April 2022

Examining the relationship between functionally assessed parental behavior and child anxiety

Allison Smith

EXAMINING THE RELATIONSHIP BETWEEN FUNCTIONALLY ASSESSED PARENTAL BEHAVIOR AND CHILD ANXIETY

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agriculture and Mechanical College
in partial fulfillment of the
requirements for the degree of
Masters of Arts

in

The Department of Psychology

by
Allison C. Smith
B.S., Louisiana State University, 2019
May 2022

Table of Contents

Abstract

Etiological theories of child anxiety suggest an interaction of multiple factors that lead to the development and maintenance of child anxiety. Environmental influence, specifically that involving the family or parent, has been a target area of study for decades. Additionally, functional assessment of behavior indicates that certain behaviors may be maintained primarily by specific functions. Functional assessment has been successful at identifying functions of problematic behavior and planning treatment accordingly. However, in the realm of child internalizing disorders, research has not utilized functional assessment in this way. Acknowledging the impact of parental behavior on child anxiety as well as the need for both improved technology for identification of functions of anxiety symptomology and promising treatment strategies, this study expands the literature of functional assessment to child anxiety. 204 children were selected from an existing database of youth and their parents who presented to LSU's Psychological Services Center. Parents have completed a measure on their own behavioral response to their child's fearful behavior, and children have completed a measure on their own reported anxiety. Data was analyzed through one standard multiple regression and three bivariate linear regressions. It was hypothesized that there would be a positive relationship between parental behavior and child anxiety, a negative relationship between child age and parenting behavior, and a differential relationship between types of parental behavior. Results indicate that parental control alone positively predicted child anxiety.

Introduction

Anxiety is defined by excessive or persistent emotional and behavioral response to a future threat, which exceeds that which is developmentally appropriate (American Psychiatric Association, 2013). An anxiety disorder is present when fearful or anxious emotions and their associated behaviors are disproportional to the context and cause significant impairments in functioning (Higa-McMillan et al., 2014). Together, anxiety disorders are the most common type of psychiatric disorders in children, with some researchers estimating one third of adolescents meet criteria for an anxiety disorder by age 18 (Merikangas et al., 2010). Attempts to understand the development of childhood anxiety have led to extensive research in biological, cognitive, and environmental influences. It is widely acknowledged that most anxiety disorders develop and persist due to a combination of various factors (Higa-McMillan et al., 2014). However, further examination of these contributing influences is necessary to deepen the understanding of and develop effective treatments for child anxiety.

Functional assessments have been developed as a means to understand the relationship between behavior and environment (O'Neill et al., 1997). Functional assessments examine "functions" of behavior by assessing what is maintaining behavior (e.g., attention, escape, demands, tangible reinforcers, etc.). In the literature, they have been used to extrapolate functions of problematic behavior (typically in conduct disorders or especially in developmental disabilities) to make treatment decisions (Jeong & Copeland, 2020). Functional assessments can take many forms, the most reliable and valid being an experimental functional analysis (EFA; Matson et al., 2019). However, time and resource limitations surrounding EFAs have led to an increase in alternative direct and indirect measures of functional assessment (Matson & Minshawi, 2007). EFAs can also be time-intensive, inconclusive for behaviors that occur

infrequently, and even dangerous for intense or serious behavior, making EFAs a less than ideal choice in many situations.

While prior research has focused on the functional assessment of child behaviors in developmental disabilities and externalizing disorders, few studies have used functional assessment to examine the underlying reinforcement of internalizing problems. Research shows that when internalizing disorders (e.g., anxiety) are assessed functionally, they are correlated with specific maintaining variables (Kearney & Silverman, 1993). Evidence suggests that assessing a behavioral function and subsequently designing a treatment program based on that assessment results in better treatment plans and outcomes (Jeong & Copeland, 2020). Examining how child anxious behavior is maintained is a particularly important area of study. Thus, this study investigated of the indirect functional assessment of parental behavior on child anxiety.

Etiological Models of Child Anxiety

Various developmental models of child anxiety have been proposed and investigated. Early models of child anxiety were explained by psychoanalytic theory (Freud, 1955/1909) and behavioral theory (Watson & Rayner, 1920). Freud pointed to his case study of "Little Hans," claiming that unconscious processes are responsible for child phobia development. Later, Watson used his experiment of conditioned fear on "Little Albert" to provide evidence for classical conditioning theories affecting child fear development. While outdated, these studies were some of the first to investigate etiological theories of child fear and anxiety, thus prompting interest and paving the way for further examination. In more recent literature, factors such as genetics, neurobiology, temperament, learning influence, and familial influence have dominated (Higa-McMillan et al., 2014).

In the literature it is well established that there are significant genetic influences on anxiety (Bartels et al., 2007; Eley et al., 2003). Understanding that anxiety runs in families, Higa-McMillan, Francis, and Chorpita (2014) explain that the challenge for researchers has been attempting to piece apart the contributions of genetic and environmental factors. Twin studies have been the host for this research. Some findings suggest genes are the driving factor for anxiety development while others suggest environment is the key factor. In examining twins in the Netherlands, Bartels and colleagues (2007) found that genetic influence accounted for the most variance in child anxiety. However, other research shows that environmental contributions (60-70%) are much greater than those of genetics (30-40%) (Cannon et al., 1998; Gross & Hen, 2004; Hettema et al., 2001). The discrepancy in the literature calls for a deeper understanding of the degree to which genes influence anxiety, particularly child anxiety development. However, despite the competing findings, there is a general understanding that genetics alone cannot fully explain child anxiety. There is likely an interaction between genes and environment that lead to the expression of certain genetic predispositions (Gross & Henn, 2004).

Affective neuroscience uses technology such as MRI (Molent et al., 2017) and fMRI (Gold, et al., 2020) to understand the importance of size and activity of certain brain structures involved in affective disorders including anxiety and depression (Higa-McMillan et al., 2014). The main brain structures of interest in anxiety are the amygdala, prefrontal cortex, and hippocampus. Research on the amygdala, responsible for processing emotional reactions and memories (Higa-McMillan et al., 2014), has found increased size of amygdala associated with increased anxiety (Schienle et al., 2011). Research using fMRI, also indicates that activation of the amygdala is greater for fearful stimuli (Büchel & Dolan, 2000) as well as for anxious individuals (Nitschke et al., 2009). The hippocampus (responsible for emotional memories) and

the prefrontal cortex (responsible for executive functioning) are highlighted in affective neuroscience literature (Higa-McMillan et al., 2014).

Literature focused on the effects of learning and cognition on child anxiety has centered around information-processing (Daleiden & Vasey, 1997) and conditioning (Pavlov, 2003; Watson & Rayner, 1920). Daleiden and Vasey's (1997) stage model of information processing outlines the role of cognitions in childhood anxiety (Higa-McMillan et al., 2014). Their theory, which has been supported by others, explains how anxious children will selectively attend to threatening information (Beck et al., 1985; Daleiden & Vasey, 1997; Kendall & Ronan, 1990). Furthermore, anxious children exhibit interpretation bias, skewing their perception of threats, increasing their tendency to anticipate catastrophes, decreasing their coping expectations, and causing them to underestimate positive events (Higa-McMillan et al., 2014). Conditioning occurs when an unconditioned, or neutral, stimulus is paired with a fearful stimulus and over time, the neutral stimulus alone comes to eventually elicit a fearful response (Higa-McMillan et al., 2014). This learned fear can be due to direct or indirect (vicarious/observed) conditioning. Watson and Rayner's (1920) study of conditioned fear on Little Albert paved the way for further examination.

Conditioned child fear has been studied both retrospectively and prospectively. Townend and colleagues (2011) examined pathways to fear using retrospective parent report of child fear of dentists. They found that child fear was largely related to conditioning, seemingly acquired through the child's perception of their past experience. Unfortunately, retrospective reporting can be prone to memory bias and forgetting which leads often to inaccurate data (King et al., 1998). To date, less research has examined fear conditioning prospectively due to ethical concerns; but some studies have successfully done so (Higa-McMillan et al., 2014). Lau and

colleagues (2008) were able to increase fear of images in both anxious and non-anxious youth through classical conditioning, pairing one image with an aversive shriek until it elicited fear. Negative information has also been used to study the conditioning of fear prospectively. Field and Lawson (2003) were able to elicit fearful beliefs as well as fearful behavioral responses using negative information about animals. The literature surrounding vicarious conditioning reveals learned fear in children as early as infancy (de Rosnay et al., 2006). De Rosnay and colleagues found infants to be more fearful of strangers after their mothers expressed an anxious reaction to the stranger. Research has found the effect of vicarious learning to increase with one's perceived relatedness to the observed (Brown, 1974). This understanding further supports a model based on environmental influence, particularly those involving the influence of close peers or family members.

Familial Impact

The influences of genetics, neurobiology, temperament, and cognitions on child anxiety have been examined for decades. Each plays an essential role in the understanding of child anxiety and its development. However, this paper will focus on the influence of familial impact. Familial influence has been explained by a multitude of factors from parenting styles to parents' own anxiety (Hudson et al., 2011). Bögels and Brechman-Toussaint (2006) explored the literature and found several potential factors (i.e., attachment, family functioning, parental beliefs, and parenting style and behavior).

Parent-child attachment has been recognized as a risk factor for child anxiety (Hudson et al., 2011). Insecure attachment, developed from a lack of consistent sensitivity from caregivers, has been shown to transfer between parents and children and results in increased anxiety for both parent and child (Barnett et al., 1991; Colonnes et al., 2011; Manassis et al., 1995). Shamir-

Essakow and colleagues (2005) discovered that children with anxious mothers and insecure attachment were more likely to have anxiety. Furthermore, when controlling for maternal anxiety, insecure attachment still predicted child anxiety. Although the literature reveals insecure attachment is related to child anxiety (Colonnesi et al., 2011), it is also related to other temperamental and parenting factors, making it difficult to parse these influences apart (Higa-McMillan et al., 2014).

Bögels and Brechman-Toussaint (2006) explored overall family functioning and environment. Differences in levels of various family factors such as cohesion, adaptability, and dysfunction have been attributed to the maintenance of child anxiety (Bögels & Brechman-Toussaint, 2006). Scales such as the Family Environment Scale (FES) have been developed to deepen the understanding of these effects (Moos & Moos, 1986). Research on family cohesion has yielded inconsistent results, some claiming that increased cohesion is associated with greater child anxiety (Peleg-Popko & Dar, 2001) and others claiming cohesion to be unrelated to child anxiety (Nomura et al., 2002). Acknowledging these inconsistencies, the literature proposes that aspects of family environment may instead serve as mediating factors between child temperament and anxiety (Degnan et al., 2010). A certain child temperament may elicit a specific environment and in turn lead to anxiety development (Hudson et al., 2011).

In evaluating what factors impact parental behavior, it is important to consider not only child anxiety but also parental perceptions of child anxiety. Research indicates that parental beliefs of their child's functioning can influence parent behavior more so than their child's actual state (Rubin et al., 1999). These beliefs about a child's anxiety can impact parental response, indirectly affecting child anxiety. Micco and Ehrenrich (2008) demonstrated that parents of anxious children perceive their child's abilities more negatively. The impact, however, of these

parental beliefs on child anxiety may rely on the child's knowledge of them (Higa-McMillan et al., 2014). Some research hypothesizes that a child's anxiety may only be affected when parental beliefs are explicitly communicated (Becker & Ginsburg, 2011).

Hudson, Dodds, and Bovopoulos (2011) explain parenting style in regard to two dimensions: negativity (commonly referred to as rejection or lack of warmth) and control (also termed overprotection, over-involvement, or over-control). Parental negativity is typically thought of as a lack of acceptance and involves high criticism. Over-control describes a pattern of high vigilance and intrusion and excessive regulation. It is thought to limit child autonomy (Bögels & Brechman-Toussaint, 2006). Some research indicates that irrespective of their own anxiety, mothers of anxious children have been found to be more negative and grant less autonomy (associated with over-control) than mothers of non-anxious children (Moore et al., 2004). Taken together, most of the literature in this area has found strong evidence for the relationship between child anxiety and parental over-control and less evidence for the relationship between child anxiety and parental rejection (Bögels & Brechman-Toussaint, 2006; Higa-McMillan et al., 2014; Hudson et al., 2011;). However, Bögels and Brechman-Toussaint (2006) proposed that while low warmth alone does not have a strong association to child anxiety, when paired with high control it may have stronger implications (Higa-McMillan et al., 2014).

In addition to genetic risk factors, parental anxiety can impact that of the child by affecting parent behavior, thus altering the child's environment (Hudson et al., 2011). Parental behavior has increased child anxiety through promoting avoidant behavior (Sicouri et al., 2017) and modeling anxious behavior (Bögels & Brechman-Toussaint, 2006). Gerull and Rapee (2002) showed that maternal behavior can produce avoidance even in infants. Other research has shown that child anxiety, rather than parental anxiety, can also influence anxious parenting

behaviors (Hudson et al., 2009). This cycle of anxious behavior and anxious behavioral response between parent and child makes it difficult to identify the root cause of child anxiety. Nonetheless, it is evident that parental behavior can play a critical role in the initiation and exacerbation of child anxiety (Bögels & Brechman-Toussaint, 2006). What is apparent is that many factors contribute to the onset and maintenance of child anxiety. Parental influence, specifically that related to parenting behavior, is important in understanding the development of child anxiety.

Child Anxiety and Family Accommodation

While parental behavior has been incorporated into the understanding of child anxiety in various ways (Bögels & Brechman-Toussaint, 2006; Gerull & Rapee, 2002; Hudson et al., 2011; Sicouri et al., 2017) recent literature surrounding the link between parenting behaviors and child anxiety has centered on family accommodation (Benito et al., 2015; Lebowitz, 2013; Thompson-Hollands, 2014). Family accommodation refers to how parents alter their behavior in an effort to reduce child distress (Lebowitz et al., 2013). It has been defined by several characteristics: modification of family routines, excessive reassurance, participating in symptoms, and assisting avoidance (Benito et al., 2015; Lebowitz, 2013; Thompson-Hollands, 2014). Research suggests a link between family accommodation and child anxiety (Kagan et al., 2016). The literature shows not only that family accommodation maintains client symptoms but it is also associated with poor family functioning and increased family stress (Cavoloressi et al., 1995). Family accommodation first entered the literature in Obsessive Compulsive Disorder research (Calvocoressi et al., 1995) and was later adapted to study child and adolescent anxiety (Benito et al., 2015; Lebowitz, 2013; Thompson-Hollands, 2014).

Family accommodation of OCD patients has been related to increased symptom severity, lower functioning, and worsened treatment response (Wu et al., 2015). Recognizing the significant role of family members in the maintenance of obsessive and compulsive symptoms, Calvocoressi and colleagues developed the Family Accommodation Scale (1995) to investigate this effect. The first scale was a clinician-rated measure given to relatives of adult patients with OCD (Calvocoressi et al., 1999), and developed to assess type and frequency of accommodating behaviors as well as the severity of the consequences when accommodation was refused (Wu et al., 2015). The scale was later revised and became known as the Family Accommodation Scale – Interviewer Rated (FAS-IR; Calvocoressi et al., 1999). Since, revised versions have been developed to increase cost-effectiveness and validity (Albert et al., 2010; Pinto et al., 2012). A parent-rated version based off of the original FAS was developed and is commonly referred to as the Family Accommodation Scale – Parent Rated (FAS-RS; Albert et al., 2010; Wu et al., 2015). Pinto and colleagues (2012), in hopes of increasing standardization of the measure, developed the Family Accommodation Scale – Self Report (FAS-SR) based off of the FAS-IR instead of the original FAS. More recently, the Family Accommodation Scale – Patient Version (FAS-PV) was developed, showing good psychometric properties and validity for patient report of accommodation (Wu et al., 2015).

Once family accommodation entered the anxiety domain all measures were rated by parents, and more often than not by mothers. Thus, it is somewhat misleading in the literature to refer to it as family accommodation. In 2013, Lebowitz and colleagues adapted the FAS in order understand family accommodation in anxiety, creating the Family Accommodation Scale – Anxiety (FAS-A). This was a 9-item questionnaire designed to assess frequency of parental accommodation over the past month. Their research concluded that accommodation was even

higher in families with an anxious child than in families with a child diagnosed with OCD (Lebowitz et al., 2013). The questions fell into two broader domains: modification (i.e. changing family routines, doing things for child, modifying work schedule or leisure activities) and participation (i.e. providing items, participating in symptoms, assisting avoidance). Results suggested that child anxiety predicted family accommodation, specifically separation anxiety disorder, school anxiety, and generalized anxiety disorder. These findings prompted an expansion of research on family accommodation in child anxiety.

Other scales were developed to assess accommodation in families with anxious children, expanding to focus on areas of impact and interference of accommodation (Benito et al., 2015; Thompson-Hollands, 2014). Thompson-Hollands and colleagues (2014) claimed that looking at frequency alone did not give the entire picture, explaining that some frequently occurring accommodations (i.e. letting your young child sleep with you) are not highly interfering while some infrequent accommodations (i.e. picking child up from school) are much more interfering. They found that accommodation was related to age (areas of accommodation decreasing with increasing child age), diagnosis (only with Generalized Anxiety Disorder, Separation Anxiety Disorder, and Specific Phobias), and maternal stress and anxiety. Interestingly, accommodation was not tied to paternal measures of stress or anxiety.

The previously mentioned scales have been successful in identifying some changes parents can make to their own behavior to positively impact their child's anxious behavior. However, by narrowing the focus to parental accommodation research has failed to explore other domains of potentially impactful parenting behavior. Furthermore, the current scales of family accommodation have defined various domains of accommodation (i.e. excessive reassurance, assisting avoidance, modification of routines, etc.) but have failed to investigate these domains

independently. It is also unclear from the current literature how much of these accommodating behaviors are related to child anxious behavior rather than parental anxiety.

Developmental Considerations

The contributions of genetic and environmental factors appear inversely proportional throughout development. Research has found that genetic influences are strongest for young children and decrease with age, while environmental influences increase throughout development and are strongest in older children (Bartels et al., 2007). In contrast, Feigon and colleagues (2001) examined a large sample of children age 3 to 18 and found that genetic influence increases with age while environmental influence decreases with age. Other research suggests differential maternal responding to child anxious behavior based on age, indicating that younger children receive a response of over-control while older children's anxious behavior is more likely to be ignored (Mills & Rubin, 1993). Lebowitz and colleagues (2013), however, found no significant differences in parental accommodation based on child age. This discrepancy in the literature calls for further investigation of the differential impact of genes and environment on children throughout development. When considering impact from the environment versus that created by parents, it is important to consider that a younger child's environment is more limited and potentially impacted more heavily by the parent.

Functional Assessment

Functional Assessment Defined

Psychologists have used the terms "function" or "functional" to describe a variety of phenomena (i.e. functionalism, adaptive functioning, function of behavior; Ruth et al., 2001). The process of functional assessment involves connecting specific behaviors to external situations, thus revealing antecedent variables and consequences that control behavior.

Functional assessment made its debut in the behaviorism literature, under B.F. Skinner (Ruth et al., 2001). Skinner identified and classified variables that affected behavior. He also went on to propose methods of experimental manipulation that could reveal a functional relationship between behavior and environment (Skinner, 1953).

Functional behavioral assessment (FBA) refers to collection and interpretation of data related to the function of a problematic behavior (Matson et al., 2019). FBAs aim to identify the maintaining variable or variables for challenging behaviors and, subsequently, allow for the implementation of an effective treatment plan (Sterling-Turner et al., 2001). Recognizing its utility and evidence base, the Individuals with Disabilities Education Act (IDEA) mandates using FBA to develop a behavioral intervention plan (McMahan & Frick, 2019). There are various FBA procedures, the most vigorous and complex being experimental functional analysis (EFA) (Matson et al., 2019). EFA is defined as "direct observation of potential maintaining variables systematically manipulated by the experimenter" (Matson & Minshawi, 2007).

An EFA typically consists of four assessment conditions: alone, attention, play/ tangible, and demand (Iwata et al., 1994; Wightman et al., 2014). The alone condition limits stimuli, both social and tangible, allowing the experimenter to observe behavior independent of positive reinforcement. Presence of the challenging or target behavior in this condition would be indicative of possible automatic reinforcement. In the attention condition, social attention (e.g., brief verbalizations like "stop that you'll hurt yourself," facial expressions, brief physical contact) is contingent upon problematic behavior. The experimenter is in the room and provides attention only when the problematic behavior appears. Occurrence of the behavior in this condition would suggest that it might be maintained by positive reinforcement in the form of attention. The play condition involves access to both social (i.e. experimenter attention) and

tangible (i.e. preferred toys) reinforcement. This condition is considered a control condition; thereby behavior is expected to be low. In the escape from demands condition the experimenter has the client engage in low-preference activities and provides a withdrawal of the low-preference activity upon the presence of behavior. Behavior in this condition is believed to be maintained by escape (Wightman et al., 2014). These highly controlled environments reveal whether behavior is maintained primarily by automatic reinforcement, attention (positive reinforcement), access to tangible items (positive reinforcement), escape from demands (negative reinforcement), or various combinations of these variables.

Transition to other modes of EFA

While EFAs provide reliable and accurate means of behavioral assessment (Matson et al., 2019), they are not the easiest to execute. A standard EFA can take up to five hours (Wightman et al., 2014), require highly skilled personnel, and involve many resources which may not be feasible (Matson et al., 2019). Even then, results may not be clear and additional sessions may be needed, particularly in the case of low frequency target behaviors. While aggressive and dangerous behaviors should be minimized during clinical assessment (Wightman et al., 2014), these maladaptive behaviors are reinforced during EFAs for a while in order to learn their functions. It can also be difficult to gain clinically useful information about a child's behavior from schools and families due to the highly controlled setting of EFAs . Further, while EFAs have been used frequently to assess behaviors of individuals with developmental or cognitive delays, they may not be an appropriate method to assess behaviors of intellectually sophisticated individuals who can more see through the conditions of the EFA.

These limitations led to alternative methods of identifying maintaining variables (Matson & Minshawi, 2007). One approach to improve efficiency is the brief EFA, which consists of

single, five-minute sessions of each condition (Wightman et al., 2014). This method was successful at reducing time; however, it seems to be a solution primarily for individuals with high-frequency behaviors, as many clients fail to present behavior in this limited time frame (Derby et al., 1992). An alternative solution is descriptive assessment. This involves direct observation of the antecedent, behavior, and consequences in the client's natural environment (Matson et al., 2019). While leaving a controlled environment decreases experimental control, observation and charting of the problematic behavior in a natural setting can offer beneficial insight. A third suggestion is indirect assessment measures such as questionnaires (Matson et al., 2019).

One measure developed for indirect functional assessment was the Motivation Assessment Scale (MAS) (Durand & Crimmins, 1988). This is a descriptive measure used to determine the strength of functions of self-injurious behavior. Another measure that has shown inter-rater and test-retest reliability is the Questions About Behavioral Functioning (QABF) (Matson & Vollmer, 1995). The QABF is a 25-item questionnaire that inquires how often a problematic behavior occurs in a particular situation or for a particular gain. Designed to assess five functions (i.e escape, attention, nonsocial, tangible, and pain-related) of problematic behavior and to develop targeted treatments for these behaviors, the QABF has successfully identified antecedents and resulted in effective treatment plans (Paclawskyj et al., 1999). Additionally, when compared to EFA, the QABF has shown clinical utility and is an effective tool for assigning behavioral functions (Healy et al., 2013). These indirect measures of functional assessment are less costly (e.g., require less highly trained personnel and less time), do not provide reinforcement for maladaptive target behaviors, and can be given for low frequency behaviors that are not captured in an EFA. Using indirect assessments such as questionnaires

allows clinicians to gain information about behaviors that have been occurring outside of the clinic on a daily basis in a cost effective way.

Functional Assessment of Internalizing Problems

Functional assessments have typically been used to understand what may be maintaining challenging behaviors, usually in the areas of conduct disorders or intellectual disability (Matson & Minshawi, 2007; Sterling-Turner et al., 2001). However, less formal functional assessments are also used in cognitive-behavioral therapy (CBT) to reveal the process by which a client's thoughts, feelings, and actions develop (Kemp & Freeman, 2019). While the literature and government have shown support for functional assessment (Paclawskyj et al., 1999; IDEA, 2004) there has been little research exploring functional assessment in internalizing problems.

Early research on social deficits found that functional assessment could be beneficial (Trower et al., 1978). Trower and colleagues revealed significantly greater treatment response in clients whose treatment targeted their specific functional deficit (i.e. lack of social skills or social anxiety). Later research built upon this by examining whether social phobia is maintained primarily by behavioral factors (i.e. social deficit) or physiological reactors (i.e. heart rate) (Ost et al., 1981). The results of this study revealed that targeting the maintaining variables associated with social phobia enhances treatment response. In 1984, McKnight and colleagues used functional assessment in depression. Using two models to examine maintenance of depression (i.e. lack of social skills and negative cognitions), they discovered differential functions. Their findings emphasized the importance for conducting functional assessments and the significant impact it can have on treatment implications.

More recently, Kearney and Silverman (1993, 2004) led the literature with their research on child functional assessment for school refusal. They hypothesized a differential role of

positive and negative reinforcement in children with internalizing versus externalizing symptoms explaining that children who receive positive reinforcement (i.e. attention, tangibles) for school refusal behavior are more inclined to respond with noncompliance when faced with parental commands, as opposed to children who receive negative reinforcement (i.e. escape, avoidance) who are more likely to encounter stimuli provoking negative affectivity (Kearney & Silverman, 1993). Consistent with their hypotheses, child-rated internalizing problems were correlated most strongly with avoidance (a type of negative reinforcement) and parent-rated externalizing problems were correlated with both types of positive reinforcement. Surprisingly however, parent-rated internalizing problems were correlated with all reinforcement types, both positive and negative. In 2004, Kearney and Silverman conducted another study on truant behavior, hypothesizing that avoidance, escape, attention, or tangible reinforcers may maintain this behavior. Using the School Refusal Assessment Scale (SRAS), modeled after the MAS (Durand & Crimmins, 1988), Kearney and Silverman functionally assessed school refusal and confirmed it with behavioral observation. They noted that behavior could be attributed to more than one function. For example, an anxious child may begin truant behavior in order to avoid aversive stimuli (i.e. avoidance) but if the child contacts a positive reinforcer after avoiding the stimuli, this may serve as a secondary reinforcer. Kearney and Silverman ran a factor analysis establishing three main factors of the SRAS, negative reinforcement (highly associated with internalizing behaviors), tangible (highly associated with externalizing behaviors), and attention-seeking (associated with both).

Another measure developed for functional assessment of adult anxiety is the Motivation for Fear (MOTIF-A)-Adult (Nebel-Schwalm & Davis, 2011). The MOTIF-A was adapted from a child version of the MOTIF that was informally in use and was itself adapted from the QABF

(with permission). Similar to the QABF, the MOTIF targets functions of behavior using a questionnaire format filled out by the child's parent. The MOTIF was adapted to assess the function of parental behavior in response to child fear or anxiety (e.g., allowing access to desired items, offering comfort, allowing escape from fearful stimuli). The MOTIF has demonstrated reliability and validity and has promising implications for treatment of adult anxiety (Nebel-Schwalm & Davis, 2011). Davis and colleagues' original MOTIF for children (Davis, 2006) is finally being prepared for publication and an initial investigation of the psychometric properties and validity are very promising (Davis et al., 2020). It was designed to extend the functional assessment literature into the field of typically developing children with internalizing symptoms (i.e., fear and anxiety). The result is a 22-item questionnaire completed by parents regarding the frequency of their own behavioral responses to their child's fearful behavior. Similar to the QABF, the MOTIF has promising clinical utility in assessments as well as guiding treatment.

A factor analysis revealed four factors: positive reinforcement, negative reinforcement, child fear, and control (or accommodation). Some items in the positive reinforcement scale include: "How often does he/she get your attention during or after being afraid?", "How often does he/she have someone comfort him/her during or after being afraid?", and "How often does he/she get a safety item during or after being afraid?". Example items in the negative reinforcement scale include: "How often does he/she get to leave the situation during or after being afraid?", "How often does he/she get to avoid the situation because he/she might get afraid?", and "How often does he/she appear to feel better after successfully leaving or avoiding the fear situation?". Items in the child fear scale include: "How often does he/she behave afraid because he/she is scared?", "How often does he/she become afraid if he/she encounters the situation alone?", and "How often does he/she say bad things will happen either before or after

being afraid?". Some items included in the control scale are: "How often does he/she get an item you or someone else has during or after being afraid?", "How often does he/she become the focus of the situation or activity during or after being afraid?", and "How often does he/she get his/her own way during or after being afraid?".

Present Study and Rationale

It is understood that parents play a significant role in their child's wellbeing, specifically in the development and maintenance of anxiety disorders. While supported in the literature for decades, there has been minimal movement towards utilization of functional assessment of internalizing problems, specifically in children. Furthermore, the lack of treatment response for a significant minority of children with anxiety disorders prompts consideration of alternative methods to further enhance the assessment and treatment of childhood disorders (Davis et al., 2011). In light of this evidence, this study expanded upon existing research by using a functional assessment to examine the effect of parental response to child fearful behavior (as measured by the MOTIF subscales negative reinforcement (NR), positive reinforcement (PR), and control (C)) on child anxiety severity (as measured by the RCMAS-2 Total Anxiety T-score), child age on parental response to child fear (as measured by the MOTIF subscales NR, PR, and C), and differential impact of parental behavior subscales on the MOTIF (i.e. negative reinforcement, positive reinforcement, and control) on child anxiety. Due to a lack of consistency in the research on differential impact of parental behaviors on specific anxiety disorders, hypotheses were not made on which specific subscales of the RCMAS-2 would be affected by parent response.

Hypotheses

Hypothesis 1: Parental behaviors, as measured by the MOTIF subscale scores negative reinforcement (NR), positive reinforcement (PR), and control (C), will positively predict child anxiety severity, as measured by the RCMAS-2 total T-score.

Hypothesis 2: Parental negative reinforcement of child fearful behavior, as measured by the MOTIF subscale negative reinforcement (NR), will more strongly predict child anxiety, as measured by the RCMAS-2 total T-score than control (C) and positive reinforcement (PR).

Hypothesis 3: Child age will negatively predict parental reinforcement behaviors, as measured by the MOTIF subscale scores negative reinforcement (NR), positive reinforcement (PR), and control (C) (i.e. increase in child age will decrease parent MOTIF scores).

Methods

Participants

Participants were obtained through an existing database of children and their parents who presented to the Psychological Services Center on Louisiana State University's campus for psychoeducational evaluations. The participants received their assessments from graduate student clinicians pursuing their doctorate in clinical psychology under the supervision of a licensed clinical psychologist. Each participating family agreed to have their de-identified data used for research purposes. Parent and child consent as well as Institutional Review Board approval were obtained at the start of the assessment. Children and adolescents were selected from an original database of more than 700 youth and families based on having completed both of the measures included in this study: the MOTIF and the RCMAS-2 (see Measures section). 204 children and adolescents (ages 6-16 years, M = 10.34, SD = 2.88) met the requirements to be included for this study. The sample consisted of 110 males (53.9% and 94 females (46.1%). The youth participating in the study predominately identified as Caucasian (n = 170, 83.3%), with the remaining children identifying as African American (n = 27, 13.2%), Hispanic (n = 2, 1.0%), Asian (n = 3, 1.5%), or other (n = 2, 1.0%).

Measures

Motivation for Fear (MOTIF)

The MOTIF (Davis, 2006) is a 22-item self-report parent measure used to functionally assess parental response behavior to child fear. Using a three-point Likert scale (1 = rarely, 2 = some, 3 = a lot), parents were asked to rate how often they engage in various response behaviors in situations when their child is fearful. The items are derived into four subscales: negative reinforcement, positive reinforcement, control, and child fear. The MOTIF has demonstrated

good internal consistency (Cronbach's α = .86 for the positive reinforcement, .81 for negative reinforcement, .80 for the control subscale, and .87 for child fear) in a normative sample.

Revised Children's Manifest Anxiety Scale – Second Edition (RCMAS-2)

The RCMAS-2 (Reynolds & Richmond, 2008) is a 49-item self-report questionnaire that measures level and nature of anxiety in youth. Children and adolescents answer each question using a yes-no format. Items are scored '0' when there is absence of the symptom and '1' when the symptom is present. The RCMAS-2 yields three anxiety subscale scores (Physiological Anxiety, Worry, and Social Anxiety), a Total Anxiety score, and a Defensiveness score. Due to research suggesting differences in gender and sex in reporting of anxiety symptoms, gender and age norms have been created for the RCMAS-2. The RCMAS-2 has demonstrated good internal consistency (Cronbach's α = .92 for the Total Anxiety score) in a normative sample.

Procedure

Institutional Review Board approval was obtained for the database, consisting of over 700 families. Prior to the assessments, parental informed consent and child assent were obtained. Only the parent-child dyads that met the inclusion criteria for this study (completed the MOTIF, completed the RCMAS-2) were included. Children seeking services and their parents responded on various measures and questionnaires throughout a psychoeducational assessment. Evaluations were provided by graduate student clinicians pursuing their doctorate in clinical psychology under the supervision of a licensed clinical psychologist. Evaluations were comprehensive, consisting of IQ testing, achievement

testing, diagnostic interviews, and supplemental measures and questionnaires.

Additionally, youth demographic information including age, gender, race, etc. was collected.

Results

Preliminary Analyses

G*Power (version 3.9.1.2) was used to conduct a power analysis. Power was set to .95, an acceptable means to detect an effect when one exists (Cohen, 2013), alpha was set to .05, and effect size (f^2) was set to 0.35, a moderate effect size (consistent with prior research examining functional assessment in child internalizing and externalizing behavior). The power analysis was set for the planned analysis - linear multiple regression: fixed model, R^2 increase; with three tested predictors (i.e. negative reinforcement, control, and positive reinforcement). Results of the power analysis revealed that an N of 54 is needed to detect a moderate effect. The current sample of 204 meets this requirement, suggesting adequate power to determine a moderate effect size. Statistical analyses were conducted using SPSS, version 27.

Table 1. Descriptive Statistics

Variables	Mean	Std. Deviation	Range
Age of Child	10.34	2.88	6-16
Child Anxiety T-Score	45.71	11.63	29-78
Parent Negative Reinforcement	8.34	2.73	5-15
Parent Control	4.47	1.66	3-9
Parent Positive Reinforcement	12.19	3.53	6-18

Note. n = 204. The table contains the averages and standard deviations of child age (in years), child total anxiety T-score, parent negative reinforcement, parent control, and parent positive reinforcement.

Prior to running the primary analyses, preliminary analyses were conducted to check for suitability for primary analyses and clean data. Preliminary analyses included descriptive statistics (e.g., mean and standard deviation) of youth age, anxiety ratings, and parental behavior ratings (i.e., Negative Reinforcement, Control, Positive Reinforcement), seen in Table 1. The

following assumptions were tested to determine if they met the necessary qualifications to proceed with analyses to address hypotheses one and two. Independence of residuals was determined by a Durbin-Watson statistic of 1.785. Data points were z-scored to check for outliers (z-scores of +/-3.0). No outliers were detected or removed. Linearity and homoscedasticity were determined by visual inspection of a plot of studentized residuals versus unstandardized predicted values. Normal distribution of residuals was determined through a visual inspection of a normal probability plot. Multicollinearity was assessed using Pearson's correlation coefficient. No correlations were greater than 0.7 between any of the independent variables, indicating no problems with multicollinearity.

Additionally, the following assumptions were tested to determine whether to proceed with analyses to address hypothesis three. A scatterplot of each parental variable (negative reinforcement, control, and positive reinforcement) against child age was plotted. Visual inspection of the scatterplots indicated non-linear relationships between the variables. Transformations were conducted to coax the variables into a linear relationship should one exist. However, linearity was not established for any of the three relationships. Due to the nature of the relationships between the variables, neither a regression nor a correlation was run to examine hypothesis three, as neither linear nor monotonic relationships could be established.

Primary Analyses

To address hypotheses one and two, a standard multiple regression was performed to examine the overall and differential functional effects of parenting behavior (as measured by MOTIF Negative Reinforcement, MOTIF Control, and MOTIF Positive Reinforcement) on child anxiety symptomology (as measured by the RCMAS-2 Total Anxiety T-score). Given that negative reinforcement is typically correlated more heavily with internalizing problems than the

other predictors, it was hypothesized that it would explain the most variance. Due to the similarities on the Control scale with research on parental accommodation suggesting significant impact, Control was predicted to explain more variance than positive reinforcement, as positive reinforcement has been correlated more strongly with externalizing problems than anxiety symptomology. The RCMAS-2 Total Anxiety score was entered as the single outcome variable for this model. While the literature suggests differential impact of these three independent variables, this study aimed to explore these differences rather than assume variance distribution. Thus, a standard multiple regression was conducted rather than a hierarchical multiple regression. The multiple regression model failed to significantly predict child anxiety, $F(3, 200) = 1.804$, $p = .148$, *adj.* $R^2 = .012$. In this model, none of the three reported parental behaviors added significantly to the prediction. Regression coefficients and standard errors can be found in Table 2.

Table 2. Multiple regression results for Child Anxiety

Child Anxiety	*B*	95% CI for β		SE *B*	β	R^2	ΔR^2
		LL	UL				
Model						.026	.012
Constant	43.073	39.828	46.319	1.646			
Parent Neg. Rein.	.161	-.705	1.027	.439	.038		
Parent Control	.633	-.677	1.943	.664	.090		
Parent Pos. Rein.	.189	-.450	.829	.324	.058		

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit; SE *B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2.

Due to the proposed model failing to significantly predict child anxiety and the exploratory nature of this study, three bivariate linear regressions were run to assess whether any of the three variables alone (parental negative reinforcement, parental control, parental positive

reinforcement) significantly predicted child anxiety. The results revealed that parental control alone significantly predicted child anxiety, $F(1, 202) = 4.556$, $p = .034$, *adj.* $R^2 = .017$. The linear regression using parental negative reinforcement failed to significantly predict child anxiety, $F(1, 202) = 3.709$, $p = .056$, *adj.* $R^2 = .013$, as did the regression using parental positive reinforcement, $F(1, 202) = 3.839$, $p = .051$, *adj.* $R^2 = .014$. Regression coefficients and standard errors can be found in Table 3, 4 and 5.

Table 3. Linear regression results for Parental Control on Child Anxiety

Child Anxiety	*B*	95% CI for β LL	UL	SE *B*	β	R^2	Adj. R^2
Model						.022	.017
Constant	41.055	36.469	45.641	2.326			
Parent Control	1.043	.079	2.006	.488	.149		

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit; SE *B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2.

Table 4. Linear regression results for Parental Negative Reinforcement on Child Anxiety

Child Anxiety	*B*	95% CI for β LL	UL	SE *B*	β	R^2	Adj. R^2
Model						.018	.013
Constant	40.947	35.816	46.078	2.602			
NR	.571	-. 014	1.156	.297	.134		

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit; SE *B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2.

Table 5. Linear regression results for Parental Positive Reinforcement on Child Anxiety

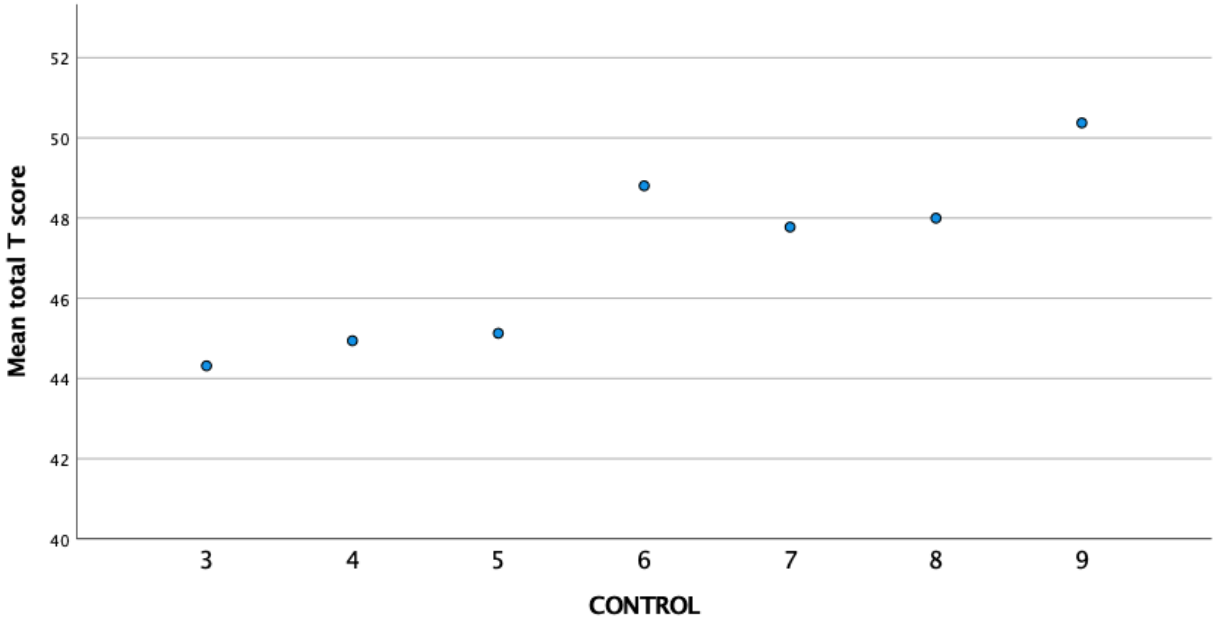
Child Anxiety	*B*	95% CI for β		SE *B*	β	R^2	Adj. R^2
		LL	UL				
Model						.019	.014
Constant	40.235	34.499	45.971	2.909			
PR	.449	-.003	.901	.229	.137		

Note. Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit; SE *B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2.

Given that the sample was rather normative (Child Anxiety T-Score *M* = 45.71; *SD* = 11.63), a subset of the sample was used to analyze whether there were significant findings for individuals with higher levels of anxiety symptomology. Participants with a T-Score of 60 (1 standard deviation) or above were included (*N* = 34) in a standard multiple regression to examine the overall and differential functional effects of parenting behavior on child anxiety. A power analysis revealed that an N of 54 is needed to detect a moderate effect. Despite inadequate power, analyses proceeded for exploratory purposes. Preliminary analyses were conducted to assess suitability for primary analysis. Preliminary analyses included descriptive statistics (e.g., mean and standard deviation) of youth age, anxiety ratings, and parental behavior ratings (i.e., Negative Reinforcement, Control, Positive Reinforcement). The following assumptions were tested to determine if they met the necessary qualifications to proceed with analyses to address hypotheses one and two. Independence of residuals was determined by a Durbin-Watson statistic of 1.936. Data points were z-scored to check for outliers (z-scores of +/-3.0). No outliers were detected or removed. Linearity and homoscedasticity were assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. A moderate negative skew was

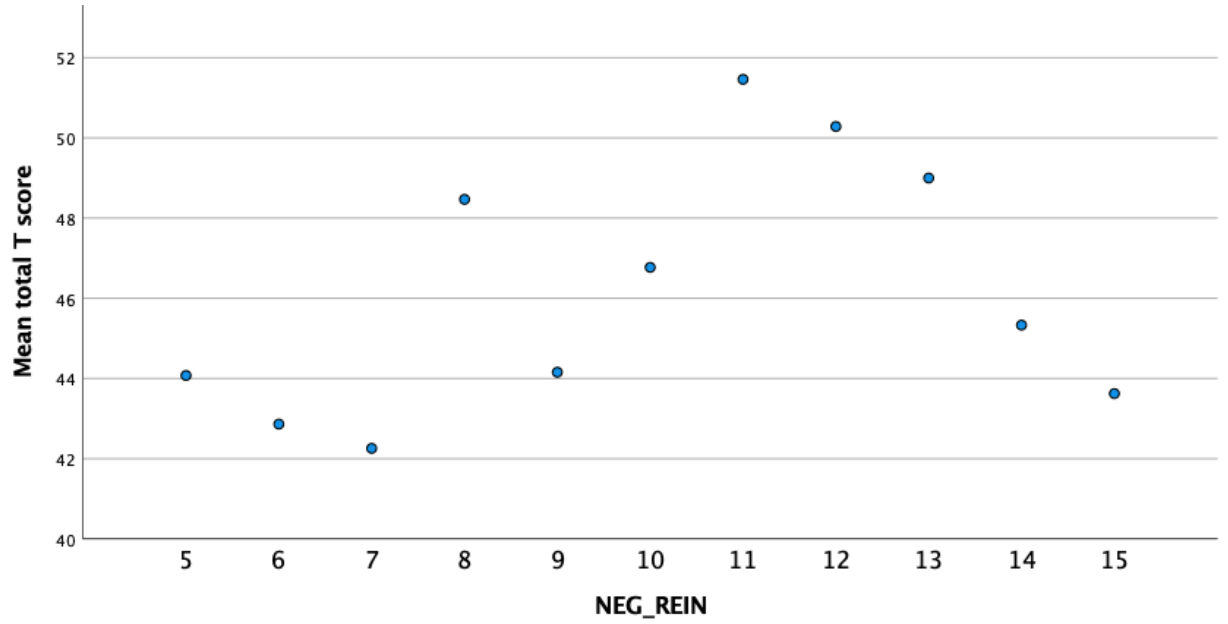
identified and a reflect and square root transformation was applied, resulting in normal distribution. Multicollinearity was assessed using Pearson's correlation coefficient. Correlations were greater than 0.7 between all of the independent variables, indicating problems with multicollinearity. Therefore, the multiple regression of the subset of data did not meet criterion to proceed with analyses.

To address hypothesis three, three bivariate linear regressions were proposed to assess the effect of child age on parental behavior (as measured by the MOTIF subscale scores). However, due to the nature of the data and the inability to establish a linear relationship, this analysis could not be run. Figures 1, 2, and 3 reveal mean parenting behaviors (control, negative reinforcement, and positive reinforcement) by child age respectively.



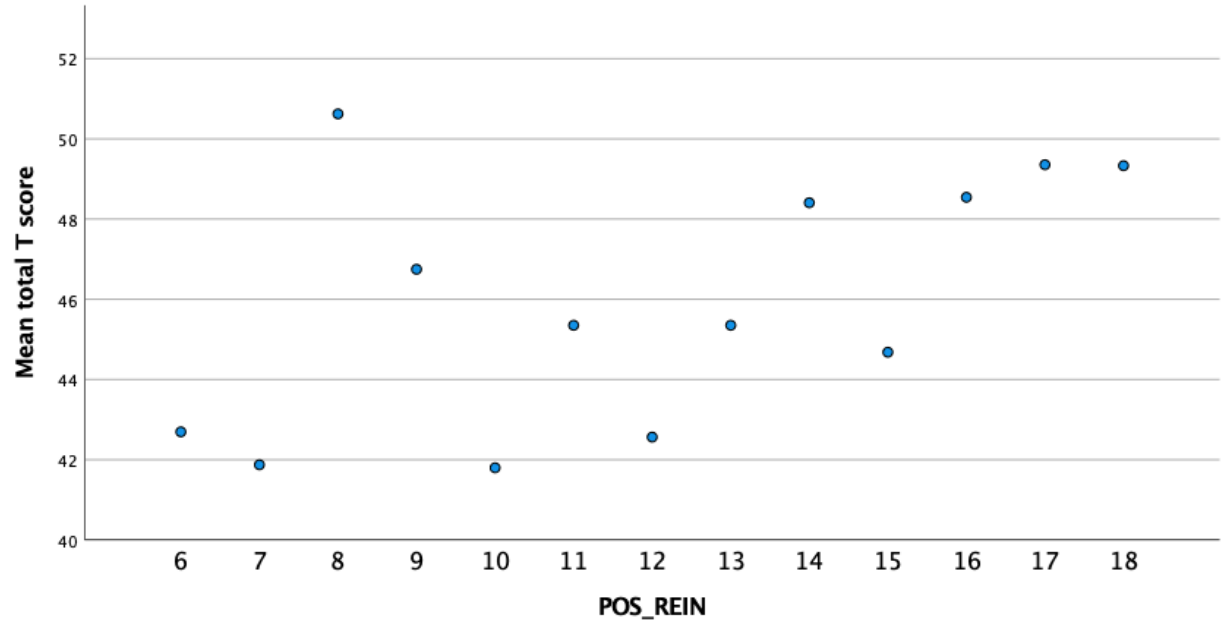
Note. n= 204. This figure contains the scores of parent ratings on the MOTIF control subscale by mean child reported total anxiety T-score.

Figure 1. Changes in Child Anxiety as a Function of Parental Control



Note. n= 204. This figure contains the scores of parent ratings on the MOTIF negative reinforcement subscale by mean child reported total anxiety T-score.

Figure 2. Changes in Child Anxiety as a Function of Parental Negative Reinforcement



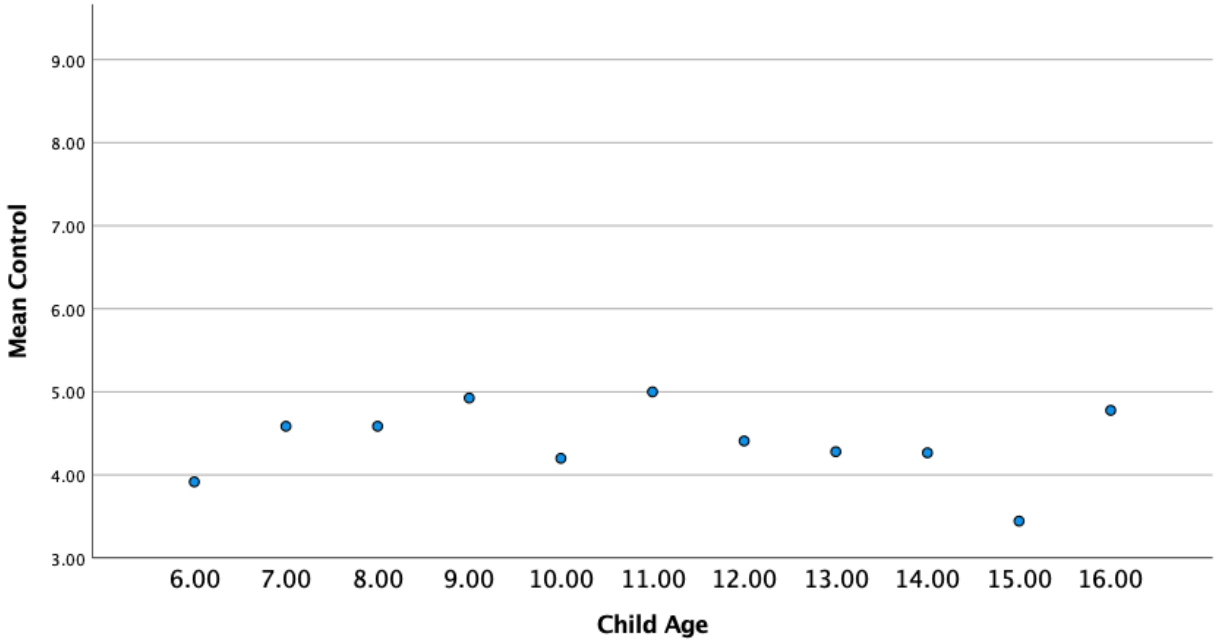
Note. n= 204. This figure contains the scores of parent ratings on the MOTIF positive reinforcement subscale by mean child reported total anxiety T-score.

Figure 3. Changes in Child Anxiety as a Function of Parental Positive Reinforcement

Discussion

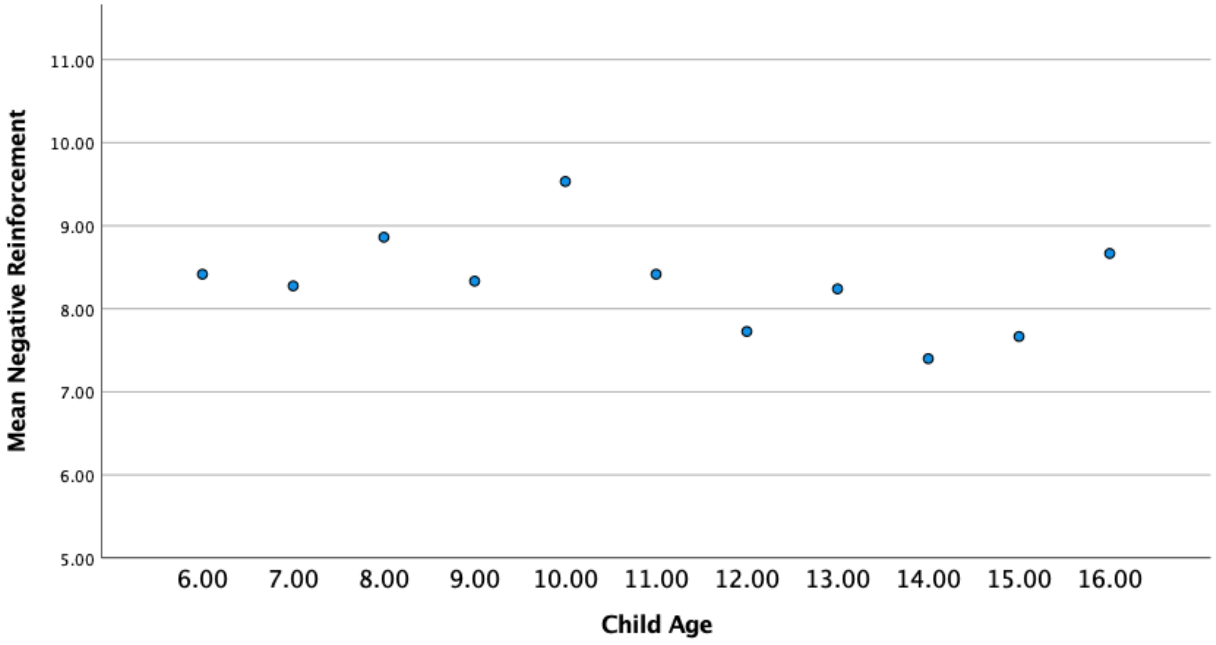
This study contributes to the literature by expanding functional analysis, specifically through indirect assessment questionnaires, into the area of child internalizing disorders. The results of this study, while mostly statistically insignificant, point to relationships between parent behavior and child anxiety, are clinically meaningful, and should not be overlooked.

Hypothesis 1 was not supported when using all three variables in one model, indicating that together positive reinforcement, control, and negative reinforcement do not predict child anxiety severity. However, when entered into separate models, it was partially supported, as child anxiety severity was significantly positively predicted by parental control. Additionally, the significance values for the effect of negative reinforcement and positive reinforcement (p=.056 and p=.051, respectively) were very close to .05, indicating that they may be approaching significance. It is likely that a few more participants could have pushed these values into significant findings. Figures 1, 2, and 3 show mean child anxiety by parental control, negative reinforcement, and positive reinforcement respectively. Hypothesis 2 was not supported, indicating that negative reinforcement does not explain more variance than parental positive reinforcement or control. In contrast, parental control (B = .633) explained the most variance, followed by positive (B = .189) and negative reinforcement (B = .161) respectively. Due to failure to meet the assumptions necessary to run analyses related to hypothesis 3, it could not be evaluated. While statistical analyses could not be run, visual inspection of graphs indicate a negative relationship between child age and parental positive reinforcement only (see Figures 4, 5, and 6).



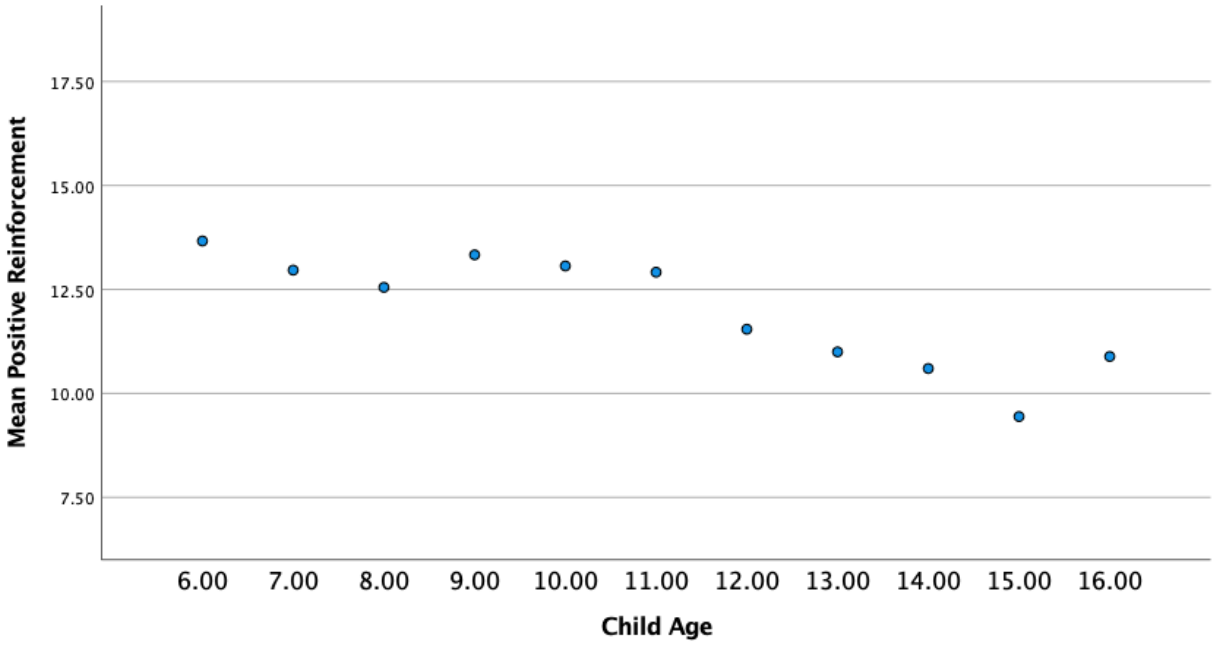
Note. n= 204. This figure contains the scores of parent ratings on the MOTIF control subscale by mean child age.

Figure 4. Changes in Parental Control as a Function of Child Age



Note. n= 204. This figure contains the scores of parent ratings on the MOTIF negative reinforcement subscale by mean child age.

Figure 5. Changes in Parental Negative Reinforcement as a Function of Child Age



Note. n= 204. This figure contains the scores of parent ratings on the MOTIF positive reinforcement subscale by mean child age.

Figure 6. Changes in Parental Positive Reinforcement as a Function of Child Age

Additionally, it is important to examine effect sizes. Results of the multiple regression indicated a small effect size as $R^2 = .026$. Results of the three follow-up linear regressions indicated a small effect size for parental control as $R^2 = .022$, negative reinforcement as $R^2 = .018$, and positive reinforcement as $R^2 = .019$. If analyses were only examining statistical significance, it would be determined that because only parental control was statistically significant, it was the only variable that contributed to the overall effect and that positive and negative reinforcement had no influence. Yet, the small effect sizes found in the linear regressions reveal that child anxiety is influenced by all three parenting behaviors to differing degrees. Further, even though there was not a statistically significant relationship between parental reinforcement (positive and negative) and child anxiety, the finding that parental positive and negative reinforcement have a small effect size shows that it is contributing to the overall effect. Thus, the impact of both positive and negative parental reinforcement based on effect size is clinically meaningful and should be considered for further study.

The finding that parental control positively predicted child anxiety is consistent with the current literature on parental accommodation. This area of research, centered on how parents change their behaviors in order to reduce child distress, currently dominates in parenting behavior of internalizing children (Lebowitz et al., 2013). As the existing literature focuses solely on parental accommodation, the MOTIF can serve to expand upon this by assessing other areas of parenting behaviors that may be related to child anxiety. While in this study, parental control was the only significant predictor of child anxiety, parental reinforcement could be meaningful for future research or clinical applications.

In contrast to the hypothesis, parental control showed the strongest relationship with child anxiety, suggesting differential impact of domains of parental behaviors on child anxiety. This provides good clinical utility, as it may shift the way treatment of internalizing disorders is approached. Much of the focus of treatment for internalizing disorders is centered on limiting negative reinforcement (e.g., escape). The results of this study suggest that parent control (e.g., allowing child to get their way or become the focus of the situation) may function more strongly to affect child anxiety than either type of parental reinforcement. Additionally, the parental control scale on the MOTIF appears similar to the scales for family accommodation, suggesting overlap in these research areas. It is possible that the measure of parental control on the MOTIF is better described as a measure of parental accommodation discussed by Lebowitz and colleagues (2013).

An attempt at follow up analyses of a subset of participants that showed high levels of anxiety failed to meet criteria to proceed. However, given a larger sample size the analysis could meet adequate power criteria and likely be more able to detect an effect if one exists. Additionally, due to a small number of children who rated their anxiety in the clinical range

(n=13) the current study could not examine effects of parental behavior on a clinically anxious subset of children nor could it explore differential effects of parental behavior on non-clinical and clinically anxious children. Future research should explore these differential effects and potential differential effects of parental behavior on varying subtypes of anxiety (e.g., social anxiety, separation anxiety, generalized anxiety).

While not statistically evaluated due to assumptions not being met, there was a clear trend for positive reinforcement decreasing with child age determined by graphs. This can offer useful information for clinicians working with various age populations. Knowing that parents are more likely to respond to child fear at a younger age, provides insight into treatment planning for children at different age levels.

The lack of ability to make predictions from the multiple regression as well as linear regressions was not surprising given the exploratory nature of the current study. Further, it is difficult to determine, as the literature points to a dynamic child-environment relationship, in which each is constantly affecting the other. In this study, we can assume that parent behavior (e.g., environment) and child fear or anxiety were in a dynamic interplay. Thus, prediction was difficult to ascertain. Additionally, due to the data being cross sectional, causation could not be determined. In order to examine causal relationships, future research should consider a larger scale, longitudinal study. Following parent-child dyads across several weeks or months and obtaining multiple measures of child anxiety and parental behavior could allow causal investigations. Implementation of a treatment program in which parents are taught to respond to their child's anxious behavior in a certain way over the course of the study could give us beneficial information, especially from a clinical perspective.

As with all research, the current study had limitations. First, there were limitations associated with the exploratory nature of the study and the use of a novel measure. The insignificant findings may indicate that the phrasing of the questions on the measure used (MOTIF) did not accurately distinguish between parents and may need to be re-evaluated. As one of the first questionnaires to functionally assess child fear, it is possible that more research needs to be done to better understand and measure this phenomenon in children.

Second, the current study did not use comparative control groups or clinical cut offs, as the goals of the study were to look at overall trends and predictions rather than compare group differences. Being a pilot study on the MOTIF and its ability to predict child anxiety, there were no known clinical cutoffs or standard scores on any subscales. This hindered the ability to compare group differences between MOTIF subscales. Additionally, due to lack of participants who had completed the MOTIF, there were not enough subjects to compare clinically and non-clinically anxious children. With more participants one would be able to create groups to see if clinical severity changes how much parental behavior impacts child anxiety

Another limitation of the current study is that both measures were self-reports (RCMAS-2 for child self-report and MOTIF for parent self-report). Any time one relies on self-report a level of objectivity is lost. In particular, when subjects filling out self-report measures are as young as six years old, there is much room for misinterpretation. Additionally, collecting data from mixed reporters creates potential issues for interpretation, especially when dealing with internalizing symptoms. For example, a parent may view their child as having little anxiety or showing few signs of anxiety, while the child feels rather anxious internally. Future studies may consider validating child anxiety self-report by additionally including clinician or parent ratings of child anxiety as well.

Further, there were limitations related to data collection. Specifically, age was recorded only by age in years at the time of the assessments. This left age as a variable very difficult to use, as it could not be interpreted as either categorical or continuous. If age were recorded in months or days, it would be more easily tracked as a continuous variable.

Future directions should include use of the MOTIF fear subscale (a fourth subscale on the MOTIF that measures child fear) to see if it can be used alone to assess level of child fear. If validated, this would allow clinicians and researchers to use the MOTIF to examine both parent-rated child fear and parent behaviors. Additionally, future research should push to standardize subscales and clinical cutoffs on the MOTIF in order to expand the clinical and research utility of the measure. It is also important to realize that whatever is recorded on the MOTIF may only be a rating of half of the parenting environment, as only one parent completed the measure. It would also be beneficial to understand how much time parents spend with their child and if additional informants (such as caretakers or teachers) would be useful. Future research should aim to continue examining indirect assessment of functional behavior to assess child internalizing symptoms. Using questionnaires allows researchers to understand functions of child behavior in the home and is the best way to achieve scientific rigor without facing the limitations of EFAs. Findings from studies such as this may prompt clinicians to include parental behaviors in their conceptualization and treatment planning for children with anxiety disorders. Targeting parental behaviors that predict child anxiety allow for treatment to expand to and rely on parent training more heavily. This is especially important for children who may be too young for CBT or those who do not show good treatment response.

References

Albert, U., Bogetto, F., Maina, G., Saracco, P., Brunatto, C., & MataixCols, D. (2010). Family accommodation in obsessive-compulsive disorder: Relation to symptom dimensions, clinical and family characteristics. *Psychiatry Research*, 179, 204 –211.

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (DSM-5). *American Psychiatric Pub*.

Barnett, B., Schaafsma, M. F., Guzman, A., & Parker, G. B. (1991). Maternal Anxiety: A 5-Year Review of an Intervention Study. *Journal of Child Psychology and Psychiatry, 32*(3), 423-438. doi:10.1111/j.1469-7610.1991.tb00321.x

Bartels, M., Beijsterveldt, C., Derks, E., Stroet, T., Polderman, T., Hudziak, J., & Boomsma, D. (2007) Young Netherlands Twin Register (Y-NTR): A longitudinal multiple informant study of problem behavior. *Twin Research and Human Genetics*, 10(1), 3-11.

Bögels, S. M., & Brechman-Toussaint, M. L. (2006). Family issues in child anxiety: Attachment, family functioning, parental rearing and beliefs. *Clinical Psychology Review, 26*(7), 834-856.

Brown, I. (1974). Effects of perceived similarity on vicarious emotional conditioning. *Behaviour Research and Therapy, 12*(3), 165-173.

Buss, A.H., & Plomin, R. (1984). *Temperament: Early developing personality traits*. Hillsdale, NJ: Erlbaum.

Calvocoressi, L., Lewis, B., Harris, M., Trufan, S. J., Goodman, W. K., McDougle, C. J., & Price, L. H. (1995). Family accommodation in obsessive-compulsive disorder. *The American Journal of Psychiatry*, 152, 441– 443.

Calvocoressi, L., Mazure, C.M., Kasl, S.V., Skolnick, J., Fisk, D., Vegso, S.J., Van Noppen, B.L., & Price, L.H., (1999) Family Accommodation of Obsessive-Compulsive Symptoms: Instrument Development and Assessment of Family Behavior, *The Journal of Nervous & Mental Disease*, 187(10), 636-642

Cannon T.D., J. Kaprio, J. Lonnqvist, M. Huttunen and M. Koskenvuo (1998). The genetic epidemiology of schizophrenia in a Finnish twin cohort. A population-based modeling study. *Arch. Gen. Psychiatry.* 55, 67-74.

Clark, L.A., & Watson, D. (1991) Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology*, 100, 316-336.

Cohen, B.H., (2013). *Explaining Psychological Statistics. Fourth Edition*. John Wiley & Sons.

Colonnesi, C., Draijer, E.M., Geert, J., Stams, J.M., Van der Bruggen, C.O., Bögels S.M., & Noom, M.J. (2011) The Relation Between Insecure Attachment and Child Anxiety: A Meta-Analytic Review, *Journal of Clinical Child & Adolescent Psychology,* 40(4), 630-645.

Connell, A.M. and Goodman, S.H. The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: A meta-analysis. *Psychological Bulletin*, 128 (2002), pp. 746-773

Davis III, T. E. (2006). Motivation for Fear (MOTIF). Unpublished manuscript, Louisiana State University, Baton Rouge, Louisiana.

Davis III, T. E., Castagna, P.J., & Adenuga, P. (2020). The motivation for fear questionnaire (MOTIF): development and initial validation. Unpublished manuscript, Louisiana State University, Baton Rouge, Louisiana.

Davis, T. E., May, A., & Whiting, S. E. (2011). Evidence-based treatment of anxiety and phobia in children and adolescents: Current status and effects on the emotional response. *Clinical Psychology Review*, *31*(4), 592-602.

Davidson, R. J., Pizzagalli, D., Nitschke, J. B., & Putnam, K. (2002). Depression: Perspectives from Affective Neuroscience. *Annual Review of Psychology, 53*(1), 545-574.

Derby, K.M., Wacker, D.R, Sasso, G., Steege, M., Northup, J., Cigrand, K., & Asmus, J. (1992). Brief functional assessment techniques to evaluate aberrant behavior. *Journal of Applied Behavior Analysis*, 25, 713-721.

Durand, V.M., & Crimmins, D.B. (1988). Identifying the variables maintaining self-injurious behavior. *Journal of Autism and Developmental Disorders*, 18(1), 99-117.

Eley, T.C., Bolton, D., O'Connor, T.G., Perrin, S., Smith, P., & Plomin, R. (2003). A twin study of anxiety related behaviours in pre-school children. *Journal of Child Psychology and Psychiatry*. 44(7), 945-960.

Feigon, S.A., Waldman, I.D., Levy, F. et al. (2001) Genetic and environmental influences on separation anxiety disorder symptoms and their moderation by age and sex. *Behavioral Genetics*, 31, 403-411.

Field, A.P. & Lawson, J. (2003) Fear information and the development of fears during childhood: effects on implicit fear responses and behavioural avoidance. *Behaviour Research and Therapy*, 41, 1277-1293.

Gold, A. L., Abend, R., Britton, J. C., Behrens, B., Farber, M., Ronkin, E., Pine, D. S. (2020). Age Differences in the Neural Correlates of Anxiety Disorders: An fMRI Study of Response to Learned Threat. *American Journal of Psychiatry, 177*(5), 454-463.

Gross, C. and Hen, R., (2004) Genetic and environmental factors interact to influence anxiety. *Neurotox Research*, 6, 493-501.

Healy, O., Brett, D., & Leader, G. (2013). A comparison of experimental functional analysis and the Questions About Behavioral Function (QABF) in the assessment of challenging behavior of individuals with Autism. *Research in Autism Spectrum Disorders*, 7(1), 66-81.

Hettema, J.M., Neale, M.C., & Kendler, K.S. (2001). A review and metaanalysis of the genetic epidemiology of anxiety disorders. *American Journal of Psychiatry*, 158, 1568-1578.

Higa-McMillan, C.K., Francis, S.E., & Chorpita, B.F. (2014). Anxiety Disorders. In E.J. Mash & R.A. Barkley (Eds.), *Child Psychopathology Third Edition*. The Guilford Press.

Hudson, J.L., Dodd, H.F. & Bovopoulos, N. Temperment, family environment and anxiety in preschool children. (2011) *Journal of Abnormal Child Psychology*, 39, 939

Individuals with Disabilities Education Act (IDEA), 20 U.S.C.1400 (2004).

Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward A Functional Analysis Of Self-Injury. *Journal of Applied Behavior Analysis, 27*(2), 197-209.

Jeong, Y. and Copeland, S.R. (2020). Comparing functional behavior assessment-based interventions and non-functional behavior assessment-based interventions: A systematic review of outcomes and methodological quality of studies. *Journal of Behavioral Education*, 29(1), 1-41.

Kagan, J., Reznick, J., & Gibbons, J. (1989) Inhibited and uninhibited types of children. *Child Development*, 60, 838–845.

Kemp, J., & Freeman, J.B. Obsessive-Compulsive Disorder. (2019) In M.J. Prinstein, E.A. Younstrom, E.J. Mash, & R.A. Barkley (Eds.), *Treatment of Disorders in Childhood and Adolescence* (pp.311-331). New York, NY: The Guilford Press.

King, N.J., Eleonora, G., & Ollendick, T.H. (1998) Etiology of childhood phobias: current status of Rachman's three pathways theory. *Behaviour Research and Therapy*, 36, 297-309.

Lau, J. Y., Lissek, S., Nelson, E. E., Lee, Y., Roberson-Nay, R., Poeth, K., . . . Pine, D. S. (2008). Fear Conditioning in Adolescents With Anxiety Disorders: Results From a Novel Experimental Paradigm. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(1), 94-102.

Lissek, S., Powers, A. S., Mcclure, E. B., Phelps, E. A., Woldehawariat, G., Grillon, C., & Pine, D. S. (2005). Classical fear conditioning in the anxiety disorders: A meta-analysis. *Behaviour Research and Therapy, 43*(11), 1391-1424.

Lund Research Ltd. (2018). *We make statistics easy. The ultimate IBM® SPSS® Statistics guides.* SPSS Statistics Tutorials and Statistical Guides | Laerd Statistics. https://statistics.laerd.com/.

Manassis, K., Bradley, S., Goldberg, S., Hood, J., & Price Swinson, R. (1995). Behavioural Inhibition, Attachment and Anxiety in Children of Mothers with Anxiety Disorders. *The Canadian Journal of Psychiatry*, *40*(2), 87–92.

Matson, J.L., Matheis, M., Estabillo, J.A., Burns, C.O., Issarraras, A., Peters, W.J., & Jiang, X, (2019). Intellectual Disability. In M.J. Prinstein, E.A. Younstrom, E.J. Mash, & R.A. Barkley (Eds.), *Treatment of Disorders in Childhood and Adolescence* (pp.416-438). New York, NY: The Guilford Press.

Matson, J.L., & Minshawi, N.F. (2007). Functional assessment of challenging behavior: Toward a strategy for applied settings. *Research in Developmental Disabilities*, 28(4), 353-361.

Matson, J. L., & Noha, M. F. (2007). Functional assessment of challenging behavior: Toward a strategy for applied settings. *Research in Developmental Disabilities*, *28*(4), 353–361.

Matson, J.L. & Vollmer, T.R. (1995). User's Guide: *Questions About Behavioral Function (QABF).* Baton Rouge, LA: Scientific Publishers, Inc.

McMahon, R.J., & Frick, P.J. Conduct and Oppositional Disorders. (2019) In M.J. Prinstein, E.A. Younstrom, E.J. Mash, & R.A. Barkley (Eds.), *Treatment of Disorders in Childhood and Adolescence* (pp.102-151). New York, NY: The Guilford Press

Merikangas, K.R., He, J., Burstein, M., Swanson, S.A., Avenevoli, S., Cui, L. et al. (2010) Lifetime prevalence of mental disorders in US adolescents: Results from the National Comorbidity Study Replication – Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry*, 49, 980- 989.

Mills, R.S.L. & Rubin, K.H. (1993) Socialization factors in the development of social withdrawal. In K.H. Rubin & J. Asendorpf (Eds.), *Social withdrawal, inhibition, and shyness in childhood*. Hillside, N.J.: Erlbaum.

Molent, C., Maggioni, E., Cecchetto, F., Garzitto, M., Piccin, S., Bonivento, C., Brambilla, P. (2017). Reduced cortical thickness and increased gyrification in generalized anxiety disorder: A 3 T MRI study. *Psychological Medicine, 48*(12), 2001-2010.

Moore, P. S., Whaley, S. E., & Sigman, M. (2004). Interactions Between Mothers and Children: Impacts of Maternal and Child Anxiety. *Journal of Abnormal Psychology, 113*(3), 471–476.

Moos, R.H. and Moos, B.S., (1986) The Family Environment Scale: The manual. Palo Alto CA: Consulting Psychologists Press.

Paclawskyj, T.R., Matson, J.L., Bamburg, J.W., Cherry, K.E. (1999). A validity study on the questions about behavioral function (QABF) scale: Predicting treatment success for self-injury, aggression, and stereotypies. *Research in Developmental Disabilites*, 20(2), 163-176.

Reynolds, C. R. & Richmond, B. O. (2008). The Revised Children's Manifest Anxiety Scale, Second Edition (RCMAS-2). Los Angeles, CA: Western Psychological Services.

Rosenbaum, J. F., Biederman, J., Bolduc, E. A., Hirshfeld, D. R., Faraone, S. V., & Kagan, J. (1992) Comorbidity of parental anxiety disorders as risk for childhood-onset anxiety in inhibited children. *The American Journal of Psychiatry, 149*(4), 475–481.

Rubin, K. H., Nelson, L. J., Hastings, P. D., & Asendorpf, J. B. (1999). The transaction styles between parents' perceptions of their children's shyness and their parenting styles. *International Journal of Behavior Development*, 23(4), 937-957.

Ruth A. Ervin, Kristal E. Ehrhardt & Alan Poling (2001) Functional Assessment: Old Wine in New Bottles, *School Psychology Review*, 30:2, 173-179

Shamir-Essakow, G., Ungerer, J.A. & Rapee, R.M. (2005) Attachment, behavioral inhibition, and anxiety in preschool children. *Journal of Abnormal Child Psychology*, 33, 131-143.

Sicouri, G., Sharpe, L., Hudson, J. L., Dudeney, J., Jaffe, A., Selvadurai, H., Lorimer, S., & Hunt, C. (2017). Threat interpretation and parental influences for children with asthma and anxiety. *Behaviour Research and Therapy, 89*, 14-23.

Skinner, B. F. (1953). *Science and human behavior*. New York: Free Press.

Sterling-Turner, H.E., Robinson, S.L., & Wilczynsky, S.M. (2001). Functional assessment of distracting and disruptive behaviors in the school setting. *School Psychology Review*, 30, 211-226.

Thomas, A., & Chess, S. (1981). The Role of Temperament in the Contributions of Individuals to Their Development. In N. A. Busch-Rossnagel & R. M. Lerner (Authors), *Individuals as producers of their development: A life-span perspective* (pp. 231-232). New York: Academic Press.

Townend, E., Dimigen, G., & Fung, D. (2000). A clinical study of child dental anxiety. *Behaviour Research and Therapy*, 38(1), 31-46.

Trower, P., Yardley, K., Bryant, B. M., & Shaw, P. (1978). The treatment of social failure: A comparison of anxiety-reduction and skills-acquisition procedures on two social problems. *Behavior Modification, 2*(1), 41–60.

Wightman, J., Julio, F., & Virués-Ortega, J. (2014). Advances in the indirect, descriptive, and experimental approaches to the functional analysis of problem behavior. *Psicothema*, 26(2), 186-192.

Wu, M. S., Pinto, A., Horng, B., Phares, V., Mcguire, J. F., Dedrick, R. F., Van Noppen, B., Calvocoressi, L., & Storch, E. A. (2016). Psychometric properties of the Family Accommodation Scale for Obsessive–Compulsive Disorder–Patient Version. *Psychological Assessment, 28*(3), 251-262.

Vita

Allison Smith, born in Baton Rouge, Louisiana, received her bachelor's degree in Psychology from Louisiana State University in 2019. She plans to receive her Master's in May of 2022. After graduation, she entered the Clinical Psychology doctoral program at Louisiana State University in 2019. Upon receiving her master's degree, she will begin to work on her doctorate.