability analysis of parent and teacher reports

According to Field (2005) an alpha value of .70 or higher indicates sufficient internal consistency. The reliability analysis of each questionnaire will be explored in the following paragraphs. The reliability statistics are presented in Table 5.1. Cronbach alpha values were computed in order to determine the internal consistency of the total scores of the PAS-R, BIQ and POM.

Table 5.1 shows the reliability results of the total scores of PAS-R, BIQ and POM as reported by parents and teachers.

Table 5.1

Internal Consistency of PAS-R, BIQ and POM According to Parent and Teacher Reports

	No. of Items	Cronbach's α	
		Parent report	Teacher report
PAS-R			
Total anxiety score	28	.83	.71
BIQ			
Total BI score	30	.84	.71
POM			
Total POM score	19	.88	

Note: PAS-R = Revised Preschool Anxiety Scale; BI = Behavioural inhibition; BIQ = Behavioural Inhibition Questionnaire; POM = Parental Overprotection Measure (only reported by parents)

According to Table 5.1, the internal consistency of both the parent and teacher report total scales of the PAS-R proved to be sufficient to good, with an alpha value of .83 for the PAS-R parent reports and a value of .71 for the PAS-R teacher reports. The parent reports

produced slightly higher internal consistency than the teacher reports of the PAS-R, but both the parent and teacher report measures had satisfactory Cronbach alpha values.

The internal consistency of the total BIQ scale (across all 30 items) for both the parent and teacher reports was excellent producing Cronbach alpha values of .83 and .93 respectively. The internal consistency for the total scale of the BIQ teacher report was slightly higher. However, both the parent and teacher reports showed good internal consistency and thus were acceptable scales.

The reliability analysis on the total scale of the POM (across all 19 items) indicated high and satisfactory internal consistency, with an alpha value of .88.

5.4. Descriptive statistics for parent and teacher reports

Tables 5.2 and 5.3 respectively present the descriptive statistics of the parent and teacher reports. The mean scores and standard deviations—between brackets—were calculated for the parent and teacher reports respectively on the PAS-R, the BIQ and the POM, and organised according to total scores, gender and age. The POM is a parent report only and was not completed by the teachers.

Table 5.2 shows the descriptive statistics of the total scores of the PAS-R, BIQ and POM as reported by parents.

Table 5.2

Mean Scores (Standard Deviations) for the PAS-R, BIQ, and POM According to Parent

Reports

	Total Group <i>N</i> = 59	Boys <i>n</i> = 34	Girls <i>n</i> = 25	3 years <i>n</i> = 3	4 years <i>n</i> = 16	5 years <i>n</i> = 22	6 years <i>n</i> = 14	7 years <i>n</i> = 4
PAS-R								
Total anxiety	38.6 (18.8)	40.4 (17.5)	36.2 (20.7)	30.3 (16.1)	40.7 (18.4)	31.3 (16.2)	46.5 (21.2)	49.3 (17.3)
BIQ								
Total BI	91.2 (26.0)	90.6 (23.6)	92.1 (29.4)	87.0 (15.6)	90.3 (25.1)	86.9 (25.5)	100.6 (28.8)	88.8 (31.5)
POM								
Total POM	41.9 (13.2)	40.7 (14.1)	44.0 (11.4)	38.3 (10.7)	48.6 (12.1)	36.6 (12.1)	43.07 (14.7)	46.0 (4.2)

Note: PAS-R = Revised Preschool Anxiety Scale; BIQ = Behavioural Inhibition Questionnaire; BI=Behavioural inhibition; POM = Parental Overprotection Measure

The difference between mean scores did not reach statistical significance. However, the following scores can still be reported on comparable levels. Parents reported slightly more behavioural inhibition ($M = 92.1$, $SD = 29.4$) as well as parental overprotection scores ($M = 44.0$, $SD = 11.4$) for girls than for boys ($M = 90.6$, $SD = 23.6$ and $M = 40.7$, $SD = 14.1$, respectively). However, the boys had a marginally greater mean score for anxiety ($M = 40.4$, $SD = 17.5$) in comparison to the mean anxiety score for girls ($M = 36.2$, $SD = 20.7$). The 6-year-old age group had the greatest behavioural inhibition mean score ($M = 100.6$, $SD = 28.8$), the 7-year-old age group obtained the greatest mean score for anxiety ($M = 49.3$, $SD = 17.3$) and the 4-year-old age group attained the greatest mean score for parental overprotection ($M = 48.6$, $SD = 12.1$) as reported by parents. The 5-year-old age group scored a low mean score for both behavioural inhibition ($M = 86.9$, $SD = 25.5$) and parental overprotection ($M = 36.6$, $SD = 12.1$). Parents also reported a low anxiety mean score for the 3-year-old age group ($M = 30.3$, $SD = 16.04$). Although comparable, the above reported

differences between mean scores were not at a significant level and should be interpreted with caution.

A one-way ANOVA was conducted to test for any significant effect of gender and age on the parent-reported PAS-R, BIQ, and POM scores. Results revealed that there was no significant effect for gender on the parent-reported BIQ data: $F(1,57) = 0.04, p = .83$ neither on the parent-reported PAS-R data: $F(1,57) = 0.73, p = .40$. No significant gender effect was found on the POM data: $F(1,57) = 0.96, p = .33$. In addition to this, no significant age effects were found on either the parent-reported BIQ data: $F(4,54) = 0.63, p = .64$ or on the parent-reported PAS-R data: $F(4,54) = 2.11, p = .09$. Finally, no significant age effect was found on the POM data: $F(4,54) = 2.34, p = .66$.

In Table 5.3 the descriptive statistics of the total scores of the PAS-R as reported by teachers are presented.

Table 5.3

Mean Scores (Standard Deviations) of the PAS-R and BIQ According to Teacher Reports

	Total Group <i>N</i> = 59	Boys <i>n</i> = 34	Girls <i>n</i> = 25	3 years <i>n</i> = 3	4 years <i>n</i> = 16	5 years <i>n</i> = 22	6 years <i>n</i> = 14	7 years <i>n</i> = 4
PAS-R								
Total anxiety	27.4 (14.3)	27.6 (17.4)	27.2 (9.9)	16.0 (1.0)	26.1 (14.0)	24.09 (16.0)	17.3 (8.7)	43.8 (16.6)
BIQ								
Total BI	87.8 (35.0)	93.5 (33.9)	87.0 (40.2)	89.0 (14.7)	108.1 (43.4)	79.4 (32.0)	85.9 (22.7)	107.8 (58.1)

Note: PAS-R = Revised Preschool Anxiety Scale; BIQ = Behavioural Inhibition Questionnaire; BI = Behavioural inhibition

Results revealed that the teacher-reported mean scores were not significantly different and should therefore be interpreted with caution. The following mean scores will be reported on a comparable level only.

Teachers reported slightly more behavioural inhibition scores for boys ($M = 93.5$, $SD = 33.9$) than they did for girls ($M = 87.0$, $SD = 40.2$). However, the mean anxiety scores reported by teachers were very similar for both boys ($M = 27.6$, $SD = 17.4$) and girls ($M = 27.2$, $SD = 9.9$). Teachers reported the greatest behavioural inhibition mean score for the 4-year-old age group ($M = 108.1$, $SD = 43.4$) whereas the 7-year-old age group had the greatest anxiety mean scores ($M = 43.8$, $SD = 16.6$). Teachers reported a low behavioural inhibition mean score ($M = 85.9$, $SD = 22.7$) for the 6-year-olds and also a low anxiety mean score ($M = 16.0$, $SD = 1.0$) for the 3-year-olds.

Conducting a one-way ANOVA provided evidence for no significant effects of gender on the BIQ teacher-report scale ($F(1,57) = .57$, $p = .46$) and on the PAS-R teacher report scale ($F(1,57) = 1.22$, $p = .35$). Furthermore, no significant effects of age were discovered on the BIQ teacher report scale ($F(4,54) = 3.28$, $p = .18$) and on the PAS-R teacher report scale ($F(4,54) = 1.85$, $p = .13$).

5.5. Main analysis of parent and teacher reports

The present study wished to address the following aims. Firstly, to conduct a follow-up assessment on the parent and teacher reports of anxiety and behavioural inhibition scores after a one-year period from collected data in the initial study (Wege, 2014). This was carried out by measuring the correlation between the PAS-R and BIQ total scores and subscale scores according to parent and teacher reports. Furthermore, a stepwise regression analysis was conducted in order to provide a more detailed explanation for the association found between PAS-R and BIQ subscales. Secondly, the study aims to evaluate parental overprotection as a possible moderator in the relationship between anxiety and behavioural inhibition scores. This was carried out by conducting a multiple regression analysis to measure the effect POM scores have on the relationship between PAS-R and BIQ scores. Finally, the present data analysis intended to compare the difference in scores between parent and teacher reports

collected in 2012 with scores from parent and teacher reports as collected in the present study's follow-up assessments in 2013. In the following sections of this chapter the hypotheses described in the methodology chapter will be addressed systematically.

5.5.1. Correlations between PAS-R and BIQ scores, according to parent and teacher reports.

The present study hypothesised that there would be a significantly positive correlation between young children's anxiety symptoms and behavioural inhibition scores, as reported by parents in the follow-up assessment. In addition to this, it was also hypothesised that there would be a significantly positive correlation between young children's anxiety symptoms and behavioural inhibition scores as reported by teachers on the follow-up assessment. In order to test these two hypotheses, Pearson correlations were computed.

In Table 5.4 the Pearson correlations of the PAS-R and the BIQ total scales are presented according to both parent and teacher reports.

Table 5.4

Pearson Correlations between PAS-R and BIQ Total Scores in the Follow-up Assessment

	<i>PAS-R</i>	
	Total parent-reported anxiety	Total teacher-reported anxiety
<i>BIQ</i>		
Total parent-reported BI	.52**	
Total teacher-reported BI		.62**

Note: PAS-R = Revised Preschool Anxiety Scale; BIQ = Behavioural Inhibition Questionnaire; BI = Behavioural inhibition, ** $p < .01$.

According to Table 5.4, significant and positive correlations were found between anxiety scores and behavioural inhibition scores of the parent reports ($r = .52, p < 0.01$) and teacher reports ($r = .62, p < 0.01$) supporting the present study's hypothesis.

Pearson correlations were computed for the subscales of the PAS-R subscales with the BIQ subscales as presented in Table 5.5 and Table 5.6. This was done in order to explore in further detail the strong association between anxiety symptoms and behavioural inhibition for both parent and teacher reports.

In Table 5.5 the Pearson correlations of the subscales of the PAS-R and the BIQ as reported by parents are presented.

Table 5.5

Pearson Correlations between the Subscales of the PAS-R and BIQ, According to Parent Reports

	Parent-reported PAS-R				
	Total anxiety	Generalised anxiety	Social anxiety	Specific phobias	Separation anxiety
Parent-reported BIQ					
Total BI	.52**	.43**	.72**	.20	.44**
Unfamiliar situations	.58**	.51**	.64**	.29*	.54**
Peers	.41**	.29*	.58**	.16	.37**
Adults	.34**	.25*	.56**	.10	.25
Physical challenges	.26*	.26	.31*	.13	.20
Performance situations	.18	.13	.54**	-.05	.05
Separation	.53**	.45**	.57**	.26*	.53**

Note: PAS-R = Revised Preschool Anxiety Scale; BIQ = Behavioural Inhibition Questionnaire; BI = Behavioural inhibition; * $p < .05$. ** $p < .01$.

In Table 5.6 the Pearson correlations of the subscales of the PAS-R and the BIQ as reported by teachers are presented.

Table 5.6

Pearson Correlations between the Subscales of the PAS-R and BIQ, According to Teacher Reports

	Teacher-reported PAS-R				
	Total anxiety	Generalised anxiety	Social anxiety	Specific phobias	Separation anxiety
Teacher-reported BIQ					
Total BI	.62**	.43**	.87**	.17	.33*
Unfamiliar situations	.65**	.41**	.86**	.24	.37**
Peers	.46**	.33*	.73**	.06	.19
Adults	.39**	.29*	.72**	-.04	.08
Physical challenges	.73**	.55**	.72**	.43**	.52**
Performance situations	.54**	.31*	.82**	.13	.28**
Separation	.62**	.50**	.80**	.16	.43**

Note: PAS-R = Revised Preschool Anxiety Scale; BIQ = Behavioural Inhibition Questionnaire; BI = Behavioural inhibition; * $p < .05$. ** $p < .01$.

According to Table 5.5 and Table 5.6, significantly positive correlations amongst the PAS-R and BIQ subscales exist for both parent and teacher reports as hypothesized for this present study. Of the parent-reported scores, the social anxiety subscale produced the most significantly positive correlations with all the BIQ subscales. The generalised anxiety subscale produced similar findings, with exception of the physical challenges and performance situation BIQ subscales. As expected, the teacher-reported scores revealed a similar pattern, with both social anxiety and generalised anxiety producing significantly positive correlations with all the BIQ subscales. Overall, social anxiety had the highest significantly positive correlation with the BIQ subscales for both parent and teacher reports.

Taking a closer look at the BIQ subscales, for the parent-reported scores, unfamiliar situations and separation produced significant correlations with all PAS-R subscales. The teacher-reported scores showed slightly different findings. Physical situations significantly correlated with all PAS-R subscales whereas unfamiliar situations, performance and separation significantly correlated with all PAS-R subscales but one.

Table 5.7 and Table 5.8 present stepwise regression results of the PAS-R and BIQ, according to parent and teacher reports. It was decided that running a stepwise multiple regression analysis, whilst controlling for gender and age, would help determine which BIQ subscales were most responsible for predicting specific anxiety symptoms in the cohort of children. In these analyses, PAS-R subscales were the dependent variables, whilst gender and age (Step 1) and the BIQ subscales (Step 2, Step 3, and Step 4) were entered as the predictor variables. A stepwise regression is designed to find the most significant set of predictors that are most effective in predicting the dependent variable (Field, 2005). Therefore, the variables are added to the regression equation one at a time and excluded if found to play an insignificant role as a predictor variable.

Table 5.7 shows the stepwise regression analyses predicting PAS-R subscales from BIQ subscales as reported by parents.

Table 5.7

Stepwise Regression Analyses Predicting PAS-R Subscales from BIQ Subscales, According to Parent Reports

	<i>B</i>	<i>SE</i>	β	ΔR^2
PAS-R generalised anxiety				
Step 1				.06
Gender	1.3	1.3	.13	
Age	1.1	0.2	.23	
Step 2				.23**
Gender	1.0	1.1	.10	
Age	0.9	0.6	.18	
BIQ Unfamiliar	0.3	0.1	.49**	
PAS-R social anxiety				
Step 1				.02
Gender	0.1	1.5	.01	
Age	0.8	0.7	.15	
Step 2				.40**
Gender	-0.3	1.1	-.23	
Age	0.6	0.6	.10	
BIQ Unfamiliar	0.5	0.1	.64**	
Step 3				.11**
Gender	-0.2	1.1	-.01	
Age	0.4	0.5	.10	
BIQ Unfamiliar	0.4	0.1	.51**	
BIQ Performance	0.3	0.1	.34**	
PAS-R specific phobia				
Step 1				.07
Gender	2.8	2.0	.19	
Age	1.6	1.0	.22	
Step 2				.07*
Gender	2.6	1.9	.17	

Table 5.7 continued

Table 5.7 continued

	<i>B</i>	<i>SE</i>	β	ΔR^2
Age	1.5	0.9	.20	
BIQ Unfamiliar	0.3	0.1	.27*	
PAS-R separation anxiety				
Step 1				.02
Gender	1.2	1.3	.12	
Age	0.5	0.7	.11	
Step 2				.09**
Gender	0.9	1.1	.09	
Age	0.3	0.6	.07	
BIQ Unfamiliar	0.3	0.1	.54**	

Note: This table represents parent-reported anxiety and behavioural inhibition scores; PAS-R = revised Preschool Anxiety Scale; BIQ = Behavioural Inhibition Questionnaire; * $p < .05$. ** $p < .01$.

According to Table 5.7, results revealed that the BIQ subscale unfamiliar situations accounted for a substantial proportion in the variance (between 3 and 29%) of PAS-R subscales according to parent reports. More specifically, unfamiliar situations accounted for 23 % of variance in generalised anxiety ($F(1,55) = 18.51, p < .001$), 40% of the variance in predicting social anxiety ($F(1,55) = 38.38, p < .001$), 7 % in specific phobia ($F(1,55) = 3.07, p = .034$) and 29% of the variance in separation anxiety scores ($F(1,55) = 22.67, p < .001$). Only in the case of social anxiety did the BIQ subscale performance also make an additional significantly positive contribution, explaining respectively 11% of the variance in combination with unfamiliar situations ($F(1,54) = 11.45, p < .001$).

Table 5.8 shows the stepwise regression analyses predicting PAS-R subscales from BIQ subscales as reported by teachers. This table illustrates an association between the relationship between anxiety and behavioural inhibition scores, according to teacher reports.

Table 5.8

Stepwise Regression Analyses Predicting PAS-R Subscales from BIQ Subscales, According to Teacher Reports

	<i>B</i>	<i>SE</i>	β	ΔR^2
PAS-R generalised anxiety				
Step 1				.01
Gender	-0.5	1.2	-.06	
Age	0.3	0.6	.06	
Step 2				.31**
Gender	-0.5	1.0	-.06	
Age	0.3	0.5	.07	
BIQ Physical	0.5	0.1	.56**	
PAS-R social anxiety				
Step 1				.03
Gender	-2.1	1.7	-.17	
Age	-0.5	0.8	-.07	
Step 2				.77**
Gender	-3.2	0.8	-.26**	
Age	-0.04	0.4	-.01	
BIQ Unfamiliar	0.6	0.04	.88**	
Step 3				0.03**
Gender	-3.05	0.7	-.25**	
Age	0.1	0.4	.01	
BIQ Unfamiliar	0.5	0.1	.66**	
BIQ Separation	0.4	0.1	.29**	
Step 4				.01*
Gender	-3.4	0.7	-.27**	
Age	0.03	0.3	.004	
BIQ Unfamiliar	0.4	0.1	.53**	
BIQ Separation	0.3	0.1	.26**	
BIQ Adults	0.2	0.1	.19*	

Table 5.8 continued

Table 5.8 continued

	<i>B</i>	<i>SE</i>	β	ΔR^2
PAS-R specific phobia				
Step 1				.02
Gender	-0.6	1.6	-.05	
Age	0.8	0.8	.13	
Step 2				.18**
Gender	-0.6	1.5	-.05	
Age	0.8	0.7	.13	
BIQ Physical	0.5	0.1	.43**	
Step 3				.15**
Gender	0.6	1.4	.05	
Age	0.7	0.7	.12	
BIQ Physical	0.9	0.2	.74**	
BIQ Adults	-0.5	0.1	-.50**	
PAS-R separation anxiety				
Step 1				.04
Gender	-0.1	0.7	-.03	
Age	0.5	0.4	.19	
Step 2				.27**
Gender	-0.1	0.6	-.02	
Age	0.5	0.3	.19	
BIQ Physical	0.3	0.1	.52*	
Step 3				.09**
Gender	0.3	0.6	.05	
Age	0.5	0.3	.18	
BIQ Physical	0.4	0.1	.76**	
BIQ Adults	-0.1	0.1	-.39**	
Step 4				.07*
Gender	0.3	0.5	.07	
Age	0.6	0.3	.22*	
BIQ Physical	0.3	0.1	.57**	

Table 5.8 continued

Table 5.8 continued

	<i>B</i>	<i>SE</i>	β	ΔR^2
BIQ Adults	-0.2	0.1	-.53**	
BIQ Separation	0.2	0.1	.40*	

Note: This table represents teacher-reported anxiety and behavioural inhibition scores; PAS-R = revised Preschool Anxiety Scale; BIQ = Behavioural Inhibition Questionnaire; * $p < .05$. ** $p < .01$.

According to Table 5.8, somewhat different results were found when performing the stepwise regression analyses on teacher-reported scores, in comparison to parent reports. Similar to the parent report analyses, unfamiliar situations turned out to be a significant predictor variable of social anxiety accounting for 77 % of the variance in this dependent variable ($F(1,55) = 208.35, p < .001$). However, both the BIQ subscales separation and adults also contributed a small percentage in predicting social anxiety as seen in Step 4 in the regression analysis, with all three predictors contributing to 20% of the variance in social anxiety ($F(1,53) = 4.15, p < .05$). Gender showed to have a significantly negative effect on social anxiety ($b = -.27, p < .001$) when interacting with all three of these predictor variables.

Generalised anxiety was only significantly predicted by one independent variable namely, the BIQ subscale physical challenges ($F(1,55) = 8.49, p < .001$) without any significant gender or age effects playing a role. The BIQ subscale physical challenges also significantly predicted 18% of the variance in specific phobias ($F(1,55) = 12.66, p < .001$) and 27% of the variance in separation anxiety ($F(1,55) = 21.44, p < .05$). The final interaction of independent variables that predicted separation anxiety included the subscales physical challenges, adults and separation. In interaction with these three subscales in step 4 ($F(1,53) = 6.44, p < .05$), age showed to have a small but significant effect ($b = 0.22, p < .05$).

5.5.2. Moderation effect of POM scores on the relationship between PAS-R and BIQ scores, according to parent reports. A multiple regression analysis was conducted to examine

whether parental overprotection had a moderating effect on the relationship between anxiety scores and behavioural inhibition which is presented in Table 5.9. In this analysis behavioural inhibition was the independent variable, anxiety was the dependent variable and parental overprotection was the moderating variable. To test the hypothesis that parental overprotection moderates the relationship between anxiety scores and behavioural inhibition, a hierarchical multiple regression was conducted.

Table 5.9 shows the results of the regression analyses predicting parental overprotection as a moderator variable.

Table 5.9

Results of the Regression Analyses Predicting Moderation Effects of the POM on the Relationship between the PAS-R and BIQ, According to Parent Reports

	<i>B</i>	<i>SE</i>	β	ΔR^2
Step 1				.38**
BIQ	9.2	2.0	.49**	
POM	6.1	2.0	.33*	
Step 2				.35
POM Behavioural inhibition	3.5	1.9	.19	

Note: BIQ =Behavioural Inhibition Questionnaire; POM = Parental Overprotection Measure, * $p < .05$. ** $p < .01$.

According to Table 5.9, the first model two variables were included: behavioural inhibition and parental overprotection. These variables accounted for a significant amount of variance in anxiety scores, $R^2 = .376$, $F(2,56) = 16,84$, $p < .001$. To avoid possible problematic high multicollinearity with the interaction term, the variables were standardised and an interaction term between behavioural inhibition and parental overprotection was computed (Aiken & West, 1991).

In the second model the interaction term between behavioural inhibition and parental overprotection was added to the regression model. This interaction accounted for a non-significant proportion of the variance in anxiety scores, $\Delta R^2 = .04$, $\Delta F(1, 55) = 3.30$, $p = .08$, $b = .19$, $t(55) = 1.82$, $p = 0.075$.

Figure 5.1 shows a plotted graph of this interaction between these variables.

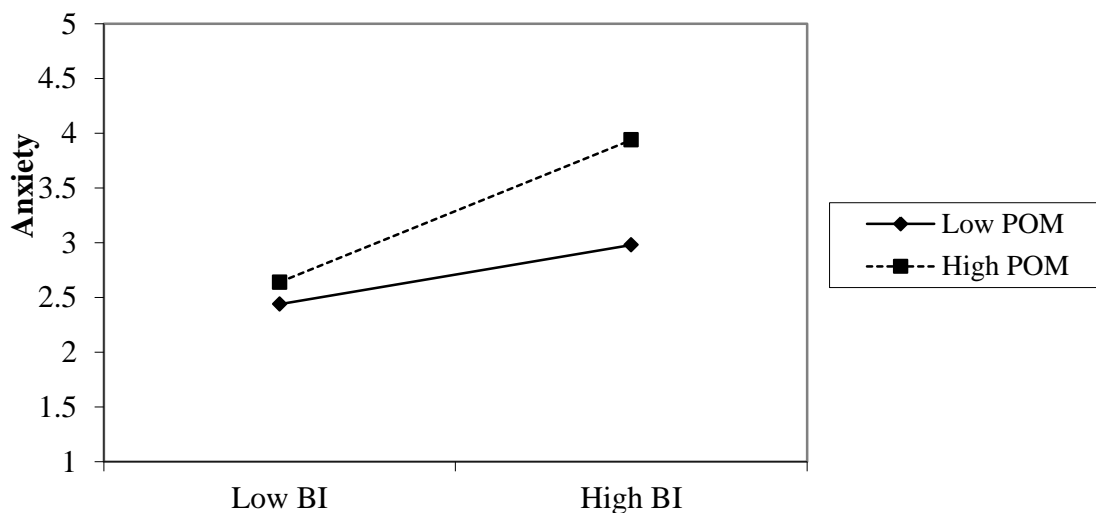


Figure 5.1. Moderation effect of the POM, according to Parent Reports.

Note: POM = Parental Overprotection Measure; BI = Behavioural inhibition scores

According to Figure 5.1, as behavioural inhibition and parental overprotection increases, anxiety scores increase in a non-significant trend in the predicted direction. If behavioural inhibition and parental overprotection are low then anxiety scores also remain low. It must be noted that these results should be interpreted with caution as the results were found to be non-significant. Table 5.9 summarises the important statistical results of the above mentioned regression analysis.

5.5.3. *Difference in scores between parent and teacher reports in 2012 with parent and teacher reports collected in 2013.* It was hypothesised that there would be a significant difference between anxiety scores collected in 2013 with anxiety scores collected in 2012 by Wege (2014). It was also hypothesised that there would be a significant difference in

behavioural inhibition scores collected in the present follow-up study in 2013 and behavioural inhibition scores collected in the initial study in 2012 (Wege, 2014). To test these hypotheses paired-samples *t*-tests were conducted.

Table 5.10 shows the results of the paired *t*-test results examining the difference between anxiety scores collected in 2012 and anxiety scores collected in 2013, as reported by parents and teachers.

Table 5.10

Difference between Anxiety Scores Collected in 2012 and Anxiety Scores Collected in 2013, According to Parent and Teacher Reports

	PAS-R		<i>t</i>	<i>df</i>
	2012 scores	2013 scores		
Parent-reported Anxiety	37 (15.9)	39 (18.8)	-1.33	58
Teacher-reported Anxiety	18.7(19.9)	23.9(14.7)	-1.90	58

Note: PAS-R = Revised Preschool Anxiety Scale

According to Table 5.10, there was an increase from parent-reported anxiety scores in 2012 ($M = 37$, $SD = 15.9$) to parent-reported anxiety scores in 2013 ($M = 39$, $SD = 18.8$), however not at a significant level [$t(58) = -1.33$, $p = .47$]. Although there was a slight increase [$t(58) = -1.90$, $p = .063$], no significant results were found between teacher-reported anxiety scores in 2012 ($M = 18.71$, $SD = 19.9$) and teacher-reported anxiety scores in 2013 ($M = 23.9$, $SD = 14.7$),

Table 5.11 shows the results of the paired *t*-test results examining the difference between behavioural inhibition scores collected in 2012 and behavioural inhibition scores collected in 2013, as reported by parents and teachers.

Table 5.11

Difference between Behavioural Inhibition Scores Collected in 2012 and Behavioural Inhibition Scores Collected in 2013, According to Parent and Teacher Reports

	BIQ		<i>t</i>	<i>df</i>
	2012 scores	2013 scores		
Parent-reported BI	91(26.0)	99 (24.9)	2.89*	58
Teacher-reported BI	86 (37.8)	91(36.2)	-.68	58

*Note: BIQ = Behavioural inhibition Questionnaire; * $p < .05$.*

As predicted, Table 5.11 shows that there was a significant difference between parent-reported behavioural inhibition scores in 2013 ($M = 91$, $SD = 26.0$) and parent-reported behavioural inhibition scores collected in 2012 ($M = 99$, $SD = 24.9$), $t(58) = 2.89$, $p = .05$. This finding was however not found for teacher reports, which indicated a non-significant difference between the teacher-reported behavioural inhibition in 2013 ($M = 91$, $SD = 36.2$) and teacher-reported behavioural inhibition in 2012 ($M = 86$, $SD = 37.8$), $t(58) = -.68$, $p = .50$.

5.6. Additional findings

A number of additional findings were found that do not answer or address specific hypotheses or aims but are nonetheless interesting.

5.6.1. Parent-teacher correlations on PAS-R and BIQ subscales. Table 5.12 and Table 5.13 display results of the correlational analyses which were conducted in order to examine the correlations between parent and teacher reports in both the PAS-R and BIQ subscales. This would allow the researcher to measure and assess the level of informant agreement between parent and teacher reports.

Table 5.12 shows the correlational findings between parent and teacher reports of the PAS-R subscale scores.

Table 5.12

Correlations between Parent- and Teacher-Reported PAS-R Subscales

	Parent-teacher correlation
Total PAS-R score	.27
Generalised anxiety	.32
Social anxiety	.36**
Specific fears	.21
Separation anxiety	-.07

Note: PAS-R = Revised Preschool Anxiety Scale; * $p < .05$. ** $p < .01$.

According to Table 5.12 scores from the parent and teacher reports on anxiety correlated positively on only one subscale of the PAS-R. As illustrated in Table 5.13, social anxiety produced a significantly positive correlation between parent and teacher reports with a Pearson's coefficient of $r = 0.36$, $p < 0.01$. Separation anxiety produced a negative correlation between parent and teacher reports, but not at a significant level.

Table 5.13 shows the correlational findings between parent and teacher reports of the BIQ subscale scores.

Table 5.13

Correlations between Parent and Teacher Reported BIQ Subscales

	Parent-teacher correlation
Total BIQ score	.36**
Unfamiliar situations	.38**
Peers	.25*
Adults	.30*
Physical challenges	.25*
Performance situations	.16
Separation	.47**

Note: BIQ = Behavioural inhibition Questionnaire; * $p < .05$. ** $p < .01$.

According to Table 5.13, the correlations between parent and teacher reports of behavioural inhibition scores were significantly positively correlated with the overall scales producing a Pearson coefficient of $r = .36$ at the 0.01 significance value. When assessing the correlations between the subscales of the parent and teacher reports of the BIQ, significant positive correlations were also found in unfamiliar situations ($r = .38, p < 0.01$), peers ($r = .25, p < 0.05$), adults ($r = .30, p < 0.05$), physical challenges ($r = 0.25, p < 0.05$), separation ($r = .47, p < 0.01$) with exception of performance situations which was not significantly correlated.

5.6.2. Relationship between POM and PAS-R, according to parent reports. Table 5.14

displays how PAS-R is significantly correlated to the POM with a Pearson coefficient of $r = .38$ at a significance level of $p < 0.01$.

Table 5.14

Correlations between the POM and the PAS-R, According to Parent Reports

	Parent-reported PAS-R
Parent-reported POM	Total reported anxiety
Total reported overprotection	.38**

Note: POM = Parental Overprotection measure; PAS-R = Revised Preschool Anxiety Scale
 * $p < .05$. ** $p < .01$.

According to Table 5.14, anxiety scores were found to significantly correlate positively with parental overprotection.

5.6.3. Relationship between POM and BIQ, according to parent reports. Table 5.15 displays how BIQ is non-significantly correlated to the POM with a Pearson coefficient of $r = .09$ at a significance level of $p < 0.01$.

Table 5.15

Correlations between POM and the BIQ, According to Parent Reports

	Parent-reported BIQ
Parent-reported POM	Total reported BI
Total reported overprotection	.09

Note: POM = Parental Overprotection Measure; BIQ = Behavioural Inhibition Questionnaire; BI = Behavioural inhibition

According to Table 5.15 no significant correlation was found between the total scores of the BIQ and POM.

5.7. Chapter summary

The present chapter began with an introduction and reporting of the preliminary analysis followed by a report of the main analyses and additional findings.

The preliminary analysis provided a reliability analysis (internal consistency) of the PAS-R, BIQ and POM. Results indicated that all total scales used in the present follow-up study produced satisfactory internal consistency and were therefore considered reliable measures. A presentation followed of the descriptive statistics of the parent and teacher reports on the relevant variables anxiety, behavioural inhibition and parental overprotection. A number of contrasting results—no substantial differences though—were found on gender and age. An analysis of variance was done to test for age and gender effects on parent and teacher reports but results yielded no significant difference. Gender and age were therefore eliminated as confounding variables in the main analyses.

Thereafter the main findings of the study, which aimed to answer the predicted hypotheses, were presented. As foreseen, there were strong correlations between anxiety and behavioural inhibition scores according to both parents and teachers in the present follow-up assessment. A stepwise regression analysis confirmed that the BIQ subscale unfamiliar situations was a significant predictor variable in the development of anxiety.

Moderation effects were found for parental overprotection. It was however just a trend in the predicted direction and results illustrated that parental overprotection did not significantly moderate the relationship between anxiety symptoms and behavioural inhibition.

Lastly, the hypotheses predicting significant differences between mean scores collected in the follow-up study in 2013 with mean scores collected for the initial study in 2012 were tested with a paired-samples t-test. Results revealed contradictory findings and there was only a significant difference found between parent-reported behavioural inhibition in 2013 with parent-reported behavioural inhibition in 2012. Teacher-reported behavioural inhibition mean scores as well as both parent- and teacher-reported anxiety mean scores increased from the initial study in 2012 to the follow-up assessment in 2013, but not at a significant level.

Some additional findings were reported that were found to be useful to interpret for the present study. These findings include exploring informant agreement between parent and teacher reports and the correlation of the POM with the PAS-R and BIQ that was found.

CHAPTER 6

DISCUSSION

6.1. Introduction to discussion of findings for follow-up assessment

A discussion of the results is presented in this chapter within the context of the findings of previous studies. Firstly, the overall findings regarding the follow-up assessments of anxiety symptoms and behavioural inhibition in young South African children, according to parent and teacher reports will be discussed. The reliability results and descriptive analyses for parent and teacher reports regarding gender and age are discussed next. For the main analysis the correlations between anxiety symptoms and behavioural inhibition according to both parent and teacher reports are considered—addressing hypothesis 1 and hypothesis 2. The moderation effects of parental overprotection on the relation between anxiety symptoms and behavioural inhibition scores (addressing hypothesis 3) are discussed. Moreover, the difference in scores between parent and teacher reports in 2012 with parent and teacher report scores collected in 2013 (addressing hypothesis 4 and hypothesis 5) will be discussed. Finally, attention will be drawn to some additional findings which include discussing the parent-teacher correlations on anxiety and behavioural inhibition scores as well as discussing correlations between parental overprotection and anxiety and behavioural inhibition scores.

6.2. Overall findings of parent and teacher reports

To the researcher's knowledge, the current study was the first study in South Africa examining the longer-term effects of the relationship between anxiety symptoms and behavioural inhibition in young children. In keeping with previous research (e.g., Biederman et al., 1993; Chronis-Tuscano et al., 2009; Muris et al., 2011), a strong positive correlation was found between anxiety symptoms, specifically social anxiety, and behavioural inhibition (see Table 5.5 and Table 5.6). A stepwise regression showed that the BIQ subscale unfamiliar

situations was the most significant predictor variable for all subscales of anxiety (Table 5.7 and Table 5.8).

Findings from the present study show that the moderating effect of parental overprotection was less strong than predicted (see Table 5.9). A non-significant trend in the hypothesised direction was found: the relationship between anxiety and behavioural inhibition was strongest when there were simultaneously high levels of parental overprotection (see Figure 5.1). This finding is in keeping with previous results (e.g., Vreeke et al., 2013) and suggests that parental overprotection needs more consideration in further research on early childhood anxiety.

With regard to the comparative analyses, the only significant difference found between scores collected in the initial study (Wege, 2014) and the present researcher's follow-up assessment was that parents reported significantly lower levels of behavioural inhibition at the one-year follow-up (see Table 5.11). The teachers also reported a decrease in behavioural inhibition but not at a significant level. Both parents and teachers reported somewhat higher levels of anxiety symptoms at follow-up assessment, but this increase was statistically non-significant (see Table 5.10).

Lastly, the informant agreement for the PAS-R was only found for one subscale, social anxiety (see Table 5.12). Additional findings indicated that there was a strong informant-agreement between parents and teachers for the BIQ (see Table 5.13). Parental overprotection was found to strongly correlate with anxiety but not with behavioural inhibition (see Table 5.14 and Table 5.15). Implications of the above findings will be discussed in the following sections.

6.3. Reliability analysis of parent and teacher reports

As mentioned, the internal consistency for the parent and teacher reports of the PAS-R and BIQ as well as for the POM were found to be satisfactory (see Table 5.1).

As can be seen in Table 5.1, The PAS-R parent report had an alpha value of .83 and the PAS-R teacher report produced an alpha value of .71. These findings are also well in line with previous studies using the PAS-R as a measure for anxiety (Broeren et al., 2013; Edwards et al., 2010). Past studies generally obtained internal consistency coefficients greater than .72 for both the parent and the teacher reports of the PAS-R. These findings replicate those of the first study, which used the PAS-R amongst the same cohort of children (Wege, 2014).

The internal consistency of the total BIQ scale (across all 30 items) for both the parent and teacher reports produced satisfactory Cronbach alpha values of .83 and .93 respectively (see Table 5.1). These findings compare well with previous studies using the BIQ (Bishop et al., 2003; Broeren et al., 2010; Kim et al., 2011), which all found this report measure to produce internal consistency coefficients greater than .80. The present findings on the reliability of the BIQ parallel those of the first South African study (Wege, 2014). Therefore the following alpha values confirm the results as obtained in previous research, both internationally and in South Africa, attesting to the use and relevance of this questionnaire in the South African context.

According to the results seen in Table 5.1, a high alpha value of .88 was found for the POM, indicating satisfactory internal consistency for this measure. These findings parallel with psychometric properties previously found in studies using the POM (Edwards et al., 2007; Vreeke et al., 2013). Comparable data from South African studies using this parent report measure do not exist. Therefore more studies are needed using this specific measure in order to confirm its reliable utilisation in the South African context.

6.4. Descriptive statistics of parent and teacher reports

The findings obtained from the descriptive analysis of the data on parent and teacher reports will be discussed in the following sections with special attention to gender and age difference.

6.4.1. Gender. From the present study's results (see Table 5.2 & Table 5.3), it can be concluded that gender was found to have no significant effect on anxiety, behavioural inhibition, and parental overprotection as reported by parents and teachers.

Previous research found similar findings for behavioural inhibition, reporting no significant gender differences in children (Chen et al., 2009; Vreeke et al., 2012). These findings were confirmed in the initial study by Wege (2014). However, the non-significant effect of gender on anxiety is in contrast with a number of previous research findings. Spence (1998) found a significant effect for gender with girls reporting significantly higher levels of anxiety symptoms than boys. Despite the general trend of gender effects on childhood anxiety, non-significant effects of gender on anxiety and behavioural inhibition scores have also been found in more recent studies conducted by Dougherty et al. (2013) as well as in the initial South African study conducted by Wege (2014).

In a study by Edwards et al. (2010) gender was found to have no significant effect on either of these relevant variables including anxiety, behavioural inhibition, and parental overprotection. These findings were confirmed by the present study.

6.4.2. Age. In the present study age did not significantly contribute to parent and teacher reports on anxiety, behavioural inhibition, and parental overprotection. There have been conflicting findings with respect to the effect of age on anxiety, with some research suggesting that anxiety remains stable and others reporting decreasing or even increasing trends (Broeren et al., 2013; Rapee et al., 2009).

With regard to behavioural inhibition, previous research suggests that there is a moderate continuity in this temperamental trait (Kagan et al., 1988). It has been shown that behavioural inhibition is best identifiable in the early stages of a child's development and it is quite difficult for parents and teachers to report on these traits as the child gets older (Gest, 1997).

The present study's findings of a non-significant influence of age on anxiety and behavioural inhibition scores confirm the general findings of the initial study conducted by Wege (2014), which found no significant age differences for either anxiety or behavioural inhibition levels as reported by parents and teachers. There was one exception though. A significant age difference for the subscale generalised anxiety was found by Wege (2014). She found that older children had higher generalised anxiety in comparison to younger children, as reported by teachers.

In terms of parental overprotection, the non-significant age difference is contrary to previous findings. Studies by Thomasgard et al. (1995, 1997) have shown that parents are more overprotective towards younger children than older children. With the present study's age range being 3 to 7 years old, an insignificant age effect could be expected.

6.5. Correlations between anxiety symptoms and behavioural inhibition, according to parent and teacher reports

In order to test hypothesis 1 (predicting a significant positive correlation between young children's anxiety symptoms and behavioural inhibition scores, as reported by parents in the first follow-up cohort) and hypothesis 2 (predicting a significant positive correlation between young children's anxiety symptoms and behavioural inhibition scores, as reported by teachers in the first follow-up cohort), Pearson correlations were computed. A positive correlation between anxiety symptoms and behavioural inhibition was hypothesised as previous research indicated that the temperament of behavioural inhibition may act as a significant risk factor in

the development of early childhood anxiety (Fox et al., 2005; Hirshfeld-Becker et al., 2008). Congruent with previous findings (Wege, 2014), the present study indeed found a significant positive correlation between anxiety and behavioural inhibition for both parent and teacher reports (see Table 5.4).

So far very little research has been done exploring the developmental outcomes of behavioural inhibition in non-Western countries (Chen et al., 2009). The present study addresses this gap in the literature and the findings indicate that behaviourally inhibited children in South Africa are also at a greater risk for developing anxiety problems. According to both parents and teachers, moderately strong correlations were found amongst all the subscales of behavioural inhibition and social anxiety (see Table 5.5 and Table 5.6). Generalised anxiety also correlated with most of the BIQ subscales but a less strong relationship was discovered in comparison to social anxiety. This finding supports previous results that show behavioural inhibition to be a specific risk factor in the development of social anxiety (Gladstone et al., 2005; Hirshfeld-Becker et al., 2008; Muris et al., 2011).

The significant positive correlations between anxiety symptoms and behavioural inhibition as found in the present study also correspond with the significant correlations found in the initial study of Wege (2014). The stability in the size of the positive correlations between social anxiety and behavioural inhibition strengthens the argument that behavioural inhibition may be considered a prominent specific risk factor in the development of social anxiety in young children.

In order to confirm the present study's significant correlation found between anxiety symptoms and behavioural inhibition, a stepwise regression analysis was conducted, controlling for both gender and age. By doing this it was hoped that the regression model could be used to clarify the association found between the anxiety and behavioural inhibition subscales and the effects of gender and age in a single analysis. The stepwise method was

chosen in order to find the most parsimonious predictor variables (i.e. the BIQ subscales) that were effective in predicting the different subscales of anxiety.

In Table 5.7, findings from the stepwise regression analysis indicated that according to parent reports, unfamiliar situations was the most significant BIQ subscale in predicting all types of anxiety symptoms in the children. According to the teacher reports, unfamiliar situations accounted for 77 % of social anxiety scores (see Table 5.8). These findings could be expected as Kagan (1997) discovered that avoidance towards unfamiliarity and unfamiliar situations is very closely associated with fearful behaviour in children. Literature has shown that children who act out avoidant behaviour rather than curiosity towards unfamiliar situations have an increased risk of developing an anxiety disorder (e.g., Hirshfeld-Becker et al., 2008). Erikson's (1963) psychosocial theory (discussed in Chapter 3) suggests that children in the early childhood phase need to overcome the psychosocial conflict of initiative versus guilt, which involves learning to control their curiosity whilst also being able to feel secure to explore new things without the physical presence of their parent.

According to teacher reports, physical challenges was found to be a prominent BIQ subscale in predicting generalised anxiety, separation anxiety and specific phobias (See Table 5.8). Physical challenges, defined by the hesitancy to explore new things, could also be perceived as closely related to the fear of unfamiliar situations. Together, it is possible that fear of unfamiliar situations and physical challenges could be as a result of parental practices that encourage avoidant behaviour in the child (Jarcho et al., 2013). Parent-child attachment has shown to have influences on the level of a child's curiosity (Laible & Thompspon, 2000; Louw et al., 2014). Bronfenbrenner (1979, 1989) stresses the importance of the parent's and the teacher's relationship with the child, as they will have the most significant impact on the child's development. If there is a breakdown of relationships within the child's immediate environment (microsystem) it is believed that the child does not have the necessary tools to

overcome other environmental influences from the meso-, exo-, macro-, and chronosystems. Hence, if a behaviourally inhibited child has an overprotective or anxious parent, the child will be significantly influenced to act out the same anxious behaviour (Addison, 1992; Mash et al., 2013). Additionally, if the child is exposed to an uncomfortable school setting as well as being brought up in a violent or culturally different society, it may further encourage anxious behaviour (Briggs-Gowan et al., 2010; Liang et al., 2007).

According to the teacher reports, the BIQ subscale adult was found to significantly negatively predict high separation anxiety and specific phobias. These significantly negative results for the BIQ subscale adults were surprising as behavioural inhibition usually positively controls anxiety symptoms. There are three possible explanations for these results. Firstly, on a statistical level, it could be regarded as a statistical artefact due to two predictor variables being strongly related and competing for the same variance (Aiken & West, 1991). On a theoretical level, it also has meaning even though it is difficult to explain. The findings indicate that whilst controlling for the physical subscale, lower inhibition would occur in children when meeting unfamiliar adults. This could be due to the fact that specific phobias and separation represent a fear of the unknown physical environment rather than a fear of unfamiliar people. However, it is important to note that these significant negative beta coefficients were only found for teacher reports, which may suggest that these strange findings are a reflection of the teacher's inability to accurately judge fear and inhibition in young children (Rothi, Leavey, & Best, 2008).

Overall, according to both parents and teachers, gender and age had no significant effects in predicting anxiety levels, as revealed in the stepwise regression analysis. The teacher reports, however, indicated that gender had a significant negative effect in predicting social anxiety whilst interacting with the predictor variables of the BIQ subscales of unfamiliar situations, separation and adults.

6.6. The moderation effect of parental overprotection on anxiety symptoms and behavioural inhibition according to parent reports

In order to test hypothesis 3 (predicting parental overprotection to have a moderating effect on anxiety symptoms and behavioural inhibition scores as reported by parents in the first follow-up cohort), a multiple regression analysis was conducted.

The current results showed that parental overprotection did not significantly moderate the relationship between anxiety symptoms and behavioural inhibition (see Table 5.9). Before it is assumed that parental overprotection does not play a role in the development of anxiety, the finding should be explored on a deeper level. Although non-significant, a trend in the predicted direction was found in the regression analysis, indicating that a combination of high behavioural inhibition and high parental overprotection scores was associated with high anxiety scores (see Figure 5.1). This trend confirms previous research showing that the parenting style of overprotection, in combination with behavioural inhibition, may induce higher levels of childhood anxiety (Dougherty et al., 2013; Hudson & Rapee, 2001). This also confirms findings within the South African context. Muris et al. (2006) found that perceived overprotective parental behaviours were significantly positively correlated with rejection and anxiety symptoms in South African children and youths.

The small sample size of 59 parents included in the present follow-up assessment may have compromised the statistical power to detect significant results for the moderating role of parental overprotection. Perhaps parental overprotection needs to be assessed over a longer period of time in order to identify significant negative effects (Vreeke et al., 2013). In the present study it would have been the first time the participants reported on parental overprotection and it is quite possible that future follow-up assessments measuring the moderating role of parental overprotection may yield a statistically significant result. However, the present findings still show that parental overprotection has an association with

anxiety and behavioural inhibition scores. It may consequently be concluded that this variable still proves to provide useful information on the developments of child anxiety and may have an important impact on parent-based interventions for anxiety problems in young children (Rapee et al., 2013). The social perspective (discussed in Chapter 3) would perhaps argue that the attachment figure and parent-child relationship have the most significant influences on the level of a child's psychosocial adjustment (Cassidy et al., 2008; Mash et al., 2013).

Edwards et al. (2010) found that behavioural inhibition and parental overprotection made their own significant unique contributions to the development of anxiety. An interactive effect was, however, not explored in the study by Edwards et al. (2010). Few studies have explored the interactive effect of behavioural inhibition and parental overprotection on the development of anxiety. Therefore more research needs to be done to explore the interaction effect of parental overprotection and behavioural inhibition on the development of anxiety in young children (Hudson et al., 2011).

6.7. Difference in scores between parent and teacher reports in 2012 and parent and teacher report collected in 2013

Anxiety symptoms have been found to increase and become significantly more impairing over time in young children (Broeren et al., 2013; Mian et al., 2011). Similar findings have been found for behavioural inhibition, which is a temperament that is considered to be relatively stable during toddlerhood and the preschool years through to middle childhood (Kagan et al., 1988). This literature motivated the present study to predict significant differences in both anxiety scores and behavioural inhibition between the initial assessment conducted in 2012 (Wege, 2014) and the present follow-up assessment one year later. In order to test hypothesis 4 (predicting a significant difference between anxiety symptom scores collected in 2013 and anxiety symptom scores collected in 2012) and hypothesis 5 (predicting a significant

difference between behavioural inhibition scores collected in 2013 and behavioural inhibition scores collected in 2012) paired sample *t*-tests were conducted.

This comparative analysis yielded quite conflicting findings. A non-significant increase from parent-reported anxiety scores in 2012 to parent-reported anxiety scores in 2013 was found. Although there was a slight increase [$t(58) = -1.90, p = .063$], no significant results were found between teacher-reported anxiety scores in 2012 and teacher-reported anxiety scores in 2013 either (see Table 5.10). Results showed that there was a significant decline in parent-reported behavioural inhibition scores obtained in 2012 compared to 2013 [$t(58) = 2.890, p = .05$]. The teachers' reports revealed no difference in behavioural inhibition between the initial assessment and the follow-up assessment (see Table 5.11).

These findings are therefore contrary to what was expected. A substantial amount of literature is also quite ambivalent about this point. Sweeney and Pine (2004) suggest that anxiety symptoms are only moderately stable whereas other findings suggest that the development of anxiety is more severely and chronically stable (e.g., Karevold et al., 2006; Mian et al., 2011). A significant difference in anxiety levels was predicted for our follow-up assessment in the present study. However, due to the significant decrease in reported behavioural inhibition after the one year follow-up, it is possible that this could explain the non-significant increase found in anxiety levels. Children with stable behavioural inhibition have been found to be at an increased risk for developing pathological anxiety. Hirschfeld et al. (1992) found that children who remained inhibited at 4, 5½, and 7 ½ years old had higher rates of anxiety than children who were not consistently inhibited over time. Therefore it may be argued that a decrease in parent-reported behavioural inhibition may have had an impact on the anxiety levels found in the present study.

According to the biological perspective (discussed in Chapter 3) the severity of a child's temperament would have a significant influence on a child's ability to psychosocially adjust

to his or her environmental influences (Illingworth, 2013; Mash et al., 2013). Therefore high levels of behavioural inhibition would be more closely associated with high levels of anxiety symptoms than in the case of low levels of behavioural inhibition.

Although at a non-significant level, both parent and teacher reports on anxiety indicated an increase in the one year follow-up assessment. The non-significant levels may have been as a result of a power problem due to the limited amount of participants. The fact that no age effects were found for anxiety in the present study could explain why no significant longitudinal effects were found for the present study.

It should be noted that previous studies revealed inconsistent findings with regard to the stability of early childhood anxiety and behavioural inhibition symptoms (Craske, 1997; Feng et al., 2008; Gest, 1997). It is possible that statistically significant effects will only be noticed over a longer time period. Piaget's (1972) cognitive developmental theory (discussed in Chapter 3) stresses the importance of how children make meaning of their world and how these cognitive processes directly impact their psychosocial development. It would be interesting to interview children in future follow-up assessments for the present cohort study in order to detect possible anxiety-promoting cognitions. Intervention programmes for South African children that encourage cognitions that provide for a more positive sense of control may assist in minimising any longitudinal effects of childhood anxiety.

6.8. Additional findings

6.8.1. Parent-teacher correlations on anxiety and behavioural inhibition scores. With the exception of the subscale performance situation, results revealed a strong parent-teacher agreement for the BIQ scale (see Table 5.13). This finding is comparable with Kim et al. (2011) who also found a moderate agreement between parent and teacher reports for the BIQ. Surprisingly, a significant cross-informant agreement was only present for one subscale of the

PAS-R, namely social anxiety (see Table 5.12). Parents and teachers both spend quite some time with the children; therefore both are considered reliable sources for reporting on anxiety and behavioural inhibition (Fonseca et al., 2002). Yet, the discrepancies between parents and teachers in cross-informant agreement have also been noted in past research (e.g., Ballespí et al., 2012).

There are various explanations for the lack of agreement between parents and teachers on the PAS-R. Edwards et al. (2010) pointed out that parents and teachers observe children in different contexts and children may behave differently at school compared to how they behave at home. Anxiety may also be difficult to observe due to its internalised nature (Luby et al., 2007). Consequently it is quite possible that anxiety symptoms in children may go unnoticed within a school setting. These discrepancies between informants for the PAS-R were noticed during data collection. Many of the teachers who participated in the present study left various questions unanswered—particularly from items on the specific phobia subscale. This particular pattern revealed that teachers were unable to answer questions about certain behaviours of the child, probably because they rarely occur in the classroom setting. Items on the PAS-R specific phobia subscale that were most commonly left out by teachers included item 3 (*Is afraid of doctors/dentists*), item 17 (*Is frightened of dogs*), item 18 (*Has nightmares*), item 20 (*Is afraid of the dark*) and 22 (*Wary of large animals*). Exactly the same items of the PAS-R subscale specific phobia were left out in the initial study by Wege (2014). It may be argued that future follow-up assessments should reconsider the use of the PAS-R for teachers.

The one subscale that did manage to produce a significant cross-informant agreement between parents' and teachers' reports on the PAS-R was the separation anxiety scale (see Table 5.12). Perhaps this is because both the teacher and the parent will be able to witness a child's reaction to separation from the parent or caregiver when being left at school in the

morning. This significant parent-teacher correlation for separation anxiety was also found for the initial study (Wege, 2014).

6.8.2. Correlations between parental overprotection with anxiety symptoms and behavioural inhibition, according to parent reports. Correlational analyses were conducted to explore the relationship between the POM on the one hand, and the BIQ and PAS-R on the other.

Findings showed that parental overprotection was significantly positively correlated with the anxiety symptoms (see Table 5.14) but did not significantly correlate with behavioural inhibition (see Table 5.15). These findings of a non-significant correlation between parental overprotection and behavioural inhibition contradict previous findings. Literature shows that parental overprotection contributes to either the levels of anxiety symptoms and behavioural inhibition or both (e.g. Dougherty et al., 2013; Muris et al., 2011). The present study's findings may perhaps imply that parental overprotection and behavioural inhibition are separate contributing factors to the development of anxiety. If separate factors contribute to anxiety, this may also explain why not all behaviourally inhibited children develop anxiety symptoms.

It is not surprising that the contextual perspective (discussed in Chapter 3), traditionally known as the systems theory, has become a typically prominent theoretical framework within which to interpret childhood development (Appleton, 2010) and specifically child development within the African context (Nsamenang, 1992). Anxiety in young children is believed to be best understood by means of a multifaceted system of several contextual factors, which cooperate with each other throughout the child's development (Appleton, 2010).

The present study's findings therefore re-confirm the results in the study conducted by Edwards et al. (2010) who found that behavioural inhibition and parental overprotection made their own significant unique contributions to the development of anxiety as mentioned earlier.

Most importantly, the present study's findings confirm those of Muris et al. (2006) who found a significant relationship between parental overprotection and anxiety symptoms in older and adolescent South African children.

The significant correlation between parental overprotection and anxiety supports previous findings. Overprotective parents of inhibited young children may contribute to the development of withdrawn behaviours and encourage social fearfulness and fear of the unknown (e.g., Rubin, Stewart, & Chen, 1995). Overprotective parents encourage anxious, fearful and avoidant behaviour in their children (Jarcho et al., 2013). Alternatively it is possible that parents are naturally more protective of socially anxious, inhibited children. These findings may imply that parents of behaviourally inhibited children indirectly encourage them to avoid entering unknown and novel situations, which may result in the child developing even more severe anxiety symptoms as they get older. Bandura's social learning theory (1977) proposes that children essentially learn through observation and model the behaviour they observe.

Research confirms that anxiety problems in children may be interpreted by means of assessing a variety of risk factors (Muris et al., 2011; Pahl et al., 2012; Van Brakel et al., 2006). The present study's findings on the significant correlation between reported parental overprotection and anxiety symptoms provide further evidence that it is not only temperamental factors that play a role in the development of child anxiety, but also environmental factors such as parental behaviour (Broeren et al., 2013; Hudson et al., 2011; Muris, 2008; Rapee, 1997).

For this reason, it may be argued that the ecological systems theory (Bronfenbrenner, 1979) is a good theoretical framework for providing a broader understanding of anxiety in young children. This framework may be particularly useful in considering the impact of both internal and external factors found within a South African context, including socio-economic

status, culture, temperament and parental styles or attachment, which may all contribute to the development of anxiety symptoms. Certain studies that have explored a diverse approach to understanding the development of anxiety symptoms in childhood and its interaction with behavioural inhibition (e.g., Manassis et al., 2004; Van Brakel et al., 2006) found that a variety of factors contributed to and influenced the development of anxiety symptoms. Research suggests that the time a child spends at day care (e.g. Fox et al., 2001; Rapee & Szollos, 2003), expressed parental anxiety (Hudson, Dodd, & Bovopoulos, 2011; Rapee et al., 2009), parental overprotection (Edwards et al., 2010), stressful life events and sleeping problems (Dougherty et al., 2013), as well as culture (Bowie et al., 2013; Chen et al., 2009) have all provided helpful insight into interpreting the relationship between childhood anxiety symptoms and behavioural inhibition. This confirms the intricate contextual factors which may affect childhood development as emphasised by the ecological systems theory (Bronfenbrenner, 1979).

6.9. Chapter summary

The findings of the present study were discussed in Chapter 6. The chapter began with an introduction, which outlined what would be discussed. Then a discussion followed, summarising the most prominent results. Thereafter a more detailed description of each finding was examined. Firstly, the reliability of all three measures used in the present study was explored. Secondly, the descriptive statistics were discussed with regard to gender and age effects. Following this, the main analysis was discussed, pertaining to the correlation between anxiety symptoms and behavioural inhibition scores, the moderation effect of parental overprotection on the relationship between anxiety symptoms and behavioural inhibition. The comparison between the differences in scores collected in the initial study (Wege, 2014) versus scores collected in the present follow-up study was discussed. Finally, the chapter concluded with a discussion of the additional findings, which included the parent-

teacher correlations as well as the correlations found between parental overprotection and anxiety symptoms and behavioural inhibition. The importance of the contextual perspective on understanding the relationship between anxiety symptoms and behavioural inhibition in South African children was highlighted.

The subsequent chapter includes a synthesis of the main findings of the present study, the study's limitations and recommendations for future research.

CHAPTER 7

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

By examining the longitudinal relationship between anxiety symptoms and behavioural inhibition in young South African children, the aim of the present study was to make a significant contribution to the scientific knowledge in this specific research field. In addition, by exploring the moderation effect of parental overprotection on anxiety symptoms and behavioural inhibition it was foreseen that this study would also increase understanding of the development of anxiety symptoms in this under-studied population (Loxton, 2009).

The primary aims of the study were to assess the parent and teacher reports of anxiety symptoms and behavioural inhibition in a one-year follow-up on a cohort of young children (addressing hypotheses 1 & 2); to determine whether parental overprotection is a moderating variable in the relationship between anxiety symptoms and behavioural inhibition (addressing hypothesis 3); and finally to compare parent and teacher reports from the 2012 dataset with parent and teacher reports from the 2013 dataset (addressing hypotheses 4 & 5).

In order to achieve these aims and to address the present study's predicted hypotheses (see Chapter 4) the following objectives of the present study were sought:

- to conduct a follow-up assessment on children's levels of anxiety and behavioural inhibition symptoms by means of parent reports
- to conduct a follow-up assessment on children's levels of anxiety and behavioural inhibition symptoms by means of teacher reports
- to assess whether parental overprotection moderates the effect of behavioural inhibition on anxiety symptoms

- to compare the differences between parent and teacher reports as obtained in the 2012 dataset (Wege, 2014) with parent and teacher reports as collected in the present follow-up study in 2013.

The present chapter highlights the main findings of the current study in carrying out these objectives. Implications for these findings with regard to the South African context will also be discussed. Thereafter a critical discussion of the present study will be presented in which the limitations of the study are considered and recommendations for future research are given.

7.1. Major findings

The current findings supported the hypothesis that both parent and teacher reports of anxiety symptoms and behavioural inhibition would be significantly correlated. High levels of behavioural inhibition were indeed accompanied by high levels of anxiety symptoms—more specifically social anxiety symptoms. By exploring the association between anxiety and behavioural inhibition, it was evident that the unfamiliar situations subscale of the BIQ was the strongest predictor in determining anxiety symptoms. Additionally, no overall significant gender and age effects were found.

A trend was found showing that the relationship between anxiety symptoms and behavioural inhibition was stronger when there were concurrent high levels of parental overprotection, which may be taken as tentative support for the hypothesised moderation effect of this parenting variable. Although the role of parental overprotection was not as significant as had been hypothesised, findings still displayed a non-significant moderation effect in the predicted direction.

Also confirming the predictions for the present study, significant differences were found between parent-reported behavioural inhibition scores collected in 2012 and parent-reported behavioural inhibition scores collected in 2013. However, the comparative findings for the

present study were not entirely according to what was hypothesised. No significant differences were found between teacher-reported behavioural inhibition scores in 2012 and teacher-reported behavioural inhibition scores in 2013. Additionally, no significant differences were found between parent- and teacher-reported anxiety scores collected in 2012 and those collected in 2013. It was noted that a power problem might have prevented statistically significant differences between these scores.

7.2. Theoretical perspective

In terms of Bronfenbrenner's ecological systems theory, (discussed in Chapter 3), environmental influences from the micro-, meso-, macro-, and chronosystems will affect child development (Mash et al., 2013). Therefore overprotective parents may encourage anxious behaviour in children. This notion possibly explains the present study's findings—a significant positive correlation between the parental overprotection measure and the anxiety scale. These results were also obtained by Muris et al. (2006), who found that parental overprotection has a significant effect on the anxiety levels of older South African children.

As emphasised by Bronfenbrenner's ecological systems theory (Appleton, 2010), the present study's findings support the importance of considering a variety of contextual factors (i.e. both behavioural inhibition and parental overprotection) in interpreting and understanding child development and behaviour. However, additional information is needed about attachment styles, temperamental traits, cognitions and other social and cultural factors before more grounded interpretations of the development of anxiety symptoms in young South African children can be made.

7.3. Implications for the South African context

All the measurement scales that were used in the present study had acceptable to good internal consistency when administered to our South African participants, which indicates that

these instruments for assessing anxiety, behavioural inhibition, and parental overprotection are suitable for the South African context. In line with research from other countries (e.g., Biederman et al., 1993; Chronis-Tuscano et al., 2009; Muris et al., 2011), the present findings indicate that behaviourally inhibited children in South Africa are also more at risk for developing anxiety symptoms than children who are not behaviourally inhibited.

Furthermore, the fact that parental overprotection was found to be associated with high levels of anxiety and behavioural inhibition symptoms in the present study, stresses the importance of the parental role in the development of anxiety in young South African children. This finding has implications for future implementation of intervention programmes within a South African context. Such intervention programmes could aim at educating the parents to prevent the development of anxiety in young children (Fox et al., 2012). Recent evidence has confirmed the effectiveness of early intervention for young at-risk children in other countries. Rapee (2013) explored the long-term effects of a brief prevention programme. The children initially assessed at preschool age were prone to develop an internalising disorder. The brief intervention was presented to the parents of these young children. The results showed clear benefits for the children and were still present after an 11-year follow-up period. Therefore prevention and early intervention programmes aimed at educating South African parents may offer the most economical and effective ways to prevent anxiety and reduce the currently high prevalence rates of anxiety symptoms in young South African children (Loxton, 2009; Muris et al., 2006).

7.4. Critical review of the present study

The present study is the first follow-up of a South African cohort study exploring the relationship between early childhood anxiety and behavioural inhibition. Various challenges as well as valuable aspects of this research are noted.

7.4.1. Challenging aspects. The present study experienced various difficulties that should be considered when interpreting these findings.

- It was a challenge to trace children in their current school location after one year after the initial assessment. Of the original cohort of 107 children, only 77 children could be identified for the follow-up assessment. A total of 27 children had moved from original preschool to 7 different formal school settings one year after the initial assessment. It was also difficult to motivate parents and teachers to re-participate in the follow-up study.
- As a result of these recruitment difficulties only 59 children were included in this follow-up study, which may have resulted in a statistical power problem.
- With regard to time, the present study was demanding as permission had to be gained from the Western Cape Education Department, from the principals of all seven schools involved, as well as from the parents and teachers.
- Teachers found it difficult to respond to various items on the PAS-R. It appears that teachers were not able to answer questions regarding children's behaviour outside of the classroom setting. Often teachers left these items unanswered—resulting in missing data.

7.4.2 Limitations. Apart from various challenges that have been mentioned, a number of additional limitations should be recognised.

- Due to the research design, no cause-effect relationships can be established between anxiety and behavioural inhibition symptoms. An association between these two variables can rather be assumed.
- As the sample size was quite small one should be cautious with generalising the findings to the total South African child population.

- The present study only made use of parent and teacher reports of early childhood anxiety symptoms and behavioural inhibition. Clinical interviews, observations or self-report measures of the children in this cohort would have added important cross-informant insights, especially with regard to cultural and contextual aspects.
- The PAS-R was used with the specific purpose to follow-up this cohort and remain consistent with Wege's (2014) methodology. Even though some of the children in the cohort were slightly older, it should be noted that this measurement tool was specifically designed for preschool aged children.
- Although a variety of potential moderators have been identified in past research (Dougherty et al., 2013), only one moderator (parental overprotection) was assessed in the present study.

7.4.3. *Valuable aspects.* There were also positive aspects of the study that are worthy to note.

- All measuring scales were economical and easy to administer. School principals with many years' experience in the preschool and formal school environment reviewed all questionnaires to ensure that items were appropriate and legible for both parents and teachers.
- Although it was a small sample group, participants in the present study represented a multicultural and diverse South African population.
- It is believed that the present study filled a gap in existing South African childhood anxiety literature. To the researcher's knowledge, no other follow-up studies have been conducted on anxiety and behavioural inhibition symptoms in young South African children. Behavioural inhibition is an under-researched topic in South Africa. Therefore this cohort study adds to the scientific knowledge as it represents the first cohort follow-up study carried out in South Africa that explores longitudinal effects on

the relationship between anxiety and behavioural inhibition symptoms in young children. Such studies are sparse due to their time-consuming nature; however, the study of longitudinal effects can contribute to our understanding of the development of anxiety symptoms in youths (Magnusson, Bergman, Rudinger & Törestad, 1994).

- To the researcher's knowledge, no other studies have explored the moderation effects of parental overprotection on the relationship between anxiety and behavioural inhibition symptoms within the South African context.

7.5. Recommendations

Taking the aforementioned critical review of the present study into consideration, the following recommendations may be considered for future research:

- Future follow-up assessments may consider using a revised version of the PAS-R for teacher informants, which could exclude certain items that do not consider the school environment.
- Future follow-up assessments may use a more age-appropriate scale for measuring anxiety symptoms for the older children who have already entered formal school, for example, the Spence Children's Anxiety Scale (Spence, 1998).
- It is important to build a good relationship with all the involved schools for this type of cohort study. The schools have an important and influential role in motivating and keeping contact with the parents and teachers, which may be helpful in reducing the attrition rates common in longitudinal studies (Magnusson et al., 1994).
- In addition to parent and teacher reports, it would be worthwhile to conduct child-friendly interviews with the children themselves in order to further substantiate the current findings.

- More research is needed to explore the influence of parenting practices on the relationship between anxiety and behavioural inhibition symptoms in young children. Only parental overprotection was assessed but other parenting practices or additional moderating factors such as parental anxiety, stressful life events and maternal attachment could also have an impact on the development of anxiety symptoms in early childhood (Dougherty et al., 2013; Muris et al., 2011; Pahl et al., 2012).
- Comparable data from South African studies using the *Parental Overprotection Measure* (Edwards et al., 2007) do not exist. More studies are needed using this specific measure in order to confirm its reliable utilisation within the South African context.

7.6. Concluding remarks

Due to the high prevalence rates and the early onset of anxiety disorders in young children, intervention programmes are urgently needed to prevent the development of anxiety in young children (Baxter et al., 2013; Hirshfeld-Becker et al., 2008). The present follow-up study was set up with the aim to fill the gap in current South African childhood anxiety literature. The researcher trusts that this new knowledge will be used to improve our understanding of the development of anxiety symptoms in young children and to design more effective intervention programmes in South Africa.

The most pertinent finding from the current study is perhaps that behavioural inhibition has a strong and stable association with young children's anxiety symptoms, specifically social anxiety. Future longitudinal assessments may allow for further mediation and moderation effects to be explored. Although it is not possible to assume causal paths from the present research, the findings provide important insights into the risk factors involved in elevating anxiety symptoms in young children, including both temperamental and environmental risk factors. From the present study's findings multifactorial models that

consider a variety of risk factors in understanding the anxiety development in young children is further emphasised (Van Brakel et al., 2006). Prevention and early intervention programmes of this nature are crucial in South Africa. These programmes specifically need to target South African parents with young children who are behaviourally inhibited and at risk for developing anxiety symptoms.

This follow-up study has hopefully introduced the importance and need for longitudinal research in the area of childhood anxiety in South Africa and holds encouragement for future research to embark on further explorations of this kind.

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ADDENDUM A
WESTERN CAPE EDUCATION DEPARTMENT PERMISSION

Audrey.wyngaard2@pgwc.gov.za

tel: +27 021 467 9272

Fax: 0865902282

Private Bag x9114, Cape Town, 8000

wced.wcape.gov.za

REFERENCE: 20130813-15732

ENQUIRIES: Dr A T Wyngaard

Ms Megan Howard
4 Libertrau Street
Somerset West
7130

Dear Ms Megan Howard

RESEARCH PROPOSAL: BEHAVIOURAL INHIBITION AND ANXIETY SYMPTOMS IN YOUNG SOUTH AFRICAN CHILDREN: A FOLLOW-UP ON PARENT- AND TEACHER REPORTS

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Approval for projects should be conveyed to the District Director of the schools where the project will be conducted.
5. Educators' programmes are not to be interrupted.
- 6. The Study is to be conducted from 12 August 2013 till 20 September 2013**
7. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
8. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
9. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
10. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
11. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
12. The Department receives a copy of the completed report/dissertation/thesis addressed to:

The Director: Research Services
Western Cape Education Department
Private Bag X9114
CAPE TOWN
8000

We wish you success in your research.

Kind regards.

Signed: Dr Audrey T Wyngaard

Directorate: Research

DATE: 13 August 2013

ADDENDUM B
PARENT'S INFORMATION LETTER



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Stellenbosch University
Private Bag x 1
Matieland
7602
Stellenbosch, South Africa
Tel.: +27 21 808 9111

Dear Parent/ Guardian

**PERMISSION FOR THE PARTICIPATION OF PARENTS IN FOLLOW-UP
ASSESSMENT ON MASTERS RESEARCH: MEGAN HOWARD**

I am currently a registered MA (Psychology) student who is conducting a study titled, *Behavioural inhibition and anxiety symptoms in young South African children: A follow-up on parent- and teacher reports*, under the supervision of Prof Helene Loxton.

You are invited, as a parent or guardian of a child (ages 3- to 7 years) who was part of a cohort study that was initially conducted in 2012 by Andrea Wege (see attached reference), to again participate in the 2013 follow-up study, which is currently being undertaken at the University of Stellenbosch. Please take some time to read the information below, which explains the details of this follow-up study. If you have any questions with regards to the study, please feel free to contact the researcher. It is of great importance that you are satisfied and understand what the research entails. Your participation is completely voluntary and you may decline consent. You may also withdraw your participation from the project at any point in time, even if you initially gave consent.

This project was approved by the Research Ethics Committee: Human Research (Humaniora) at the University of Stellenbosch, and will be executed in accordance with the ethical guidelines and principles (protocol number HS966/2013).

What is this Follow-up research project about?

The purpose of this follow-up study is to re-assess parent and teacher reports of behavioural inhibition and anxiety symptoms. This will enable us to explore the longer-term effects of the relationship between behavioural inhibition and anxiety symptoms. The information gathered in this research will make a contribution to the current literature base within the South African context which will be used in order to generate awareness among members of society, especially parents and teachers, and to enable them to detect early signs of anxiety in young children. Research shows that behavioural inhibition or shyness in early childhood might put children at risk for the development of anxiety symptoms, which might persist into adolescence or adulthood, if not addressed timeously.

Why have you been invited to participate?

You were selected as a participant in this follow-up study because you are a parent of a child (1) between the ages of 3- to 7 years, (2) who was part of the cohort of children who took part in the initial study conducted by Andrea Wege in 2012 (3) and attends a preschool/primary school in the Stellenbosch district where the research will be conducted.

What is your responsibility if you agree to participate?

If you would like to participate in this follow-up study it is your responsibility to sign and return the attached informed consent form. The four questionnaires to be completed will be sent to you after receipt of the signed consent form. You have a choice to complete the questionnaires in either Afrikaans or English. The questionnaires will take approximately 10 minutes each to complete. These four questionnaires include: (1) *A Brief Biographical Questionnaire for parents*, (2) *Childhood Concerns Survey*, a scale developed to measure anxiety symptoms in young children, (3) *Behavioural Inhibition Questionnaire*, which measures the levels of shyness in young children and (4) *Parental Overprotection Measure*, which assesses parental style.

Will you or your child benefit from participation in this project?

Although there are no financial benefits related to the participation in this follow-up study, the proposed study will contribute to a significant lack of both international and South African research on child anxiety. Once the proposed study has been completed, the findings will be made available to the involved parent and teacher participants, upon request.

Does participation in this follow-up study present any risks?

It is expected that no discomfort or risk will occur in this follow-up study. If you have any concerns about your child's behaviour during the course of the project, arrangements can be made for consultation with the supervisor, Prof Helene Loxton, a registered Counselling Psychologist (hsl@sun.ac.za).

Who will have access to your questionnaire data/reportings on your child?

All information gathered from this follow-up study will be treated confidential at all times. Information will be used for research purposes only and will not be traceable to you or your child. The personal information required will only be used for administration purposes. In the final results of this study, the only aspects that will be reported on will be the age and gender of the child. Only my research supervisor and I (the primary researcher) will have access to the data.

Will you be remunerated for participation in this follow-up study and are there any costs involved?

Neither you nor your child will be remunerated for participation in this project, and it will cost you nothing to participate.

Is there anything else that you should know or do?

Your child's school teacher will also be asked to report on your child's anxiety and behavioural inhibition symptoms by completing questionnaires (2) *Childhood Concerns Survey* and (3) *Behavioural Inhibition Questionnaire* to strengthen report findings.

If you agree to participate in this study, it will be appreciated if you would please complete the form entitled STELLENBOSCH UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH, attached to this letter, and return it in the enclosed envelope marked for the attention of Ms. Megan Howard.

For any further information regarding the research, you are welcome to contact the researcher or her supervisor. You can also contact the Research Ethics Committee: Human Research (Humaniora) at the University of Stellenbosch if you have further concerns or complaints that were not adequately addressed by the researcher. You will receive a copy of this information and consent form for your own records.

Yours sincerely

Ms. Megan Howard
MA Psychology Student
University of Stellenbosch
15382664@sun.ac.za

Supervisor: Prof. H. Loxton
Department of Psychology
University of Stellenbosch
Private bag X1
Matieland
South Africa
7602
Tel: (021) 808 3417

Reference:

Wege, A. (2012). *The relation between anxiety symptoms and behavioural inhibition in young South African children*. Manuscript in progress.

ADDENDUM B
PARENT'S INFORMATION LETTER

DETAILS OF PARENT: INDICATION OF PARTICIPATION

Name of parent/guardian (full name in capital letters):	
Mother/father/caregiver:	
Name of your child:	

Please mark the appropriate options:

I agree to participate in this research study.	
I do not agree to participate in this research study	

Signature	
Date:	

ADDENDUM C
TEACHER'S INFORMATION LETTER



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Stellenbosch University
Private Bag x 1
Matieland
7602
Stellenbosch, South Africa
Tel.: +27 21 808 9111

Dear Teacher

**PERMISSION FOR THE PARTICIPATION OF TEACHERS IN FOLLOW-UP
ASSESSMENT ON MASTERS RESEARCH: MEGAN HOWARD**

I am currently a registered MA (Psychology) student who is conducting a study titled, *Behavioural inhibition and anxiety symptoms in young South African children: A follow-up on parent- and teacher reports*, under the supervision of Prof Helene Loxton.

You are invited, as a teacher of a child (ages 3- to 7 years) who was part of a cohort study that was initially conducted in 2012 by Andrea Wege (see attached reference), to participate in the 2013 follow-up study, which is currently being undertaken at the University of Stellenbosch. Please take some time to read the information below, which explains the details of this follow-up study. If you have any questions with regards to the study, please feel free to contact the researcher. It is of great importance that you are satisfied and understand what the research entails. Your participation is completely voluntary and you may decline consent. You may also withdraw your participation from the project at any point in time, even if you initially gave consent.

This project was approved by the Research Ethics Committee: Human Research (Humaniora) at the University of Stellenbosch, and will be executed in accordance with the ethical guidelines and principles (protocol number HS966/2013).

What is this Follow-up research project about?

The purpose of this follow-up study is to re-assess parent and teacher reports of behavioural inhibition and anxiety symptoms. This will enable us to explore the longer-term effects of the relationship between behavioural inhibition and anxiety symptoms. The information gathered in this research will make a contribution to the current literature base within the South African context which will be used in order to generate awareness among members of society, especially parents and teachers, and to enable them to detect early signs of anxiety in young children. Research shows that behavioural inhibition or shyness in early childhood might put children at risk for the development of anxiety symptoms, which might persist into adolescence or adulthood, if not addressed timeously.

Should you give consent to participate in the follow-up study, you will need to report on (x) learners who were involved in the initial 2012 study and who are now being taught by you as their teacher at (school's name) during 2013. You will be administered two questionnaires per child and these reportings should take you approximately 20 minutes per child.

Why have you been invited to participate?

You were selected as a participant in this follow-up study because you are a teacher of a child (1) between the ages of 3- to 7 years, (2) who was part of the cohort of children who took part in the initial study conducted by Andrea Wege in 2012, (3) and attends a preschool/primary school in the Stellenbosch district where the research will be conducted.

What is your responsibility if you agree to participate?

If you would like to participate in this follow-up study it is your responsibility to sign and return the attached informed consent form. The two questionnaires to be completed will be sent to you after receipt of the signed consent form. You have a choice to complete the questionnaires in either Afrikaans or English. The questionnaires will take no longer than approximately 20 min each to complete. These two questionnaires include the: (1) *Childhood Concerns Survey*, a scale developed to measure anxiety symptoms in young children and (2) *Behavioural Inhibition Questionnaire*, which measures the levels of shyness in young children.

Will you or the child benefit from participation in this project?

Although there are no financial benefits related to the participation in this follow-up study, the proposed study will contribute to a significant lack of both international and South African research on child anxiety. Once the proposed study has been completed, the findings will be made available to the involved parent and teacher participants, upon request.

Does participation in this follow-up study present any risks?

It is expected that no discomfort or risk will occur in this follow-up study. If you have any concerns as a teacher about the child's behaviour during the course of the project, arrangements can be made for consultation with the supervisor, Prof Helene Loxton, a registered Counselling Psychologist (hsl@sun.ac.za).

Who will have access to your questionnaire data/reportings on your child?

All information gathered from this follow-up study will be treated confidential at all times. Information will be used for research purposes only and will not be traceable to the involved child. The personal information required will only be used for administration purposes. In the final results of this study, the only aspects that will be reported on will be the age and gender of the child. Only my research supervisor and I (the primary researcher) will have access to the data.

Will you be remunerated for participation in this follow-up study and are there any costs involved?

Neither you as the teacher, or the involved child, or the school will be remunerated for participation in this project, nor will it cost you anything to participate.

Is there anything else that you should know or do?

The child's parent or guardian will also be asked to report on their child's anxiety and behavioural inhibition symptoms by completing questionnaires (1) *Childhood Concerns Survey* and (2) *Behavioural Inhibition Questionnaire* to strengthen report findings. The parents will also be asked to fill in two additional questionnaires namely, (3) *A Brief Biographical Questionnaire for parents* and (4) *Parental Overprotection Measure*, which assesses parental style.

If you agree to participate in this study, it will be appreciated if you would please complete the form entitled STELLENBOSCH UNIVERSITY CONSENT TO

PARTICIPATE IN RESEARCH, attached to this letter, and return it in the enclosed envelope marked for the attention of Ms. Megan Howard.

For any further information regarding the research, you are welcome to contact the researcher or her supervisor. You can also contact the Research Ethics Committee: Human Research (Humaniora) at the University of Stellenbosch if you have further concerns or complaints that were not adequately addressed by the researcher. You will receive a copy of this information and consent form for your own records.

Yours sincerely

Ms. Megan Howard
MA Psychology Student
University of Stellenbosch
15382664@sun.ac.za

Supervisor: Dr. H. Loxton
Department of Psychology
University of Stellenbosch
Private bag X1
Matieland
South Africa
7602
Tel: (021) 808 3417

ADDENDUM C
TEACHER'S INFORMATION LETTER

DETAILS OF TEACHER: INDICATION OF PARTICIPATION

Name of Teacher (full name in capital letters):	
Name of School:	
Name of Child:	
Grade of Child:	

Please mark the appropriate options:

I agree to participate in this research study.	
I do not agree to participate in this research study	

Signature	
Date:	

ADDENDUM D
PARENT'S INFORMED CONSENT FORM



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STELLENBOSCH UNIVERSITY
CONSENT TO PARTICIPATE IN RESEARCH

FOR PARENTS / GUARDIAN

**Behavioural inhibition and anxiety symptoms in young South African children: A
follow-up on parent- and teacher reports**

You are asked to participate in a follow-up research study conducted by **Megan Howard BA:** Psychology (Hons) graduate, currently enrolled as an MA (Psychology) student, at the Department of Psychology of Stellenbosch University. The final results will contribute to an MA Thesis. You were selected as a participant in this study given that (1) your child took part in the initial 2012 study conducted by Andrea Wege (see reference), (2) falls between the age-group of 3-to-7 years and (3) attends a preschool/primary school within the Stellenbosch district where the research will be conducted.

Reference:

Wege, A. (2012). *The relation between anxiety symptoms and behavioural inhibition in young South African children*. Manuscript in progress.

1. PURPOSE OF THE STUDY

The purpose of this follow-up research study is to explore the long-term relationship between behavioural inhibition and anxiety symptoms in a cohort of young South African children (ages 3-to 7 years) by means of a follow-up assessment of parent and teacher reports. The social relevance of this research is based on the future potential contribution that this follow-up study can make toward the knowledge base on this subject. The information will be used in order to generate awareness among members of society, especially parents and teachers, and to enable them to detect early signs of anxiety in young children. Research shows that

behavioural inhibition or shyness in early childhood might put children at risk for the development of anxiety symptoms, which may persist into adolescence or adulthood, if not addressed timeously.

2. PROCEDURES

Should you consent to participate in this follow-up research study, you will be asked to complete the following four questionnaires, listed below, and once completed will be collected within one week of reception by the researcher:

- (1) *Biographical Questionnaire*
- (2) *Behavioural Inhibition Questionnaire*
- (3) *Childhood Concerns Survey*
- (4) *Parental Overprotection Measure*

3. POTENTIAL RISKS AND DISCOMFORTS

No physical risks or discomforts are likely to occur in the study.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The proposed follow-up study will contribute to a significant lack of both international and South African research on child anxiety. Once the proposed follow-up study has been completed, the findings will be made available to the involved parent and teacher participants, upon request.

If the parents or teachers communicate any distress or concern regarding a child's behaviour during the course of the study, arrangements can be made in order to attend to these concerns and issues by means of a consultation with the project supervisor, dr Helene Loxton, who is a registered Counselling Psychologist.

5. PAYMENT FOR PARTICIPATION

Participants will not receive payment for participation in the study.

6. CONFIDENTIALITY

Confidentiality and anonymity will be ensured according to the ethics approval (place ethics code here) which has been obtained. The parent- and teacher reportings of these children will be handled with caution and confidentiality at all times and the names of the children and teachers will remain anonymous in the future reportings of the results. No personal information with regards to the children or the school will be revealed in any way. Any personal information that is required for the study will be used for administrative purposes only. In the final results of this study, aspects such as the children's age and gender will be reported on.

Confidentiality will be maintained by means of the following: Hard copy data, which will be collected during the study, will be stored in a secure and locked filing cabinet for a minimum of five years, as stipulated by the Research Ethics Committee: Human Research (Humaniora) (place ethics code here). Access to this data will only be allowed for the researcher and supervisor for research purposes only. The hard copy data will be destroyed after completing the research project and electronic data will be stored on a password protected computer program. Electronic data will be coded and used anonymously.

If requested, teachers and parents/ guardians will be provided with feedback.

Should the research be published, participants' information will stay fully confidential and anonymous.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether to participate in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact:

Megan Howard (**Researcher**)

E-mail: 15382664@sun.ac.za

Prof H. Loxton (**Supervisor**)

Department of Psychology

University of Stellenbosch

Private bag X1

Matieland

South Africa

7602

Tel: (021) 808 3417

E-mail: hsl@sun.ac.za

9. RIGHTS OF PARTICIPANTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study.

If you have questions regarding your rights as a participant, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development, US

TEAR THIS PAGE OF AND RETURN IN ENVELOPE WITH QUESTIONNAIRES

Name of child: _____

Please indicate who will complete the questionnaire, (e.g. Mother, father, guardian)

Please circle: Mother/ Father/ Guardian

SIGNATURE OF PARTICIPANT

The information above was supplied to me by **Megan Howard** in English and I am in command of this language or it was satisfactorily translated to me.

I was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent voluntarily to participate in this study. I have been given a copy of this form.

Name of Participant

Date

(Parent / Guardian)

SIGNATURE OF INVESTIGATOR

I declare that I supplied the information given in this document to _____
[*name of the participant*]. [*He/she*] was encouraged and given ample time to ask me any questions.

Signature of Investigator

Date

ADDENDUM E
TEACHER'S INFORMED CONSENT FORM



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STELLENBOSCH UNIVERSITY
CONSENT TO PARTICIPATE IN RESEARCH

FOR TEACHERS

**Behavioural inhibition and anxiety symptoms in young South African children: A
follow-up on parent- and teacher reports**

You are asked to participate in a follow-up research study conducted by **Megan Howard BA**: Psychology (Hons) graduate, currently enrolled as an MA (Psychology) student, at the Department of Psychology of Stellenbosch University. The final results will contribute to an MA thesis. You were selected as a participant in this follow-up study because you are a teacher of a child (1) between the ages of 3- to 7 years, (2) who was part of a cohort of children who took part in the initial study conducted by Andrea Wege in 2012, (3) and attends a preschool/primary school in the Stellenbosch district where the research will be conducted.

Reference:

Wege, A. (2012). *The relation between anxiety symptoms and behavioural inhibition in young South African children*. Manuscript in progress.

1. PURPOSE OF THE STUDY

The purpose of this follow-up research study is to explore the long-term relationship between behavioural inhibition and anxiety symptoms in a cohort of young South African children (ages 3-to 7 years) by means of a follow-up assessment of parent and teacher reports. The social relevance of this research is based on the future potential contribution that this follow-up study can make toward the knowledge base on this subject. The information will be used in order to generate awareness among members of society, especially parents and teachers,

and to enable them to detect early signs of anxiety in young children. Research shows that behavioural inhibition or shyness in early childhood might put children at risk for the development of anxiety symptoms, which may persist into adolescence or adulthood, if not addressed timeously.

2. PROCEDURES

Should you consent to participate in this research study, you will be asked to complete the following two questionnaires, listed below, and once completed will be collected within one week of reception by the researcher:

- (1) *Behavioural Inhibition Questionnaire*
- (2) *Childhood Concerns Survey*

3. POTENTIAL RISKS AND DISCOMFORTS

No physical risks or discomforts are likely to occur in the study.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The proposed follow-up study will contribute to a significant lack of both international and South African research on child anxiety. Once the proposed study has been completed, the findings will be made available to the involved parent and teacher participants, upon request.

If you as a teacher communicate any distress or concern regarding a child's behaviour during the course of the study, arrangements can be made in order to attend to these concerns and issues by means of a consultation with the project supervisor, dr Helene Loxton, who is a registered Counselling Psychologist.

5. PAYMENT FOR PARTICIPATION

Participants will not receive payment for participation in the study.

6. CONFIDENTIALITY

Confidentiality and anonymity will be ensured according to the ethics approval (place ethics code here) which has been obtained. The parent- and teacher reportings of these children will be handled with caution and confidentiality at all times and the names of the children and teachers will remain anonymous in the future reportings of the results. No personal information with regards to the children or the school will be revealed in any way. Any personal information that is required for the study will be used for administrative purposes only. In the final results of this study, aspects such as the children's age and gender will be reported on.

Confidentiality will be maintained by means of the following: Hard copy data, which will be collected during the study, will be stored in a secure and locked filing cabinet for a minimum of five years, as stipulated by the Research Ethics Committee: Human Research (Humaniora) (place ethics code here). Access to this data will only be allowed for the researcher and supervisor for research purposes only. The hard copy data will be destroyed after completing the research project and electronic data will be stored on a password protected computer program. Electronic data will be coded and used anonymously.

If requested, teachers and parents/ guardians will be provided with feedback.

Should the research be published, participants' information will stay fully confidential and anonymous.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether to participate in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact:

Megan Howard (**Researcher**)

E-mail: 15382664@sun.ac.za

Prof H. Loxton (**Supervisor**)

Department of Psychology

University of Stellenbosch

Private bag X1

Matieland

South Africa

7602

Tel: (021) 808 3417

E-mail: hsl@sun.ac.za

9. RIGHTS OF PARTICIPANTS

You may withdraw your consent at any time and discontinue participation without penalty.

You are not waiving any legal claims, rights or remedies because of your participation in this research study.

If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development, US.

TEAR THIS PAGE OF AND RETURN IN ENVELOPE WITH QUESTIONNAIRES

Name of Child: _____

SIGNATURE OF PARTICIPANT

The information above was supplied to me by **Megan Howard** in English and I am in command of this language or it was satisfactorily translated to me.

I was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent voluntarily to participate in this study. I have been given a copy of this form.

Name of Participant

Date

(Teacher)

SIGNATURE OF INVESTIGATOR

I declare that I supplied the information given in this document to _____
[*name of the participant*]. [*He/she*] was encouraged and given ample time to ask me any questions.

Signature of Investigator

Date