

Maternal Influence on Childhood Anxiety and Self-Efficacy

Marilyne A. White

University of Tasmania

A thesis submitted as partial requirement for the degree of Master of Counselling at the University of Tasmania, 2012.

“I declare that this thesis is my original work and that the contributions of others have been duly acknowledged”.

Signature.

m. white

Date.

23.7.2012.

Acknowledgments

My gratitude and thanks to my supervisor Dr Mandy Matthewson from the University of Tasmania School of Psychology, for her faith and trust in my ability to be part of her research team. I would also like to extend my sincere thanks to Dr Allison Matthews for being so generous with her time in offering me guidance and assistance with the statistics and results of this study.

My heartfelt thanks and gratitude to all the participating families who were brave enough to allow me to interview them regarding their personal family dynamics and feelings. This study would not have been possible without their participation.

I would like to acknowledge and thank my fellow student Olivia Boer, with whom I pooled and shared data for this research. I would also like to express my deepest appreciation to Marilyn Williams for her generosity in helping me to recruit participants for the current study. A special thank-you to my friend YuHan Chen for her support and friendship during our shared journey through our Master of Counselling degree at the University of Tasmania.

My deepest love and gratitude to my husband Bruce and daughter Natalie for their amazing help, constant encouragement, support, understanding and unconditional love throughout my ongoing tertiary study.

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University of Tasmania

Abstract

The current study examined the influences that maternal parenting attitude and skills, maternal anxiety and perceived maternal self-efficacy levels have on their sons' anxiety and self-efficacy levels. Bögels and Phares, (2008); Matthewson, (2009) found mothers and fathers influence their child's anxiety and self-efficacy levels, however they make different contributions and recommended further research in this phenomenon. To expand on parental influences on childhood anxiety and self-efficacy, the present study examined the mother/son dyad, specifically how maternal parental attitude, anxiety and self-efficacy impacts on her son. Structured interviews on ($n = 36$) boys 8 -12 years of age and their biological mothers from intact families residing in the same home were conducted. It was hypothesised that the level of maternal anxiety would influence her son's anxiety levels, secondly it was hypothesised a mother's perceived self-efficacy would be associated with her son's self-efficacy levels. Finally it was hypothesised that maternal parenting attitude and skills would influence her son's anxiety and self-efficacy levels. The data supported the hypotheses that maternal anxiety influenced the sons' anxiety levels, and that maternal parenting attitude and skills influenced her sons' anxiety levels. Although the studies second hypothesis did not attain statistical significance at the $p = < .05$ level, it approached it at the $p = < .07$. The results indicated an association between maternal state anxiety and the son's perceived trait anxiety and that the level of trait anxiety is positively associated with the level of perceived self-efficacy. Childhood anxiety and self-efficacy would all benefit from future more diverse research into these associations.

Keywords: Anxiety; Attitude; Influence; Involvement; Maternal; Parental; Self-efficacy; State; Trait.

Maternal Influences on Childhood Anxiety and Self-Efficacy

Childhood anxiety has been the focus of many studies over the last two decades (Bandura, 1997; Barlow, 2002; Bögels & Phares, 2008; Matthewson, 2009; Silverman, Ginsburg & Goedhart, 1999;). Collectively, these studies provide a comprehensive and well-supported body of evidence regarding the antecedents and factors that influence the development of anxiety disorders in children. Matthewson (2009) investigated the influences that parents have on their child's anxiety and self-efficacy. Matthewson (2009) concluded parents do influence their child's anxiety and self-efficacy levels, however fathers and mothers do so independently and differently and recommended further investigation into the effect gender differences have on a child's anxiety and self-efficacy. With this recommendation in mind, this study will further research the mother/son dyad to determine the effect a mother's anxiety, self-efficacy and her perceived parenting skills and parenting attitude may have on her son.

Defining Childhood Anxiety

Children experience anxious moments both emotionally and physically, in a variety of ways with varying degrees of severity. An anxious child may become overly worried about life in general or about a specific area of their life. They may have deep concerns about how others perceive them, or about the future of themselves or their loved ones. Anxiety often results in the child having a distorted view of the world around them (Silverman, Ginsburg, & Goedhart, 1999).

Barlow (2002) argued that transient anxiety, in the form of intermittent anxious moments such as feeling jittery or having a nervous stomachache when faced with a novel situation such as the first day of school, a visit to the dentist or an encounter with a large

spider is common during childhood. This is referred to as the 'flight or fight' response and is thought to be a helpful state of anxiety designed to protect the person from danger (Barlow, 2002). The fight or flight mode involves the sympathetic nervous system, which releases a surge of adrenalin resulting in increased heartbeat and breathing rate. The increased adrenaline affords a person the strength to either get away from the danger, or stay and face the impending threat. Thus, being in the fight or flight state can be protective. If however, a person becomes over anxious or panicked their brain chemistry alters, creating a state of persistent central nervous system tension and arousal which results in the part of the brain that controls rational thoughts to be bypassed into an immediate "fight " or "flight" mode (Barlow, 2000). Barlow (2000) contends that often an anxious person does not have the ability to restore their parasympathetic (rest) nervous system, and thus experiences a heightened state of alert for an extended period of time.

Anxiety can have a negative impact on a child's emotional wellbeing when anxious moments become more than a passing phase and begin to interfere with a child's day-to-day activities. Anxiety and concerns that are disproportionate to the situations or events that the child encounters may warrant an assessment for an anxiety disorder (Silverman, et al., 1999). The severity and variety of anxious feelings experienced by a child varies widely as do the triggers that create these anxious feelings. Childhood anxiety is generally described as a feeling of fear, hesitation or uneasiness about a certain event, person or place (Barlow, 2000; Lefton, 1997; Silverman, et al., 1999). Feeling anxious can prevent some children from exploring their world and it can make them fearful of exploring novel activities. This feeling of anxiety and fear is enhanced if the child perceives that an activity may be embarrassing or harmful. Anxious children may worry about everyday life experiences, such as social relationships, school performance, or the safety and health of themselves or significant others (Barlow, 2000; Lefton, 1997; Silverman, et al., 1999). Young children may also experience feelings of anxiety towards

anyone they deem to have power over them, such as a dominant sibling or parent (Barlow, 2000; Lefton, 1997).

Lefton (1997) contends that it is often the things that children have been previously warned may be a danger to them (e.g. spiders, thunderstorms, public bathrooms, deep water, heights) that can later be the source of ongoing distress and potentially develop into a chronic anxiety disorder.

Childhood anxiety often includes one or more of the following symptoms:

- Excessive worry on most days, often within a particular theme or topic, such that it disrupts normal daily life
- Restlessness and disrupted sleep patterns
- Irritability
- Difficulty concentrating
- Physical symptoms
- Covert symptoms such as nightmares (Lefton, 1997).

Unfortunately, anxiety is prevalent in childhood and adolescence (Silverman et al., 1999), with reports indicating that as many as 10% of children will suffer some form of chronic anxiety or fear during their life (Silverman et al., 1999). Often children will have symptoms consistent with more than one category or sub-set of anxiety disorders. The onset of anxious symptoms may be readily observable, such as bouts of crying, social withdrawal and sleep disturbances. Other symptoms such as nightmares or a feeling of being jittery and scared for no apparent reason may be harder to detect and identify (Silverman et al., 1999).

Aetiology of childhood anxiety

As an infant develops through to a pre-school child and beyond, the types of

things that make them feel anxious changes. Often the anxious feelings a child experiences dissipate over time and as a child matures, the level and type of stimuli that may create feelings of anxiety can also change (Lefton, 1997; Silverman et al., 1999).

There are a number of theories that have been proposed to explain the aetiology of childhood anxiety. Current theories include behavioural learning theory, cognitive theory, genetic transmission models and attachment theory, and each is briefly described in turn.

Learning theory holds that anxiety is a learned behaviour, and that children learn anxious behaviours from the people within their social system who hold the most meaning to them, typically their parents (Bandura, 1986; 1977). In addition, learning theory maintains that anxiety may also be learned through a specific stressful or traumatic event.

However, not all individuals with anxiety can attribute it to a single stressful or traumatic event in their lives, and not all individuals who encounter stressful/traumatic events go on to develop anxiety (Mineka & Zinbar, 2006; Rachman, 1976; 1977).

Learning theory has therefore been criticised for its inability to account for individual differences in the development of anxiety (Mineka & Zinbarg, 2006). When considering the aetiology of childhood anxiety, for example, behavioural learning theory does not explain why some children who are exposed to anxious behaviours in their parents develop anxiety, yet others do not.

Cognitive theory is another theory of anxiety that has been used to try to understand the development of anxiety in children. Cognitive theory posits that an individual's appraisals or cognitions of the environment, self and future determine emotions and behaviour (Barlow, 1988). While this model is particularly popular in explaining the aetiology of anxiety in adults, applying it to children is complicated by the difficulty that children have in separating cognitions, such as positive or negative

thoughts, from emotions (Flavell, Flavell and Green, 2001; Alfano et al., 2002).

The genetics of childhood anxiety has been examined using several methods, including twin studies (Thapar & McGuffin, 1994, 1995, 1997), adoption studies (van den Oord, Boomsma & Verhulst, 1994) and familial studies (Beidel & Turner, 1997). In general, these studies indicate that both genetic and environmental factors play an important role in the development of childhood anxiety. That is, there is a familial predisposition to anxiety, but that both genetic heritability and environmental influences determine the degree to which anxiety is expressed in a child.

Genetic transmission models also emphasise the importance of the parent-child relationship in the development of childhood anxiety, since children not only inherit their biological predisposition to anxiety from their parents, they also share their environment with them.

A theory that has the parent-child relationship and its influence on emotional development at its core is attachment theory. John Bowlby (1969) argued that the quality of the relationship that an infant has with its primary caregiver, usually the mother, is instrumental in the development of that child's social-emotional development, developed this theory. Attachment theory has been criticized for not taking into account the influence of peers and environment in shaping a child's personality (Harris, 1995). In addition, the theory focuses on the parent-child bond in early infancy, but neglects this relationship in middle childhood or beyond. It has therefore been argued that exploring parent-child relationships as opposed to attachment may yield more valuable insight into the development of anxiety in children (Harris, 1995). Attachment theory has also been criticised for focusing on the mother-child relationship and neglecting the father's role in the development of children, although this has been explored recently (Bögels & Phares, 2008). Further, Attachment Theory focuses on the parent-infant bond and a lack of valid and reliable measure of attachment during childhood and adolescence make it difficult for

researchers to explore the more sophisticated parent-child attachment behaviours during these stages of development (Gerard, 2002; Gullone & Robinson, 2005). Therefore, in the absence of such measures it may be more useful to explore parent-child relationship variables.

Bögels and Phares (2008) proposed a model of the different roles mothers and fathers might play in protecting their children against anxiety at various stages of child development. The model proposes that in early infancy, mothers can protect their children against anxiety by providing warm care and protection, whereas fathers can do so through physical play and challenge. In middle childhood, the role of the mother shifts to one of promoting close interpersonal relationships, whereas the father is important in fostering independence in their child. Bögels and Phares (2008) argue that the abilities of mothers and fathers to carry out these roles are differentially affected by their own levels of anxiety. However, there is limited research to date testing this model. In addition, the Bögels and Phares (2008) model does not account for differences related to the gender of the child. Further studies are needed to examine how mothers and fathers might differentially impact upon the emotional development of their sons and daughters.

Each of the aforementioned theoretical constructs provide some insight into the development of anxiety in children, and many researchers call on aspects of more than one in interpreting their results. For example, Weems, Taylor, Marks, and Varella (2010) argued that if a child exhibits a greater than expected sensitivity to anxious feelings, and has the perception of having no control over stressful external or internal events in their life, feelings of anxiety will exacerbate and become what Weems et al. (2010) describes as *the problem*. Weems et al. (2010) included behavioural, cognitive and social factors all contribute to the development of childhood anxiety.

Barlow (2002) contends that a biological deviation of a child's fight or flight response system, may be responsible for, and a pre-cursor to, anxiety. Barlow argued that

an anxious child will often perceive danger when no danger exists; these perceptions are frequently about events that may occur in the future. Often nervous or timid children have no means to deal with what they might perceive to be frightening or worrisome events and rely on cognition in attempt to solve the perceived threat.

Childhood anxiety has been the focus of many studies over the last two decades (Bandura, 1997; Bowlby, 1969; Fearon et al., 2010; Feng, 2008; Silverman, Ginsburg & Goedhart 1999; Weems et al., 2008). Collectively, these studies provide a comprehensive and well-supported body of evidence regarding the antecedents and factors that influence the development of anxiety disorders in young children. However, there is a lack of research examining the differential roles of mothers and fathers in the development of childhood anxiety in sons and daughters. An examination of gender-specific influences on anxiety in middle-childhood may shed light on the role each parent plays in the development of childhood anxiety.

The present study therefore, will focus specifically on the mother/son dyad during the boy's middle childhood. In particular, the association between a mother's anxiety and her son's anxiety will be explored by examining maternal care-giving, responsiveness, parenting skills, anxiety levels and perceived self-efficacy.

Self-efficacy

An important and influential concept that is relevant to the development of childhood anxiety is the concept of self-efficacy. Self-efficacy is defined as an individual's belief in their capabilities to exercise control over their own functioning and over events that affect their lives (Bandura, 1994). Self-efficacy beliefs influence how people think, behave and feel, and therefore influence vulnerability to stress and anxiety (Bandura, 1994). Marsh (1992) refers to the distinction between self-concept and self-efficacy by explaining that self-concept relates to an evaluative judgment of an

individual's own self-worth in a global sense. In contrast, self-efficacy refers to how a person feels about a specific task. A child that has a good sense of self in general may still have low self-efficacy about a particular activity that they are not confident they have the ability to perform (Marsh, 1992; Bandura, 1986; 1991; 1997).

According to Bandura (1994) self-efficacy beliefs are developed through four main sources. The first of these are known as mastery experience, whereby performing a task successfully raises self-efficacy; failure to accomplish a task or meet a challenge can have the opposite effect. Bandura (1991; 1997) argued that experience is the most influential origin of self-efficacy. Social modeling, or witnessing other people manage task demands successfully, is a second important source of self-efficacy. Parents, because of their close contact with their children, provide a fundamentally important model. Observing their parents manage task demands successfully may promote self-efficacy in children. Social persuasion, such as verbal encouragement, helps build confidence and help individuals to achieve their goals. Again, parents may play a critical role here, providing their children with positive verbal support and encouragement throughout childhood. Finally, feedback from one's own physical and mood states in response to challenges plays an important role in self-efficacy beliefs (Bandura, 1997). Each of these sources of self-efficacy is important during childhood. Bandura argues that a child will develop a sense of motivation and self-efficacy for a task when their ability to self-regulate develops and broadens (Bandura, 1997).

Bandura's Social Cognitive Theory (SCT) recognises the interaction of personal factors, behaviour and the environment in influencing human behavior (Bandura 1977; Bandura 1986). The theory highlights the notion that people can learn new behaviours by observing others in the context of social interactions. For example, children learn by observing their parent's reactions and responses to various situations. SCT therefore acknowledges that parental behaviour is a major influence on the emotional development

of the child.

Previous research has provided substantial data supporting the use of this type of social learning to develop self-efficacy in individuals (Bandura, 1986; 1991; 1997; Barlow 2002). Bandura (1986) describes SCT as a three-part interactive model including self-efficacy magnitude, the level of difficulty a person perceives at which they will be capable of achieving a successful outcome for a certain behavior; self-efficacy strength refers to the strength of conviction about attaining a successful outcome; and self-efficacy generality, the degree to which the behaviour outcome will influence future behaviours (Bandura, 1986). These factors are not independent – rather, they simultaneously interact, helping to develop self-efficacy beliefs in an individual. Self-efficacy beliefs do not develop in isolation, however (Bandura 1991; Barlow 2002). Barlow (2002) contends a person's beliefs are influenced by many factors such as goal expectations, perceived control, natural ability and how valued a specific task is to the individual. In childhood, a major potential influence on self-efficacy beliefs is the child's parents, given their important roles in modeling appropriate behavior, providing opportunities for mastery experiences and in providing support through verbal encouragement.

Self-efficacy and anxiety in children

The relationship between self-efficacy and childhood anxiety has been explored in a number of previous studies (e.g. Dumas & LaFreniere 1993; Landon, Elrenreich & Pincus 2006; Suveg and Zelman 2004). Landon et al. (2006) demonstrated a relationship between low self-efficacy and self-reported anxiety in non-referred children aged 7 to 14 years, consistent with an earlier study focusing on non-referred adolescents (Muris, 2002).

In contrast to the Muris (2002) study, Landon et al. (2006) included a cohort of children diagnosed with anxiety. The authors used a modified version of a questionnaire constructed by Muris (2001), in which three different aspects of self-efficacy are

explored: social, academic, and emotional self-efficacy. The clinically anxious group displayed lower levels of perceived emotional self-efficacy, than the non-referred group, and importantly, it was emotional self-efficacy, the perceived capability to cope with negative emotions, that was found to be strongly related to anxiety in this group. The inverse relationship between emotion regulation self-efficacy and self-reports of anxiety for all children in the study, and for the clinical sample in particular is consistent with an earlier study by Suveg and Zelman (2004). The authors found emotional self-efficacy was strongly related to anxiety and may be the most relevant aspect of self-efficacy for clinically anxious children (Landon, 2006). With respect to gender differences, Muris (2001) reported lower levels of emotional self-efficacy and higher levels of trait anxiety in girls than in boys, but Suveg and Zelman (2004) and Landon et al. (2006) found no significant gender differences in their studies, which included anxious youth.

Self-efficacy in the school environment

According to Bandura (1997) a potent source of self-efficacy is the child's successful accomplishments within the primary school environment. Bandura (1997) emphasizes the importance of social learning in the early school years and maintains that the self-beliefs and self-efficacy formed as a primary school student serve as the foundation on which consequent self-efficacy beliefs are structured. Often negative or low self-efficacy for a task may be long lasting, resulting in the child being unwilling to participate in the activity in the future and to take further chances at similar novel tasks.

Pajares and Schunk (2001) posit that a child with high self-efficacy towards a specific task and the knowledge that they have the competence and confidence to successfully execute the task does not automatically mean the child holds positive feelings towards the behaviour or task. Rather, Pajares and Schunk (2001) argued that there is no evidence that can pair an individual's beliefs with negative or positive feelings.

The researchers use the analogy of a student who approaches a specific academic subject area with confidence, yet still has negative feelings towards that subject and takes no pride in their achievement. The opposite situation may also be the case: a student may perform a specific task poorly by others' standards, but suffer no loss of self-efficacy towards the task if the child believes they have achieved a small improvement overall. This suggests the child's performance expectations differ from their global expectation, thus any small increments of improvement in the particular activity may strengthen their belief in their ability and their self-efficacy towards the task at hand (Pajares & Schunk, 2001).

In a study exploring the influence that self-efficacy levels have on student's ability to perform in a mathematics task, Collins (1982) tested students with a range of low, middle and high self-efficacy beliefs towards mathematics and within each of these levels had students with high, middle or low mathematical ability. As a baseline, the students were given a set of mathematics problems to solve. The problems were scored, and after further explanation and instructions on how to solve the problems, the students were again asked to complete a new set of problems. Collins (1982) found that students holding high levels of self-efficacy, regardless of their mathematical ability, completed more problems successfully and attempted to re-work more of the problems they had previously missed compared to students with low levels of self-efficacy. Collins (1982) concluded that self-efficacy levels made a significant contribution to the prediction of performance in this task.

Pajares and Schunk (2001) argued that students who are confident in their ability to perform certain tasks, such as mathematics problems, anticipate that they will succeed and often achieve a more successful outcome. In contrast, a student with low self-efficacy towards mathematics expects to do poorly and often lack confidence in their ability to complete the task successfully.

Pajares and Schunk (2001) contended that self-efficacy levels are not universal – rather they are task specific. For example; if a child is asked “how confident are you that you can perform a certain task?” the response can differ from task to task depending on how proficient the child believes they are in achieving a successful completion. A child that can play the piano to a high standard would have confidence in their ability to play piano and would therefore hold a high level of self-efficacy for piano playing. Conversely, if asked the same question about an activity they do not believe they are competent in performing well, the child may have low self-efficacy towards that task (Pajares & Schunk, 2001).

A recent study by Joët, Usher, and Bressoux (2011) investigated the variation in self-efficacy in primary school girls and boys and whether any noted differences were related to the child’s sex. The researchers found that boys and girls do utilize different strategies when forming academic self-efficacy. Girls rely upon social persuasions, and boys rely on their mastery skills. Joët et al. (2011) also discovered that young boys developed a higher level of self-efficacy with regards to mathematics and displayed higher levels of self-regulatory efficacy; however boys had lower levels of physiological arousal than girls. Joët et al. (2011) contend that boys and girls perceive their social environment differently, with girls being more sensitive to social messages. Moreover, a heightened level of social sensitivity within the academic environment may impact the level at which girls rate their self-efficacy. The authors argue that the school environment in general and subjects in particular, differ with regard to how boys and girls self-report their self-efficacy beliefs, with girls reporting greater self-efficacy beliefs for their social and writing subjects and boys self-reporting stronger self-efficacy beliefs in their mastery achievements and mathematics. Joët et al. (2011) clarified that the study did not find sex differences in how younger primary school children self-report their self-efficacy beliefs in mastery achievements, mathematics or writing subjects.

Bandura (1997) advocates if a student's academic ability is to be predicted from their self-efficacy beliefs, it must be at a discrete and situational level. Marsh (1993) also maintains that self-efficacy cannot be judged at a global level and for self-beliefs to be adequately assessed, they must be consistent with the achievement the individual has previously attained.

Parental involvement in the child's academic domain was the topic of a meta-analysis by Desforges and Abouchaar (2003). The study found that parental influences could be the most effectual, significant and powerful influences on a child's self-efficacy levels in the academic domain. The present study will examine the extent a mother's involvement influences her son's self-efficacy levels in the school and home environment.

The relationship between self-efficacy and anxiety in mothers and their sons

Parental influence has also been shown to be an important factor in the development of anxiety related problems in children. Parenting is a multifaceted task situated within a relationship (Woodcock, 2003). Factors that contribute towards parents' responsibilities include sensitivity towards the child's emotional, developmental and physical needs (Woodcock, 2003). A strong cohesive family that can adapt to an ever-changing environment within the family unit helps children to feel secure and self-assured. Reder, Duncan and Lucey (2003) advocate that parenting competencies include the ability to be a positive role model for the child and to exercise good parenting strategies such as:

- Providing the child with a stable environment
- Family support and love
- Participating in open communication and discussions between parent and child
- Actively encouraging positive social skills and good citizenship

- Demonstrating the value of a sound education and positive school involvement

The parent-child relationship also impacts significantly on the degree to which a child experiences anxiety (Azar & Cote, 2002). As a child rapidly passes through different growth stages, so to do situations and circumstances change that make them feel anxious. A child's life is constantly being influenced by the world around them, including the immediate and extended family, peer groups, the school environment and the broader community (Azar & Cote, 2002).

Successful parenting requires a skill-set that must change and adjust as the child develops and circumstances in their life change. Although positive steps are being made in parent-children treatment programs to help children cope with their anxiety and self-efficacy levels, Silverman, Pina and Viswesvaran (2008) argued that there is still much to learn about what sort of intervention strategies would be most beneficial in helping a child in the 6 to 12 year age group attain a long-term positive outcome from treatment programs aimed at improving parent child relationships and enhancing the child's self-efficacy levels.

Relatively few studies of the influence of parental factors on the development of childhood anxiety have been gender specific. In a recent study exploring the developmental pathways of anxiety symptoms in children, Feng, Shaw and Silk (2008) chose to focus on boys ($N = 290$) and their mothers, arguing that though limited, there is some evidence to suggest that gender-specific studies of childhood anxiety are warranted. In their study, Feng et al. (2008) found that boys were more likely to be at risk of anxiety if their mothers scored highly in negative parental control; that is, excessive control of their child's activities and emotions. Feng et al. (2008) contended that this group of boys had anxiety levels that increased over their childhood through to adolescence. This was the case even for boys who did not show signs of anxiety as toddlers. The authors of the study argued that there is an association between the level of parental control and the

elevated risk of a child developing internalizing anxiety disorders and depressive disorders as they mature through middle childhood to adolescence.

Weinberg, Olsen, Beeghly and Tronick (2006) examined the influence that maternal anxiety and depressive symptoms had on infant boys. The study looked at mother-son affective behaviour and levels of communication; they found that mothers with high levels of stress and low self-esteem levels had difficulty coping with demanding social contact with their sons. Furthermore, the authors contended there is an association between the level of a mother's psychological stress and the level of social support and security needed by her son. Weinberg et al. (2006) concluded that mothers' with high levels of psychological stress and low levels of self-efficacy increase the likelihood of the son developing anxious and depressive symptoms.

The lack of current research investigating mother-son dyads specifically prompted Weinberg et al. (2006) to recommend further studies on the effect of the absence of strong positive communication and social interaction between mother and son, and how this may influence a child's long-term self-efficacy and anxiety levels. Weinberg et al. (2006) argued that environmental factors including maternal anxiety and mother-child interaction in infancy may lead to increased anxiety childhood and beyond.

More recently, Fearon, Bakermans-Kranenbug, Van Uzendoor, Lapsley and Roisman (2010) conducted a meta-analysis comprising ($N = 5947$) children under the age of 12 years. The focus of the study was to determine the influences an insecure mother and child attachment had on the child's behaviour. The researchers found that male infants with insecure attachment to their mothers resulted in the son receiving less emotional support, and their requests rejected more often. Moreover, these children displayed significantly more behavioural problems than female or male infants with secure attachments. Fearon et al. (2010) also argued that the relationship between a mother and son in the child's infancy has an ongoing effect and may result in low-self

efficacy and behavioural problems, including aggressive behavior, as the child reaches middle childhood.

Weems et al. (2008) maintain that childhood anxiety sensitivity may be an important indicator of future adulthood anxiety. In a study by Weems, Silverman, Rapee and Pina (2003) it was suggested that a child's cognitive development is not only an antecedent of anxiety sensitivity but also has a direct impact on their degree of anxiety sensitivity. The authors argued that cognitive development, age and gender all impact on the level of disagreement between parent and child regarding the reporting of anxiety.

The complexities of parent-child reporting disagreement (Weems et al., 2003) although well documented, are yet to be understood. Weems et al. (2003) suggest that parent and child may have different understandings and perceptions of anxiety and differences on how to report or rate it in a self-report instrument. Weems et al. (2003) also maintain that differences between parent and child perceptions of anxiety become broader as the child nears adolescence.

In a recent study of gender differences in parental influences on childhood anxiety, Matthewson, Burton Smith and Montgomery (2012) found that effective mother/son communication was a predictor of anxiety in her son. The authors argued good communication between the dyad affords the mother a greater opportunity to understand what is occurring in her child's life and allows her to offer support when needed.

Present Study

The aim of the present research is to build upon recent studies by Matthewson (2009), Boer (2009) and Mathewson et al. (2012). Matthewson (2009) investigated the influence parents have on their child's anxiety and self-efficacy levels and found although genetics may play a part in the gender differences found in childhood anxiety further

studies on the broader epidemiology of anxiety are needed. Matthewson et al. (2012) examined gender differences in the way fathers and mothers support their sons and daughters. The authors found that mothers' perception of their ability to communicate with their child was associated with their sons' anxiety and fathers' perception of their capacity to communicate with their child was associated with their daughters' anxiety.

Boer (2009) explored the link between maternal demandingness and responsiveness in developing adolescent self-esteem, general self-concept and self-efficacy; Boer concluded maternal responsiveness toward adolescent sons, to be more influential than demandingness in developing all three self-dimensions.

With a similar focus on the role gender plays in childhood anxiety and self-efficacy, the present study will focus specifically on maternal anxiety, maternal parenting attitudes and skills and perceived self-efficacy and the influence these dimensions have on sons' anxiety and self-efficacy levels.

The three specific aims of the study are as follows:

1. To investigate whether a mothers' state or trait anxiety is significantly associated with her sons' state or trait anxiety levels.
2. To explore whether a mother's perception of her parental attitudes and skills, as measured by the Parent-Child Relationship Inventory, is significantly associated with her son's anxiety levels. These attitudes include perceived parental support, maternal satisfaction with parenting, maternal involvement with her son, the extent to which mothers' encourage their sons' autonomy and the level of communication.
3. To investigate whether the level of maternal general self-efficacy is significantly associated with sons' general and academic self-efficacy levels.

The answers to these questions will give further insight regarding the influence of

maternal anxiety and self-efficacy on the development of childhood anxiety in boys.

Hypotheses

Based on the findings of Matthewson (2009) and Matthewson et al (2012) it is predicted the present study will find that maternal anxiety and self-efficacy levels will influence sons' anxiety and self-efficacy levels. However, mothers' level of involvement and communication with sons' will be the most important predictor of sons' anxiety.

1. High-level maternal state and trait anxiety will be associated with high levels of sons' state and trait anxiety.
2. Low scores of perceived maternal parenting skills and attitude will be associated with high level of sons' state and trait anxiety.
3. Low maternal self-efficacy will results low self-efficacy in sons.

Method

Participants

The present study was part of a larger study designed to explore parental influences on their sons and daughters. The present study focused on data from mother-son dyads living in the same family home.

Boys aged between 8 to 12 years were recruited from grades four to six attending Tasmanian primary schools.

The participants for this study comprised ($n = 36$) boys' ($M = 9.97$, $SD = 1.341$) and mothers' ($n = 36$) aged 34 to 49 years ($M = 42.22$, $SD = 4.29$) as shown in Table 1.

Table 1.
Statistics of Child Participants' Age

	Age	Frequency	%
Valid	8	7	19.4
	9	5	13.9
	10	12	33.3
	11	6	16.7
	12	6	16.7
Total		36	100

Materials

The Parent-Child Relationship Inventory (PCRI) developed by Gerard (1994) was administered to mothers. The PCRI was developed to assess parents' attitudes toward parenting and their children (Gerard, 1994). The PCRI is suitable for parents with children in the age range of 3 to 15 years of age.

The PCRI comprises 78-items presented in seven subscales as described below:

- Parental Support consists of 9 items designed to assess the social and emotional support a parent perceives they receive.
- Satisfaction with Parenting is a 10-item scale designed to assess the amount of satisfaction and pleasure a parent derives from parenting.
- Involvement scale comprise 4-items is designed to measure the level of interaction and knowledge between parent and child.

- Communication is a 9-item scale designed to measure a parent's perception of how effectively they communicate with their child.
- Limit Setting comprised 12-items that focus on how parent disciplines their child.
- Autonomy a 10-item scale that focus on the ability of a parent to encourage independence in their child.
- Role Orientation is a 9-item scale that focuses of parents' attitudes on gender roles.

Parents responded to the questions using a 4-point Likert-type rating 1 = (strongly disagree), 2 = (agree), 3 = (disagree), 4 = (strongly agree) with high score indicating positive parenting. The PCRI can normally be completed in 15-minutes (Gerard, 1994).

The PCRI also has two validity indicators, Social desirability and an indicator of inconsistent response. Gerard (1994) developed the cutoff score of 2 or greater as an indicator for inconsistent responses. Gerard (1994) maintained that a T value greater than 40 indicates serious problems with parenting attitude. Gerard (1994) reports a test re-test reliability of the PCRI subscales ranging from 0.93 for limit setting to 0.68 for communication. The Cronbach alpha ranging from 0.79 to 0.93.

Mothers also completed The Parent Self-Efficacy Scale (PSES) (Bandura, 2006). The PSES is a 5-point Likert-type questionnaire ranked from (not at all) to (very well), it consists of 48 items presented in nine subscales, and developed to measure parental self-efficacy.

The Children's Perceived Self-Efficacy (CPSE) developed by Bandura (2006) was administered to child participants. The CPSE is a Likert-type questionnaire comprising 37-item presented in three subscales;

- Self-regulatory
- Social self-efficacy
- Academic self-efficacy

Responses rated on a 5-point scale ranging from (not at all), (okay) or (very well).

Children were administered The Spence Children's Anxiety Scale (SCAS) developed by Spence (1998). The SCAS (Spence, 1998) was designed to assess a child's anxiety levels as described in the DSM-IV (*DSM-IV-TR*, 2000) and can usually be completed in 10-minutes. The SCAS comprise 44-items in six areas of anxiety such as;

- Generalized anxiety (6-items)
- Panic/agoraphobia (9-items)
- Social phobia (6-items)
- Separation anxiety (6-items)
- Obsessive compulsive disorder (6-items)
- Physical injury fears (5-items)

The SCAS contains six randomly presented, positive filler items included to allay negative response bias (Spence, 1998). All items are presented in random order and are ranked on a 4-point Likert-type scale ranging, never (0), sometimes (1), often (2), and always (3). The SCAS (Spence, 1998) is scored according to gender and age, with normative sub-scales and developmental statistical information including high reliability co-efficient alpha scores for each of the six domains (Spence, 1998).

Spence (1998) reports the SCAS showed high internal consistency, for both the total scale, and each of the six sub-scales and acceptable test–retest reliability over a six-month period in the community sample.

Spence Children Anxiety Scale for Parents (SCAS-P; Spence, 1999) was developed to compliment the corresponding items on the SCAS (Spence, 1999). Parents

in this study also completed this measure.

In a study examining the psychometric properties of SCAS-P, Nauta et al., (2004) explains how a SCAS item referring to how a child feels, (e.g. item 1, *I worry about things*) was re-worded to reflect observable behaviours in the SCAS-P (e.g. item 1, *my child worries about things*). The SCAS-P is scored using a four point Likert Type ranking, 0 (never), 1. (some-times), 2 (often), 3 (always). The SCAS-P does not include positive filler items. The Nauta et al., (2004) study also found the SCAS-P to have both divergent and convergent validity, high test re-test reliability and a parent-child agreement range from 0.41 to 0.66.

The State Trait Anxiety Inventory (STAI) (Spielberger, 1983) is a two-part instrument developed to assess how people feel “right now” and how they “generally feel”. Form Y-1 asks questions regarding how the participant feels in real time “right now” it comprise twenty questions regarding feelings of worry, disturbances, concerns and tension. Whereas Form Y-2 asks twenty questions with respect to how the participant “feels” in general and how they perceive danger and stressful life events (Spielberger, 1983). The STAI- Trait Anxiety form is also used to assess the success of counselling therapies and psycho-therapies (Spielberger, 1983) Both Form Y-1 and Form Y-2 are scored on a four-point Likert Type scale. Form Y-1 ranges, (not at all), (somewhat), (moderately so) and (very much so). STAI Form Y-2 four point ranking, (almost never), (some-times), (often), (almost always).

High anxiety levels are indicated by a high score for ten questions on the Form Y-1 and eleven on Form Y-2. The STAI instrument is accompanied by a detailed manual and scoring key (Spielberger, 1983).

Sons completed the State Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973) this measure also has two parts, *How-I-Feel Questionnaire* to assess the two individual components of anxiety, state and trait, in primary school children.

State-Anxiety (S-Anxiety) on Form – 1, specifically measures how the child feels at that time. It was designed to measure transitory anxiety and feelings of concern, apprehension or fear a child may be experiencing at that particular time. Form-2, Trait-Anxiety (T-Anxiety) was designed to measure how a child generally feels, their more stable feelings and perceptions anxiety or fear (Spielberger, 1973).

The STAIC- state-trait is a two form Likert-type self-report questionnaire designed to be self-administered with no time limit set. Both Form-1 and Form-2 comprise 20-items The State-Anxiety has a 3-point ranking ranging (very calm), (calm) to (not calm). Trait-Anxiety scale is aimed at assessing how the child generally feels with a 3-point-scale ranging (hardly ever), (sometimes) or (often) (Spielberger, 1983).

In a study to assess the validity and reliability of the State Trait Anxiety Inventory (STAI), Spielberger, Reheiser, Ritterband, Sydeman, and Unger (1995) found the STAI-state and STAI-trait to have concurrent validity to other scales that measure anxiety. With correlation of scores (.73 and .85) contending the STAI is a valid instrument to measure anxiety. Reliability of the STAI was carried out with test and re-test method, the author reported the STAI–state to have a reliability coefficients .54 and STAI- trait reliability coefficients correlation $r = .86$.

Procedure

The University of Tasmanian Social Science Human Research Ethics Committee granted ethics approval for the present study, ethics Ref: H10374. As this research involved recruiting from primary schools ethics approval was applied for and granted by Tasmania Department of Educational Performance Services; (file: 983181).

Following approval from school principals at four primary schools across Tasmania, information letters, informed consent forms and replied paid envelopes (*Appendix B*, B1. B2.) were distributed to children attending grades four to six. Families willing to

participate in the research completed the forms and returned them to the researchers at the University of Tasmania. No further school involvement occurred.

All age appropriate children and both their biological parents were invited to complete the surveys and structured interviews. The study's rationale and structured interview methods and self-report instruments were fully explained to the family on the initial meeting. Following initial greetings and briefing on the present study the informed consent forms were signed and the child was briefed on their right to terminate the interviews if they felt at all uncomfortable or distressed.

Child participants were asked each question on each of the listed instruments in the form of a structured interview utilizing the pictorial aide (See *Appendix D.1.*) if they needed to do so. Interview questions/instruments regarding the child's thoughts were conducted first. This was followed by interview questions regarding their parent/s.

The researcher acted as scribe and completed the instruments on the child's behalf. This process took approximately 45 minutes to complete.

Parents were requested to complete their questionnaires individually. To ensure the child participants privacy, parents were asked to complete their instruments in an area where they could not hear the child's responses.

Design and Data Analysis

Preliminary analyses were conducted to ensure there were no violations of the assumptions including normality, linearity, multicollinearity and homoscedasticity

Pearson product-moment correlation coefficients were conducted between the mean scores of the predictor variables and dependent variables (see Table 2.) and follow up regression analyses.

Predictor variables were the mean score of mothers' perceived self-efficacy, state and trait anxiety and parenting anxiety as measured by:

- State Trait Anxiety Inventory (STAI)
- Perceived Self Efficacy Scale (PSES)
- Parent-Child Relationship Inventory (PCRI) support; satisfaction; involvement, autonomy and communication subsets.

The dependent variables were the mean scores of the sons' anxiety and self-efficacy variables as measured by:

- Spence Children Anxiety Scale (SCAS)
- State Trait Anxiety Inventory Children (STAIC) state-trait
- Children's Perceived Self-Efficacy (CPSE)

The predictor variables and dependent variables that the Pearson-product moment correlation coefficients indicated as having a significant medium to strong linear relationship $r = .30$ to $r = .99$, were further examined using entry-type multiple regression.

The aim of the analysis was to assess the relative contribution of the predictor variables to sons' state/trait anxiety and perceived self-efficacy levels.

Entry-type multiple regression were conducted on PCRI-support, satisfaction, involvement and communication to examine how much variance in the dependent variables STAIC-state-trait and Spence Child Anxiety Scale they could explain.

Entry-type multiple regressions were conducted on predictor variable mothers' Perceived Self-efficacy Scale and dependent variable sons' Children's Perceived Self-efficacy Scale to examine the strength of the relationship between the variables.

Results

The means and standard deviations for the predictor and dependent variables are shown in Table 2.

Table 2.
Dependent and Predictor Variables Statistics.

Variable	<i>M</i>	<i>SD</i>
PCRI-SUP	27.70	4.47
PCRI-SAT	36.14	3.63
PCRI-INV	46.86	4.75
PCRI-COM	29.11	3.28
PCRI-LIM	36.25	8.10
PCRI-AUT	29.22	3.61
STAI-state	32.69	11.31
STAI-trait	38.81	9.98
PSES	170.90	20.32
CPSE	144.19	16.08
SCAS	26.92	19.93
STAIC-state	28.89	5.54
STAIC-trait	33.58	10.04

Note. PCRI = Parent-Child Relationship Inventory; SUP = Support; SAT = Satisfaction; INV = Involvement; COM = Communication; AUT = Autonomy; LIM = Limitation (Gerard, 1994). PSES= Perceived Self-Efficacy Scale (Bandura, 2006). Spence Children Anxiety Scale (SCAS) (Spence, 1999). STAI = State Trait Anxiety Inventory; STAIC = State Trait Anxiety Inventory Child (Spielberger, 1973). CPSE = Children Perceived Self-Efficacy (Bandura, 2006).

Correlations

Maternal state/trait anxiety is significantly associated with sons' state/trait anxiety.

Pearson product-moment correlation coefficients was conducted to determine if maternal state/ trait anxiety was able to predict dependent variables, sons' state/trait anxiety and anxiety as measured by Spence Children Anxiety Scale (see Table 3).

Table 3.

Pearson Product-Moment Correlation Coefficient Between Mothers' and Sons' Anxiety Levels.

Variable	Correlation	STAIC- state	STAIC- trait	SCAS
STAI-state	Pearson Correlation (Two-tailed)	.22 .18	.49** .00	.53* .00
STAI-trait		.09 .57	.37* .02	.42* .01
STAIC-state		1	.61** .00	.56** .00
STAIC-trait		.61** .00	1	.91** .00
SCAS		.56** .00	.91** .00	1

Note. STAI = State Trait Anxiety Inventory; STAIC = State Trait Anxiety Inventory Child (Spielberger, 1973). SCAS= Spence Children Anxiety Scale (Spence, 1998).

** $p < .001$ (two-tailed). * $p < .05$ (two-tailed). $N = 36$.

Pearson product-moment correlation coefficients as shown in Table 3 examined the association between mothers' state and trait anxiety levels as measured by State Trait Anxiety Inventory-state/trait and sons' anxiety levels as measured by State Trait Anxiety

Inventory Child-state/trait and Spence Children Anxiety Scale. Results indicated a strong positive correlation between mothers' state anxiety and sons' trait anxiety, and a medium positive correlation between mothers' trait anxiety levels and sons' trait anxiety levels.

Maternal parenting skills and attitude will be associated with sons' state and trait anxiety.

Pearson product-moment correlations were conducted to examine the influence maternal parenting attitude and skill has on sons' State Trait Anxiety Inventory Child-trait (STAIC) discussed in the second hypothesis. Results are shown in Table 4.

Table 4.

Pearson Product-Moment Correlation Coefficients Between Predictor Variables, Parent Child Relations Inventory (PCRI) and Dependent Variables, SCAS, STAIC-State/Trait and Sons' Perceived Self-efficacy (CPSE).

Variable	Correlation	STAIC-state	STAIC-trait	SCAS	CPSE
PCRI-SUP	Pearson	-.24	-.36*	-.45*	.15
	Correlation	.15	.03	.01	.36
PCRI-SAT	(Two-tailed)	-.23	-.43**	-.50**	.14
		.16	.01	.00	.41
PCRI-INV		-.27	-.55**	-.53**	.24
		.09	.00	.00	.15
PCRI-COM		-.22	-.46**	-.50**	.13
		.19	.01	.00	.42
PCRI-AUT		-.05	-.38*	-.41*	.09
		.75	.02	.01	.57

Note. PCRI = Parent-Child Relationship Inventory; SUP = Support; SAT = Satisfaction; INV = Involvement; COM = Communication (Gerard, 1994). STAIC = State Trait Anxiety Inventory Child (Spielberger, 1973). SCAS= Spence Children Anxiety Scale (Spence, 1998).

** $p < .001$ (two-tailed). * $p < .05$ (two-tailed). $N = 36$.

The results indicate a strong negative correlation between PCRI-satisfaction, involvement and communication with Spence Children Anxiety Scale. With low scores on mother’s PCRI-variables associated with high scores on son’s SCAS score.

PCRI_involvement and Spence Children Anxiety Scale (SCAS) indicate a significant strong negative correlation between the two variables, $r = -.53^{**}, p < .001$ with low scores on PCRI_involvement associated with high levels of anxiety experienced.

PCRI_support, satisfaction, involvement, communication and autonomy with STAIC-trait were analysed using Pearson product-moment correlation coefficient and all indicated a medium negative association between the variables (see Table 4).

Influence of maternal self-efficacy levels on sons’ self-efficacy levels.

A Pearson product-moment correlation was conducted to investigate the influence maternal self-efficacy levels has sons’ self-efficacy levels, with predictor variable being Perceived Self-Efficacy Score (PSES) and dependent variable being sons’ Child Perceived Self-efficacy Score (CPSE). Results indicate no significant associations between the dependent and predictor variables in these data (see Table 5.).

Table 5.

Correlation Between Child Perceived Self-Efficacy and Maternal Perceived Self-Efficacy Scale Levels.

Variable	Correlation	PSES	CPSE
PSES	Pearson Correlation	1	.29 .07
CPSE	(Two-tailed)	-.32 .05	1

Note. PSES = Perceived Self-efficacy Scale (Bandura, 1987) CPSE = Child Perceived Self-efficacy Scale (Bandura, 1987).

****** $p < .001$ (two-tailed). ***** $p < .05$ (two-tailed). $N = 36$.

Pearson product-moment correlations were conducted to examine the association between dependent variables, sons’ Children Perceived Self Efficacy Scale (CPSE), Spence Children Anxiety Scale (SCAS) and State Trait Anxiety Inventory Child-state/trait (STAIC-state/trait) results of this analysis can be seen in Table 6.

Table 6.
Pearson Product-Moment Correlation Coefficient Between Scores on CPSE, SCAS, STAIC-state-trait.

Variable		CPSE	SCAS	STAIC-state	STAIC-trait
CPSE	Pearson	1	-.32	-.34**	-.48*
	Correlation		.06	.00	.04
SCAS	Significant	-.32	1	.91**	.56**
	(Two-tail)	.06		.00	.00
STAIC-state		-.34*	.91**	1	.60**
		.00	.00		.00
STAIC-trait		-.48**	.56**	.60**	1
		.04	.00	.00	

Note. SCAS = Spence Children Anxiety Scale (Spence, 1998). STAIC = State Trait Anxiety Inventory Child (Spielberger, 1973). CPSE = Children’s Perceived Self-Efficacy (Bandura, 2006).
** $p < .001$ (two-tailed). * $p < .05$ (two-tailed). $N = 36$.

Children Perceived Self-Efficacy (CPSE) and State Trait Anxiety Inventory Child-state indicated a significant medium negative correlation between the two variables $r = -.34, p < .001, n = 36, p < .001$, with high levels of state anxiety associated with low levels of sons’ perceived self-efficacy. There was a medium, negative correlation between sons’ STAIC-trait anxiety levels and low CPSE levels, suggesting that the more the son felt anxious the less self-efficacy was perceived as shown in Table 6.

There was a strong positive correlation between sons’ STAIC-state and sons’ SCAS variables, $r = .91^{**}$, $n = 36$, $p < .001$. There was strong positive correlation between STAIC-trait and SCAS $r = .56^{**}$, $n = 36$, $p < .001$, high levels of anxiety.

Results of Standard Multiple Regression Analyses

To examine the strength of association between maternal anxiety and sons’ anxiety levels as discussed in the first hypothesis, a standard entry-type multiple regression analysis was conducted on dependent variable STAIC-trait with predictor variables mothers’ mean score on State Trait Anxiety Inventory (STAI) state/trait, resulting in mothers’ STAI-state making the largest contribution for the variance in this model ($\beta = .57$, $p < .05$). The total variance explained by the model as a whole was $R^2 = .25$ adjusted $R^2 = .21$, $F(2,33) = 5.54$, $p < .05$. The model explains 21% of the variance between mothers’ state anxiety and sons’ trait anxiety as shown in Table 8.

Table 8.
State Trait Anxiety Child- Trait and Mothers’ State Trait Anxiety Inventory-state-trait

ANOVA ^a						
Model		Sum of Squares	<i>df</i>	Mean Square	F	Sig.
1	Regression	887.75	2	443.87	5.54	.008 ^b
	Residual	2642.99	33	80.09		
	Total	3530.75	35			

a. Dependent Variable: STAIC-trait
b. Predictor: STAI-state-trait

To examine the strength of association between variables as discussed in the second hypothesis, predictor variables, maternal PCRI-involvement, support and

satisfaction were entered simultaneously as a standard entry-type multiple regression, to assess their ability to predict the dependent variables, sons’ levels of anxiety, as measured by Spence Children Anxiety Scale (SCAS).

These data indicated the variable with the largest ($\beta = -.43, p < .001$) was PCRI_involvement making the strongest unique contribution in explaining the variance at 10.2% (See *Appendix A*. Table. A7.). The total variance explained by the model is 31%, $F(3, 32) = 6.49, p < .001$ (See Table 9).

Table 9.

Dependent Variable Spence Children Anxiety Scale and Predictors Variables Parent Child Relationship Inventory Subsets

ANOVA ^a						
Model		Sum of Squares	<i>df</i>	Mean Square	F	Sig.
1	Regression	5253.90	3	1751.30	6.48	.001 ^b
	Residual	8640.84	32	270.02		
	Total	13894.75	35			

a. Dependent Variable: SCAS
b. Predictor: PCRI_INV, PCRI_SUP, PCRI_SAT

A standard entry-type multiple regression analysis was conducted on predictors PCRI subsets, Support, Satisfaction and Involvement and the dependent variable State-Trait- Anxiety Inventory Child-state. PCRI_involvement ($\beta = -.55, p < .001$) made the strongest contribution in explaining the variance in the model at 16.2%.

The total variance explained by the model was $R^2 = .36$, adjusted $R^2 = .29$ $F(3, 32) = 5.90, p. < .05$. Thus, the model explains approximately 29% of the variance between maternal parenting skill and attitude as measured by PCRI and the level of state anxiety felt by sons’ as measured by State Trait Anxiety Inventory Child-state (see Table 10).

Table 10.

*Dependent Variable State Trait Anxiety Child- state and Predictors Variables Parent
Child Relationship Inventory Subsets.*

ANOVA ^a						
Model		Sum of Squares	<i>df</i>	Mean Square	F	Sig.
1	Regression	1257.51	3	419.17	5.90	.003 ^b
	Residual	2273.23	32	71.03		
	Total	3530.75	35			

a. Dependent Variable: STAIC-state
b. Predictor: PCRI_INV, PCRI_SUP, PCRI_SAT

Discussion

The aim of the current study was to expand on the findings of Matthewson (2009) who found that parents do influence their child’s anxiety and self-efficacy levels, and furthermore that fathers and mothers do so independently and differently. The present study focused on examining three hypotheses regarding the mother/son dyad.

Influence of maternal anxiety on son’s anxiety

The first hypotheses predicted that high-level maternal state and trait anxiety would be associated with high level of sons’ state and trait anxiety. It was expected the findings would indicate a significant association between the level of maternal anxiety and sons’ anxiety as in the Matthewson (2009) study.

Pearson product-moment correlation suggested a medium positive association between maternal state anxiety with sons’ trait anxiety and a medium positive association between maternal state anxiety and sons’ state anxiety. Thus, supporting the hypothesis

that high-level maternal anxiety is associated with a high level of sons' anxiety.

However, the expected association between maternal trait anxiety and sons' anxiety, either state or trait were not significant in these data.

The findings in the first hypotheses are supported by studies conducted by the instruments developer (Spielberger, 1973) who explains that STAIC-trait is a useful instrument for measuring stable individual differences in trait anxiety, such as neurotic anxiety that are not unique to any particular activity. Conversely, state-anxiety, as measured by STAIC-state, is a measure of anxiety felt in the 'here and now' these are the anxious feelings that fluctuate between situations and events.

Influence of maternal parenting skill and attitude

The second hypothesis predicted low scores of perceived maternal parenting skills and attitude will be associated with high level of sons' state and trait anxiety. Chorpita and Barlow (1998) contended that, amongst other factors, a large contributor towards a child's trait anxiety level is the degree of parental control exercised on the child. A high degree of parental control has the potential to make a child feel dependent on their parents, thus perceive a lack of control or 'mastery' over their environment, and to feel anxious about the unknown future and what may happen.

The reverse may be said by autonomy granting and encouraging independence (Chorpita & Barlow, 1998). Ehrenreich, Micco, Fisher, and Warner (2009) found that mothers of socially anxious children offered little respect for the child's independent thoughts and stated opinions and offered poor psychological autonomy granting towards the child.

Similarly the present study found a significant negative association between maternal autonomy granting, as measured by PCRI-autonomy and state and trait anxiety felt by sons' (See Table 4). Parenting is a complex task, often requiring child specific

strategies. Parents may parent each child in the family unit differently or vary the strategies employed for the same child depending upon several key elements including:

- The child's place within the family
- The age of the child
- The gender of the child
- Personality differences
- Context, situation and time of the behaviour

PCRI (Gerard, 2004) was used to measure parent-child relationships in the current study, significant correlation coefficients for five PCRI sub-groups, support, satisfaction, involvement, autonomy and communication (see Table. 4) with the STAIC-state/trait (Spielberger, 1973) and SCAS (Spence, 1998).

PCRI_involvement sub-scale reflects the degree of parental involvement with their child's life on a daily basis. This included the level of interest the parent has in their child's life generally, the level of involvement with their child's activities, the degree of time they spend with the child and their involvement with the child's wellbeing (Gerard, 1994).

The present study indicates that parental involvement, PCRI_INV, is an important aspect of how a child perceives their parents. The Pearson product-moment correlation coefficient results indicated the greater the parental involvement the less anxiety a child feels.

In a study investigating the importance of mother's involvement with the success of their anxious child's therapy, Suveg et al. (2006) found that involvement by the mother as a 'collaborator' while her child was undergoing therapy session was most important and beneficial for a successful therapeutic alliance. Suveg et al. (2006) recognised that the amount of effort needed for the mother's ongoing involvement both in and out of therapy

sessions may be difficult, particularly with a resistant child, but contend ongoing involvement is invaluable. Furthermore, the success of a child gaining mastery over their anxiety, depends a great deal on whether the mother continues to be actively involved with the appropriate management strategies after therapy concludes, thus giving the child further opportunities to develop self-efficacy over the task responsible for making the child feel anxious.

PCRI_ communication sub-scale represents how capably a parent communicates with their child. This includes incidental simple conversations, being comfortable and empathetic when discussing problems with their child and keeping the lines of communication open and available for their child. The result of the Pearson product-moment correlation coefficient (see Table 4.) also suggests that the greater a mother's communication, PCRI_COM, the less anxiety the child feels. This is the case for both the SCAS (Spence, 1998) and STAIC-trait (Spielberger, 1973).

These data were further analysed using standard enter multiple regression. The results (see *Appendix A*. Table 12.2; 12.3) indicated PCRI_COM violated the Mahalanobis distance as recommended in Tabachnick and Fidell (2007) by exceeding the critical value of 13.82. PCRI_COM also violated the singularity assumption.

Tabachnick and Fidell (2007) state multicollinearity and singularity occur if the two variables are very highly correlated that is greater than $r = .9$, or if items in the two variables are so similar that they overlap in properties. In the current study PCRI_COM reached a significance level of greater than $r = .93$ (see *Appendix A*. Table. A.13.)

Studies examining the reliability and validity of the PCRI, (Coffman, Guerin & Gottfried, 2006; Suchman & Luthar, 2006) reported that some aspects of the PCRI scale do overlap. In particular, they discuss how communication, limit setting and autonomy have item overlap thus creating redundancy in some items of the PCRI.

Gerard (2004) explains that PCRI reflects a parent's evaluation about their perception of their parenting ability and that the overlap and redundancy in some items is due to the similarity of certain parenting strategies. Furthermore, Gerard (2004) maintains that parents who report good communication with their child also tend to report granting autonomy and positive involvement with their child. Pearson product-moment correlation coefficients, as shown in Table 4, confirms that assumption.

Maternal self-efficacy influence on son's self-efficacy

The third hypothesis predicted that maternal self-efficacy levels would influence her son's perceived self-efficacy levels. Bandura (2006) advocates human thoughts and belief systems are a difficult and complex phenomenon to measure. Bandura (2006) maintains that self-efficacy is arguably the most difficult self-belief to successfully measure, arguing that self-efficacy is highly contextualized, situation dependent and time and task specific.

Bandura (2006) maintains that to be able to assess perceived self-efficacy, the instrument employed should be tailored to suit the individual task or behaviour, and by doing so will greatly enhance the instrument's predictability.

In the current study a Pearson product-moment correlation coefficient between mothers' perceived self-efficacy (PSES) and child perceived self-efficacy (CPSE) was conducted. These data did not attain a significant level at $p = < .05$, however, approached significance at $p = < .07$. (See *Appendix A*. Table. A.11.)

A further standard entry multiple regression between PSES and CPSE showed an adjusted R^2 .06, indicating that variations in the mother's self-efficacy level, account for 6% of the variations in her son's self-efficacy level. These data failed to support the third hypothesis that low maternal self-efficacy will result in low perceived self-efficacy in her son however the variance of 6% should still be viewed as a part of a larger contingent of

factors that contribute to feelings of low or high levels of a child's perception of self-efficacy. Research on the influence low maternal self-efficacy has on her son's level of self-efficacy with a larger more diverse cohort may produce a greater variance.

Analyses were conducted to determine if there were an association between sons' perceived self-efficacy levels CPSE and his anxiety levels as measured by STAIC-trait. Preliminary examination of the association between CPSE and STAIC-trait indicated the greater the level of trait anxiety felt by the son, the less perceived self-efficacy they experience. These data suggest a negative association between the level of trait anxiety and level of perceived self-efficacy

Bandura (2007) argues that perceived self-efficacy is about what a person thinks they *can* do and that feeling anxious would not normally stop a person attempting a particular behaviour; furthermore, if a person believes they can successfully execute that behaviour, they will do so, despite feeling anxious about the activity.

The relationship between a child's level of trait anxiety and their self-efficacy belief that they *can* execute a specific or novel behaviour, would benefit from future research.

Clinical and Theoretical Implications

Chorpita and Barlow (1998) found a strong indication that a child is more likely to suffer trait-anxiety and negative effects if their parents are controlling, allowed their child little freedom or autonomy over simple life choices and did not encourage their child to exercise self-control over events or behaviour.

Dumas and LaFreniere (1993) compared parenting behaviour of those with clinical (anxious) children to those with non-clinical children. They found the parenting behaviour of parents with clinical children to be more controlling, restrictive and grant less autonomy than the non-clinical group. Likewise, Muris and Merckelbach (1998) also

contend that when non-clinical children are asked to rate parental behaviour, the analyses of their ratings are positively correlated to childhood symptoms of anxiety.

Bögels and Phares (2007) discuss the unique ways in which mothers and fathers are involved in the development of anxiety disorders in their children. The authors argue that a lack of maternal comfort offered to the child may result in the child experiencing feelings of anxiety. Fearon et al. (2010) posit that maternal depression and anxiety is a predictor of young sons' internalizing symptoms such as anxiety. The present study's findings would suggest a mother high in state anxiety could impact the level of her son's trait anxiety. It is suggested the benefit of strong positive lines of communication between mothers and sons may help reduce trait and state anxiety in sons (Bögels and Phares 2007; Fearon et al., 2010).

Limitations

The current study had a relatively small non-clinical, self-selected, cohort of participants comprising ($n = 36$) mothers and ($n = 36$) sons. The participants could not be considered a true representation of the wider community due to their homogeneity. All families spoke English as a first language, all families had at least one, in majority of cases both parents employed in full time work. Furthermore, to control for extraneous variables, families who volunteered for this study were required to have both biological parents residing in the same household as their participating child. This requirement therefore excluded a wide range of people who may have considered participating in the research.

This research allowed for more than one age appropriate child per family to participate; however, parents were asked to complete the PCRI (Gerard, 1994) and STAI-state-trait (Spielberger, 1973) instruments as a 'family'. Some parents with more than one child participating in the research voiced concerns with that arrangement, arguing that it

was difficult to answer the questions explicitly for more than one child as their parenting strategies differed between children. Parents cited children's personality and behavioural differences as the over-riding factor that determined how they parented each child. This was the case if the children were both male, both female or male and female.

Gerard (1994) notes the PCRI has a small print size, which may pose a problem for some people. Self-report instruments rely upon long-term memory and this may also be difficult and or unreliable for children. The child's mood and demeanor should also be considered at the time of data collection. While every effort was made in this study to minimize bias resulting from such factors, it is not possible to rule out that bias inherent in all self-report instruments.

Future Research Directions

Future research into parental influences on child anxiety and self-efficacy may benefit from drawing from a non-clinical and clinical population. Including children from families with or without both biological-parents residing with them, such as blended families, single parent families, same sex parent families and families with adopted or step-children, will also help to understand how anxiety impacts the broader population.

Future studies into parental influences on childhood anxiety and self-efficacy may gain a greater insight into the parent-child relationship if separate instruments are completed for each child. Parents often 'parent' their child/ren differently on the basis of their personality and behaviour. Child-specific parenting perceptions would afford greater understanding of the anxiety levels parents experience, and the anxiety they perceive their child to be experiencing.

Childhood anxiety develops from many sources (Ehrenreich et al., 2009) including intrinsic factors such as genetics or comorbid conditions that predispose a child to anxiety such as a sensory processing disorder. As the body of research into parental influences on

childhood anxiety and self-efficacy becomes more robust, it is hoped that the aetiology of childhood anxiety will become better understood.

The positive and the negative aspects of mother-son relationship in terms of maternal anxiety, parenting skills and attitudes that influence the son's level of perceived self-efficacy and anxiety over the long term will benefit from future research.

Conclusion

Most parents aim to raise their children with love, care and to facilitate their growth and development within a safe, harmonious environment. Environmental factors in which the relationship between parents and their children develop is as diverse. The needs of the family can and are often, influenced by cultural differences. The dynamics of family life are unique and dependent on many contextual issues and situations, which may impact intra-family relationships and parenting ability. These include psychosocial factors such as the relationship between parents and between parent and child as well as situational circumstances such as health and unforeseen significant life-events (Woodcock, 2003).

Contextual situations within each family unit and within the extended family hinder the ability to universally assess parental influence on their children. Maternal involvement and communication strategies employed by one family, may be the best predictor of childhood anxiety and perceived self-efficacy for that family unit; however, different types of support, involvement and communication may best be suited for another family.

With the above differences in mind the current study found that the degree of maternal state anxiety positively influences the degree of trait anxiety as reported by her son, supporting the hypothesis that high-level maternal anxiety will be associated with a high level of son's anxiety.

Data in the current study did not support the second hypothesis, that low maternal self-efficacy will influence her son's level of perceived self-efficacy at the $p = < .05$ level however, the data was approaching significance at $p = < .07$.

Significance may have been attained with a clinical cohort. Children who present with clinical anxiety may have a different relationship with their mother; moreover, mother's self-efficacy levels may have more influence on her son's self-efficacy.

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Appendix A

Statistic Tables

Appendix A.7.

Table. A.7.

Coefficients and Beta Values for Predictors Variables PCRI with Dependent SCAS.

Coefficients ^a												
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error				Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	153.74	30.56		5.03	.00	91.48	215.99					
PCRI_SUP	-1.42	.87	-.31	-1.63	.11	-3.19	.35	-.44	-.27	-.22	.51	1.96
PCRI_SAT	-.05	1.34	-.01	-.04	.96	-2.78	2.67	-.50	-.00	-.00	.32	3.07
PCRI_INV	-1.82	.79	-.43	-2.29	.02	-3.43	-.20	-.53	-.37	-.32	.54	1.83

a. Dependent Variable: SCAS

Note. SCAS = Spence Children Anxiety Scale (Spence, 1998). PCRI = Parent-Child Rating Inventory; SUP = support, SAT=satisfaction, INV = involvement (Gerard, 1994).

Appendix A.11.

Table. A.11.

Coefficients and Beta Values for Predictor Variable PSES With Dependent Variable CPSE.

Coefficients ^a												
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error				Lower Bound	Upper Bound	Zero-order	Partial	Partial	Tolerance	VIF
(Constant)	104.13	22.29		4.67	.00	58.83	149.44					
1 Perceived Self-efficacy	.23	.13	.29	1.80	.07	-.02	.49	.29	.29	.29	1.00	1.00

a. Dependent Variable: Child Perceived Self-efficacy

Note. PSES = Perceived Self-Efficacy (Bandura, 2006) CPSE = Children’s Perceived Self-Efficacy (Bandura, 2006).

Appendix A. 12.

Table A. 12.

Coefficients and Beta Values for Predictor Variables PCRI_SUP/SAT/INV/COM, With
Dependent Variable STAIC-trait.

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error				Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	94.02	16.10		5.83	.00	61.18	126.87					
PCRI_SUP	-.63	.48	-.28	-1.31	.19	-1.62	.34	-.35	-.23	-.19	.45	2.22
PCRI_SAT	.30	.70	.11	.43	.66	-1.13	1.75	-.42	.07	.06	.31	3.15
PCRI_INV	-1.18	.55	-.56	-2.13	.04	-2.32	-.05	-.55	-.35	-.30	.30	3.32
PCRI_COM	.05	.70	.01	.08	.93	-1.38	1.49	-.45	.01	.01	.38	2.56

a. Dependent Variable: STAIC-trait

Note. PCRI = Parent Child Relationship Inventory /Support/Satisfaction/Involvement/Communication (Gerard, 1994). STAIC = State Trait Anxiety Inventory Child (Spielberger, 1973).

Appendix A. 12.1

Table. A. 12.1

Coefficients and Beta Values for Predictor Variables PCRI_INV/COM, with Dependent Variable SCAS.

Coefficients ^a												
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant	137.87	29.49		4.67	.00	77.87	197.87					
1 PCRI_INV	-1.54	.91	-.36	-1.68	.10	-3.39	.31	-.53	-.28	-.24	.44	2.23
PCRI_COM	-1.33	1.31	-.22	-1.01	.32	-4.01	1.35	-.49	-.17	-.14	.47	2.23

a. Dependent Variable: SCAS

Note. PCRI_INV_COM = Parent Child Relationship Inventory (Involvement/ Communication) Gerard, 1994). SCAS = Spence Children Anxiety Scale (Spence, 1998).

Appendix A. 12.2

Table. A.12.2.

*Mahalanobis Distance Violation Independent Variables PCRI_INV_COM with
Dependent Variable Spence Children Anxiety Scale.*

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	6.74	67.90	26.92	10.96	36
Std. Predicted Value	-1.84	3.73	.00	1.00	36
Standard Error of Predicted Value	2.86	11.33	4.68	1.60	36
Adjusted Predicted Value	6.51	58.48	26.57	10.19	36
Residual	-23.72	41.60	.00	16.63	36
Std. Residual	-1.38	2.42	.00	.971	36
Stud. Residual	-1.42	2.46	.00	1.00	36
Deleted Residual	-25.26	42.86	.34	18.04	36
Stud. Deleted Residual	-1.45	2.68	.02	1.04	36
Mahal. Distance	.00	14.34	1.94	2.48	36
Cook's Distance	.00	.23	.02	.04	36
Centered Leverage Value	.00	.41	.05	.07	36

^a Dependent Variable: SCAS

Note. Mahalanobis critical distance for two independent variables according to Tabachnick and Fidell (2007) is 13.82.

Appendix A. 12.3

Table. A.12.3.

*Mahalanobis Distance Violation Independent Variables PCRI_INV_COM with
Dependent Variable State Trait Anxiety Inventory Child-trait*

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	24.21	54.85	33.58	5.616	36
Std. Predicted Value	-1.669	3.787	.000	1.000	36
Standard Error of Predicted Value	1.435	5.672	2.345	.804	36
Adjusted Predicted Value	24.43	50.84	33.48	5.275	36
Residual	-16.884	22.507	.000	8.327	36
Std. Residual	-1.969	2.625	.000	.971	36
Stud. Residual	-2.067	2.664	.005	1.008	36
Deleted Residual	-18.611	23.188	.102	9.004	36
Stud. Deleted Residual	-2.182	2.961	.013	1.046	36
Mahal. Distance	.008	14.340	1.944	2.486	36
Cook's Distance	.000	.166	.028	.040	36
Centered Leverage Value	.000	.410	.056	.071	36

a. Dependent Variable: STAIC_trait
Note. Mahalanobis critical distance for two independent variables according to Tabachnick and Fidell (2007) is 13.82.

Appendix A.13

Table A.13.

Pearson Product-Moment Correlation Coefficients Indicating PCRI_COM Violates

Singularity With Significant Association of $r = .93$.

Coefficients ^a												
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error				Beta	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance
(Constant)	94.02	16.10		5.83	.00	61.18	126.87					
PCRI_SUP	-.63	.48	-.28	-1.31	.19	-1.62	.34	-.35	-.23	-.19	.45	2.22
1 PCRI_SAT	.30	.70	.11	.43	.66	-1.134	1.75	-.42	.07	.06	.31	3.15
PCRI_INV	-1.18	.55	-.56	-2.13	.04	-2.32	-.05	-.55	-.35	-.30	.30	3.32
PCRI_COM	.05	.70	.01	.08	.93	-1.38	1.49	-.45	.01	.01	.38	2.56

a. Dependent Variable: STAIC_trait

Note. PCRI_INV_COM = Parent Child Relationship Inventory /Involvement/ Communication) Gerard, 1994). STAIC = State Trait Anxiety Inventory Child (Spielberger, 1973).

Appendix B

Information Letters

*Appendix B.1.**B.1. Research Information and Informed Consent Form***UNIVERSITY OF TASMANIA****CONSENT TO PARTICIPATE IN RESEARCH****Exploring Parental Influences on Childhood Anxiety and Self Efficacy**

1. I have read and understood the information letter for this study.
2. The nature and possible effects of the study has been explained to me.
3. I understand that the study requires that my child will be involved in a separate interview. I understand that the questions asked are about self-efficacy, and anxiety and how families deal with anxiety. I also understand that the same questions will be asked of my partner and similar ones will be asked of my child.
4. I understand that discussion of this topic could possibly cause me and/or my child emotional distress.
5. I have had an opportunity to ask any questions and have had them answered to my satisfaction.
6. I understand that the answers I give will be anonymous and will be treated as strictly confidential.
7. I understand that in order to maintain confidentiality all research data will be stored in a locked cabinet at the University of Tasmania, and will be destroyed at the end of five years;
8. I understand that participation is voluntary and I am free to withdraw my child and myself from the study at any time without prejudice and if I so wish, may request that any data that has been supplied to date be withdrawn from the research immediately following cessation of the interview. Following coding of the information supplied by you and your child, withdrawal of your information will not be possible as data will be unidentifiable.
9. I understand that if my child is upset during the interview or by the questions, it will be terminated immediately.
10. I also understand that to ensure my child's confidentiality, the content of my child's answers to the questions he/she will be asked will not be disclosed to me unless my child becomes distressed at any time during the interview.
11. I agree that research data gathered for the study may be published provided that no member of my family will be identified as a participant.
12. I understand that both my partner and I are required to participate in the investigation and to give our independent consent.
13. I agree to my child's participation in this investigation.
14. I agree to my own participation in this investigation.
15. I agree to provide my contact details so that the researcher can contact me to arrange an interview time.

*Appendix B.2.**B.2. Parents Information Letter*

Dear Parent,

Thank you for participating in our research. When completing the questionnaire package, please consider the following points.

1. Some pages are double sided, including the separate page. Please check that you have completed the items on both sides of the page.
2. Please do not discuss the items or your choices with anyone while you are completing the questionnaires. If you have any questions regarding any of the items please contact me at mawhite@utas.edu.au
3. All information will be kept strictly confidential. Please do not provide any identify information. Your family has been provided with a code in order to link each person's questionnaire package. However, please remember to complete the demographic information at the start of the first page of your package (age, postcode, and number of children in the family).
4. If there are any items that you do not feel comfortable with answering, you may leave the box empty. However, unanswered questions can interfere with the final statistical analysis and may result in your family's data being excluded from the research.
5. Answer the question only in respect to the child participating in the research. Some items ask about "your children". Where possible, still answer these questions with respect to the child participating in the research. If you need to answer about the family in general, please make sure you also consider this child in your answer.

Please feel free to distribute my contact details to anyone who meets the inclusion criteria I biological family living together with children aged 8-12). The more families that participate in this research, the more powerful and accurate the results will be.

I have included a reply-paid envelope. Please return your completed questionnaires as soon as possible.

Thank you for your time and participation.

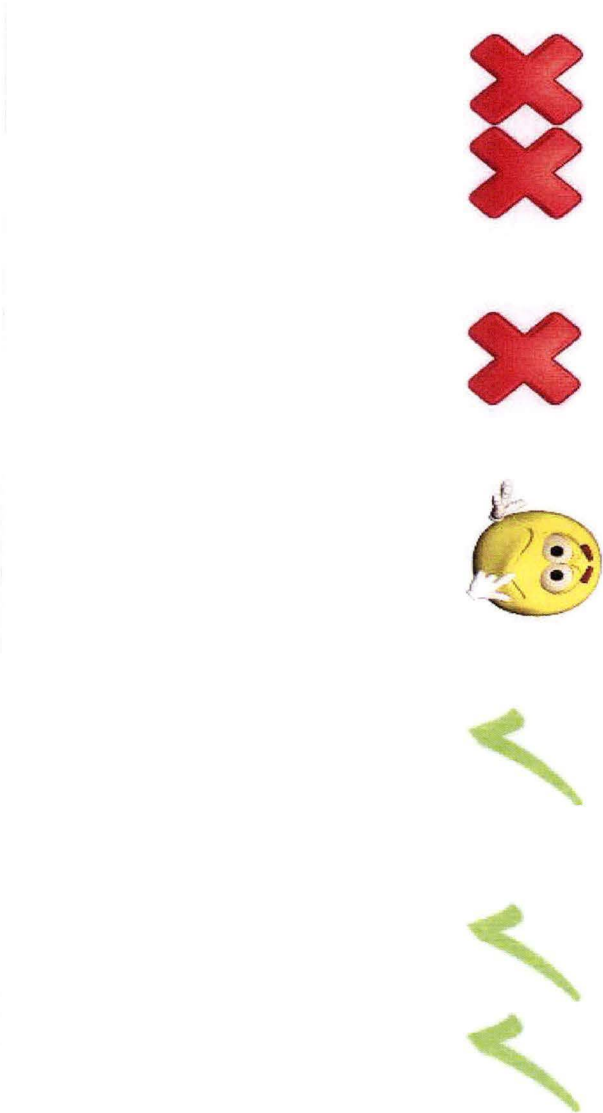
Marilyne White

Appendix C
Materials

Appendix C.

Appendix C.1.

Pictorial Aide for Young Participants



Appendix C.2.

C.2. Child Questionnaire Package

Child Questionnaire Package

Demographic Questions:

Code: _____

Child's age: _____ years

Child's gender: male female

I am going to be asking you some questions about things you think about your mother and father, as well as some questions about how you feel. To help you answer these questions, I have some pictures. However, if you would like, you can just tell me the answer. I will write down your answers on my sheet of paper. There are no right or wrong answers, and if you don't want to answer any questions that is ok. You will not get in trouble for anything you say to me, and I am not going to tell your mum or dad what you say unless you want me to. Would you like to start?

Note: answers pertaining to 'mother' will be circled in red pen and answers pertaining to 'father' will be circled in blue pen by the researcher. All mother questions will be answered first, followed by father questions, so as to not ask the child to 'compare' their parents to each other.