

# Do Parental Internalizing Symptoms and Family Stress Predict Child Anxiety Symptoms?

*Findings from a clinical trial*

Christina Lium



Innlevert som hovedoppgave ved Psykologisk Institutt

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Hovedoppgave ved Psykologisk Institutt, Universitetet i Oslo

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# Abstract

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**Title:** Do Parental Internalizing Symptoms and Family Stress Predict Child Anxiety Symptoms? Findings from a clinical trial

**Background:** Anxiety disorders are prevalent among youth, and may have significant negative long-term impact on individuals' functioning, as well as leading to other difficulties later in life. Therefore, studies are needed to examine possible contributors to anxiety problems in children. **Objective:** This thesis will focus on family factors which may influence child anxiety. The thesis will investigate the relationship between parental internalizing symptoms, family stress, and child anxiety symptoms in a clinical sample of children.

**Method:** The data material is obtained from a randomized controlled trial (RCT) which was conducted in seven public child and adolescent mental health outpatient clinics in Western Norway (Wergeland et al., 2014). The sample consisted of children ( $N = 182$ ,  $M$  age = 11.5 years, range 7-15 years), with social phobia, separation anxiety or generalized anxiety disorder, mothers ( $N = 165$ ), and fathers ( $N = 72$ ). Child anxiety symptoms were assessed by the Spence Children's Anxiety Scale (SCAS), through child-, mother-, and father- report. Parental internalizing symptoms was assessed by the Depression Anxiety Stress Scale (DASS), through mother- and father- report. Family stress was assessed by the Family Stress Scale (FSS), which is a part of the Development and Well-Being Assessment (DAWBA), through parent-report. Pearson product-moment correlations and standard multiple linear regression analyses were performed. **Results:** There were significant correlations between fathers' internalizing symptoms and child self-rated anxiety symptoms; between mothers' internalizing symptoms and mother-rated child anxiety symptoms; and between family stress and both mother-rated child anxiety symptoms and mothers' internalizing symptoms. Fathers' internalizing symptoms was a significant predictor of children's self-rated anxiety symptoms. Mother-father correspondence regarding how they rated anxiety symptoms in the child was higher than parent-child correspondence. **Conclusions:** Findings suggest differences in how mothers' and fathers' internalizing symptoms may influence anxiety symptoms in children with anxiety disorders, and family stress may play a role in maternal internalizing symptoms and anxiety symptoms in children with anxiety disorders. Findings are discussed in the light of the existing literature.



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# 1 Introduction

## 1.1 Anxiety in children

In the Diagnostic and Statistical manual of mental disorders (DSM-V) the differentiation between fear and anxiety is defined as follows:

*“Fear is the emotional response to real or perceived imminent threat, whereas anxiety is anticipation of future threat” (American Psychiatric Association, 2013, p. 189).*

Fear and anxiety are important for individuals’ survival and functioning in an evolutionary context (Pine & Klein, 2015). However, fear and anxiety may become pathological if provoked by situations or objects that are not threatening or harmful, or have a negative impact on a person’s functioning by causing the presence of clinically significant distress or avoidance in a person (Pine & Klein, 2015). The key distinction between developmentally normative fears and anxiety disorders is that children with anxiety disorders display fears and anxiety that are excessive or persisting beyond developmentally appropriate periods (American Psychiatric Association, 2013). In DSM-V anxiety disorders are defined as follows:

*“...disorders that share features of excessive fear and anxiety and related behavioral disturbances” (American Psychiatric Association, 2013, p. 189).*

There are different types of anxiety disorders. A characteristic that is common among all the anxiety disorders is avoidance behaviors (Carr, 2016). Another common characteristic among the anxiety disorders is that the beliefs regarding danger or threat are accompanied by an affective state in the individual, characterized by feelings of restlessness, uneasiness, and tension (Carr, 2016). The disorders can be differentiated by the objects or situations that induce the fear, anxiety or avoidance in an individual, and the cognitive ideations that the individual experiences when exposed to these situations or objects (American Psychiatric Association, 2013). The main characteristics of the three anxiety disorders used as inclusion criteria in the present study of this thesis will be described below.

Separation anxiety disorder is characterized by excessive fear in an individual when separated from an attachment figure (Carr, 2016). The individual’s anxiety or fear concerns the ideation that attachment figures or themselves might get harmed, that the individual might get separated from or loose attachment figures, and physical symptoms of distress and

nightmares may occur as well (American Psychiatric Association, 2013). Children with separation anxiety disorder tend to avoid activities involving ordinary separation from caretakers to a degree that is developmentally inappropriate (Pine & Klein, 2015), which may for example lead to school refusal (Carr, 2016).

Social anxiety disorder (also labeled social phobia) is characterized by an excessive fear of behaving in an embarrassing way in front of others, and a fear of being negatively evaluated by others (Carr, 2016). The social interactions that the individual may fear include for example performing in front of other people, meeting unfamiliar people, or situations where the individual may be observed drinking or eating (American Psychiatric Association, 2013). This may lead to a constricted lifestyle (Carr, 2016). Children with this disorder may express their fear or anxiety by freezing, crying, tantrums, shrinking, clinging, or not being able to speak in social situations (American Psychiatric Association, 2013). Children with social anxiety disorder tend to have concerns about being perceived as acting stupid or foolish, and the child's discomfort is present not only with adults but also with peers, and are not due to an impaired capacity for socialization (Pine & Klein, 2015).

Generalized anxiety disorder involves an excessive and persistent worry in which the individual finds hard to control, regarding a number of activities or events, affecting various domains of the individual's life (American Psychiatric Association, 2013). The individual has a persistent apprehension that various sorts of misfortune will occur (Carr, 2016). The individual may experience physical symptoms as well, including difficulty concentrating, muscle tension, irritability, sleep disturbances, restlessness, and/or being easily fatigued (American Psychiatric Association, 2013). Children with generalized anxiety disorder tend to worry about their ability to succeed, often concerning future, schoolwork or appearance, and might strive for perfection (Pine & Klein, 2015).

Anxiety disorders are prevalent among youth (Beesdo, Knappe, & Pine, 2009; Costello, Egger, & Angold, 2005). Prevalence estimates tend to vary due to differences in how studies measure anxiety. These differences are for instance information source (e.g., teacher-, parent-, or self- report), which diagnostic system is used (e.g., DSM-III, DSM- IV, DSM-V, ICD-10), how strict the inclusion criteria of participants are (e.g., anxiety disorders or anxiety symptoms), and the number or types of anxiety disorders included (Beesdo et al., 2009).

Across these variations, the estimated lifetime prevalence of anxiety disorders in children and adolescents is between 15% and 20% (Beesdo et al., 2009).

Anxiety disorders in childhood have been found to predict psychopathology in adolescence, including both anxiety and other psychiatric disorders (Bittner et al., 2007). Results from a study of 964 adolescents selected from a birth cohort, showed a significant association between number of anxiety disorders in adolescence (14-16 years) and risk of suicidal behavior, major depression, anxiety disorder, and substance dependence later in life (16-21 years) (Woodward & Fergusson, 2001). Anxiety problems can also have a long-term impact on academic, vocational, and social functioning (Kendall & Ollendick, 2004). Anxiety has been found to often co-occur with other difficulties (e.g., depression) (Cummings, Caporino, & Kendall, 2014).

To summarize, anxiety disorders are prevalent among youth and may have significant negative long-term impact on individuals' functioning, as well as leading to other difficulties later in life. Therefore, it can be argued that studies are needed to examine factors which may cause and/or maintain anxiety problems in children.

## **1.2 Theoretical models in child anxiety**

There are several models that attempt to explain which factors that may cause and/or maintain child anxiety. For example, Carr (2016) proposed a model concerning factors in anxiety problems in childhood. According to this model, factors concerning anxiety can be divided into predisposing, precipitating, maintaining, and protective factors. Protective factors will not be discussed here, as they are beyond the scope of this thesis. According to this model by Carr (2016), the predisposing factors can be divided into personal and contextual factors. The personal predisposing factors include biological and psychological factors, while the contextual predisposing factors include parent-child interactions, family problems, and life stresses in early life (Carr, 2016). The precipitating factors may be stressful life events, separation from a caregiver for a significant period, and lifecycle transitions (Carr, 2016). Both contextual and personal factors may be maintaining factors in child anxiety (Carr, 2016). According to the model, personal maintaining factors are divided into biological and psychological factors, while the contextual maintaining factors are divided into factors in the family system and the treatment system, parental factors, and

factors in the social network (Carr, 2016). It has been argued that it can be difficult to demonstrate that correlates of anxiety are risk factors, because it should be demonstrated that the risk factor is present before the onset of the disorder (Kraemer et al., 1997), and there are several factors that can be argued to be for example both predisposing and maintaining factors as well.

This thesis will focus on family factors concerning childhood anxiety, and therefore a theoretical model concerning child anxiety by Ginsburg and Schlossberg (2002), which they adapted from Rubin and Mills (1991) and Manassis and Bradley (1994) will be used as a theoretical framework (see Figure 1). According to the model, there is a reciprocal relationship between child and parent factors, in the context of stressors in the environment, concerning the development of child anxiety disorders (Ginsburg & Schlossberg, 2002). According to the model, it is hypothesized that child factors, such as early temperament of behavioral inhibition, which is presumed to be due to a genetic predisposition, may lead to a higher level of sympathetic arousal in the child, and a lower threshold of response to novel stimuli (Ginsburg & Schlossberg, 2002). This lower threshold of response to novel stimuli may lead to withdrawal, and an insecure attachment with parents or caregivers (Ginsburg & Schlossberg, 2002). Furthermore, child factors are likely to influence parenting behaviors in caregivers (Ginsburg & Schlossberg, 2002). Concerning the parental factors, according to the model, the history of insecure attachment and temperament in parents may predispose parents to develop psychiatric symptoms (e.g., anxiety) (Ginsburg & Schlossberg, 2002). High levels of anxiety symptoms in parents are, according to the model, hypothesized to interfere with adaptive coping skills in the parents, leading to parenting behaviors which may increase the children's vulnerability of developing anxiety disorders (Ginsburg & Schlossberg, 2002). In addition to child and parent factors, according to the model, there are several environmental factors which may influence the interactions in the family as well (Ginsburg & Schlossberg, 2002).

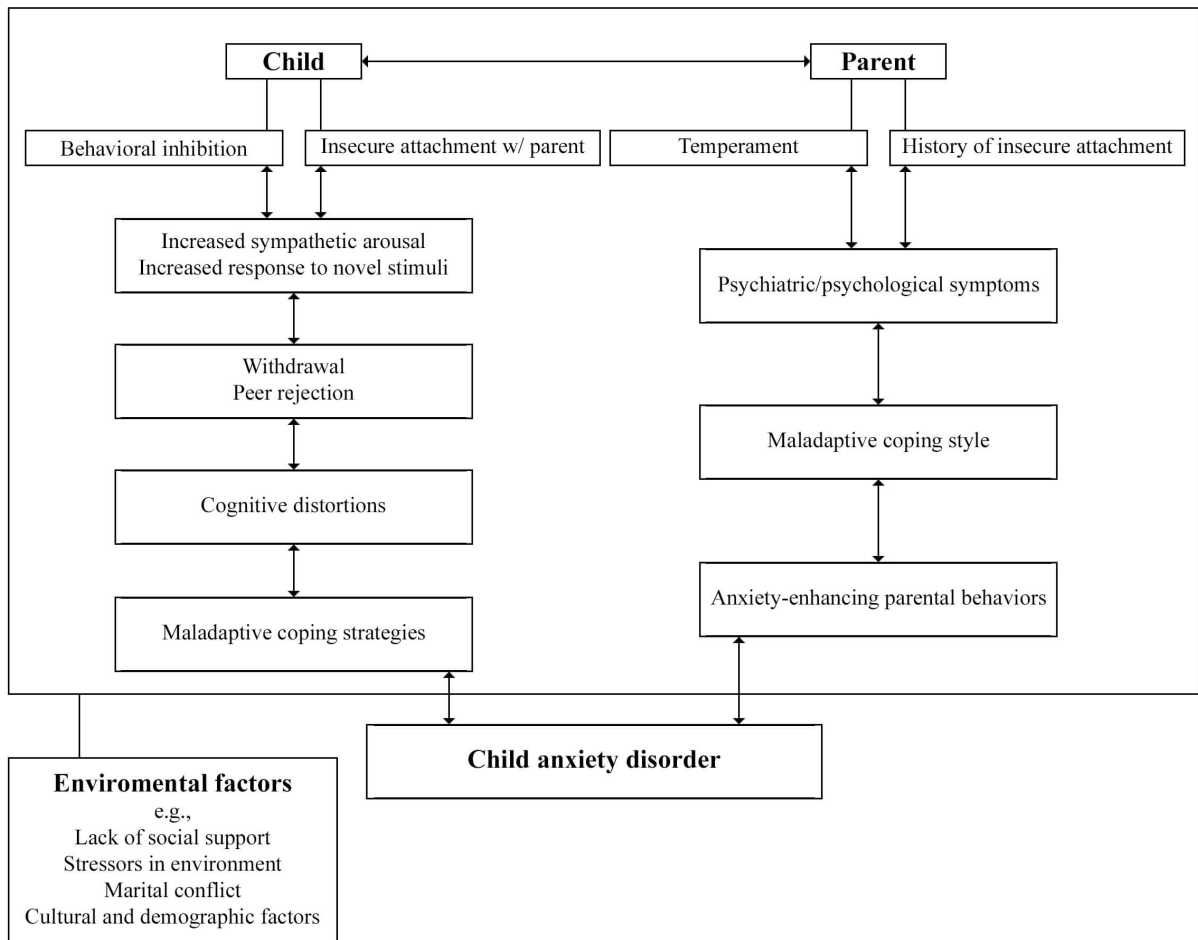


Figure 1. Model of factors in the development of childhood anxiety. Adapted from Ginsburg and Schlossberg (2002).

Child, parental, and environmental factors that have been found to be relevant in child anxiety will be described below. Then the relationships between these factors will be discussed, and then finally the two family factors examined in the present thesis data, namely parental internalizing symptoms and family stress, will be discussed in more detail.

### 1.2.1 Child factors

#### Genetics

In a review of research on the genetics of anxiety disorders, Shimada-Sugimoto, Otowa, and Hettema (2015) found that heritability estimates of anxiety disorders are about 30% to 50%, where twin studies suggest that the anxiety disorders share genetic risk factors. Results from studies of molecular genetics suggest that there are a large number of genes, each with small effects alone, that together account for the heritability of the phenotypes of anxiety disorders (Shimada-Sugimoto et al., 2015). Phenotypes can be defined as the observable characteristics of an organism (Gregory & Eley, 2007). There has been suggested that there are genetic loci

that influence both anxiety and depression (Demirkan et al., 2011), which may suggest some genetic overlap between these two disorders.

### **Temperament**

Temperament can be defined as a stable set of mood and behavior profiles observed in early childhood and infancy (Schwartz, Wright, Shin, Kagan, & Rauch, 2003). Behavioral inhibition is a temperamental trait where the child has a consistent tendency to react with withdrawal and fear when he or she encounters unfamiliar situations (Kagan, 1989).

Behavioral inhibition has been shown to be a risk factor in the development of anxiety disorders, especially social anxiety disorder (Zantvoord, Lindauer, Bakker, & Boer, 2013), and to predict anxiety symptoms as well (Mian, Wainwright, Briggs-Gowan, & Carter, 2011). Chronis-Tuscano et al. (2009) found that stable behavioral inhibition in early childhood and infancy reported by mothers was associated with social anxiety disorder in adolescents. Prior, Smart, Sanson, and Oberklaid (2000) found in a community sample that childhood shyness had a clinically meaningful association with anxiety disorders in adolescence. However, the association was only modest where most children showing shyness did not develop an anxiety disorder (Prior et al., 2000).

### **Neurobiology**

Regarding the neurobiological factors, it is not clear to what degree they are specific correlates of anxiety disorders, or whether they relate to anxiety processing in general (Beesdo et al., 2009). According to the neurobiological hypothesis, it is assumed that anxiety disorders are associated with abnormalities in systems of threat-processing and fear (Carr, 2016). A level of amygdala hypersensitivity in some forms of anxiety has been suggested, however, the findings are inconsistent (Beesdo et al., 2009). For example, McClure et al. (2007) found that adolescents with generalized anxiety disorder showed higher amygdala activation to fearful faces than to happy faces while paying attention to their own subjective fear, as compared to control subjects. Children exposed to high levels of stress over time or who are behavioral inhibited have been argued to exhibit exaggerated activity in the amygdala, resulting in increased activity in the hypothalamic pituitary adrenal (HPA) axis, and increased levels of cortisol (Zantvoord et al., 2013). Increased levels of cortisol during development are then argued to cause altered functioning and development of the pre-frontal cortex in some children, causing insufficient modulation of amygdala activity, and resulting in pathological activation of the fear circuitry and symptoms of anxiety (Zantvoord et al.,



2013). Dysregulation in neurotransmitter systems of GABA and serotonin has been associated with poorer communication between prefrontal cortex and the limbic system, and neurotransmitter systems of glutamate, noradrenaline, and dopamine may also be involved in anxiety disorders (Carr, 2016).

### **Gender and age**

Anxiety disorders tend to occur more frequently among females as compared to males (Beesdo et al., 2009), and this difference between gender tends to increase with age (Craske, 2003). The heritability of anxiety disorders has been found to be greater in females than males, and to increase with age as well (Zavos, Eley, & Gregory, 2013). The vulnerability to develop specific anxiety disorders has been suggested to differ with age as well. The vulnerability to develop generalized anxiety disorder, panic disorder, and social phobia has been found to be more common in adolescence, whereas the vulnerability to develop separation anxiety and specific phobias has been found to be more common in childhood (Seligman & Gahr, 2013).

Parent gender may also influence child anxiety differently. Mothers and fathers have been suggested to have different roles or importance depending on the child's age concerning the etiology of child anxiety, and mothers and fathers may have different effects on their children depending on the child's gender (Bögels & Phares, 2008).

### **1.2.2 Parental factors**

Several parent factors have been identified as possible contributors to child anxiety, including insecure attachment in parents and children, parenting behaviors, parental modeling of anxious behavior, parental beliefs regarding children's anxious behavior, parental psychopathology, and parental reinforcement of avoidant behavior in the child (Bögels & Brechman-Toussaint, 2006; Ginsburg & Schlossberg, 2002). Parental anxious modeling can be defined as a tendency to exhibit avoidant behavior, and anxious feelings or thoughts in front of the child (Drake & Ginsburg, 2012). Attachment can be explained as the quality of the bond between child and parent (Drake & Ginsburg, 2012). In a meta-analysis of 46 studies, including 8907 children, Colonnese et al. (2011) found a moderate association between insecure attachment and child anxiety.

Parenting behaviors have been found to have small to medium associations with anxiety in children (McLeod, Wood, & Weisz, 2007; Van Der Bruggen, Stams, & Bögels, 2008). Parental overcontrol has been defined as the excessive use of instructions and commands, constraining individuality of the child, minimal encouragement of child autonomy, restricting the behavior of the child during tasks, and showing intrusive behavior (Ginsburg & Schlossberg, 2002). Parental overcontrol has been used synonymously with parental overprotection, which has been defined as an excessive use of protective and restrictive behavior and caution (Drake & Ginsburg, 2012; Ginsburg & Schlossberg, 2002). This broad definition of parental overcontrol has been argued to lead to confusion and inconsistencies when interpreting findings from studies regarding the relationship between parental overcontrol and child anxiety (Drake & Ginsburg, 2012). Parental warmth has been defined as parenting behaviors demonstrating acceptance, positive affect, and affection, and a lack of parental warmth may increase child anxiety (Drake & Ginsburg, 2012). Parental rejection/criticism has been defined as parenting behaviors that are overly dismissing, hostile, and disapproving of the child (Drake & Ginsburg, 2012).

### **1.2.3 Environmental factors**

There is some evidence suggesting that childhood adversities and life events are associated with anxiety disorders (Beesdo et al., 2009). Results from epidemiological studies have for example showed associations between anxiety disorders and other mental disorders, as well as parental divorce, loss of caregivers, and sexual and physical abuse in childhood (Beesdo et al., 2009). As mentioned above, this thesis will mainly focus on how family factors may influence child anxiety. Family, adoption, and twin studies have suggested that both non-shared and shared environmental factors have relevant roles in childhood anxiety (Gregory & Eley, 2007). The shared environment (e.g., socioeconomic status) can be defined as influences from the environment that could result in increased similarity between the members of the family, whereas non-shared environment (e.g., peers) can be defined as influences from the environment that could influence siblings in a way that make them differ more from each other (Gregory & Eley, 2007). In a review, Ginsburg and Schlossberg (2002) indicated that anxious children reported more conflict among members of the family, as compared to non-anxious children, however, no difference was found between depressed and anxious children. Higher levels of marital conflict have been associated with higher levels of anxiety symptoms in children (Bögels & Brechman-Toussaint, 2006).

## **1.3 Interactions between child, parental, and environmental factors**

According to the model by Ginsburg and Schlossberg (2002) used as a theoretical framework of this thesis (see Figure 1), there are reciprocal relationships between parental, child, and environmental factors. The mechanisms influencing these relationships will be discussed below.

### **1.3.1 Gene-environment correlations and interactions**

Both genetic and environmental factors have been found to have a substantial contribution to the development of anxiety disorders (Shimada-Sugimoto et al., 2015), and both environmental and genetic factors have been argued to play a role in the familial transmission of anxiety disorders (Drake & Ginsburg, 2011). Environmental and genetic factors can act together in the development and maintenance of anxiety disorders through gene-environment correlations, and gene-environment interactions (Zavos et al., 2013). Gene-environment correlations can be divided into active, passive and evocative (Zavos et al., 2013). Passive gene-environment correlations are for example when the parent passes on to the child both an environment with anxiety enhancing parenting styles and a genetic vulnerability (Zavos et al., 2013). Evocative gene-environment correlations are for example when the child's phenotype (e.g., behavior), which is influenced by a genetic predisposition, evokes reactions in the parent (Zavos et al., 2013). Active gene-environment correlations occur for example when the child actively seeks out, or avoids, situations or experiences according to their genetic predisposition, which may reinforce their genetic vulnerability (Zavos et al., 2013).

Gene-environment interactions occur when a genetic susceptibility is only expressed in the presence of a certain environment, or when a certain environment becomes a risk factor only in the presence of a certain genetic susceptibility (Zavos et al., 2013). An individual's underlying vulnerability has been suggested to interact with exposure to stress (Pine & Klein, 2015). A set of genes has been hypothesized to increase the liability of developing a phenotype (e.g., an anxious personality trait), which then interacts with genes and stressful life events to reach the threshold for the development of one or more anxiety disorders (Hettema, Prescott, Myers, Neale, & Kendler, 2005). Results from a study of female twins aged 14-17 years showed that genetic effects on anxiety were significantly greater in

individuals who were exposed to negative life events, as compared to individuals that had no such experiences, and these differences were due to gene-environment interactions (Silberg, Rutter, Neale, & Eaves, 2001).

### **1.3.2 The family system**

According to family systems hypotheses, it is assumed that family interactions are an important aspect of the development of anxiety disorders, suggesting that individuals who are socialized in families in which caregivers reinforce, elicit and model anxiety-related behaviors and beliefs may develop anxiety disorders (Carr, 2016). Members of the family influence each other, and it has been argued to be a reciprocal relationship between child and parent factors in the context of stressors from the environment (Ginsburg & Schlossberg, 2002). Hughes, Hedtke, and Kendall (2008) found that parental depression and anxiety predicted poor family functioning in families of children with anxiety disorders.

#### **Parenting behaviors**

It has been hypothesized that anxious parents may be more susceptible to parenting stress (Drake & Ginsburg, 2012). This may result in increased use of parenting behaviors that may enhance child anxiety, even though there is only limited support regarding the claim that anxious parents exhibit more overcontrol and less warmth towards their children (Drake & Ginsburg, 2012). Studies have suggested that parental overcontrol has the strongest link to anxiety levels in children, relative to other parenting behaviors that have been examined (Drake & Ginsburg, 2012). Gere, Villabo, Torgersen, and Kendall (2012) found in a study of parents and 190 children aged 7 to 13 years who were referred to mental health clinics, that the significant association between parental overprotection and child anxiety disappeared when controlling for co-occurring child behavior problems. This suggests that parenting behaviors of overprotection may not be uniquely associated with child anxiety (Gere et al., 2012). Children with anxiety disorders may also influence their parents (Connell & Goodman, 2002). For example, characteristics of the child, such as anxiety level, temperament and personality may affect parenting behaviors as well (Hudson, Doyle, & Gar, 2009; Moore, Whaley, & Sigman, 2004). Marital discord, unemployment, lack of social support, and death of a loved one are examples of other factors that have been argued to influence parenting behaviors (Manassis & Bradley, 1994).

In a meta-analytic review, Wilson and Durbin (2010) found parental depression to be significantly associated with higher levels of negative parenting behaviors and lower levels of positive parenting behaviors. Positive parenting behaviors involved, for example, accepting, positive, sensitive, engaging, affectionate, supportive and warm parenting behaviors and/or interactions (Wilson & Durbin, 2010). Negative parenting behaviors involved, for example, controlling, critical, hostile, intrusive, negative, coercive, restrictive, and dysfunctional behaviors and/or interactions (Wilson & Durbin, 2010). Wilson and Durbin (2010) found as well that the association between depression in parents and negative and positive parenting behaviors did not differ significantly for mothers and fathers, suggesting that the association between parental depression and impaired parenting exists for both mothers and fathers. There is some overlap between the parenting behaviors associated with parental depression and the parenting behaviors associated with child anxiety (e.g., overcontrol, warmth, rejection/criticism) (Drake & Ginsburg, 2012; McLeod et al., 2007; Wilson & Durbin, 2010).

### **Parental modeling**

Parental modeling of anxious avoidance and catastrophic thinking have been suggested to be related to the maintenance and etiology of anxiety disorders in children (Wood, McLeod, Sigman, Hwang, & Chu, 2003), although there has also been argued to be only limited support regarding the claim that anxious parents exhibit more modeling of anxious behavior towards their children (Drake & Ginsburg, 2012). In a study of parents and 208 children aged 7 to 14 years seeking anxiety treatment, Wei, Cummings, Villabo, and Kendall (2014) found a significant association between anxious self-talk in mothers and anxious self-talk in youth. However, no significant association was found between fathers' anxious self-talk and anxious self-talk in youth, and youth-perceived maternal acceptance mediated the association between anxious self-talk in youth and mothers (Wei et al., 2014).

### **Threat bias**

Threat bias is a cognitive bias leading a person to interpret an ambiguous situation as threatening or negative (Blossom et al., 2013). A positive correlation has been found between anxiety symptoms in children and threat bias (Hughes & Kendall, 2008). A population study of 40 parents, and their children aged 4 to 10 years showed that parents with higher levels of anxiety interpreted ambiguous situations involving both themselves and their children as more threatening, as compared to parents with lower levels of anxiety (Lester, Field, Oliver, & Cartwright-Hatton, 2009). A population study of 92 children and their mothers showed that

the children with higher rates of threat bias were more likely to believe that their mothers would also perceive situations as threatening in similar ways as themselves (Lester, Seal, Nightingale, & Field, 2010). Moreover, children's expectations regarding their mothers' threat behavior were related to their mothers' expressed anxiety levels and to the children's own interpretation bias, suggesting that parents may reinforce their children's threat bias by how they assist them in the situations they encounter (Lester et al., 2010). Blossom et al. (2013) found that parents who expected their children to have greater threat bias tended to have children who showed higher threat bias when presented with ambiguous scenarios. This finding suggested that parents may be acting in ways that encourage threat bias in their children, based on their experience of how their child has reacted to situations in the past (Blossom et al., 2013).

### **Financial stress**

The family stress model (FSM) by Masarik and Conger (2017), which they adapted from Conger, Conger, and Martin (2010) and Conger and Conger (2002), proposes a theoretical process of how economic stressors may influence adjustment problems in children and adolescents through several pathways (see Figure 2). Economic hardship can be defined as negative financial events (e.g., unemployment), or low income (Masarik & Conger, 2017). According to the FSM, economic hardship and pressure may increase maladjustment in children and adolescents, through psychological distress in parents, relationship problems between parents, and maladaptive parenting (Masarik & Conger, 2017). According to the FSM, there are additional risk factors and protective factors that may influence the process of family stress as well, through both main and interactive effects (Masarik & Conger, 2017). According to the FSM, economic hardship may lead to an experience of economic pressures, which may include for example having to cut back on essential expenses, not being able to pay debts, and so on (Masarik & Conger, 2017). Economic pressure is hypothesized to mediate the association between economic hardship and psychological distress (e.g., depression and/or anxiety) in parents (Masarik & Conger, 2017). It is then hypothesized that psychological distress in parents will lead the parents to experience more problems in their relationship with each other (Masarik & Conger, 2017). According to the FSM, it is then hypothesized that the psychological distress in parents, and conflicts between parents, may lead to maladaptive parenting behaviors. A bi-directional relationship between maladaptive parenting behaviors and conflicts between parents are suggested in the FSM. Maladaptive parenting behaviors are then hypothesized to lead to adjustment problems (e.g., internalizing

symptoms) in children and adolescents (Masarik & Conger, 2017). The protective or risk factors that may moderate the family stress process, according to the FSM, includes community, family, or individual influences in which may enhance or reduce the family stress process (Masarik & Conger, 2017). Examples of additional risk factors may be the neighborhood and low-income families, however additional risk factors in the FSM model are argued to be in need of more theoretical development and empirical research (Masarik & Conger, 2017).

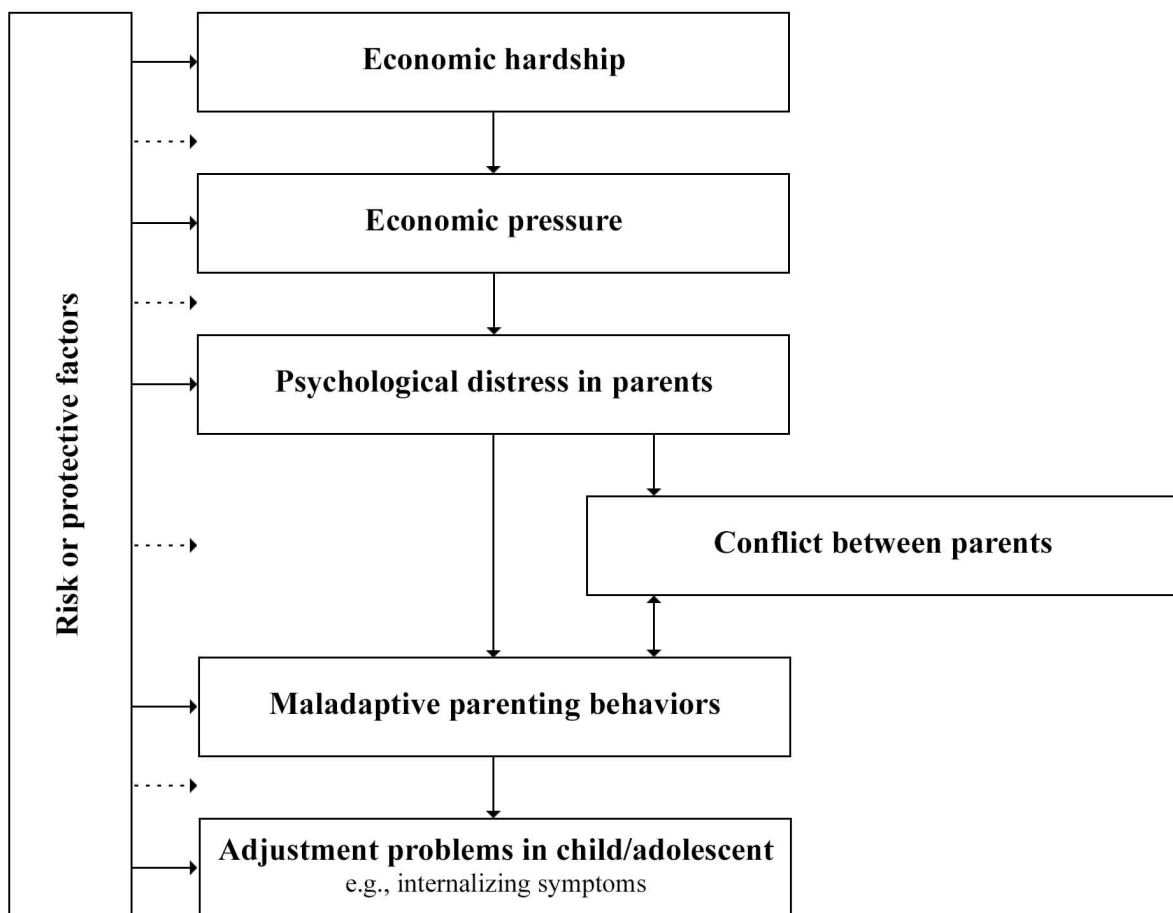


Figure 2. The Family Stress Model. Adapted from Masarik and Conger (2017).

The FSM focuses on how economic hardship may cause pressure in the family, however, there are other factors that may cause pressure in the family as well. For example lack of social support and death of a loved one have been argued to influence parenting behaviors (Manassis & Bradley, 1994).

### **1.3.3 Maternal versus paternal influences**

In a meta-analysis, Möller, Nikolić, Majdandžić, and Bögels (2016) found that the association between parenting behaviors and anxiety symptoms in children aged 0-5 years was stronger for fathers as compared to mothers. Moreover, associations between child anxiety and parental overinvolvement, overcontrol, and overprotection did not differ for fathers and mothers (Möller et al., 2016). However, whereas fathers' challenging parenting behaviors were related to less child anxiety, mothers' challenging behavior was not (Möller et al., 2016).

Fathers' responses when they encounter possible threat may have a bigger influence on children's evaluation of a situation as dangerous, as compared to mothers' responses (Bögels & Phares, 2008). Bögels and Phares (2008) proposed a model concerning the traditional different roles that mothers and fathers may have in the normal development of children's coping with anxiety. Moreover, they hypothesized that fathers may have traditional roles of engaging in risk-taking, physical playing, challenging, and encouraging independence in the child to prevent child anxiety, whereas mothers may have the traditional roles of caring and protecting the child (Bögels & Phares, 2008). Furthermore, they hypothesized that anxious fathers may not be able to encourage risk-taking, engage in physical play, or challenge their child, whereas maternal anxiety may not negatively influence mothers caring and protective behaviors towards the child (Bögels & Phares, 2008). Alternatively, they proposed that both mothers' and fathers' roles may be affected by parental anxiety, however as mothers and fathers may have different roles in different stages of child development, maternal and paternal anxiety may affect children differently (Bögels & Phares, 2008). This model may be restricted to traditional families.

Many studies do not distinguish between mothers and fathers, and it has been pointed out that research on child development has tended to ignore potential effects of paternal psychopathology (Ramchandani & Psychogiou, 2009). Research on parents' role in child anxiety has been argued to focus on mothers, which may neglect possible paternal influences on child anxiety (Bögels & Phares, 2008).



To summarize, the mechanisms in childhood anxiety are complex, with several factors influencing each other, and mothers and fathers may influence child anxiety differently. The focus of the present study of this thesis will be on two family factors and their influence on child anxiety. These two factors are parental internalizing symptoms and family stress which will be discussed in more detail below.

## **1.4 Parental internalizing symptoms**

Parental internalizing symptoms are defined in this thesis as symptoms of anxiety and depression in parents. Research has argued that anxiety disorders tend to aggregate in families (Hettema, Neale, & Kendler, 2001). The literature has indicated a link between parental depression and anxiety in children as well (Colletti et al., 2009). For example, Biederman et al. (2001) found an association between parental major depression and an increased risk of social phobia in children, however not for other anxiety disorders. A study of parents and 230 children, of whom 178 children had anxiety disorders and 52 had no disorder, showed that parents of youth with anxiety disorders were over three times more likely to meet criteria for an anxiety disorder than parents of youth with no disorder (Hughes, Furr, Sood, Barmish, & Kendall, 2009). The same study showed that parents of children with anxiety disorders did not have an increased risk of a lifetime mood disorder (e.g. depression), however, parental self-report suggested higher levels of depressive symptomatology (Hughes et al., 2009). A study of 85 children aged 6 to 16 years with an anxiety disorder recruited from a specialist anxiety disorder clinic, and their parents, showed a strong association between child anxiety disorder and parental anxiety disorder, with a stronger association between child and mother, as compared to child and father (Cooper, Fearn, Willetts, Seabrook, & Parkinson, 2006). The same study also showed a high rate of major depressive disorder (MDD) in mothers of children with anxiety disorders, however they could not test whether maternal MDD alone was a significant predictor of child anxiety disorder, since most of the mothers had comorbid MDD and anxiety disorder (Cooper et al., 2006). In the latter study, only 60% of the fathers were assessed, which might have led to a bias in the results. A study of a high-risk sample (moderate to severe maternal self-rated depressive symptomatology) of 816 youth aged 15 years, and their parents, drawn from a longitudinal cohort, showed that maternal anxiety disorder significantly predicted child anxiety disorder, however, paternal anxiety disorder was not a significant predictor of child anxiety disorder (McClure, Brennan, Hammen, & Le Brocque, 2001). The same study also showed that the

risk of developing child anxiety disorders was greatest in the presence of maternal comorbid anxiety and depressive disorders, but children of mothers with depressive disorders alone had no significant elevated risk (McClure et al., 2001). The latter study also pointed out the absence of a substantial sample of fathers, which might have affected the findings. In a review, Kane and Garber (2004) found that paternal depression was significantly and positively associated with internalizing symptoms in children. In a meta-analysis, Connell and Goodman (2002) found that maternal depression was more related to internalizing problems in children than paternal depression.

In a population study of 337 adolescents and their parents, Fjermestad, Nilsen, Johannessen, and Karevold (2017) found that neither paternal nor maternal self-rated anxiety or depressive symptoms had a significant association with adolescents self-rated anxiety symptoms. They found, however, that parental depression symptoms predicted higher levels of parent-rated adolescent anxiety, suggesting that parental symptoms affect how parents perceive anxiety symptoms in adolescents, however not how adolescents perceive their own symptoms.

To summarize, both paternal and maternal internalizing symptoms have been found to be associated with child anxiety. There are studies that suggest that maternal internalizing symptoms may influence child anxiety more than paternal internalizing symptoms. However, several of these studies point out that a low number of fathers in the sample might have led to bias in the results, and more research is needed regarding the different roles of mothers and fathers in child anxiety.

## **1.5 Family stress**

Chronic and acute stress may put children and parents at increased risk of experiencing relational and psychological problems (Masarik & Conger, 2017). Stress has been defined in various ways. Levine and Ursin (1991) divided stress into four components. These components are the stress stimuli (stressors), the individual's experience of the stress stimuli, the individual's response to the stress stimuli (psychophysiological activation), and the individual's experience of this response. This stress response has been argued to occur when something is missing, and when an organism faces a challenge it does not expect to be able to cope with (Levine & Ursin, 1991).

The family stress model by Masarik and Conger (2017), which was described above (see Figure 2) focuses on how economic problems may lead to a family stress process resulting in adjustment problems in children and adolescents, including internalizing symptoms.

Wittchen, Nelson, and Lachner (1998) found an association between anxiety disorders and experiencing unsatisfactory financial situations. Later studies have shown an association between poor family economy and mental health problems in children as well. For example, Bøe, Øverland, Lundervold, and Hysing (2012) investigated the relationship between socioeconomic status (SES), defined as parental education and family economy, and childhood mental health problems in a Norwegian population-based study of children aged 11 to 13 years. Poor family economy predicted mental health problems in the children, whereas parental education level predicted externalizing disorders in the children stronger than internalizing disorders (Bøe et al., 2012). Huisman et al. (2010) found an association between household income and internalizing and externalizing problems in adolescents, whereas no consistent association were found between maternal education level and internalizing symptoms in adolescents.

As Masarik and Conger (2017) also pointed out, there is a need for more empirical research regarding additional risk factors in the process of family stress. For example, children living in families where a parent has cancer may experience threats, challenges, and changes which may evoke different feelings, thoughts and responses (Helseth & Ulfsæt, 2003). A study of 117 adult patients with cancer, their partners, and their children, showed that both patients and family members were confronted with substantial stress at the time of the diagnosis, and this stress was reflected in symptoms of anxiety and depression in the family members (Compas et al., 1994). Therefore, illness in a family member may be suggested to cause stress in the family, which may lead to psychological distress in family members.

Higher lifetime prevalence of substance use disorder have been reported in first-degree relatives of children with anxiety disorders (Last, Hersen, Kazdin, Orvaschel, & Perrin, 1991), however there is also research that has not found any higher prevalence of substance use disorder in mothers and fathers of children with anxiety disorders (Cooper et al., 2006). A study showed an association between anxiety disorders in children and fathers' increased risk of a lifetime substance use disorder, but this association disappeared when parental lifetime anxiety was controlled for, suggesting that the association between paternal substance use disorder and child anxiety disorder were secondary to paternal anxiety (Hughes et al., 2009).

To summarize, economic hardship may lead to a family stress process, which may result in internalizing symptoms in children. However, other factors than economic hardship may lead to family stress and internalizing symptoms in members of the family. Therefore, the study of this thesis will measure family stress by including more factors than just economic hardship in the family.

## **1.6 The present study**

The main aim of this thesis is to examine the relationship between parental internalizing symptoms, family stress, and children's anxiety symptoms in a clinical sample of children with anxiety disorders. The literature above suggests that it is important to differentiate between mothers and fathers in research on child anxiety, and that child age and child gender might play a role. Paternal and maternal internalizing symptoms will therefore be differentiated, and child age and child gender will be controlled for in the analyses as well.

The data material used was baseline data from a randomized controlled trial (RCT) conducted in seven public child and adolescent mental health outpatient clinics in Western Norway (Wergeland et al., 2014). The clinics covered both urban and rural areas. The aim of that RCT was to examine the effectiveness of cognitive behavioral therapy and to compare the effectiveness of group and individual treatment approaches for children and adolescents with anxiety disorders. The Regional Committee for Medical and Health Research Ethics of Western Norway approved the RCT.

### **1.6.1 Main research question**

The main research question is: Do parental internalizing symptoms and/or family stress predict children's anxiety levels? This question was investigated separately for child self-, mother-, and father- reported child anxiety symptoms, and controlling for child gender and age. This is because the literature suggests that anxiety disorders tend to occur more frequently among females than males, and this gender difference tends to increase with age (Beesdo et al., 2009; Craske, 2003). Mothers and fathers have been suggested to have different importance depending on the child's age and gender (Bögels & Phares, 2008). The issue was investigated separately for child self-, mother-, and father-report because of the importance of including several informants. This is because of the tendency of only small to

moderate agreement between how parents and youth rate youth anxiety (Fjermestad et al., 2017). Children may also show different behaviors in different contexts, and informants may have different perspectives (e.g., attribution bias) on this behavior (De Los Reyes, Henry, Tolan, & Wakschlag, 2009; De Los Reyes & Kazdin, 2005). Negative bias has been found to increase with increased levels of depressive symptoms in individuals (Lee, Mathews, Shergill, & Yiend, 2016), which may influence how parents rate their children.

## **1.6.2 Hypotheses**

### **Hypothesis 1**

Hypothesis 1 is that parental internalizing symptoms will predict levels of anxiety symptoms in children. This is because the literature suggests that parental symptoms of anxiety and depression are associated with anxiety in children (e.g., Hughes et al., 2009).

### **Hypothesis 2**

Hypothesis 2 is that family stress will predict levels of anxiety symptoms in children. This is because the literature suggests that experienced stress in the family may lead to internalizing symptoms in children (e.g., Masarik & Conger, 2017).

### **Hypothesis 3**

Hypothesis 3 is that parents' own internalizing symptoms will affect how they rate children's anxiety symptoms. This is because parental symptoms have been argued to affect how parents perceive anxiety symptoms in adolescents (Fjermestad et al., 2017), and a negative bias has been found to increase with increased levels of depressive symptoms in individuals (Lee et al., 2016).

## **2 Method**

### **2.1 Participants**

The sample consisted of 182 children, 165 mothers, and 72 fathers. The children were between 7 and 15 years old. See Table 1 for participants' background information. Family social class was ranked in accordance with the Registrar General Social Class coding scheme (Currie et al., 2008). Modules of generalized anxiety disorder (GAD), separation anxiety disorder (SAD), or social phobia (SOP) in The Anxiety Disorder Interview Schedule for DSM-IV, parent and child versions (ADIS-C/P; Silverman & Albano, 1996) were used to assess inclusion diagnoses. All children met the DSM-IV criteria for a principal diagnosis of GAD, SAD, or SOP (American Psychiatric Association, 1994). Exclusion criteria were mental retardation, pervasive developmental disorder and/or psychotic disorder. Informed written consent was obtained from parents, and assent was obtained from children aged 12 years or older.

Table 1

*Background information*

	<i>M</i>	<i>SD</i>	<i>n</i>	<i>%</i>
Child Age	11.5	2.09		
Child Gender				
Female			95	52.2
Male			87	47.8
Ethnicity				
Caucasian				90.7
Asian				1.6
Not reported				7.7
Principal Diagnosis				
SOP			84	46.4
SAD			59	32.6
GAD			38	21.0
Comorbid SAD, SOP and/or GAD			125	69.1
Other Comorbidity				
Other specified anxiety disorders			25	13.8
ODD and/or ADHD			16	8.8
Tic disorder			12	6.6
Depression			21	11.6
Family Composition				
Two-parent household				57.5
Single-parent household				19.9
Biological parent and step-parent				13.3
Foster family				1.6
Not reported				7.7
Family Social Class				
High				30.4
Medium				51.4
Low				7.7
Not reported				10.5

*Note.* SAD= Separation Anxiety Disorder. SOP= Social Phobia. GAD= Generalized Anxiety Disorder. ADHD=Attention Deficit Hyperactivity Disorder. ODD= Oppositional Defiant Disorder. Other specified anxiety disorders= Mainly specific phobia. Family Social Class= Registrar General Social Class coding scheme.

## **2.2 Measures**

### **2.2.1 Spence Children's Anxiety Scale**

The Spence Children's Anxiety Scale (SCAS; Spence, 1998) was used to assess child anxiety symptoms. This is a self-report measure to assess anxiety symptoms in children. The SCAS was completed by children (SCAS-C), mothers (SCAS-M) and fathers (SCAS-F). The SCAS comprises 38 items, rated on a 4-point scale (from 0= never to 3= always), with a maximum possible score of 114. The child version also has 6 filler items that are positively worded, to reduce negative response bias. These filler items are not included in the total child score. The remaining items cover social phobia, generalized anxiety, separation anxiety, physical injury fears, panic/agoraphobia and obsessive-compulsive disorder symptoms. SCAS has been found to have acceptable psychometric properties, and the total SCAS has been reported to have a six months test-retest reliability of .60 (Spence, 1998). Significant correlations over .70 have been found between the SCAS total scores and the Revised Children's Manifest Anxiety Scale (Spence, 1998; Spence, Barrett, & Turner, 2003). Internal consistency (Cronbach's alpha) in the current sample was good to excellent (Mothers  $\alpha=.85$ , Fathers  $\alpha=.90$ , Children  $\alpha=.91$ ).

### **2.2.2 Depression Anxiety Stress Scale**

The Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) was used to assess parental internalizing symptoms. The DASS was completed by both mothers (DASS-M) and fathers (DASS-F) and is used to assess parents' self-rated anxiety, depression, and tension-stress symptoms. The DASS comprises 42 items, rated on a 4-point scale (from 0=hardly ever to 3= almost always), with a maximum possible score of 126. The DASS has been reported to have satisfactory reliability, and convergent and discriminant validity (Lovibond & Lovibond, 1995). Internal consistency (Cronbach's alpha) in the current sample was excellent (Mothers  $\alpha= .95$ , Fathers  $\alpha: .94$ ).

### **2.2.3 Family Stress Scale**

The Family Stress Scale (FSS; Goodman, Ford, Richards, Gatward, & Meltzer, 2000) was used to assess family stress. The FSS is a part of The Development and Well-Being Assessment (DAWBA; Goodman et al., 2000), and was completed by parents. The FSS covers multiple stressors (e.g., economic problems, everyday time pressure, tension in



relationship with partner or ex-partner, illness in the family), and parents rate how much the different stressors make the family life stressful. The scale comprises 13 items, and are rated on a 3-point scale (from 0= no, or doesn't apply to 2= a lot), with a possible maximum score of 26. The DAWBA has been reported to have good to excellent reliability (Ford, Goodman, & Meltzer, 2003), and to discriminate well between clinical and community samples (Goodman et al., 2000). Internal consistency (Cronbach's alpha) for the FSS in the current sample was acceptable ( $\alpha=.69$ ).

## **2.3 Statistical analyses**

Descriptive statistics, Pearson product-moment correlations and standard multiple linear regression were performed. Preliminary analyses were performed to investigate violation of the assumptions of normality and outliers. Independent-samples t-tests were performed to compare the scores on internalizing symptoms for mothers and fathers, to compare the scores on parent-rated child anxiety symptoms for mothers and fathers, and to compare the scores on child self-rated anxiety for boys and girls. According to the criteria of Cohen (1988), correlations between .10 to .29 were interpreted as small, between .30 to .49 as medium, and between .50 to 1.0 were interpreted as large.

# 3 Results

## 3.1 Preliminary analyses

Regarding the distributions of the scores for child self-, mother-, and father-reported child anxiety symptoms, there was no kurtosis above 0.5 or skewness above 0.9. Regarding the distributions of scores for maternal and paternal internalizing symptoms and family stress, skewness and kurtosis patterns suggested that the assumption of normality might be violated, with the distributions being positively skewed (Family stress: Kurtosis: 7.8, Skewness: 2.3. Parental internalizing symptoms: Kurtosis: 7.0/8.7, Skewness: 2.5/2.6). However, as the parent sample is non-clinical, a positively skewed distribution is expected. Outliers were investigated and Mahalanobis distance was high in all the regression models. However, the Cook's distance values suggested that the outliers would have no undue influence on the results for the regression models. Extreme cases were investigated and interpreted as to represent true scores and was therefore kept to maintain true variance. The assumption of no multicollinearity was met. Missing data were handled by using the option of excluding cases pairwise to retain as much variance as possible when performing correlation analyses in SPSS. Missing data were handled by using the option of excluding cases listwise to get more stable models when performing regression analyses in SPSS. The correlations between the subscales of DASS were significant and large, and therefore only the DASS total scores were included in the analyses.

## 3.2 Descriptive statistics

See Table 2 for descriptive statistics for the child anxiety symptoms variables, and p-values from independent-samples t-tests. There was a significant difference in scores for boys and girls on child self-rated anxiety symptoms, with girls scoring higher.

Table 2

*Children's anxiety symptoms rated by children, mothers, and fathers*

Variable	Total sample		Boys	Girls	<i>p</i>
	<i>Min-Max</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	
SCAC-C	4.0-84.0	36.0 (16.6)	32.2(16.6)	39.3(16.1)	.005
SCAS-M	11.0-76.0	34.9(12.8)	36.2(12.9)	33.8(12.8)	.217
SCAS-F	10.0-71.0	33.0 (14.1)	33.5(14.6)	32.3(13.7)	.735

*Note.* Min-Max= Range of minimum to maximum scores. SCAS= Spence Children's Anxiety Scale. C=Child. M= Mother. F= Father.

See Table 3 for descriptive statistics for the parental internalizing symptoms variable for both mothers and fathers, as well as the p-value from independent-samples t-test. There was no significant difference in the scores for mothers and fathers.

Table 3

*Parental depression, anxiety, and tension-stress symptoms*

Variable	<i>Min-Max</i>	<i>M(SD)</i>	<i>p</i>
DASS-M	0-92.4	12.0 (14.5)	.061
DASS-F	0-54.3	8.4 (11.5)	

*Note.* Min-Max= Range of minimum to maximum scores. DASS= Depression Anxiety Stress Scale. M=Mother. F=Father

See Table 4 for the distribution of family stress. Experienced family stress was reported by parents and most of the respondents were mothers (68.7%). 19.6% of the parents reported all the types of family stress as “no/doesn't apply”.

Table 4

*Percentages of reported family stress in families of 182 children and adolescents with anxiety disorders*

Type of stress	No/doesn't apply	A little	A lot
Unemployment	88.5	2.7	1.1
Work situation	70.3	15.9	6.0
Economical problems	76.9	12.6	2.7
Home inadequate for family needs	81.9	8.8	1.6
Neighbours/neighbourhood problems	88.5	3.3	0.5
Everyday time pressure	38.5	47.3	6.6
Tension in relationship with partner	74.2	15.4	2.7
Tension in relationship with ex-partner	80.8	9.3	2.2
Parental physical health	75.8	14.8	1.6
Parental psychological health	76.4	11.5	4.4
Illness in others (e.g., extended family)	78.6	9.9	3.8
Alcohol/drug use by a family member	85.7	3.8	2.7
Gambling by a family member	92.3	0.0	0.0

### 3.3 Associations between variables

See Table 5 for Pearson product-moment correlations between the variables. There were seven significant positive correlations. These were a) small between child self-rated anxiety symptoms and both mother- and father-rated child anxiety symptoms; between mother-rated child anxiety symptoms and internalizing symptoms in mothers; between family stress and mother-rated child anxiety symptoms b) medium between child self-rated anxiety symptoms and internalizing symptoms in fathers; between family stress and internalizing symptoms in mothers c) large between mother-rated child anxiety symptoms and father-rated child anxiety symptoms.

Table 5

*Pearson's correlations for variables*

Variables	1	2	3	4	5	6	7
1. SCAS-C	1	.26***	.27*	.35**	.09	-.01	.08
2. SCAS-M		1	.77***	.17	.27***	.18*	-.11
3. SCAS-F			1	.23	-.04	.01	-.02
4. DASS-F				1	.22	-.05	.04
5. DASS-M					1	.37***	.02
6. Family stress						1	-.07
7. Child age							1

Note. SCAS= Spence Children's Anxiety Scale. DASS= Depression Anxiety Stress Scale. C=Child. M=Mother. F=Father. \*Correlation is significant at the  $p<.05$  level, \*\*correlation is significant at the  $p<.01$  level, \*\*\*correlation is significant at the  $p<.001$  level.

### 3.4 Regression analyses

Three regression models were run (see Table 6). The first model predicted child self-rated anxiety symptoms (SCAS- C) from mothers' (DASS-M) and fathers' (DASS-F) self-rated internalizing symptoms, family stress, child age, and child gender. This model was significant and explained 21.0% of the variance (adj.  $R^2$ ) in child self-rated anxiety symptoms. Fathers' internalizing symptoms was the only unique significant predictor of child self-rated anxiety symptoms.

The second model predicted mother-rated child anxiety symptoms (SCAS- M) from mothers' self-rated internalizing symptoms (DASS- M), family stress, child age, and child gender. This model was significant and explained 6.0% of the variance (adj.  $R^2$ ) in mother-rated child anxiety symptoms.

The third model predicted father-rated child anxiety symptoms (SCAS- F) from fathers' self-rated internalizing symptoms (DASS-F), family stress, child age, and child gender. The overall model was not significant, however, fathers' internalizing symptoms was a significant predictor of father-rated child anxiety symptoms.

Table 6

*Standard multiple regression models*

Dependent variables	Predictors	<i>B</i>	<i>CI</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>p</i>	<i>Adj. R<sup>2</sup></i>	<i>F</i>
<u>Model 1</u>								.21	3.70**
SCAS-C	DASS-F	.61	(.07 - 1.15)	.27	.31*	2.28	.028		
	DASS-M	.27	(-.16 - .69)	.21	.19	1.27	.209		
	Family stress	2.16	(-.90 - 5.22)	1.52	.20	1.42	.162		
	Child age	-.99	(-3.39 - 1.42)	1.19	-.11	-.83	.414		
	Child gender	6.15	(-2.68 - 14.98)	4.38	.18	1.40	.168		
<u>Model 2</u>								.06	3.38*
SCAS-M	DASS-M	.15	(-.02 - .31)	.08	.16	1.77	.079		
	Family stress	.59	(-.18 - 1.37)	.39	.13	1.51	.133		
	Child age	-.42	(-1.35 - .51)	.47	-.07	-.90	.370		
	Child gender	-3.03	(-7.02 - .96)	2.02	-.12	-1.50	.135		
<u>Model 3</u>								.01	1.17
SCAS-F	DASS-F	.40	(-.001 - .80)	.20	.26*	2.00	.050		
	Family stress	-.02	(-1.66 - 1.61)	.82	-.003	-.03	.979		
	Child age	-.07	(-1.81 - 1.68)	.87	-.01	-.08	.940		
	Child gender	-3.46	(-10.53 - 3.62)	3.53	-.13	-.98	.332		

*Note.* SCAS= Spence Children's Anxiety Scale. DASS= Depression Anxiety Stress Scale. C= Child. M= Mother. F= Father. \* Significant at the  $p < .05$  level, \*\* significant at the  $p < .01$  level. *Adj. R<sup>2</sup>*= Adjusted *R<sup>2</sup>*. *CI*= 95% confidence intervals for unstandardized coefficients.

## **4 Discussion**

The aim of the present thesis was to examine the relationship between parental internalizing symptoms, family stress, and anxiety symptom levels in a clinical sample of children with anxiety disorders. It was expected that parental internalizing symptoms and family stress would predict child anxiety symptoms. Mothers' and fathers' internalizing symptoms were expected to influence how parents rated anxiety symptoms in their children.

### **4.1 Main findings**

#### **4.1.1 Parental internalizing symptoms and child anxiety symptoms**

There was a significant association between parental internalizing symptoms and child self-rated anxiety symptoms, however only for fathers. Paternal internalizing symptoms was a significant predictor of children's self-rated anxiety symptoms, whereas maternal internalizing symptoms were not. This is an interesting finding and suggests differences in how mothers' and fathers' internalizing symptoms influence anxiety symptoms in children. This finding is contrary to studies which have shown stronger associations between maternal internalizing symptoms and child anxiety (e.g., Connell & Goodman, 2002; Cooper et al., 2006). However, the finding is in line with studies which have suggested that fathers may have a more influential role in childhood anxiety than mothers, and may influence child anxiety in a different way as compared to mothers (e.g., Bögels & Phares, 2008; Möller et al., 2016).

Investigating the mechanisms through which parental internalizing symptoms may influence child anxiety symptoms was beyond the scope of the present thesis. The literature has indicated that both parental anxiety and depression are associated with anxiety in children (e.g., Biederman et al., 2001; Colletti et al., 2009; Hughes et al., 2009). Some genetic overlap between anxiety and depression has been suggested (Demirkan et al., 2011), which may indicate that parental anxiety and depression influence child anxiety through some common mechanisms. For example, some parenting behaviors that are associated with parental depression overlap with parenting behaviors associated with parental and child anxiety (e.g., overcontrol, warmth, rejection/criticism) (Drake & Ginsburg, 2012; McLeod et al., 2007; Wilson & Durbin, 2010). This may suggest that the associations between depression and anxiety in parents and child anxiety may be moderated by maladaptive parenting behaviors.

Earlier research has suggested some factors that may influence the relationship between parental internalizing symptoms and child anxiety. For example, some of these factors are biological (e.g., genetics), some factors are related to modeling of anxious behavior (e.g., anxious self-talk), some are related to anxiety enhancing parenting behaviors (e.g., increased overcontrol, rejection, and criticism, and decreased warmth), some are related to cognitive bias (e.g., threat bias) in child and parent, and some are related to negative interaction patterns in the family (e.g., conflict between parents) (Drake & Ginsburg, 2012; Lester et al., 2009; Masarik & Conger, 2017; Shimada-Sugimoto et al., 2015; Wei et al., 2014; Wilson & Durbin, 2010; Wood et al., 2003).

However, the mechanisms concerning the development and maintenance of childhood anxiety are complex, and the relationship between parents and children is reciprocal (Ginsburg & Schlossberg, 2002). Genetic predispositions and environmental factors influence each other through both gene-environment correlations and interactions (Zavos et al., 2013).

A study by Bögels, Stevens, and Majdandžić (2011) presented children aged 9 to 12 years with short stories in which the child had to imagine being confronted with an ambiguous social situation where their fathers or mothers acted anxious or confident. The children were then supposed to indicate how confident or anxious they would have been in the imagined situation. High socially anxious children were more influenced by fathers' behaviors, whereas children in general or with low levels of social anxiety were more influenced by mothers' behaviors (Bögels et al., 2011). This may suggest that fathers are more influential than mothers regarding reinforcement of social confidence in highly socially anxious children, and as well that fathers who exhibit anxious behaviors may influence highly anxious children more than mothers (Bögels et al., 2011). A study by Bögels, Bamelis, and van der Bruggen (2008) of 121 children referred with anxiety disorders, 38 control children, and their parents, showed that both mothers and fathers of clinically anxious children were more controlling during family discussion tasks than parents of non-anxious children. However, fathers with anxiety disorders controlled their children more during the family discussion task than fathers with no anxiety disorder, and this difference was not found for mothers with and without anxiety disorders (Bögels et al., 2008). Parental overcontrol has been suggested to have the strongest link to anxiety levels in children, relative to other parenting behaviors that have been examined (Drake & Ginsburg, 2012).



Bögels and Phares (2008) proposed a model in which father's traditional roles (e.g., encouraging risk taking, physical playing, challenging the child) in children's development of normal coping with anxiety may be negatively influenced by paternal anxiety, whereas mother's traditional roles (e.g., caring, protection) in children's normal coping with anxiety may not be negatively influenced by maternal anxiety. Alternatively, Bögels and Phares (2008) proposed that both mothers' and fathers' roles may be affected by parental anxiety, however as mothers and fathers may have different roles in different stages of child development, maternal and paternal anxiety may affect children differently. For example, maternal anxiety in adolescence may restrain the mother in her role of letting go, whereas paternal anxiety may restrain the father in his role regarding helping the adolescent in the transition to the world outside the family (Bögels & Phares, 2008). However, the model by Bögels and Phares (2008) may be restricted to traditional gender role families. Furthermore, Möller et al. (2016) found paternal challenging parenting behaviors, including playfully encouraging the child to go outside her or his comfort zone and risky behaviors, to be related to less child anxiety, however challenging parenting behaviors in mothers were not.

To summarize, in the light of earlier research described above, the finding that paternal internalizing symptoms was a significant predictor of child self-rated anxiety symptoms, whereas maternal internalizing symptoms were not, may partially be explained as follows: Fathers who exhibit anxious behaviors may influence highly anxious children more than mothers (Bögels et al., 2011), and all the children in the sample had an anxiety disorder. Fathers' with anxiety symptoms may show higher levels of parenting behaviors of control, than mothers with anxiety symptoms (Bögels et al., 2008). Since some research has shown parental overcontrol to be the parenting behavior that is most associated with child anxiety (Drake & Ginsburg, 2012), a tendency of anxious fathers to exhibit more control than anxious mothers may partially explain why paternal internalizing symptoms was a significant predictor while maternal internalizing symptoms was not. It may also be that the suggested traditional roles fathers may have in the development of children's normal coping with anxiety, may be more influenced by fathers' anxiety than mothers' traditional roles may be by their own symptoms (Bögels & Phares, 2008). It should be noted that there is only limited support regarding the claim that anxious parents exhibit more overcontrol and less warmth towards their children, and there has also been argued to be only limited support regarding the claim that anxious parents exhibit more modeling of anxious behavior towards their

children (Drake & Ginsburg, 2012). Parenting behaviors have also been found to have small to medium associations with anxiety in children (McLeod et al., 2007; Van Der Bruggen et al., 2008). More research is therefore needed to investigate the different influences paternal and maternal internalizing symptoms may have in child anxiety.

It should be noted as well that since the present study did not differentiate between depressive and anxiety symptoms in parents, and rather used the total score of DASS, it remains unclear whether it was paternal depressive symptoms, anxiety symptoms, tension-stress symptoms, or a combination, that lead paternal internalizing symptoms to be a significant predictor of child anxiety symptoms. However, the correlations between the subscales of the DASS, which measure parental symptoms of anxiety, depression, and tension-stress, were significant and large.

#### **4.1.2 Parental internalizing symptoms and parent-rated child anxiety**

It was expected that parental internalizing symptoms would affect how the parent rated anxiety symptoms in the child. Negative bias has been found to increase with increased levels of depressive symptoms in individuals (Lee et al., 2016), which may suggest that parents with elevated levels of depressive symptoms may rate higher levels of anxiety in their children as a consequence of negative bias. Parental symptoms have been shown to affect how parents perceive anxiety symptoms in adolescents (Fjermestad et al., 2017). The results of the present thesis did support this to some degree. Fathers' internalizing symptoms was a significant predictor of how they rated their child's anxiety symptoms. Note that the overall regression model for father-rated child anxiety symptoms was not significant, which makes the results more difficult to interpret. This may be a consequence of the relatively low number of fathers, i.e., the model being underpowered. The scores on paternal internalizing symptoms were positively skewed as well, with most of the fathers rating low levels of internalizing symptoms. Therefore, the results concerning the relationship between fathers' internalizing symptoms and how fathers rated anxiety in their children should be interpreted with caution.

There was a significant correlation between maternal internalizing symptoms and mother-rated child anxiety symptoms. Note that the overall regression model for mother-rated child anxiety symptoms was significant, however, none of the predictor variables were alone a significant predictor of mother-rated child anxiety symptoms. This suggests that the predictor

variables in that regression model together predicted mother-rated child anxiety symptoms, however, the level of contribution each of the predictor variables brought to the model remains unclear. There was a significant correlation between family stress and maternal internalizing symptoms, which may be why neither maternal internalizing symptoms nor family stress came out alone as significant predictors of mother-rated child anxiety symptoms. The scores on maternal internalizing symptoms were positively skewed, indicating that most of the mothers reported a low level of internalizing symptoms. This may contribute to why maternal internalizing symptoms was not found as a significant predictor of mother-rated child anxiety symptoms. Overall, the results regarding the regression model for mother-rated child anxiety symptoms should be interpreted with caution.

#### **4.1.3 Parent-child correspondence in rating child anxiety**

There were significant correlations between how parents and children rated levels of child anxiety symptoms, however, the correlations were small. There was a significant correlation between how mothers and fathers rated anxiety symptoms in their children, and this correlation was large. This shows higher correspondence between how mothers and fathers rated levels of anxiety symptoms in their children, as compared to the level of correspondence between how children and parents rated levels of anxiety symptoms in the child. This is in line with previous studies. For example, Fjermestad et al. (2017) found that parent and adolescent ratings of adolescent anxiety symptoms in a non-clinical sample were significantly and small to medium correlated (father-adolescent  $r=.25$ ; mother-adolescent  $r=.30$ ), which is similar to the results of the present thesis. It may be surprising that the results of the present thesis, which had a clinical sample of children, did not show any higher correspondence between parent-child ratings than the non-clinical study by Fjermestad et al. (2017). Anxiety has been argued to mainly be an internal phenomenon, and therefore parents may not be aware of all the symptoms the child may experience (Comer & Kendall, 2004). Higher correspondence has been found between informants when asked to rate externalizing problems in children, as compared to ratings of internalizing problems in children (De Los Reyes et al., 2015; De Los Reyes & Kazdin, 2005). This has been suggested to be a consequence of externalizing problems being more observable than internalizing problems (De Los Reyes & Kazdin, 2005). However, one might expect that parents of children with anxiety disorders who are referred to treatment would be more aware of their child's anxiety symptoms than parents of non-referred children. However, the results from the present thesis

did not find any higher parent-child correspondence than the non-clinical study by Fjermestad et al. (2017), suggesting that parents of referred children may not be more aware of their children's anxiety symptoms than parents of non-referred children. De Los Reyes et al. (2015) also found small correlations concerning child-parent correspondence on ratings of child internalizing symptoms in a meta-analysis of studies regarding cross-informant correspondence from 1989 to 2014. The results from the present thesis did find large correlations between mother-father ratings of child anxiety symptoms, whereas the results from the non-clinical study by Fjermestad et al. (2017) found small correlations between parent ratings. This may suggest a higher correspondence between mothers' and fathers' ratings of child anxiety when the child is referred to treatment than when the child is not referred to treatment. However, more research is needed to investigate this differentiation.

Social desirable responding (SDR) has been referred to as a tendency of responding to self-report measures in a way to present oneself in an overly favorable light (Tracey, 2016). Social desirable responding has been suggested to account for some of the discrepancies between children's self-ratings and ratings from other informants, however, mixed results have been found (De Los Reyes & Kazdin, 2005).

#### **4.1.4 Family stress and child anxiety symptoms**

There were significant correlations between family stress and both mother-rated child anxiety symptoms and maternal internalizing symptoms. This supports the family stress model by Masarik and Conger (2017) to some degree, where economic hardship is hypothesized to have an association with both parental distress and internalizing symptoms in children. Note, however, that in the present thesis family stress had no association with internalizing symptoms in fathers, father-rated child anxiety symptoms, or how children rated their own anxiety symptoms. This may suggest that family stress may affect mothers in a different way, as compared to fathers and children. It may also reflect the fact that most raters of family stress were mothers. Cross-informant effects (e.g., between mother-rated family stress and father-rated symptoms) are typically harder to detect.

It is important to note that the associations found in the correlation analysis do not say anything about the direction of the relationships. In addition, family stress did not predict any of the child anxiety symptom variables. Family stress not being found as a significant

predictor of child anxiety symptoms may be a consequence of the positively skewed distribution of the scores on family stress. However, the results from the regression analysis of the model for mother-rated child anxiety symptoms, which was discussed above, suggest that family stress plays a role in children's anxiety symptoms. Further research is needed to further investigate the role of family stress in child anxiety.

#### **4.1.5 Child age and gender**

No significant associations were found between child age and any other variable. This is contrary to the suggestion that maternal and paternal internalizing symptoms may affect children differently in different stages of child development (Bögels & Phares, 2008).

Girls reported significantly higher levels of anxiety symptoms than boys. This is in line with earlier research which have shown that anxiety disorders tend to occur more frequently among females than males (Beesdo et al., 2009). The heritability of anxiety disorders has been found to be greater in females than males (Zavos et al., 2013).

## **4.2 Future implications**

The findings of the present thesis, along with earlier literature, stress the importance of including both mothers and fathers in research of parental influences on child anxiety. Paternal internalizing symptoms may influence child anxiety in different ways than maternal internalizing symptoms, and mechanisms that may influence this differentiation should be examined. The results suggest that family stress may be associated with child anxiety and maternal internalizing symptoms, however, it remains unclear how the mechanisms of these associations work. More research is needed regarding how family stress may influence members of the family and childhood anxiety.

In a review, Wei and Kendall (2014) argued that all though there are several parental factors that have been found to be important in the development and maintenance of anxiety in childhood, research on family-based interventions have shown mixed results, and more research is needed. However, there is some evidence which suggests that family-based interventions may have a beneficial effect in the presence of high level of conflict between parents and the child, and parental psychopathology (Wei & Kendall, 2014). When a child has an anxiety disorder, the results of this thesis suggest that clinicians should investigate

whether there is a presence of internalizing symptoms in the mother, and especially the father of the child, which may influence child anxiety symptoms.

### **4.3 Strengths of the thesis**

The thesis included a large sample of children who were clinically referred, and all the children included were diagnosed with an anxiety disorder using a well-validated diagnostic tool. Therefore, the sample of children can be argued to represent a valid clinical sample. Both child-, mother-, and father-report were used when assessing anxiety symptoms in the child, in line with previous research recommendations, as children may behave differently in different contexts, that informants may exhibit attribution bias and negative bias, and that there has been found only small to moderate agreement between how parents and youth rate anxiety in youth (De Los Reyes et al., 2009; De Los Reyes & Kazdin, 2005; Fjermestad et al., 2017; Lee et al., 2016). Family stress was measured by including more stressors than just economic stressors, and the need for research on additional stressors regarding family stress has been pointed out earlier (Masarik & Conger, 2017).

### **4.4 Limitations**

Although the present thesis included a substantial sample of fathers, the sample of mothers was over two times bigger than the father sample. It is therefore unclear whether the scores of the fathers who participated can be generalized to the fathers who did not participate. For example, it may be that fathers with higher levels of internalizing symptoms did not participate. This might have led to bias in the results. The scores on both family stress and parental internalizing symptoms were positively skewed. However, the parent sample is non-clinical, and a positively skewed distribution on internalizing symptoms is therefore expected. Most of the participants were Caucasian, and the results may therefore not be generalized to families of other ethnicities. Most of the families were two-parent households, however, whether the parents were married or not was not accounted for. Furthermore, the findings may not be generalized to for example family compositions with parents of the same gender, single-parent households, divorced parents, or families where children live with non-biological parents.

Only the DASS total scores were used, therefore it remains unclear whether parental depressive symptoms, anxiety symptoms, tension-stress, or a combination, lead to the

associations between parental internalizing symptoms and other variables. The correlations between the subscales of DASS were significant and large, suggesting that the subscales would unlikely predict the child anxiety symptom variables differently. Therefore, only the total score on internalizing symptoms for mothers and fathers were used. The different types of family stressors measured by the FSS were not differentiated in the analyses. If one were to investigate whether the different family stressors were possible predictors of child anxiety, a bigger sample size would have been necessary. The FSS is a self-report measure. Therefore, only the parents' subjective experience of family stress regarding the different stressors in the FSS were measured, whereas the presence of the different family stressors in the families was not measured.

The measures of DASS and SCAS have been found to have acceptable psychometric properties. The FSS-scale used to assess family stress is a part of the DAWBA, however, no studies which investigate the FSS-scale directly was found. The DAWBA has been found to demonstrate good to excellent reliability (Ford et al., 2003). There exist various recommendations regarding the minimum acceptable levels of internal consistency (Ponterotto & Ruckdeschel, 2007). Some researchers recommend that the internal consistency coefficient should be at least between .60 and .70 to be at an acceptable level (Ponterotto & Ruckdeschel, 2007). However, there are other researchers that recommend that the internal consistency coefficient should be at least .70, and some even recommend that the internal consistency coefficient should be at least .80 to be at an acceptable level (Ponterotto & Ruckdeschel, 2007). The internal consistency of the FSS in the current sample being .69, therefore may be problematic.

## **4.5 Conclusions**

Findings suggest differences in how mothers' and fathers' internalizing symptoms may influence anxiety symptoms in children with anxiety disorders. Furthermore, the results suggest that family stress may have a role in maternal internalizing symptoms and anxiety symptoms in children with anxiety disorders. More research is needed to explain the possible mechanisms which these associations may operate through. According to the literature, paternal internalizing symptoms may affect child anxiety symptoms differently than maternal internalizing symptoms, for example through parenting behaviors. Parenting behaviors were not included as a variable, and more research is needed to explain why paternal internalizing

symptoms may influence anxiety symptoms in children more than maternal internalizing symptoms. Future studies should include larger samples of fathers to test whether the findings of the present thesis may be replicated. Studies should further investigate the association between family stress and child anxiety, with use of a broad measure of family stress including more stressors than just economic stressors.



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