Using the Coaching Approach Behavior and Leading By Modeling (CALM) Program to Examine Attachment and Parental Behaviors in Childhood Anxiety

Seana Bandi

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USING THE COACHING APPROACH BEHAVIOR AND LEADING BY MODELING (CALM) PROGRAM TO EXAMINE ATTACHMENT AND PARENTAL BEHAVIORS IN CHILDHOOD ANXIETY

A Dissertation
Submitted to the School of Education

Duquesne University

In partial fulfillment of the requirements for the degree of Doctor of Philosophy

By
Seana Lee Bandi

August 2019
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June 20, 2019

USING THE COACHING APPROACH BEHAVIOR AND LEADING BY MODELING
(CALM) PROGRAM TO EXAMINE ATTACHMENT AND
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ABSTRACT

USING THE COACHING APPROACH BEHAVIOR AND LEADING BY MODELING (CALM) PROGRAM TO EXAMINE ATTACHMENT AND PARENTAL BEHAVIORS IN CHILDHOOD ANXIETY

By
Seana Lee Bandi
August 2019

Dissertation supervised by Kara E. McGoey, Ph.D.

Anxiety is one of the most common disorders in children that can often lead to detrimental outcomes. Empirically-supported risk factors for child anxiety include the child’s temperament and behavioral inhibition, insecure attachment, parental over-controlling behaviors, parental anxiety, and the impact of adverse life events on the child. Targeting these risk factors early on has the ability to lead to a decrease in anxiety symptoms later in adolescence and adulthood.

Evidence suggests behavioral, therapeutic interventions are effective for treating anxiety and other mood disorders for middle childhood and adolescents. Recent research has begun to focus on developmentally-appropriate adaptations for younger children to benefit from these current therapies, such as using play techniques and incorporating parental involvement. Specifically, Parent-Child Interaction Therapy (PCIT) has been adapted from an evidence-based
treatment of disruptive disorders in young children, to its utilization in treating internalizing behaviors. Further, the Coaching Approach Behaviors and Leading by Modeling (CALM) program was developed as an adaptation for PCIT to decrease child anxiety symptoms as well as strengthen the overall parent and child relationship.

It is the aim of this study to add to the literature base of the CALM program as an adaptation to PCIT by also examining risk factors for a child’s anxiety levels such as attachment and parental behaviors. Using a single-subject, nonconcurrent multiple baseline design across subjects, this study provided overall mixed results for the CALM adaptation to PCIT using an early childhood population diagnosed with anxiety.
DEDICATION

To my Mom and Dad, for never doubting my choices and dreams, and always instilling the value of education and hard work. I cannot thank you enough for being supportive, encouraging, and loving throughout every step of this journey. Thank you for always believing in me and knowing my potential. All my accomplishments and goals are because of you and it would not have been possible without both of you. I love you both for everything.

To my sisters, Lauren and Kathryn, for inspiring me with your own success and hard work. Seeing you both achieve your goals and dreams only motivates me to be a better person. You make my decisions easier, my days better, and everything funnier. Thank you both for being my best friends and I am grateful for both of you.

To Michael, for being a part of this journey since Day 1 of graduate school and continuing to stick with me even when another year gets added on somewhere. You never stopped believing in me and supporting me especially when I doubted myself. Thank you for being able to take my mind off stress for a while but also being able to motivate me again. I appreciate everything you have done for me and everything we have done together, and I can’t wait to see what the future has for us to achieve together.

To friends, family, and loved ones, I appreciate your support in all of my achievements. I am fortunate to know and be surrounded by loving and encouraging people. Especially to my graduate school friends, I am not sure where I would be without the kindness, support, and friendship you have all provided me with, and I am thankful to know all of you.
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TABLE OF CONTENTS

Abstract ................................................................................................................................. iv
Dedication ............................................................................................................................... vi
Acknowledgement ................................................................................................................ vii
List of Tables ......................................................................................................................... ix
List of Figures ....................................................................................................................... xi
Chapter I: Introduction ......................................................................................................... I
Chapter II: Literature Review .............................................................................................. 13
Chapter III: Methods ............................................................................................................ 45
Chapter IV: Results ................................................................................................................. 61
Chapter V: Discussion .......................................................................................................... 95
References ............................................................................................................................. 110
LIST OF TABLES

Table 1: Mean Frequency of Michael’s Mother’s Positive Behaviors across Phases ...............64
Table 2: Median Frequency of Michael’s Mother’s Positive Behaviors across Phases ............65
Table 3: Mean Frequency of Michael’s Father’s Positive Behaviors across Phases ..............65
Table 4: Median Frequency of Michael’s Father’s Positive Behaviors across Phases ............65
Table 5: Mean Frequency of Jennifer’s Mother’s Positive Behaviors across Phases ..........66
Table 6: Median Frequency of Jennifer’s Mother’s Positive Behaviors across Phases ........67
Table 7: Mean Frequency of Brandon’s Mother’s Positive Behaviors across Phases ..........68
Table 8: Median Frequency of Brandon’s Mother’s Positive Behaviors across Phases ........68
Table 9: Mean Frequency of Michael’s Mother’s Negative Behaviors across Phases .........71
Table 10: Median Frequency of Michael’s Mother’s Negative Behaviors across Phases ........71
Table 11: Mean Frequency of Michael’s Father’s Negative Behaviors across Phases ..........71
Table 12: Median Frequency of Michael’s Father’s Negative Behaviors across Phases ........71
Table 13: Mean Frequency of Jennifer’s Mother’s Negative Behaviors across Phases .........73
Table 14: Median Frequency of Jennifer’s Mother’s Negative Behaviors across Phases ........73
Table 15: Mean Frequency of Brandon’s Mother’s Negative Behaviors across Phases .........74
Table 16: Median Frequency of Brandon’s Mother’s Negative Behaviors across Phases .........75
Table 17: Preschool Anxiety Scale, T-Scores at Time 1 for Michael’s mother and father ........76
Table 18: Preschool Anxiety Scale, T-Scores at Time 1, Time 2, and Time 3 and Effect Sizes for Jennifer’s mother ........................................................................................................................................78
Table 19: Preschool Anxiety Scale, T-Scores at Time 1, Time 2, and Time 3 and Effect Sizes for Brandon’s mother………………………………………………………………………………79
Table 20: Parenting Relationship Questionnaire, T-Scores at Time 1 for Michael’s mother and father…………………………………………………………………………………………81
Table 21: Parenting Relationship Questionnaire, T-Scores at Time 1, Time 2, and Time 3 and Effect Sizes for Jennifer’s mother……………………………………………………………83
Table 22: Parenting Relationship Questionnaire, T-Scores at Time 1, Time 2, and Time 3 and Effect Sizes for Brandon’s mother………………………………………………………85
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Frequency of behavioral descriptions displayed by participants across sessions</td>
<td>86</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Frequency of reflections displayed by participants across sessions</td>
<td>87</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Frequency of labeled praise displayed by participants across sessions</td>
<td>88</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Frequency of questions displayed by participants across sessions</td>
<td>89</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Frequency of commands displayed by participants across sessions</td>
<td>90</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Frequency of criticisms displayed by participants across sessions</td>
<td>91</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Visual display of Michael’s mother’s PAS-R at time 1</td>
<td>92</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Visual display of Michael’s father’s PAS-R at time 1</td>
<td>92</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Visual display of Jennifer’s mother’s PAS-R across time 1, time 2, and time 3</td>
<td>92</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Visual display of Brandon’s mother’s PAS-R across time 1, time 2, and time 3</td>
<td>93</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Visual display of Michael’s mother’s PRQ at time 1</td>
<td>93</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Visual display of Michael’s father’s PRQ at time 1</td>
<td>93</td>
</tr>
<tr>
<td>Figure 13</td>
<td>Visual display of Jennifer’s mother’s PRQ across time 1, time 2, and time 3</td>
<td>94</td>
</tr>
<tr>
<td>Figure 14</td>
<td>Visual display of Brandon’s mother’s PRQ across time 1, time 2, and time 3</td>
<td>94</td>
</tr>
</tbody>
</table>
Introduction

Anxiety disorders are one of the most prevalent mental health conditions in children, with separation anxiety disorder as the most common anxiety disorder in children under 12 (American Psychiatric Association (APA, 2015). Anxiety in childhood can lead to lifelong, detrimental effects as well as more severe anxiety and internalizing disorders and symptoms, such as social anxiety disorder, panic attacks, depression, and social phobias. There is also evidence that childhood anxiety can lead to comorbid externalizing disorders in adolescents, such as conduct disorder and attention-deficit/hyperactivity disorder (ADHD), as well as social and academic difficulties. If anxiety is left untreated through childhood and adolescence, children may be at a greater risk for adult psychopathology, substance abuse, and suicide attempts (Bittner, Egger, Erkanli, Costello, Foley, & Angold, 2007; Drake & Ginsburg, 2012).

The DSM5 (APA, 2015) allows for the identification of specific characteristics in the examination of anxiety disorders. Typically, in childhood, anxiety disorders last beyond developmentally appropriate periods, usually last longer than six months, and cannot be attributed to effects of substances or medication. The symptoms must also be persistent, and cause significant distress or impairment in many areas of functioning such as in social and academic domains. Additionally, when symptoms of anxiety begin in childhood, they are most often seen throughout adolescence and persist into adulthood (APA, 2015).

Risk factors of childhood anxiety

Previous researchers have identified multiple risk factors for developing an anxiety disorder. Risk factors for childhood anxiety include temperament and behavioral inhibition,
insecure attachment, parental over-controlling behaviors, parental anxiety, and the impact of adverse life events.

Temperament. Temperament is described as the biologically-rooted differences in behaviors that are present early in life and remain relatively stable across situations and environments as well as over time (Bates, 1987). Temperament can also be defined as part of a child’s emerging personality that may be genetically determined (Muris & Ollendick, 2005). Caspi and colleagues (Caspi, 2000; Caspi, Henry, McGee, Moffitt, & Silva, 1995) provided further evidence for this classification of stable behaviors as temperament styles, yielding three different categories of temperament styles. Specifically, these include well-adjusted children, under-controlled children, and behaviorally-inhibited children. Well-adjusted children typically are self-confident and do not become distressed or anxious with new stimuli and situations. Under-controlled children are typically impulsive and distractible, as well as easily aroused and emotionally unstable. Lastly, the inhibited group, tends to be more fearful and easily upset or avoidant in social situations (Caspi, 2000; Caspi et al., 1995).

Of the temperament styles described in previous research, behavioral inhibition has been considered to be a risk factor in the development of childhood anxiety (Turner, Beidel, & Wolff, 1996; van Brakel, Muris, Bogels, & Thomassen, 2006). Infants’ inhibited behaviors across contexts showed a moderate degree of continuity throughout childhood. That is, toddlers who were found to be quiet and shy also presented the same cautious and reserved social behaviors as children in different environments. Conversely, toddlers who were more social remained talkative and able to interact appropriately with unfamiliar peers and adults as children (Kagan, Reznick, Snidman, Gibbons, & Johnson, 1988). The long-term stability of behavioral inhibition
is important since infants who are identified as being behaviorally inhibited are more likely to develop anxiety disorders in the future.

**Attachment.** Due to the importance and influence of the parent-child relationship in infancy and early childhood, other critical variables in the development of anxiety include attachment styles the parent and child have, as well as parental styles and behaviors. Research that has developed from early work on attachment by John Bowlby and Mary Ainsworth has identified distinct categories of attachment; secure attachment and insecure attachment. There are additional categories within the insecure attachment domain. The majority of research suggests securely-attached infants tend to be well adjusted, socially competent, and able to form and maintain peer relationships in early and middle childhood. In contrast, the majority of research on insecure attachment styles has suggested that insecure attachment may lead to both internalizing and externalizing psychopathology in later life (Lewis-Morrarty et al., 2015).

Parental behaviors also greatly influence the child’s development and psychopathology. When parents use acceptance, they express warmth and responsiveness to the child, which in turn is more likely to promote the child’s emotional regulation. On opposition to positive parental acceptance behaviors, parental control is characterized by a parent’s excessive regulation of a child’s daily routine with the use of decision making, overprotection, and instruction. This overprotection is suggested to cause an increased perception of threat and increase the child’s avoidance to new stimuli (Rapee, 1997). There is also evidence in previous literature that the child’s symptoms of anxiety and withdrawal behaviors may elicit the over-controlling behaviors in parents, reflecting a bi-directional relationship (Rubin, Nelson, Hastings, & Asendorph, 1999). However, there is evidence of a significant relationship between parental over control, typically maternal over control, and anxiety.
Social Learning. Another factor that is found to be associated with the development of anxiety is parental psychopathology, and more specifically, parental anxiety. Factoring in genetics, anxious parents are more likely to have anxious children, and anxious children are more likely to have an anxious parent, as compared to non-anxious children (Hettema et al., 2001; Turner et al., 1987). In addition, children of anxious mothers specifically are at an increased risk of developing anxiety themselves (Whaley, Pinto, & Sigman, 1999). It is hypothesized that the transfer of anxiety from parent to child may be a learned or modeled environmental trait, rather than solely genetic, whereby parents may model or communicate these anxious behaviors or experiences to their children unknowingly, and the child models them or conveys the same perceived threats (Field, Lawson, & Banerjee, 2008). Lastly, children with anxiety tend to already exhibit heightened feelings of helplessness and uncertainty throughout a normal day. As such, it is suggested that adverse life events can contribute to the child perceiving his or her environment as unpredictable and uncontrollable (Eley & Stevenson, 2000). For these reasons, early intervention to address these behaviors is essential in targeting these behavioral issues before they evolve into long-term problems.

Significance of the Problem

The most significant impact of anxiety disorders is in social relationships, including family functioning, as well as with peers and social competence (Ezpeleta et al., 2001; Rapee, Schniering, & Hudson, 2009). Anxiety symptoms, specifically separation anxiety, can lead to school refusal by the child in order to avoid the anxiety feelings associated with separation. Further, this may impact the child’s academic and social difficulties (APA, 2015). Additionally, anxiety in children is not commonly seen as feelings of fear or worry to specific stimuli, as it is typically expressed in adolescents and adults. For children, anxiety may present as observable,
external behaviors such as avoidance, crying, anger, or clinging to a caregiver. For this reason, it is common for childhood anxiety symptoms to be unrecognized or misclassified as defiance or oppositional behavior (Egger & Angold, 2006). As a result, it is difficult to estimate the prevalence rates of childhood anxiety in the United States, largely due to misclassification of symptoms that may also be found in other childhood disorders. Currently, research has suggested that diagnosed childhood anxiety broadly ranges from 1.5%-22.2% of children (Luby, 2016). Consequently, due to the prevalence of this disorder, it is important for educational and mental health personnel to engage in intervention as early as possible in order to ameliorate the potential risks to children’s emotional well-being as well as social and academic success.

**Parent-Child Interaction Therapy**

Due to the previously discussed risk factors in childhood anxiety, researchers have hypothesized that the quality of overall early parent and child relationships can be influential in the development and maintenance of anxiety in children. Parent-Child Interaction Therapy (PCIT; Eyberg, Nelson, & Boggs, 2008) is an evidence-based treatment, typically used in the treatment of disruptive, externalizing behaviors in young children, typically between the ages of 2-7. PCIT is focused on improving the parent-child relationships as well as overall family functioning (Herschell, Calzada, Eyberg, & McNeil, 2002).

PCIT traditionally includes two equally important components: Child Directed Interaction (CDI) and Parent Directed Interaction (PDI). First, during CDI, the parents are instructed to follow the child’s lead during typical play, in order to strengthen the child’s sense of control, self-esteem, and prosocial behaviors. These sessions typically last ten minutes, with the therapists giving the parents continuous verbal coaching through a “bug-in-the-ear” communication device. These skills are observed, coded, and counted by the trained clinicians.
behind one-way mirrors. The coaching encourages the parents to rephrase questions and criticisms into positive attention, praise, reflection, imitations, and behavioral descriptions. Parents were also instructed to practice using these skills during normal play activity at home for at least five minutes a day. This phase intends to strengthen the overall positive relationship between the child and parent (Choate, Pincus, Eyberg, & Barlow, 2005; McNeil et al., 1991). Once CDI behaviors meet a criteria level of mastery by parents or caregivers, the next phase, PDI, begins. This phase helps parents learn specific skills to lead parent and child interactions appropriately and effectively, such as giving effective and direct commands, following through with praise for compliance, and implementing appropriate consequences or time-out procedures for disobedience. Similar to CDI, skills are coached through the communication device, observed, and coded by the therapists to determine levels of occurrence and mastery. Parents are encouraged to continue to utilize the skills learned in CDI at home, while practicing the newly learned skills, as well. Sessions are typically held once a week for approximately 12-16 weeks. PCIT is considered complete when the therapists observe and conclude parents meet mastery for the behavioral skills in both CDI and PDI phases. (Choate, Pincus, Eyberg, & Barlow, 2005; Eyberg et al., 2008).

**Theoretical Foundations of PCIT.** PCIT is based in attachment theory, where responsive and warm parents or caregivers during infancy and early childhood create a secure attachment with the child. This secure attachment between child and caregiver leads to more positive outcomes, such as a greater likelihood to be well adjusted, socially competent, and able to form and maintain peer relationships in early and middle childhood (Ainsworth, Blehar, Waters, & Wall, 1978). These outcomes may be attributed to the caregiver’s support in establishing social and emotional development through the lifespan. In contrast, the majority of
research has suggested insecure attachment styles lead to both internalizing and externalizing psychopathology in later life (Lewis-Morrarty et al., 2015). The CDI phase of PCIT targets the parent and child attachment, and intends to adjust it from a possible insecure attachment to a more secure attachment with the caregiver. This is accomplished through teaching the parents the specific skills needed to provide more encouraging and nurturing interactions with their child, as opposed to negative and unresponsive interactions (Hershell, Calzada, Eyberg, & McNeil, 2002).

Social learning theory has also influenced the basis of PCIT. This theory proposes that children’s behavior is directly or indirectly influenced by real life experiences of those around them. By observing others, children can learn how to manage and regulate their emotions as well as interact with others appropriately in different settings. Typically, children look to their parents and family environments and learn from these behaviors (O’Connor, Matias, Futh, Tantam, & Scott, 2013). Accordingly, behavioral difficulties in children are often influenced and maintained through adverse parent and child interactions. These interactions typically demonstrate negative reinforcement for the child, where dysfunctional behaviors such as aggression may be inadvertently reinforced by the parents’ behaviors (Patterson, DeBaryshe, & Ramsey, 1989). PCIT aims to restructure the parent and child relationship by instructing the parents to set specific and appropriate behavioral contingencies for the child in the PDI phase. Similarly, PCIT also uses techniques from behaviorism to modify and shape parent and child behaviors. This is accomplished through teaching the parent to utilize more positive reinforcement as opposed to negative reinforcement for undesirable behaviors.
PCIT and Anxiety

PCIT has been applied as a treatment for children diagnosed with separation anxiety disorder (SAD). In a study in which a single-subject multiple baseline design was used across three families to evaluate the changes as a result of treatment or due to other factors, PCIT was used in a sample of Caucasian parents with children between the ages of five and eight. Pretreatment was staggered among three families. The first family started one week after baseline, the second family started two weeks after baseline, and the third family started four weeks after baseline. Prior to implementation, a diagnostic semi-structured interview using the Anxiety Disorder Interview Schedule for DSM-IV-Child and Parent Versions (ADSI-IV-C/P) was conducted with parents and children separately, in order to examine the child’s anxiety and secondary disorders. Parents also monitored the child’s daily anxiety on an eight-point scale using the Weekly Record of Anxiety at Separation (WRAS). Parents and therapists also created a Fear and Avoidance Hierarchy (FAH) to list and rank, using a zero to eight-point scale, situations that the child feared or avoided the most. Scores were then summed to create a fear and avoidance score to be monitored at beginning of CDI and PDI, end of treatment, and during follow-up. Parents also completed the Child Behavior Checklist (CBCL) and Eyberg Child Behavior Inventory (ECBI) to measure externalizing and internalizing behaviors of the participants. The CBCL was administered at pretreatment and posttreatment, whereas the ECBI was completed before CDI, before PDI, at posttreatment, and at follow-up. CDI and PDI implementation was staggered among the families, and ranged from six to eight weeks in total for each child.

Results of this study showed significant decreases in behaviors of separation anxiety, such that none of the children met the criteria for SAD, following the implementation of PCIT.
Results also showed reported incidents of SAD behaviors decreased to zero within the first six weeks after beginning PCIT. During the follow-up phase, SAD behaviors also remained at or close to zero for each child. Even though single subject designs are difficult to generalize to the population at large, these results demonstrate the effectiveness in using PCIT to decrease SAD in young children (Choat, Pincus, Eyberg, & Barlow, 2005).

Chase and Eyberg (2008) further examined the use of PCIT in treating anxiety disorders in 64 children with comorbid internalizing and externalizing symptoms. All of the children in this current study were part of a larger study focusing on the effects of PCIT on ODD. As such, all of the children were diagnosed with ODD; 15 of them were also diagnosed with SAD whereas the remainder of them were not. Participants ranged in age from three to six years, with the majority of them being Caucasian (66%). Additionally, there were 42 boys and 22 girls included in the study. The CBCL was used to measure both internalizing and externalizing behaviors and symptoms on a three-point scale. The ECBI was also utilized to measure externalizing behaviors in children two to sixteen years of age using a 7-point scale. Graduate research assistants also engaged in structured diagnostic interviews with the mothers using the Diagnostic Interview Schedule for Children (DISC-IV-P) to examine the child’s psychopathology before and after treatment. In addition, this study utilized the Peabody Picture Vocabulary Test-Third Edition (PPVT-III) to measure the child’s receptive language ability, as well as the Wonderlic Personnel Test (WPT) to measure the adult’s cognitive capabilities for inclusion into this study. PCIT began following the completion of all of the pretreatment measures, starting with CDI and moving to PDI upon mastery. Treatment was considered complete when skills in both phases were mastered, and the child’s behavior problems on the ECBI were within a half of a standard deviation from the normative mean. Overall, the average
number of treatment sessions for families was 14, and the average length of treatment was 18 weeks. After treatment, families completed post-treatment DISC-IV, ECBI, and the CBCL.

Results of this study display evidence that PCIT is effective in reducing SAD symptoms. Children with or without SAD showed a significant decrease in externalizing symptoms associated with ODD. Children with comorbid ODD and SAD also demonstrated a significant reduction in SAD internalizing symptoms. Similarly, 73% of these children no longer met the clinical criteria for SAD after treatment. For the whole sample, internalizing problems significantly decreased after the implementation of PCIT. Taken together, the results of this study established an effective relationship between PCIT and the reduction of both anxious and disruptive behaviors in children (Chase & Eyberg, 2008).

The CALM Program

The research on PCIT adaptation for internalizing behaviors thus far has focused on the utility of PCIT for the treatment of separation anxiety disorder in young children. More recently, Puliafico and colleagues (2013) modified the techniques of PCIT to target not only separation anxiety disorders, but also other anxiety disorders seen in children, such as social phobia, generalized anxiety disorder, and specific phobias. Specifically, the Coaching Approach behavior and Leading by Modeling (CALM) program combines the elements of PCIT along with an exposure-based treatment to target the symptoms in anxiety. Similar to PCIT, the CALM program starts with strengthening of the parent and child relationship through the CDI phase. Unique to the CALM program, the second phase of the program teaches specific skills and behaviors to the parents to follow during exposure sessions, such as positive attending and active ignoring. These skills are known as the DADS steps, and are intended to model brave behaviors and ignore anxiety related symptoms. Recent research on the CALM program has shown it can
be feasible and effective in reducing anxiety symptoms for young children. However, continued empirical and theoretical support is needed in this area.

**Research Questions and Hypotheses**

The research questions in this study are:

*Hypothesis 1:* The CALM program will increase the number of positive parent behaviors as measured by the DPICS coding system.

*Research Question 2:* Does the CALM program have an effect on parent-child interactions, shown through a decrease in negative parent behaviors?

*Hypothesis 2:* The CALM program will decrease the number of negative parent behaviors as measured by the DPICS coding system.

*Research Question 3:* Does the CALM program significantly reduce the level of anxiety symptoms experienced in a young child?

*Hypothesis 3:* The CALM program will significantly reduce the levels of parent reported anxiety symptoms experienced in a young child as measured by the Preschool Anxiety Scale-Revised (PAS-R).

*Research Question 4:* Does the CALM program have an effect on the overall quality of the parent-child relationship?

*Hypothesis 4:* The CALM program will significantly increase the overall quality of the parent-child relationship, as measured by the Parent Relationship Questionnaire-Child/Adolescent (PRQ-CA).

**Conclusion and Summary**

Along with overall emotional functioning, the most significant and observable impacts of childhood anxiety are typically seen within family functioning and social relationships. As such,
family based, behavioral interventions are increasingly becoming utilized to treat anxiety symptoms in early childhood. PCIT is based in the theories of attachment and social learning, which specifically focus on the parent and child relationship as well as parent behaviors. The CALM program is an adaptation to typical PCIT, in that it strengthens the overall parent and child relationship and encourages parents to model brave behaviors to their children and selectively ignore anxiety related symptoms. The CALM program is hypothesized to decrease the child’s anxiety and anxiety symptoms, while simultaneously increasing positive parent responses to strengthen the parent and child relationship. This specifically targets evidenced risk factors for childhood anxiety, such as insecure attachment and parental over controlling behaviors.

The purpose of this current study is to examine the effectiveness of the CALM program for children ages three to six years and 11 months, diagnosed with anxiety, by specifically assessing the changes in the child’s anxiety levels, through its association with child attachment and parent behaviors. Results will examine the impacts of the CALM program not only on the child’s levels of anxiety, but also on parent behavioral changes as well. Overall, it is the aim of this study to significantly add to the literature base of the CALM program, as well as to more clearly identify the mechanisms of change to a child’s anxiety levels after the implementation of the CALM Program.
Chapter II: Literature Review

Historical Background of Fear and Anxiety in Children

Fear and worry are among those considered within the typical range of human emotions. When confronted with new people, things, or situations, humans usually respond with a level of caution determined by evolutionary factors, until they become acclimated to the novel stimuli of their environment. Fear is thought of as an immediate emotional response to possible or perceived threats in one’s environment. However, fear and anxiety both typically follow normative developmental patterns across the lifespan. Both are expressed by infants through adults in specific situations, often to similar stimuli such as strangers or loud noises. These emotions increase through the first years of life, and then stabilize through early childhood. It is expected for children to experience variable levels of fear or anxiety through development, such as following a major life event (Luby, 2016). However, when fear becomes irrational or excessive, it can become damaging to one’s thoughts and actions, and further develop into anxiety. Compared to fear, anxiety is considered a sustained and stable state of apprehension of thoughts of future events, typically characterized by avoidant behaviors (Luby, 2016). What differentiates fear from anxiety, and further, into an anxiety disorder is defined by the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). The DSM-5 defines an anxiety disorder by the level of distress and impairment upon a child’s age-appropriate functions (APA, 2015).

The DSM-5 considers specific characteristics in the examination of anxiety disorders. In childhood, anxiety disorders last beyond developmentally-appropriate periods, are usually longer than six months, and cannot be attributed to the effects of substances or medication. The symptoms must also be persistent, and cause significant distress or impairment in many areas of
functioning such as socially, academically, or occupationally. When symptoms of anxiety begin in childhood, they are most often seen throughout adolescence and adulthood as well (APA, 2015). However, childhood anxiety is not commonly seen as feelings of fear or worry in response to specific stimuli, as it is most often expressed in adolescents and adults. For children, anxiety may be shown through observable, external behaviors such as avoidance, crying, anger, or clinging to a caregiver. Generally, a child’s anxiety is displayed as more observable behaviors and it may also be difficult for a young child to verbalize emotions they may be experiencing. As such, it is common for childhood anxiety symptoms to be unrecognized or misclassified as defiance or oppositional behavior (Egger & Angold, 2006). Because of the misclassification of anxiety, it becomes difficult to correctly estimate the prevalence rates of childhood anxiety in the United States. Currently, research has suggested that diagnosed childhood anxiety broadly ranges from 1.5% - 22.2% of children (Luby, 2016).

**Childhood Anxiety**

Even with the wide range of diagnosed anxiety disorders, they remain one of the most prevalent mental health conditions in children. Specifically, separation anxiety disorder is the most common anxiety disorder in children under 12 (APA, 2015). Anxiety in childhood typically persists into adolescence and adulthood, and is considered as impairing as other childhood disorders, such as depressive disorders (Ezpeleta et al., 2001). This mental health disorder can lead to lifelong, detrimental effects as well as more severe anxiety and internalizing disorders and symptoms, such as social anxiety disorder, panic attacks, depression, and social phobias. There is also evidence that childhood anxiety can lead to comorbid externalizing disorders in adolescents, such as conduct disorder and attention-deficit/hyperactivity disorder (ADHD), as well as social and academic difficulties. If anxiety is left untreated through
childhood and adolescence, children may be at a greater risk for adult psychopathology, substance abuse, and suicide attempts (Bittner, Egger, Erkanli, Costello, Foley, & Angold, 2007; Drake & Ginsburg, 2012). In addition to emotional difficulties, the largest impact of anxiety disorders in children is typically seen in family functioning and relationships, as well as with peers and the child’s social competence (Ezpeleta et al., 2001; Rapee, Schniering, & Hudson, 2009). Anxiety symptoms, specifically social or separation anxiety, can lead to school refusal by the child in order to avoid the anxiety feelings associated with separation and social situations. Further, such school refusal or low attendance can contribute to significant and long-term academic and social difficulties (APA2015).

There is increasing research that suggests there is a genetic component to anxiety, as it is observed to occur in families. Family history data as well as twin studies (Eley et al., 2003) have suggested the heritability of anxiety disorders. Turner and colleagues (1987) used semi-structured interviews and standardized questionnaires to demonstrate that children of parents who are diagnosed with anxiety are seven times more likely to develop anxiety symptoms and disorders, when compared to children of parents who are not diagnosed with anxiety disorders. These children were also more likely to be worried and fearful, as well as meet DSM-III criteria for anxiety, as compared to children from typical parents (Turner, Beidel, & Costello, 1987). A meta-analysis by Hettema and colleagues (2001) demonstrated a familial genetic link between panic disorder, generalized anxiety disorder, phobias, as well as obsessive compulsive disorder. The large amount of previous data suggests that there may be a strong genetic link of anxiety disorders in families (Hettema, Neale, & Kendler, 2001).
Risk Factors for Anxiety

Previous research is unable to show the exact mechanisms of which factor has the most influence upon the development of anxiety. It is difficult to distinguish if a risk factor is due solely to genetics, the environment, or a combination of both of these. Eley and colleagues (2003) estimate that genetic factors explain more variance in the role of anxiety, as compared to the environment, yet both are thought to have important roles in the propensity of an individual to demonstrate anxiety symptoms. Some other empirically-supported risk factors for child anxiety include the child’s temperament and behavioral inhibition, insecure attachment, parental over-controlling behaviors, parental anxiety, and the impact of adverse life events on the child.

Temperament. One factor that has been suspected to be a risk factor for anxiety disorders is a child’s temperament. Temperament is described as the biologically-rooted inclinations in behaviors that are present early in life and remain relatively stable across situations and environments as well as over time (Bates, 1987). Temperament can also be defined as part of a child’s emerging personality that may be genetically determined (Muris & Ollendick, 2005). Previously, Thomas, Chess, and Birch (1970) have identified nine characteristics in children that lead to specific temperament styles: activity level, rhythmicity (which is the predictability and/or unpredictability in time of a function), approach or withdrawal to a new stimulus, adaptability of a child’s ability to modify new situations, threshold of responsiveness, intensity of reaction, quality of mood, distractibility, and attention span and persistence when faced with challenges in the environment.

Various combinations of these nine characteristics in children may lead to specific temperament styles. The first style, an easy temperament style, is characterized by positive approaches to novel stimuli, a high ability to adapt to new or changing situations, and typically, a
pleasant mood. These children also tend to be at ease in a new environment as well as when meeting or welcoming other people. The second style, a difficult temperament, is seen in children who withdraw in novel situations, are slow-to-adapt to change in situations and routines, and typically show a negative, intense mood. These children also tend to have frequent outbursts of crying and/or aggression. The last style, slow-to-warm-up, refers to children who are slow to adapt to new situations, even after repeated exposure to new stimuli or environments (Thomas et al., 1970).

More recently in multiple studies, Caspi and colleagues (Caspi, 2000; Caspi, Henry, McGee, Moffitt, & Silva, 1995) provided further evidence for this classification of stable behaviors as temperament styles. They identified and expanded on the three temperament groups from Thomas and colleague’s previous classifications and observations. First, the well-adjusted group, similar to the previously labeled “easy type,” included children who tended to be self-confident and who did not become distressed with new stimuli and situations. The second group, the under-controlled group, resembled Thomas and colleagues’ “difficult type”. This group was characterized by children who were impulsive and distractible, as well as easily aroused and emotionally unstable. Lastly, the inhibited group, which was similar to the previously named “slow-to-warm-up type,” included children who were fearful and easily upset by novelty in their environment. They also tended to be less communicative or avoidant in social settings. This longitudinal study also examined the children in these three groups through adolescence and into adulthood. Caspi and colleagues showed these temperamental qualities lasted into adulthood and even predicted aspects of adult personalities. This research suggests that there is reasonable stability in temperament and behavioral characteristics over one’s lifetime (Caspi, 2000; Caspi et al., 1995).
Behavioral Inhibition. Of the temperament styles described in previous research, behavioral inhibition has been considered to have a strong genetic component, as well as to be a risk factor in the development of childhood anxiety (Turner, Beidel, & Wolff, 1996; van Brakel, Muris, Bogels, & Thomassen, 2006). Approximately 15-20% of infants display a predisposition or temperament referred to as behavioral inhibition (Lewis-Morrarty et al., 2015). Behavioral inhibition, typically characterized by negative emotions and withdrawal, describes an infant’s relatively stable pattern of behavioral responses to novel people, stimuli, or situations (Kagan, 1997). When confronted with unfamiliar situations, behaviorally-inhibited infants stop their play behavior, and look to their caregivers for comfort. These infants rarely approach new objects or people, and remain cautious and shy throughout unfamiliar situations (Fox, Henderson, Marshall, Nichols, & Ghera, 2005; Kagan, 1994).

Similar to other temperament styles and replicated across studies, infant’s inhibited behaviors across contexts showed a moderate degree of continuity throughout childhood. That is, toddlers who were found to be quiet and shy also presented the same cautious and reserved social behaviors at 7.5 years in different environments. Conversely, toddlers who were more social remained talkative and able to interact appropriately with unfamiliar peers and adults at 7.5 years (Kagan, Reznick, Snidman, Gibbons, & Johnson, 1988). This stability of inhibited behaviors has also been replicated across longitudinal samples in different countries, such as Australia, Sweden, China, Germany, and Mauritania (Fox et al., 2005).

This long-term stability of behavioral inhibition becomes important because infants who are identified as being behaviorally inhibited are more likely to develop anxiety disorders in the future. While this evidence presents a risk factor for the development of anxiety disorders in children, it does not mean that every child with inhibited behaviors will develop an anxiety
disorder, nor will every child with an anxiety disorder have displayed inhibited behaviors in infancy, although the association is elevated. For this reason, it is important to distinguish what circumstances or interactions of commonly-seen factors lead to the development of anxiety disorders in children, and specifically for behaviorally-inhibited children. Some further-identified variables include negative parenting behaviors, parental anxiety, adverse or traumatic life events, and an insecure parent-child attachment (Muris, van Brakel, Arntx, & Schouten, 2011; Rapee et al., 2009; Van Brackel, Muris, Bogels, & Thomassen, 2006).

**Attachment**

John Bowlby and Mary Ainsworth, two of the primary attachment theorists, describe attachment as an emotional and stable relationship a child forms with an attachment figure or caregiver based on the ideas that loss and separation of an attachment figure would have long-term effects that impact the child’s development and psychosocial functioning (Bowlby, 1973). It is also suggested that early attachment of caregiver and child influence later personality development in children (Ainsworth, 1989). Children form their attachment with caregivers based on how they perceive the attachment figures as available, sensitive, and responsive to their own needs (Brumariu & Kerns, 2010). In order to assess these characteristics of a parent-child relationship, Ainsworth and colleagues (1978) developed the Strange Situation Procedure (SSP), which was a series of separations and reunions between the caregiver and child in which the child’s behaviors in these situations were observed and researched. From this procedure, Bowlby and Ainsworth found that the majority of infants display secure attachment (Ainsworth, Blehar, Waters, & Wall, 1978). Secure attachment is characterized by the child appropriately exploring one’s environments when a caregiver is present, and using the caregiver as a secure base or safe haven when needed. Following a separation, the child can comfortably reunite with
the caregiver, and the caregiver soothes their distress or addresses the child’s needs. When caregivers show a lack of responsiveness or care, children can display a different type of attachment style, insecure attachment. They are then less likely to comfortably explore and learn on their own, as well as to use the caregiver as a secure base and safe haven when in need or in distress (Brumariu & Kerns, 2010; Lewis-Morrarty et al., 2015).

Ainsworth further expanded insecure attachment into two different types: avoidant and ambivalent. Avoidant infants tend to ignore or avoid their caregivers as well as show a negative affect in order to minimize the caregivers’ importance to their comfort. This serves as a self-defense strategy for children by allowing them to avoid further attempts for contact and comfort from caregivers, and teaches the child that using negative affect in situations is appropriate (Brumariu & Kerns, 2010). Ambivalent infants express heightened, fearful emotions as well as increased dependence on their caregiver in attempts to gain attention and security from the caregivers’ inconsistent responding to the child’s distress. During separation, the children seek increased proximity when the caregiver is near, but show angry behaviors when reunited with a caregiver. In turn, the attachment figure is suggested to express uncertainty when setting limits to the child’s behaviors and undermine the child’s autonomy and expression (Brumariu & Kerns, 2010; Lewis-Morrarty et al., 2015).

A fourth type of attachment style was later characterized by infants who express fearful behaviors or no emotions toward caregivers when reunited, called disorganized attachment. These children do not show an organized strategy to cope with distress in the presence of their caregiver, and instead express incoherent or contradictory behaviors, such as that the caregiver is a source of both comfort and apprehension (Brumariu & Kerns, 2010). This further results in
showing an abnormal attachment relationship through development between child and caregiver (Lewis-Morrarty et al., 2015).

**Attachment Styles and Internalizing Behaviors**

Research on attachment styles has shown that securely attached infants tend to be well adjusted, socially competent, and able to form and maintain peer relationships in early and middle childhood. These outcomes may be attributed to the caregiver’s support in establishing social and emotional development through the lifespan. In contrast, the majority of research has suggested insecure attachment styles lead to both internalizing and externalizing psychopathology in later life (Lewis-Morrarty et al., 2015). This is hypothesized through attachment theory as the child’s uncertainty of the caregiver’s responses to the child’s needs developing into or maintaining the child’s anxiety or depression. Furthermore, the child may be focused on gaining the caregiver’s attention, and engage in less time exploring his or her own environment and independent learning (Bowlby, 1973).

A meta-analysis conducted by Madigan and colleagues (2013) reported a small to medium effect size (d=.37) for the association of insecure attachment and internalizing disorders in children ranging from 1-8 years of age in studies conducted in the United States, Canada, Europe, and Australia. Specifically, children demonstrating avoidant attachment styles were found to display more internalizing behaviors (d=.29) than compared to children with secure attachment. The authors also suggest children with insecure attachment are twice as likely to develop internalizing disorders, as compared to children with secure attachment with their caregivers. Additionally, the meta-analysis showed that studies using observational methods to measure internalizing behaviors yielded a larger effect size (d=.67), compared to studies that used a questionnaire-based measure of internalizing disorder (.34). These results suggest that
trained observers may be more sensitive to internalizing behavior than an individual’s own perceptions (Madigan et al., 2012).

In another meta-analysis, Groh and colleagues (2012) compared 42 studies to examine the association of insecure attachment styles and internalizing symptoms. For 4,614 children, the researchers found an overall small, but significant effect size \( (d=0.19) \) between insecurely attached children and internalizing psychopathology. Along with other previous research, this meta-analysis provides evidence that early insecure attachment with a caregiver increases the risk of developing internalizing symptoms and disorders (Groh, Roisman, van Ijzendoorn, Bakersmans-Kranenburg, & Fearon, 2012).

Due to the importance of the parent-child relationship in infancy and early childhood, past research has focused on attachment to characterize this relationship and its long-term effects on children’s development, adjustment, and psychopathology (Brumairu & Kerns, 2010; Lewis-Morrarty, 2015). Theorists characterize attachment to reflect the child’s perceptions of their caregiver’s responses to the child’s needs (Ainsworth, Blehar, Walters, & Wall, 1978). As previously discussed, secure attachment leads to well-adjusted and socially-competent children though childhood and adolescence. These outcomes may be attributed to the caregiver’s support in establishing social and emotional development through the lifespan and acting as a secure base for comfort or safety. In contrast, insecure attachment does not give this sense of consistency or safety to the child, and he or she can become avoidant or resistant to the caregiver (Madigan, Atkinson, Laurin, & Benoit, 2013). The majority of attachment research has suggested insecure attachment styles may lead to both internalizing and externalizing psychopathology in later life (Lewis-Morrarty et al., 2015).
Parental Factors. In addition to the parent and child relationship, it is important to examine parental styles and behaviors as possible explanations or risk factors to childhood anxiety. Parenting styles are characterized by a general pattern of caregiving behaviors (Wood et al., 2003). Traditionally, parenting styles have been framed using two constructs: the levels of parental acceptance compared to the levels of parental control (Rapee, 1997). Parental acceptance can be thought of as warmth and responsiveness to the child’s feelings and behaviors, as well as emotional and behavioral interest in the child’s daily life and activities. When parents use acceptance and warmth, rather than criticism or negativity, towards a child’s feelings or behaviors, parents are more likely to promote emotional regulation. This is accomplished by allowing the child to learn independently and tolerate negative situations. Using acceptance and warmth is thought to reduce the child’s anxiety when faced with negative experiences and emotions (Wood et al., 2003).

Parental Control. In contrast to positive parental acceptance behaviors, parental control is characterized by a parent’s excessive regulation of a child’s daily routine with the use of decision making, overprotection, and instruction. When this is used, parents promote the child’s dependence on the parent, which decreases the child’s perceived mastery of the environment and independence. Further, the child’s perceived lack of independence may lead to feelings of events or feelings being out of one’s control, leading to increased feelings of anxiety (Wood et al., 2003). Parental control can also be described as offering more assistance or guidance to the child than what the child may need, thereby overprotecting the child from negative situations and stress. In turn, this may cause an increased perception of threat, when there is not one, and increase the child’s avoidance to that stimuli. Additionally, this may increase the child’s anxiety to a non-threatening situation or environment (Rapee, 1997). There is also evidence in previous
literature that the child’s symptoms of anxiety and withdrawal behaviors may elicit the over-controlling behaviors in parents, hypothesizing a bi-directional relationship (Rubin, Nelson, Hastings, & Asendorph, 1999). With these hypotheses, there is consistent evidence that there is a significant relationship between parental over-control, typically maternal over-control, and anxiety.

**Effects of Parental Control.** Hudson and Rapee (2001) examined the association of parental control and anxiety in Australia using observational methods of mothers and children during difficult five minute cognitive tasks. In this study, 43 had anxiety disorders such as separation anxiety, generalized anxiety, and social phobias; 20 were diagnosed with oppositional defiant disorder (ODD), and 32 were non-clinical children. Because this study was conducted over several years, both the DSM-III and DSM-IV were used to diagnose anxiety and ODD using semi-structured clinical interviews utilizing either the Anxiety Disorders Interview Schedule for Children or the Anxiety Disorders Interview Schedule for DSM-IV Child and Parent Version (ADIS-IV-C/P). Children also completed the Revised Children’s Manifest Anxiety Scale (RCMAS) as a self-report scale to measure their anxiety. The mothers also completed the Child Behavior Checklist to measure behaviors observed in their children, and the Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) to measure anxiety and depression symptoms, respectively. The cognitive tasks in this study were comprised of the child completing two, five-minute scrabble and tangram tasks. The mother was instructed to give the child assistance if she perceived he or she needed it. Observers rated the interactions on the degrees of maternal involvement and negativity seen during the interaction, using a zero-to-eight-point continuum, where four was rated as a neutral value. Observers were unaware of the
child’s diagnosis and utilized an additional coder for 50% of the observations to verify inter-rater reliability.

The results of this study indicated that specifically during difficult situations, mothers of anxious children became more controlling and involved than mothers of the non-anxious children. Further, these mothers were also observed to become more negative and criticizing towards the child, compared to the mothers of non-anxious children. These results were also similar for children with ODD, in that mothers of children with ODD were also observed to be more controlling and more critical than mothers of non-clinical children. The lack of differences may be attributed to the fact that parenting styles high in control and over-involvement may lead to pathology in children in general. Contrary to the development of anxiety or pathology, this type of parenting may also play a role in the maintenance of anxiety across development. The high control seen in these mothers may be symptomatic of the mother’s pathology, as well. However, this study demonstrates the support between an observed relationship among parental control and over-involvement and childhood anxiety (Hudson & Rapee, 2001).

This association of parental control and childhood anxiety has been further evidenced in multiple longitudinal studies utilizing both questionnaires as well as observational methods. Edwards and researchers (2010) examined predictors of childhood anxiety for preschool-aged children and the impacts of parental factors, such as parental negativity, child inhibition, parent overprotection, and impact of traumatic life events. This study included mothers and fathers of 638 three- to five-year old children in Australia. Most children were attending daycare or preschool, and the sample was primarily middle-to-high income households. The parents were mailed questionnaires for baseline, and then again after 12 months. The questionnaires used included The Revised Preschool Anxiety Scale (PAS-R) to assess anxiety symptoms and The
Behavioral Inhibition Questionnaire (BIQ) to examine inhibition in three- to five-year-old children. The Depression Anxiety Stress Scales (DASS-21) was utilized to measure adult anxiety traits, which in this study was conceptualized as adult negative affectivity. The Parental Overprotection Questionnaire (OP) examined overprotective parenting behaviors that restrict a child’s exposure to perceived threatening or harming situations or events. Lastly, the Life Events Scale assessed traumatic events that may have occurred during the past 12 months, and asked parents to rate them from zero to three, in terms of perceived impact on the child.

Results revealed both mothers and fathers self-reported their overprotective behaviors to significantly predict their child’s levels of anxiety symptoms 12 months after baseline. Further, both parents suggested the level to which they engaged in overprotective behaviors influenced the degree of their child’s anxiety symptoms in the 12-month span. Few studies have examined this relationship longitudinally such as in this study, further providing indication that both overprotective mothers and fathers predict anxiety symptoms in children (Edwards et al., 2010).

Another study from Bayer and colleagues (2006) examined parental influences on internalizing behaviors in childhood using both questionnaires and observations. A sample of 112 Australian children, with 110 mothers and 2 fathers as the primary caregivers, were researched longitudinally from two to four years of age. Parents completed questionnaires and were observed during normal play activities in a play room. Questionnaires consisted of the Children’s Moods Fears and Worries Questionnaire, developed by the authors for a previous study. This measure assessed internalizing difficulties for toddlers and preschoolers using a five-point scale. Researchers examined the parents’ warmth, reasoning, and punishment practices using the Child Rearing Questionnaire (CRQ), and the parental internalizing psychopathology and emotional problems using the Anxiety and Insomnia and Severe Depression subscales of the
General Health Questionnaire (GHQ), as well as the State-Trait Anxiety Inventory’s trait form (STAI-T). These scores were combined to form a composite anxiety-depression score. The Life Events Questionnaire (LEQ) was used to measure and rate the impact of specific traumatic life events that may have occurred in the family. In addition, the Dyadic Adjustment Scale examined the parents’ relationship satisfaction, and the Index of Perceived Social Support assessed the parents’ beliefs of their own social isolation or belongingness. Lastly, the Daily Hassles Questionnaire was used to document the frequency of the parents’ hassles on a day-to-day basis.

For the observations, the children and families visited a university playroom four times over two years, twice at age two and twice at age four. The playroom visits lasted 45 to 70 minutes long and presented the children with interactions involving novelty, frustration, and contact with other peers. Coders watched these observations and used a global five-point rating scale to standardize and compare each variable measured.

Results of this study showed both parenting practices, such as over-involved/protective and low warm-engaged parenting, as well as parental stress led to early childhood internalizing behaviors. In contrast, parenting styles such as power-assertive/punitive or autonomy-encouraging parenting were not predictors of internalizing difficulties. Specifically, over-involved parenting was the single most independent predictor variable of internalizing problems, with all other variables removed. As such, this study increases the evidence that parenting, specifically, over involved or controlling parenting, predicts child internalizing difficulties throughout development (Bayer, Sanson, & Hemphill, 2006).

**Parental Control and Behavioral Inhibition.** More recently, there has been growing evidence that over-controlling parenting is also related to the maintenance of behavioral inhibition in children. As noted previously, behavioral inhibition is described as a stable
temperament seen in infants and children, typically characterized by shyness, anxiety, and withdrawal to novel situations. Rubin and colleagues (2002) aimed to examine the longitudinal relationship of parental behaviors and behavioral inhibition from age two to four. Their research showed maternal overcontrol without warmth, and maternal criticism and derision were found to moderate the relationship between toddler behavioral inhibition. This means that when mothers showed these negative parental characteristics, the toddlers who were characterized as behaviorally inhibited were more likely to show socially-wary behaviors and avoid interactions with peers. When mothers did not display over controlling behaviors, however, there was no relationship between preschool behavioral inhibition and social wariness or avoidance. As such, the results demonstrate the significant association of maternal overcontrol and negative behaviors on toddlers’ behavioral inhibition and social avoidance (Rubin, Burgess, & Hastings, 2002). From these results, there is evidence that maternal behaviors, specifically over-controlling behaviors, highly influenced a child’s inhibition as well as his or her social competence.

Lewis-Morrarty and colleagues (2012) furthered this evidence of maternal overcontrol associated with behavioral inhibition longitudinally. This research examined the temperament of infants at four months of age and further across the developmental stages, lasting into adolescence. Maternal overcontrol was observed at seven years of age during parent-child interaction tasks. Symptoms of anxiety were also reported through questionnaires completed at 14-17 years of age. Results of this study indicated higher maternal overcontrol was shown to elicit higher social anxiety symptoms at seven years of age. In addition, the interaction of high behavioral inhibition and maternal overcontrol predicted anxiety symptoms through adolescence, whereas behavioral inhibition without over-controlling mothers did not increase the association
of anxiety in adolescents. These results help to establish evidence that maternal overcontrolling behaviors are a risk factor for childhood and adolescent anxiety, specifically for children that may be at-risk for anxiety disorders due to high behavioral inhibition in infancy (Lewis-Morrarty et al., 2012).

**Parental Anxiety.** Another factor that is found to be associated with the development of anxiety is parental psychopathology, and more specifically, parental anxiety. It has become increasingly evident that anxiety has a heritable component and tends to run in families. As discussed previously, anxious parents are more likely to have anxious children, and anxious children are more likely to have an anxious parent, as compared to non-anxious children (Hettema et al., 2001; Turner et al., 1987). In addition, children of anxious mothers specifically are at an increased risk of developing anxiety themselves (Whaley, Pinto, & Sigman, 1999). However, the mechanisms of transference yield variable results. Similar to the previous parental factors, it is hypothesized that the transfer of anxiety from parent to child may be a learned or modeled environmental trait, rather than solely be transmitted genetically. Often, parents model or communicate these anxious behaviors or experiences to their children unknowingly, and the child models them or conveys the same perceived threats (Field, Lawson, & Banerjee, 2008).

Although any child exposed to these fearful behaviors or communication from a parent may be negatively impacted, children with an already inhibited temperament may be more influenced by these behaviors. Researchers have shown that mothers with social phobias were more likely than mothers without social phobias, to show signs of fear and anxiety when interacting with a stranger. Due to these observations of the mother’s fearful reactions, infants of mothers with social phobias show higher levels of avoidance during social interactions, specifically with strangers. Thus, the fear and anxiety responses from mother to infant was
transmitted to the perceptions of threat through the parent’s modeled behaviors of anxiety (Murray et al., 2008). Conversely, when mothers display calm reactions to novel events or objects encountered in the environment, infants typically do not display fear toward that object (Egliston & Rapee, 2007).

Often times, controlling parental behaviors, as described above, are thought to be a result of parental anxiety, as well. Due to their own anticipation and perceptions of threat in the environment, parents may be more likely to have an overinvolved relationship with their child. This, in turn, can increase these perceived dangers in the child, as well as further increase the child’s own anxiety (Chorpita & Barlow, 1998). Anxious mothers have also been found to be experiencing more stress and depression, leading them to become less warm and more critical of their children, as well as less granting of independence, than non-anxious mothers (Whaley et al., 1999). Overall, the transmission of anxiety from parent to child is evidenced as both a genetic and environmental risk factor.

**Adverse Life Events.** Even for a typical child or adult, an adverse or traumatic life event such as a death of a loved one or family dysfunction, can lead to feelings of worry or fear as well as develop into an anxiety disorder. As such, there is a strong interaction between external events in one’s life and the internal feelings or thoughts that one experiences. Children with anxiety tend to already exhibit heightened feelings of helplessness and uncertainty throughout a normal day. As such, it is suggested that adverse life events can contribute to the child perceiving his or her environment as unpredictable and uncontrollable (Eley & Stevenson, 2000). Some longitudinal research has shown that in preschool children, the perceived impact of an adverse life event, rather than the number of events, predicted anxiety symptoms in children one year later (Edwards et al., 2010; Rapee et al, 2009). Within clinical populations of children,
research in the area of anxiety and traumatic events has been limited. However, there is an association between the impacts of negative life events on children with anxiety, when compared to children without anxiety (Eley & Stevenson, 2000).

**Current Early Interventions for Children**

There is a myriad of evidence suggesting behavioral, therapeutic interventions are effective for treating anxiety and other mood disorders for middle childhood and adolescents, such as depression, anxiety, and phobias (David-Ferndon & Kaslow, 2008; Kendall, Hudson, Gosch, Flannery-Schroder, & Suveg, 2008; Silverman, Pina, & Viswesvaran, 2008). However, the research has lacked the examination of utility in early childhood populations. Currently, there is little evidence for appropriate treatments for anxiety and other internalizing disorders in very young children (Carpenter, Puliafico, Kurtz, Pincus, & Comer, 2014). This may be attributed to the higher-level insight and cognitive skills needs to recognize one’s emotions and feelings in these anxiety interventions for older children. In addition, young children do not often develop receptive and expressive language until later in childhood, to be able to engage and benefit from an evidenced-based intervention for internalizing disorders. Younger children may also lack well-developed perspective-taking, and other executive functioning skills such as maintaining attention and organizational skills. These are abilities are typically needed in such evidence-based psychosocial and cognitive behavioral techniques an older child or adolescent use to benefit from these therapies (Carpenter, et al., 2014; Silverman, et al., 2008).

Recent research has begun to focus on developmentally-appropriate adaptations for younger children to current these current therapies (Hirshfeld-Baker, et al., 2010; Rapee, Kennedy, Ingram, Edwards, & Sweeny, 2010). A widely-used and evidenced-based manualized intervention for anxiety in youth, Coping Cat, is typically recommended for children 7-13 years
of age, due to a young child’s difficulty identifying and expressing their emotions or behaviors. However, research suggests this can also be modified to be more effective for young children under the age of seven (Beidas, Benjamin, Puleo, Edmunds, & Kendall, 2010). These adaptations include more use of play within the intervention as well as implementing developmentally appropriate ways to teach relaxation techniques and coping skills. Other therapeutic interventions for anxiety or mood disorders in children has increased focused on higher parental involvement, as younger children are more reliant on their parents at this age (Carpenter et al., 2014; Rapee, et al., 2010). Additionally, tailored interventions use an increase of concrete language, tangible examples and rewards. This enables the child to be more engaged and involved in the therapeutic process, as well as teaching and modeling appropriate behaviors for the parents to utilize in day-to-day parenting practices (Beidas et al., 2010; Carpenter et al., 2014).

Another evidenced-based intervention that has been adapted to target anxiety and other internalizing disorders in early childhood is Parent-Child Interaction Therapy (PCIT). Most often, PCIT is utilized as an effective treatment of disruptive disorders in young children, typically around the ages of 2-7 (Eyberg, Nelson, & Boggs, 2008). PCIT centers around high parent involvement, play therapy, and positive reinforcement, and does not utilize higher level cognitive processing, which are identified as developmentally appropriate methods to engage children in the therapeutic process. Additionally, the skills taught to parents in traditional PCIT provides parents with more effective ways to decrease their child’s anxiety behaviors, as well as externalizing behaviors, as anxiety often appears as externalizing in young children (APA, 2015). PCIT also targets and reshapes the previously mentioned risk factors for childhood anxiety, such as an over-controlling parenting style and a parent’s own psychopathology. As
such, researchers and clinicians have identified PCIT as a developmentally appropriate extension to treat internalizing disorders, such as anxiety, in young children (Carpenter et al., 2014).

**Parent-Child Interaction Therapy**

Parent-Child Interaction Therapy (PCIT; Eyberg, Nelson, & Boggs, 2008) is an evidence-based treatment of disruptive disorders in young children, typically around the ages of 2-7. PCIT is focused on improving the parent-child relationships as well as overall family functioning (Herschell, Calzada, Eyberg, McNeil, 2002). PCIT also targets parent’s over-controlling behaviors, which were previously discussed as a risk factor for the development of childhood anxiety (Chorpita, Brown, & Barlow, 1998). PCIT includes two equally important components: Child Directed Interaction (CDI) and Parent Directed Interaction (PDI).

First, during CDI, the parents are instructed to follow the child’s lead during traditional play, in order to strengthen the child’s sense of control, self-esteem, and prosocial behaviors. These sessions typically lasted ten minutes, with the therapists giving the parents continuous verbal coaching through a “bug-in-the ear” communication device. These skills are observed, coded, and counted by the trained clinicians behind one-way mirrors. The coaching encourages the parents to rephrase questions and criticisms into positive attention, praise, reflection, imitations, and behavioral descriptions. Parents were also instructed to practice using these skills during normal play activity at home for at least five minutes a day. This phase intends to strengthen the overall positive relationship between the child and parent (Choate, Pincus, Eyberg, & Barlow, 2005; McNeil et al., 1991). Once CDI is mastered by parents or caregivers, the next phase, PDI, begins. This phase helps parents learn specific skills to lead parent and child interactions appropriately and effectively, such as giving effective and direct commands, following through with praise for compliance, and implementing appropriate consequences or
time-out procedures for disobedience. Similar to CDI, skills are coached through the communication device, observed, and coded by the therapists to determine levels of occurrence and mastery. Parents are encouraged to continue to utilize the skills learned in CDI at home, while practicing the newly learned skills, as well. Sessions are typically held once a week for approximately 12-16 weeks. PCIT is considered complete when the therapists observe and conclude parents meet mastery for the skills in both CDI and PDI phases. (Choate, Pincus, Eyberg, & Barlow, 2005; Eyberg et al., 2008).

**Theoretical Foundations of PCIT.** As previously discussed, PCIT is based in attachment theory, where responsive and warm parents or caregivers during infancy and early childhood create a secure attachment with the child. This secure attachment between child and caregiver leads to more positive outcomes, such as a greater likelihood to be well adjusted, socially competent, and able to form and maintain peer relationships in early and middle childhood (Ainsworth, Blehar, Waters, & Wall, 1978). These outcomes may be attributed to the caregiver’s support in establishing social and emotional development through the lifespan. In contrast, the majority of research has suggested insecure attachment styles lead to both internalizing and externalizing psychopathology in later life (Lewis-Morrarty et al., 2015). The CDI phase of PCIT targets the parent and child attachment, and intends to adjust it from a possible insecure attachment to a more secure attachment with the caregiver. This is accomplished through teaching the parents the specific skills needed to provide more encouraging and nurturing interactions with their child, as opposed to negative and unresponsive interactions (Hershell, Calzada, Eyberg, & McNeil, 2002).

Social learning theory has also influenced the basis of PCIT. This theory proposes that children’s behavior is directly or indirectly influenced by real life experiences of those around
them. By observing others, children can learn how to manage and regulate their emotions as well as interact with others appropriately in different settings. Typically, children look to their parents and family environments and learn from these behaviors (O’Connor, Matias, Futh, Tantam, & Scott, 2013). Accordingly, behavioral difficulties in children are often influenced and maintained through adverse parent and child interactions. These interactions typically demonstrate negative reinforcement for the child, where dysfunctional behaviors such as aggression are inadvertently reinforced by the parents’ behaviors (Patterson, DeBaryshe, & Ramsey, 1989). PCIT aims to restructure the parent and child relationship by instructing the parents to set specific and appropriate behavioral contingencies for the child in the PDI phase. Similarly, PCIT also uses techniques from behaviorism to modify and shape parent and child behaviors. This is accomplished through teaching the parent to utilize more positive reinforcement as opposed to negative reinforcement for undesirable behaviors.

Efficacy of PCIT. PCIT has routinely been established as an evidenced based intervention through research with a variety of populations and settings. Primarily, it has shown to be highly effective in reducing externalizing and disruptive behaviors in children, compared to waitlist control groups, both at home and at school (Eyberg et al., 2008; McNeil, Eyberg, Eisenstadt, Newcomb, & Funderburk, 1991; Schuhmann, Foote, Eyberg, Boggs, & Algina, 1998). Positive behavioral effects of PCIT have also been observed in untreated siblings, suggesting the generalization of parent behavior to other family interactions (Eyberg & Robinson, 1982). Further outcomes of similar studies include an increase in positive parent interactions with their child (Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993), as well as a decrease in parent self-reports of stress and psychopathology (Eyberg, Boggs, & Algina, 1995). Meta-analyses have demonstrated the effectiveness of adapting PCIT to reach
larger populations, such as within group settings and various community mental health settings (Lieneman, Brabson, Highlander, Wallace, & McNeil, 2017).

Although PCIT was originally conceptualized for children with externalizing and oppositional behaviors, more recently, adaptations to PCIT have been developed for other specific populations of children. PCIT has been found to reduce disruptive behavior while increasing child compliance and positive parenting behaviors for children with autism spectrum disorder (Masse, McNeil, Wagner, & Quetsch, 2016). Meta-analyses also suggest in can be effective for reducing reoccurring physical abuse and parental stress in physically abusive parents (Kennedy, Kim, Tripodi, Brown, & Gowdy, 2014). Further, PCIT has been utilized and become effective in treating internalizing disorders of childhood, such as separation anxiety (Choate, Pincus, Eyberg, & Barlow, 2005) as well as with randomized controlled trials (Pincus, Eyberg, & Choate, 2005).

**PCIT and Anxiety.** Research on PCIT has consistently demonstrated its utility and effectiveness in reducing externalizing and disruptive behaviors in young children, compared to waitlist control groups (Eyberg et al., 2008; Schuhmann et al., 1998). This has been attributed to its assumption that it improves the parent and child relationship, thus also improving the overall child and family functioning. Another main component of PCIT is that it directly focuses on changing parenting behaviors, specifically over-controlling parenting behaviors. As previously described, over-controlling parenting behaviors have been identified as a specific risk factor for the development of anxiety in children (Hudson & Rapee, 2001; Rapee 1997). Overall, PCIT is intended to decrease parental overcontrol and negativity, thus, ending the maintenance of the child’s anxiety symptoms. The CDI phase aims to increase the child’s sense of control by allowing him or her to lead and make independent decisions. The PDI phase attempts to teach
parents new, more effective parenting techniques, that the child can choose to abide by, in turn preventing a time out (Choate et al., 2005). Similarly, the improved overall parent and child relationship, following the implementation of PCIT, may give the child an increased sense of control and independence from the parent. For these reasons, it is relevant to consider the use of PCIT as an effective parent and child intervention for childhood anxiety.

Choate and colleagues (2005) examined the effectiveness of PCIT in three families with one child diagnosed with separation anxiety disorder (SAD). All of the participants and their families were Caucasian and were between the ages of five and eight. PCIT was conducted with both parents for this study. In addition, none of the children were prescribed any medications during treatment. The first participant, Mark, was a five-year-old male with SAD and panic disorder. He primarily worried about separation from his mother when she dropped him off at school and would repeatedly question when she would return. Melissa, the second participant, was an eight-year-old female with SAD and ODD. Melissa’s primary concern was falling asleep at night and staying over at friend’s houses. The third child, Jared, was a seven-year-old male diagnosed with SAD. He also worried about leaving his parents in the morning for school and worried about them not being able to pick him up on time.

This study utilized a single subject multiple baseline design across families to evaluate the changes as the result of treatment or due to the passage of time or maturity. Pretreatment was staggered among the three families. The first family started one week after baseline, the second family started two weeks after baseline, and the third family started four weeks after baseline. Prior to implementation, a diagnostic semi-structured interview using the Anxiety Disorder Interview Schedule for DSM-IV-Child and Parent Versions (ADSI-IV-C/P) was conducted with parents and children separately, in order to examine the child’s anxiety and secondary disorders.
Parents also monitored the child’s daily anxiety on an eight-point scale using the Weekly Record of Anxiety at Separation (WRAS). Parents and therapists also created a Fear and Avoidance Hierarchy (FAH) to list and rank, using a zero to eight-point scale, situations that the child feared or avoided the most. Scores were then summed to create a fear and avoidance score to be monitored at beginning of CDI and PDI, end of treatment, and during follow-up. Parents also completed the Child Behavior Checklist (CBCL) and Eyberg Child Behavior Inventory (ECBI) to measure externalizing and internalizing behaviors of the participants. The CBCL was administered at pretreatment and posttreatment, whereas the ECBI was completed before CDI, before PDI, at posttreatment, and at follow-up. CDI and PDI implementation was staggered among the families and ranged from six to eight weeks in total for each child.

Results of this study showed significant decreases in behaviors of separation anxiety, such that none of the children met criteria for SAD, following the implementation of PCIT. Results also showed reported incidents of SAD behaviors decreased to zero within the first six weeks of beginning PCIT. During the follow-up phase, SAD behaviors also remained at or close to zero for each child. Even though single subject designs are difficult to generalize to the overall population, these results demonstrate the effectiveness in using PCIT to decrease SAD in young children (Choate et al., 2005).

Chase and Eyberg (2008) further examined the use of PCIT in treating anxiety disorders in 64 children with comorbid internalizing and externalizing symptoms. All of the children in this current study were part of a larger study focusing on the effects of PCIT on ODD. As such, all of the children were diagnosed with ODD; fifteen of them were also diagnosed with SAD, whereas the remainder of them were not. Participants ranged in age from three to six years, with the majority of them being Caucasian (66%). Additionally, there were 42 boys and 22 girls
included in the study. The CBCL was used to measure both internalizing and externalizing behaviors and symptoms on a three-point scale. The ECBI was also utilized to measure externalizing behaviors in children two to sixteen years of age using a seven-point scale.

Graduate research assistants also engaged in structured diagnostic interviews with the mothers using the Diagnostic Interview Schedule for Children (DISC-IV-P) to examine the child’s psychopathology before and after treatment. In addition, this study utilized the Peabody Picture Vocabulary Test-Third Edition (PPVT-III) to measure the child’s receptive language ability, as well as the Wonderlic Personnel Test (WPT) to measure the adult’s cognitive capabilities for inclusion into this study. PCIT began following the completion of all of the pretreatment measures, starting with CDI and moving to PDI upon mastery. Treatment was considered complete when skills in both phases were mastered, and the child’s behavior problems on the ECBI were within a half of a standard deviation away from the normative mean. Overall, the average number of treatment sessions for families was 14, and the average length of treatment was 18 weeks. After treatment, families completed post-treatment DISC-IV, ECBI, and the CBCL.

Results of this study display evidence that PCIT is effective in reducing SAD symptoms. Children with or without SAD showed a significant decrease in externalizing symptoms associated with ODD. Children with comorbid ODD and SAD also demonstrated a significant reduction in SAD internalizing symptoms. Similarly, 73% of these children no longer met clinical criteria for SAD after treatment. For the whole sample, internalizing problems significantly declined after the implementation of PCIT. Taken together, the results of this study established an effective relationship between PCIT and the reduction of both anxious and disruptive behaviors (Chase & Eyberg, 2008).
The CALM Program. The research thus far has mostly focused on the utility and effectiveness of PCIT for the treatment of separation anxiety disorder in young children. More recently, Puliafico and colleagues (2013) modified the techniques of PCIT to target not only separation anxiety disorders, but also other anxiety disorders seen in children, such as social phobia, generalized anxiety disorder, and specific phobias. Specifically, the Coaching Approach behavior and Leading by Modeling (CALM) program combines the elements of PCIT along with an exposure-based treatment to target the symptoms in anxiety in children three to eight years of age. Similar to PCIT, the CALM program starts with strengthening of the parent and child relationship through the traditional CDI phase.

Unique to the CALM program, the second phase of the program teaches specific skills and behaviors to the parents to follow during exposure sessions, such as positive attending and active ignoring. These skills are known as the DADS steps. The acronym stands for Describe the situation, Approach the situation, give a Direct command to the child to approach the situation, and Selectively attend to the child’s behaviors to reinforce their approach to the feared stimuli. Describing the situation encourages the parent to make at least three brief, descriptive statements about the situation before it occurs or as soon as it begins. Next, parents approach the situation him or herself, in order to model brave behaviors to the child and to relay to the child that the situation is safe. If the child does not follow the parent and approach the situation, the parent gives direct commands that clearly instruct the child to approach the situation. Lastly, after giving a direct command, the parent is taught to attend to and positively reinforce the approach behavior, and selectively ignore the anxiety-related behaviors. These steps are utilized when a child encounters an anxiety-provoking situation, in the program and in naturally occurring situations. Parents must meet mastery of these skills before exposing the child to the
anxiety-provoking stimuli. Low-level exposures occur in the earlier sessions in order for the parents to practice the CDI and DADS skills and increase the child’s chances for success in overcoming the anxious feelings. Treatment progresses through higher-level exposure tasks. Families continue therapy until the DADS steps are mastered by the parent, and the child has engaged in the highest item or situation on their fear hierarchy (Puliafico, Comer, & Albano, 2013).

Comer and colleagues (2012) completed a pilot study on the CALM program for nine children ages four to eight from ethnically diverse backgrounds diagnosed with social anxiety disorder, generalized anxiety disorder, separation anxiety disorder, and specific phobias. Researchers used the ADIS-P to gather parent reports on the child’s anxiety symptoms and mood, as well as disruptive behavior symptoms. The Children’s Global Assessment Scale (CGAS) was also utilized by researchers to evaluate treatment-related changes in functioning throughout the intervention. To begin the treatment, baseline of the child’s diagnosis and impairment was established. The children and their parents then began the CALM program.

The results of this pilot study showed all children who finished the program showed full diagnostic improvements on the ADIS, and the majority of children also showed functional improvement on the CGAS. This further evidences the support for the roles of PCIT for the treatment of separation anxiety disorder, as well as the modification and addition of the CALM program to treat a wider range of anxiety disorders in early childhood. The results also suggest support for the role of parental live-coaching throughout treatment for the range of anxiety disorders (Comer et al., 2012).

While there is demonstrated effectiveness of the CALM program, there still lacks an extensive evidence base for this adaptation to decrease childhood anxiety. Therefore, it is the aim
of this study to add to the literature of the CALM program in order to further the evidence and effectiveness of this adaptation to PCIT.

**Purpose of Study**

PCIT has consistently been shown to be a well-established intervention for young children with disruptive behaviors. More recently, the evidence for PCIT, and specifically the CALM program, is increasingly showing it can be effective for children with symptoms of anxiety. By focusing on the reduction of maternal over-controlling behaviors, PCIT can help to improve the overall parent and child relationship through teaching parents how to increase the child’s coping skills, which in turn can decrease the child’s symptoms of anxiety (Chase & Eyberg, 2008). However, there is further need for additional studies to demonstrate PCIT CALM as an effective intervention for childhood anxiety disorders.

Consequently, the purpose of this current study is to examine the effectiveness of PCIT-CALM for children diagnosed with anxiety, but specifically assessing the changes in the child’s anxiety levels, through its association with child attachment and parent anxiety. In the study by Choate and colleagues, participants demonstrated less separation anxiety following the positive interactions learned in CDI from parents. This could be hypothesized to be a result of parents praising the child’s behaviors, thereby reducing the anxiety, or the parents ignoring negative child behaviors such as their anxiety-provoking behaviors, and thereby reducing the child’s anxiety. Additionally, the researchers hypothesize that it may be possible for the parent’s anxiety to decrease as a result of the positive interactions and more positive child behaviors, which decreases the parent’s anxiety and in turn the child’s anxiety, as well. Lastly, the decrease in anxiety may also be attributed to the parent and child’s more securely attached relationship, following PCIT.
Summary

Anxiety is one of the most common disorders in children that can potentially lead to detrimental outcomes (APA, 2015). The largest, observed impact of anxiety disorders is typically seen in family functioning and relationships, as well as with peers and in the child’s social competence (Ezpeleta et al., 2001; Rapee, Schniering, & Hudson, 2009). Empirically-supported risk factors for child anxiety include the child’s temperament and behavioral inhibition, insecure attachment, parental over-controlling behaviors, parental anxiety, and the impact of adverse life events on the child. Targeting these risk factors early on would lead to a decrease in anxiety symptoms later in adolescence and adulthood.

Parent-Child Interaction Therapy (PCIT; Eyberg, Nelson, & Boggs, 2008) is an evidence-based treatment of disruptive disorders in young children, typically within the ages of 2-7. PCIT is focused on improving the parent-child relationships as well as overall family functioning (Herschell, Calzada, Eyberg, McNeil, 2002). PCIT also aims to decrease a parent’s over-controlling behaviors, which were previously discussed as a risk factor for the development of childhood anxiety (Chorpita, Brown, & Barlow, 1998).

PCIT is rooted in the theoretical basis of attachment theory as well as social learning and behavioral theory. To address attachment, the CDI phase of PCIT targets the parent and child attachment, and intends to adjust it from a possible insecure attachment to a more secure attachment with the caregiver. This is accomplished through teaching the parents the specific skills needed to provide more encouraging and nurturing interactions with their child, as opposed to negative and unresponsive interactions (Herschell, Calzada, Eyberg, & McNeil, 2002). In social learning theory, PCIT attempts to adjust the parent and child relationship by instructing the parents to set specific and appropriate behavioral contingencies for the child in the PDI
phase. Similarly, PCIT also uses techniques from behaviorism to modify and shape parent and child behaviors. This is accomplished through teaching the parent to utilize more positive reinforcement as opposed to negative reinforcement for undesirable behaviors.

Due to the theoretical basis and overall impact of PCIT on the parent and child relationship, the CALM program was developed as an adaptation for PCIT to decrease child anxiety symptoms as well as strengthen the overall parent and child relationship. The CALM program has demonstrated behavioral improvements for parents and children, as well as decreased symptomology of anxiety. It is the aim of this study to add to the literature base of the CALM program as an adaptation to PCIT. Additionally, it is the aim of this study to more clearly identify the mechanisms of change most consistently linked with improvements to a child’s anxiety levels after the implementation of the CALM program.
Chapter III: Methods

Participants

Participating families in this study sought treatment at community-based, outpatient clinics for their child’s anxiety. Families were referred for the study by therapists and clinicians in the practice, based on parent report of anxiety symptomology through a clinical interview and appropriate emotional and behavioral rating scales. Participation was recommended due to internalizing behaviors such as specific excessive worry or fears, low frustration tolerance, and frequent crying. Participants included three, young children (2 male, 1 female) and their parents. At the initiation of treatment, Child 1, Michael, is a 6-year, 1-month old Caucasian male who presented with separation anxiety. Both his mother and father participated in this study. Child 2, Jennifer, is a 6-year, 5-month old Caucasian female who was diagnosed with social anxiety and displayed low frustration tolerance. Lastly, Child 3, Brandon, is a 6-year, 3-month old Caucasian male who presented with generalized anxiety. Both Jennifer and Brandon participated with their mothers. In addition, Jennifer’s older sister and Brandon’s two younger siblings often participated in the Phase II exposure sessions but were not included as participants in this study. There was an additional male participant, Corey, who dropped out of this intervention after the third baseline session due to initiating treatment elsewhere. Corey’s data was not included in this study as he only participated in the baseline phase and did not receive treatment.

Child anxiety was assessed using the Preschool Anxiety Scale-Parent report (PAS; Spence & Rapee, 1999). The parent-child relationship was assessed using the Parent Relationship Questionnaire (PRQ; Reynolds & Kamphaus, 2006). Inclusion criteria for this study is a diagnosed anxiety disorder according to the DSM-5 from a licensed mental health professional. Criteria for exclusion from this study Oppositional Defiant Disorder, Conduct
Disorder, Depression, Autism, or below 70 Intelligence Quotient (IQ). Attention deficit/Hyperactivity disorder was removed from exclusion criteria as it was observed to be comorbid with two of the participants. The researchers explained the purpose of the study in person, as well as all study-related procedures and participation requirements. Informed consent and permission were obtained from a parent as well as for their child, and the child will be read a brief script explaining their participation prior to initiation of the intervention.

**Setting**

Treatment sessions were conducted by one school psychology doctoral graduate student at a private community-based practice. A trained and certified PCIT clinician supervised sessions and data. Clinicians, parents, and child will be together in one room during all sessions. As such, coaching and communication was given in-room, from clinician to parents, without the use of a bug-in-the-ear device. Toys such as Legos, blocks, and art materials were included in the room and available to all participants for the purposes of this study.

**Independent Variable**

The independent variable of this project is the CALM treatment program, with the use of adaptations to the standard treatment. The CALM program is a variation of Parent-Child Interaction Therapy (PCIT; Eyberg, Nelson, & Boggs, 2008), used to target disruptive behaviors in children between the ages of 2-7, as well as strengthen the overall parent and child relationship. In addition to strengthen the relationship, the CALM program is designed to specifically target and decrease a child’s symptoms of anxiety through low to high anxiety-provoking exposures while the parent models brave, appropriate responses to the feared stimuli and praises the child’s positive behaviors as well (Comer et al., 2012).
Dependent Variable

**Internalizing Behaviors.** *The Revised Preschool Anxiety Scale-Parent Report* (Edwards, Rapee, Kennedy, Spence, 2010) is a modified version of the Preschool Anxiety Scale first created in 1999 by Spence and colleagues (Spence, Rapee, McDonald, & Ingram, 2001). This revised scale is a 30-item questionnaire designed to assess anxiety symptoms in two-and-a-half to six-and-a-half-year-old children. In the revised preschool anxiety scale (PAS-R), the items reflect four DSM-IV anxiety categories; Social Anxiety, Separation Anxiety, specific fears, and Generalized Anxiety. The obsessive-compulsive scale was eliminated in the PAS-R due to poor psychometric properties. Parents report the severity of their child’s symptoms on a zero to four-point scale, where zero indicates, “not true at all”, and four represents “very often true”. Parent report is utilized on this scale as internal thoughts and worries are typically difficult for children to verbalize at young ages, although it may also be challenging for a parent to know the specific fears a child may have (Edwards et al., 2010). Example items include statements such as, “has difficulty stopping him/herself from worrying”, “is scared of heights”, “worries that he/she will do something to look stupid in front of other people”, and “has nightmares about being apart from you”. Parents also have the opportunity to answer an additional five items if they answer, “yes” to an experience of trauma, in order to describe their child’s behavior since the event. The authors report this measure can be utilized as a tool in clinical assessment, as well as evaluating changes in anxiety symptoms across treatment (Edwards, et al., 2010; Spence et al., 2001). This measure will be given to parents prior to baseline beginning, after the CDI phase, and at the conclusion of all treatment. It will also be given to parents at the post treatment follow up, six weeks after the intervention ends.
Confirmatory factor analysis on the PAS-R resulted in all items yielding a four-factor model of childhood anxiety in this scale. Internal consistency was also found to be acceptable for all anxiety scales (as > .70). Cross-informant reliability between mothers and fathers on this scale was in the moderate range, and all correlations were significant (p < .001). It was found to be highest on the social anxiety subscale (r=.75), and lowest on the separation anxiety subscale (r=.60) (Edwards et al., 2010). Construct validity was correlated with subscales of the Strengths and Difficulties Questionnaire (SDQ), that assesses emotional symptoms, conduct problems, and hyperactivity/inattention. The PAS-R subscales were found to correlate in the moderate to high ranges with the emotional subscale of the SDQ on the mother’s reports (.47-.70; p <.001) and father’s reports (.39-.62; p <.001). The PAS-R subscales also discriminated anxiety symptoms from behavioral difficulties in that the PAS-R subscales correlated in the low range with the SDQ measures of mother and report of conduct problems, as well as mother and father report of hyperactivity and impulsivity (< .17). Although many of the PAS-R correlations were significant with the conduct problems scale on the SDQ due to the strong power of this study, it is important to note these significant correlations can also be due to the high comorbidity between anxiety symptoms and externalizing behaviors in early childhood (Edwards et al., 2010; Egger & Angold, 2006).

Parent-child Relationship. The Parenting Relationship Questionnaire (PRQ) measured the parent’s perspectives and beliefs of the overall parent-child relationship. The PRQ has two age specific forms. Specifically, the PRQ-P was designed for preschool children ages two to five, and was utilized for the purposes of this project. The PRQ is a parent-report questionnaire consisting of 45 items that compose five scales. These five scales include: Attachment, Relational Frustration, Discipline Practices, Involvement and Parenting Confidence. The PRQ
uses a 4-point response format; where 0 represents never, to 4 is always. For all scales, t-scores are calculated for the following interpretations: 10-30 (lower extreme), 31-40 (significantly below average), 41-59 (average), 60-69 (significantly above average), and 70+ (upper extreme).

The PRQ-CA is designed for parents of children 6-18, and includes items focusing on Communication and Satisfaction with school domains. It uses 71 questions and the same 4 point response format (Kamphaus & Reynolds, 2006). This measure will be given to parents prior to baseline beginning, after the CDI phase, and at the conclusion of all treatment. It will also be given to parents at the post treatment follow up, six weeks after the intervention ends.

The PRQ has reported and established reliability for parents and their preschool or school aged children. Internal reliability was measured with the coefficient alpha statistic, and was found to be in the high range, with scores ranging from .82 to .87. Test-retest reliability was also established, where reliability coefficients ranged from .75 to .89 for the PRQ-P and from .72 to .81 for the PRQ-CA. Validity has also been established for the PRQ, using convergent validity correlations with the Parent–Child Relationship Inventory (PCRI), Parenting Stress Index (PSI), and Stress Index for Parents of Adolescents (SIPA). The PRQ and SIPA correlations were among the highest ranging from the highest scores of .59 to .70, demonstrating that it correlates the closest. The PRQ and PCRI yielded moderate to high correlations, the highest scores being between .57 and .67. However, these correlations show adequate validity between both measures. Lastly, the correlations between the PRQ and PSI were weak overall. This was determined through a content review of parent stress on both instruments, revealing a different manner of measuring this construct across the measures (Kamphaus & Reynolds, 2006; Rubinic & Schwickrath, 2010).
Parent Behaviors. *Dyadic Parent Child Interaction Coding System.* Parent positive and negative behaviors will be observed and coded during all sessions using the Dyadic Parent-child Interaction Coding System (DPICS-II; Eyberg, Bessmer, Newcomb, Edwards, & Robinson, 1994). The DPICS is a behavioral coding system that measures the quality of the parent and child relationship during standard PCIT sessions with the use of a frequency count of behavior. For the purposes of this study, DPICS categories that will be analyzed are positive parent behaviors such as behavioral descriptions, reflections, and praise. Behavioral descriptions encourage the parent to describe what the child is currently doing during play. Reflections have the parent repeat what the child said during play. Praise can be both labeled, (“I like the way you are playing with the blocks”), or unlabeled, (“Good Job!”). The DPICS will also monitor negative parent behaviors, such as questions and commands. Questions include asking why the child may be doing something during play. Commands can be direct, if they are clearly and specifically stated, (“Put that block here”), or indirect if they are implied or stated as a question, (“How about we clean up?”). The DPICS has been normed, and has established validity and reliability (Eyberg & Robinson, 2000).

Research Design

The research design for this study is a non-concurrent multiple baseline single subject across subject design using the CALM program with three children diagnosed with anxiety and their parents. The multiple baseline design allows researchers and clinicians to gain experimental control by demonstrating a functional relationship between the CALM program (the independent variable) and anxiety related behaviors and parent behaviors (dependent variables) across subjects. The staggering of implementing the intervention for each subject increases internal validity by evaluating if effects from the CALM program were solely due to
the intervention or the passage of time (Richards, Taylor, & Ramasamy, 2014). The length of
the pretreatment monitoring phase will be staggered among the families as they are referred to
the practice, resulting in the non-concurrent multiple baseline design across three participants.

Materials

Clinicians utilized PCIT approved toys such as, Legos, crayons and paper, marker boards,
and Mr. or Mrs. Potato Head. At least three options were offered to participants during all
sessions. Due to limitations in setting and rooms, this variation of PCIT treatment did not
include a two-way mirror, divider, or a bug-in-the-ear device, since coaching was completed in
the same room as the parent and child. Printed handouts from the PCIT manual and CALM pilot
study were used for the parents to reference CDI and DADS skills through the sessions as well as
complete at home for homework. Lastly, an electronic timer will be used in order to time
sessions accurately (Eyberg & Funderburk, 2011). Additional materials and toys were used
based on the individualized hierarchy of low to high exposures for the child. Examples of these
include stretchy toys, sample words and passages for reading and spelling, and mathematics
problems.

Intervention

As previously mentioned, traditional PCIT includes two components: Child-Directed
Interaction (CDI) and Parent-Directed Interaction (PDI). During CDI, the parents are instructed
to follow the child’s lead during traditional play and to strengthen the child’s sense of control
and self-esteem. The second phase, PDI, helps parents learn specific skills to lead parent and
child interactions effectively, such as giving direct commands, using praise for compliance, and
implementing appropriate consequences for disobedience.
Similar to traditional PCIT, the Coaching Approach behavior and Leading by Modeling program (CALM; Puliafico, Comer, & Albano, 2013), is a 12-session manualized intervention. However, the CALM program specifically treats anxiety in young children ages three to eight. The CALM program combines the parental behavioral training elements of PCIT along with exposure-based treatments to target the child’s specific anxiety symptoms. Both are completed through in-session coaching of parents with the therapist. The CALM program starts with strengthening the parent and child relationship through the CDI phase in the first few sessions. Parents learn to attend to, praise, and reflect appropriate behaviors while selectively ignoring unwanted behaviors. This phase of the treatment helps to increase the child’s self-esteem as well as sense of control and prosocial behaviors.

The second phase of the CALM program does not focus on effective discipline practices as in traditional PCIT during PDI. Instead, the CALM adaptation teaches specific skills and behaviors to the parents to follow when the child may be experience high anxiety to certain stimuli, through approximately eight in-session exposure sessions during treatment. The CALM program is based on the ideas that positive parent attention and modeling of brave behaviors will increase these behaviors in the child, whereas avoidance and ignoring of anxiety related responses is thought to minimize these behaviors in the child. These skills taught to the parents are known as the DADS steps. The acronym stands for Describe the situation, Approach the situation, give a Direct command to the child to approach the situation, and Selectively attend to the child’s behaviors to reinforce their approach to the feared stimuli. Describing the situation encourages the parent to make at least three brief statements about the situation occurring. Next, parents approach the situation and model brave behaviors to the child, to relay that the situation is safe. If the child does not follow the parent and approach the situation, the parent gives direct
commands that instruct the child to approach the situation in a safe manner. Lastly, after giving a direct command, the parent is taught to attend to and positively reinforce the approach behavior, and selectively ignore the anxiety-related behaviors.

**Procedure**

**Baseline.** Participating families referred for treatment for anxiety were asked and agreed to give parent consent and child permission and assent prior to participating in the study. Pre-treatment anxiety levels were assessed during baselines sessions using the Preschool Anxiety Scale and parent-child relationship was measured using the Parenting Relationship Questionnaire. The DPICS was also utilized through all baseline and intervention sessions to document and monitor parent behavior change through treatment.

Baseline sessions consisted of five-minute play observations of parent and child. The clinician observed and coded parent positive and negative behaviors according to the DPICS coding system. Although the beginning of the baseline sessions was staggered, all intervention Phase I sessions began after three baseline sessions. Additionally, all participating parent behaviors demonstrated a stable trend or a trend displaying increasing negative parent behaviors and low levels of positive parent behaviors.

**Intervention Phase I: Child Directed Interaction.** Session four is the first phase of the CALM program across all three participants. This session typically begins with only the parent attending in order to use psychoeducation to introduce the overall program to the parents and practice new skills. However, all participating children were present during this session due to time and caregiver constraints. Then, the clinician gave the parents information about childhood anxiety and familiarized them with exposure-based therapy while creating an individualized fear hierarchy for the child. The hierarchy was filled in as well as edited throughout the first phase of
the intervention. Clinicians also taught and modeled CDI PRIDE skills to the parents (i.e. Praise, Reflection, Imitation, Description, Enthusiasm). Specifically, behavioral description, reflections, and labeled praises were the focus of this study. The parent and clinician practiced and role-played these specific CDI skills, and then used them during a five-minute play session. The clinician observed and coded a five-minute CDI session, focusing on the parent’s positive behaviors (i.e. behavioral descriptions, reflections, praise, etc.) as opposed to negative behaviors (i.e. commands, questions, etc.). After the CDI coding session, the parent and child continued to play normally while the clinician live-coaches the parents through a CDI session. In-room coaching was used while the clinician, parent, and child were all in the same room as a divider and bug-in-the-ear device was not available. Parents were also instructed to practice these skills at home with the child in real time, for five minutes a day, as weekly homework. Session five reviewed the child’s anxiety and behaviors that may have occurred in the past week with the addition of CDI in the home. Again, the clinician observed, coded, and then provided feedback at the end, specifically on skills the parent may be having difficulty with. Homework was again given to the parents to practice CDI skills for five minutes a day with their child. Session six is similar to the previous sessions in this phase, with the addition of preparing the parents and the child with the upcoming low-level exposure to the child’s anxiety-provoking stimuli in the next session. Clinician used CBT-related, developmentally appropriate materials to begin discussing recognizing anxiety and worry as well as coping skills with Jennifer and Brandon during these low-level exposures. This structure of the sessions continued through the remaining sessions of Phase I. CDI continued until parents were considered at mastery level with the use of the behavioral skills. The mastery criteria of CDI are 10 labeled praises, 10 behavioral descriptions, and 10 reflections, as well as zero questions, commands, or criticisms within a coded 5-minute
period. For time purposes as well as observed mastery combined with the style of child’s play, the mastery criteria for negative behaviors was 3 or less questions, commands, and criticisms within a 5-minute period of coding. Michael completed CDI phase at session 10; Jennifer completed CDI phase at session 11; and Brandon completed CDI at session 9. As previously mentioned, the differences in attaining mastery were observed to be dependent on the child’s play style and behaviors, the parent’s motivation to use the skills, as well as time constraints for treatment.

**Intervention Phase II: DADS Steps.** Prior to the beginning of the second phase of treatment, parents were asked to fill out the PAS and PRQ for the second time to determine current levels of the child’s anxiety as well as the parent’s perspectives of the parent-child relationship after Phase I. To begin, the first session of Phase II focuses on the parent to introduce and familiarize the parents with the new DADS steps (i.e. Describe situation, Approach situation, give Direct Command for child to join situation, and provide selective attention). Parents and clinicians role-played these skills for the parent to encourage brave behaviors in the upcoming sessions as well as in real situations. Parents could have attended this session alone, however, all three participating children were present for this session as part of this study. Parents and the child were also informed the exposure levels will move to moderate-levels in the upcoming sessions. They then engaged in a five-minute CDI session for coding of positive and negative parent behaviors in order to maintain behavioral mastery. Homework was again assigned to the parents, to use the DADS steps in the home or when the child appears nervous or anxious. The remaining sessions were relatively similar through the end of the treatment. They began with a review of the child’s behavior and anxiety from the previous week, and the practice of the parent’s skills. Parents then engaged in a brief CDI session with
coding and live coaching of skills. Children were then presented with moderate to high level, child-specific exposures as they progress through treatment, while parents used DADS steps to help their child during these situations. Clinicians coached and gave feedback to parents during all sessions. Parents were also prompted to utilize these skills through the week in real situations. Treatment continued until the DADS steps are mastered and the child has engaged appropriately in the highest item on his or her fear hierarchy.

In Phase II, Michael’s exposures surrounded his fear of a stretchy toy at the beginning. The exposures moved to focus on separating from his parents appropriately. As such, his parents and clinician left the room for increasing amounts of times. His parents were encouraged to ignore any anxiety-related behaviors and praise his brave behaviors of staying in the room by himself for short increments. It was also the aim of these exposures to help him and his parents feel readier for kindergarten that was beginning in the fall. Phase II lasted six sessions for Michael and his parents. Exposures were terminated after he was able to demonstrate separation with little to no anxiety-related behaviors for 2 minutes.

Jennifer’s exposures were centered around her low frustration tolerance in school when she is unsure of difficult math problems, spelling words, and reading out loud. Typically, in school, she shuts down or will begin to cry as she becomes embarrassed or worries what others will think of her. The exposures began with easy to more difficult math problems, progressed to spelling more difficult words, and ended with reading out loud. Her older sister also frequently attended the sessions, which added to Jennifer’s frustration and anxiety about her abilities. Jennifer’s mother focused on ignoring her anxiety-related behaviors of whining and shutting down, and shaped and praised her brave behaviors of picking up a pencil or looking at the paper when she was withdrawn. Jennifer’s Phase II lasted seven sessions and was terminated when she
could demonstrate braver and approach behaviors to reading more difficult words and books, rather than withdraw and refuse to complete work or engage with others.

Brandon demonstrated rigid behaviors to routines as well as making sure his abilities and work are perfect. Brandon’s exposures began with reading medium to difficult passages orally with his mother, which would often elicit frustration for him. Clinician also would also frequently change the routines as an exposure. Brandon’s younger siblings, who were four and two, also attended the beginning half of the sessions. His siblings also acted as an exposure for his when they would mess up his drawing or cause a distraction within the session. Brandon’s mother would ignore his frustration and anxiety behaviors if he was unable to pronounce a word or if something did not go right. She also praised his brave behaviors by attempting to sound out words and finding solutions. Brandon’s mother also indicated using these skills in the community, such as learning to ride a bike for the first time and increasing participation in T-ball. Brandon’s exposures lasted six sessions. The exposures were considered mastered when he was able to maintain calm and brave behaviors when his routine is changed, or things do not go his way. He was also able to generalize his brave behaviors and decrease feelings of anxiety within the community.

During the last session for all participants, clinicians also reviewed the child’s and parent’s progress throughout therapy and encouraged parents to continue using their learned skills and techniques even after treatment. Clinicians may also choose to have a “graduation ceremony” for the family to conclude treatment (Comer et al., 2012). Parents filled out the PAS and PRQ at the end of treatment to determine levels of child anxiety and the parent-child relationship.
**Post Intervention.** Post treatment consisted of a follow up interview, as well as parents completing the PAS and PRQ, two weeks after treatment has concluded. This was completed in person for Jennifer and Brandon. Post treatment data was unable to be attained for Michael as he and his family were unable to be reached.

**Research Questions and Hypotheses:**

The research questions in this study are:

*Research Question 1:* Does the CALM program have an effect on parent-child interactions, shown through an increase in positive parent behaviors?

*Hypothesis 1:* The CALM program will increase the number of positive parent behaviors as measured by the DPICS coding system.

*Research Question 2:* Does the CALM program have an effect on parent-child interactions, shown through a decrease in negative parent behaviors?

*Hypothesis 2:* The CALM program will decrease the number of negative parent behaviors as measured by the DPICS coding system.

*Research Question 3:* Does the CALM program significantly reduce the level of anxiety symptoms experienced in a young child?

*Hypothesis 3:* The CALM program will significantly reduce the levels of parent reported anxiety symptoms experienced in a young child as measured by the Preschool Anxiety Scale-Revised (PAS-R).

*Research Question 4:* Does the CALM program have an effect on the overall quality of the parent-child relationship?
Hypothesis 4: The CALM program will significantly increase the overall quality of the parent-child relationship, as measured by the Parent Relationship Questionnaire-Child/Adolescent (PRQ-CA).

Data Analysis

Most often in single-subject research, graphic displays of data are utilized to organize and communicate the data, as well as allow the researchers to visually analyze the functional relationships between the independent and dependent variables. Graphed data is also visually analyzed to examine the behavioral or symptomology changes within or across phases. This allows researchers to determine the overall effect of the intervention on the behavior across and within phases. If there is a significant “jump” in the data path following a phase change, researchers can conclude the intervention had an immediate change on the subject’s behavior. If there is a slow, but increasing change in the data, researchers may conclude there is a steadier change in the behaviors. These changes can be analyzed through changes of the level or trend of data. Level refers to the magnitude of numerical data. Median and mean lines are useful in visually determining the stability of the level of data. Trend refers to the slope or angle of the data when it is visually analyzed. More specifically, researchers look to see if a trend line is increasing, decreasing, or stable (Gast, 2010).

Microsoft Office Excel was used to input and organize the multiple baseline data separately for all participants. Graphic displays of the data were created for positive and negative parent behaviors to examine the functional relationships between independent and dependent variables as well as the trend in the data. It was also visually analyzed for behavioral changes across phases though the level and trend of the data. The mean and median frequencies of the behaviors will be used to determine the level of change in the data. This will address
research questions one and two. Research questions three and four were also analyzed with bar graphs of visual displays of data. Effect sizes using Cohen’s $d$ were also calculated, by finding the difference between two means and then dividing it by the standard deviation.

**Treatment Integrity**

To ensure treatment integrity, clinicians implemented all sessions across participants and families using the PCIT and CALM program manuals and published research. An integrity checklist from the PCIT manual was utilized in order to evidence fidelity across sessions with data. The percentage of agreement among checklists and across subjects was 100%. The supervisory clinician is a certified PCIT trainer, again ensuring the intervention will be correctly implemented. Due to a difficulty ruling out history and maturation effects in non-concurrent multiple baseline designs, it is essential to be sure that changes in behaviors through time are not due to these effects (Gast, 2010). Behaviors were repeatedly measured during all sessions to increase confidence that changes are not influenced by these threats to internal validity across subjects.

**Interobserver Agreement**

Parent and child interactions served as the primary dependent variable, specifically positive and negative parent behaviors. Both clinicians acted as simultaneous observers during baseline and two CDI coaching sessions for one participant, Michael. Percent of interobserver agreement was calculated for each session by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. Percent interobserver agreement for Michael ranged from 57%-100%. Only one clinician was available for the remainder of Michael’s session as well as the other two families. As such, interobserver agreement was unable to be calculated for these sessions.
Chapter IV: Results

Results

Single subject analysis. Visual analyses were utilized to analyze the data collected throughout baseline, Phase I and Phase II of this study, which were positive and negative parent behaviors. Parent behaviors were observed and coded using a frequency recording procedure on the DPICS coding system sheets, found in the PCIT manual for all sessions. Only the parent behaviors identified in the research questions from PCIT were used as part of this study. Specifically, coded positive parent behaviors consisted of behavioral descriptions, reflections, and labeled praises, whereas the coded negative behaviors were questions, commands, and criticisms. These behaviors were graphed and were able to be visually analyzed. Visual analysis is often customary in single-subject methodology, and allows the researcher to examine behavioral data, and further the effects of an intervention on a subject’s behavior, within and across phases. This type of analysis also compares variability, level, and trend of data, within and across phases (Gast, 2010). Results will be presented as the mean and median frequency of each observed parent behavior at each phase per subject’s parent in the following tables. Figures one through six also display the graphed data of the frequency of parent behaviors across phases for each subject.

Visual analysis was also used to compare the T-scores of two assessments for each subject across three different times and can be seen in figures 7 through 14. Effect sizes (ES) were also calculated to determine the amount of change between the assessments from time 1 to time 2, time 2 to time 3, and time 1 to time 3. In addition, Cohen’s d was calculated by the difference between two means, divided by the standard deviation. The suggested interpretation for this value is that ES estimates of less than .20 are not considered significant, ES estimates of
.20 to .49 are considered significant and small, ES estimates of .50 to .79 are considered significant and of medium size, and ES estimates of .80 and above are considered large.

The PAS-R and PRQ-CA measures were completed prior to beginning the intervention, halfway through, and upon completion by the participating parents in this study. The T-scores of the measures’ subscales determine clinical significance using cut-off scores. The change in levels of these scores will also be used to determine change within and across phases per subject. The results for all subjects in this study are presented below in order to evaluate the proposed research questions. The data of these results are also presented in tables 17 through 22.

**Research Question 1.**

*Research Question 1:* Does the CALM program have an effect on parent-child interactions, shown through an increase in positive parent behaviors?

*Hypothesis 1:* The CALM program will increase the number of positive parent behaviors as measured by the DPICS coding system.

**Michael. Baseline.** Both Michael’s mother and father participated throughout this intervention. There were three baseline sessions needed before a stable or upward trend was established for both mother’s and father’s positive behaviors. Throughout the three sessions, his mother’s mean frequency of positive behaviors during baseline was 0 for behavioral descriptions, reflections, and labeled praises. She did not demonstrate any observed positive behaviors during baseline. This displays a low level and stable trend throughout baseline for Michael’s mother’s positive behaviors, which is indicative of progressing to Phase I of the intervention.

Michael’s father’s mean frequency for behavioral descriptions through baseline was 0.3 and median was 0. His mean frequency for reflections was 1.3 and median was 1. For labeled
praises, he also demonstrated a mean of 1.3 and median of 1. This also verified a zero level and stable trend of positive behaviors during baseline, which allowed the study to move to Phase I. In addition, both Michael’s mother’s and father’s positive behaviors were considered significantly below PCIT mastery level of 10 during baseline and prior to learning the skills of the intervention.

**Intervention Phase I.** Michael’s mother’s recordings of positive behaviors during intervention Phase I, CDI, display an overall, gradual and upward trend over seven sessions. Her mean frequency of behavioral descriptions used during Phase I was 4.1, and median frequency was 3. The mean reflection frequency was 5.6 where the median frequency was 6. Lastly, labeled praises used by Michael’s mother was a mean of 4.3 and the median frequency is 4. This data displays a slowly increasing trend, and it can be assumed the effects of Phase I of the intervention had a gradual increasing trend on Michael’s mother’s shown positive behaviors. However, she was only able to attain mastery criteria of a frequency of 10 when using reflections. The data indicates that the positive behaviors used by his mother had an overall positive and increasing trend with a higher mean and median level than baseline. As such, it was agreed to move on to Phase II of the intervention.

Michael’s father’s positive behavioral data also displayed a higher level and gradual and increasing trend during Phase I over seven sessions. He showed a mean frequency of 3.6 and median frequency of 2 behavioral descriptions during this phase. In terms of reflections, he exhibited a mean frequency of 4.9 and median frequency of 4. He also showed a mean of 3.4 and median of 2 labeled praises during this phase. This data displays a slowly increasing trend, and it can be predicted that the effects of Phase I of the intervention also had a gradual increasing impact on Michael’s father’s shown positive behaviors. However, he was only able to attain
mastery criteria of a frequency of 10 when using labeled praises. Even so, it was decided to move on to Phase II of the intervention due to the higher level as well as stability and increasing trend of his positive behaviors.

**Intervention Phase II.** Michael’s mother’s recording of behavioral descriptions showed a significant increase during four sessions of Phase II with a mean of 8.8, and a median of 7.5, when compared to baseline and Phase I. Reflections also showed a slight increase to a mean frequency of 7.3 and median frequency of 7. Similarly, labeled praises displayed an increase with a mean frequency of 7 and median frequency of 6.5. She demonstrated mastery across all positive behaviors, as she was able to use more than ten of each skill within the later sessions. When visually analyzed, the graph shows a high level and an upward trend in the data, indicating this phase of the intervention had a strong effect on Michael’s mother’s positive behaviors.

Michael’s father’s recordings of behavioral descriptions also showed an increase during four sessions of Phase II. The mean was 7.3 and the median was 6. The mean frequency of reflections also increased to a mean of 7.3 and median of 6.5. In addition, his use of labeled praise increased to both a mean and median frequency of 6.5. He was able to attain mastery using behavioral descriptions and labeled praise. Likewise, these skills display an increasing trend when visually analyzed. However, his use of reflections through Phase II shows mastery during the first session, but a decreasing trend overall. Michael’s mother’s and father’s mean and median frequency of positive behaviors through the intervention is summarized in tables 1-4.

| Table 1 |
|-----------------|--------|--------|
| **Mean Frequency of Michael’s Mother’s Positive Behaviors across Phases.** | **Baseline** | **Phase I** | **Phase II** |
| Behavioral Description | 0 | 4.1 | 8.8 |
| Reflection | 0 | 5.6 | 7.3 |
| Labeled Praise | 0 | 4.3 | 7 |
Running head: CHILDHOOD ANXIETY

Table 2

*Median Frequency of Michael’s Mother’s Positive Behaviors across Phases.*

<table>
<thead>
<tr>
<th>Behavioral Description</th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection</td>
<td>0</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Labeled Praise</td>
<td>0</td>
<td>6</td>
<td>7</td>
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</tbody>
</table>

Table 3

*Mean Frequency of Michael’s Father’s Positive Behaviors across Phases.*

<table>
<thead>
<tr>
<th>Behavioral Description</th>
<th>Baseline</th>
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<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection</td>
<td>0.3</td>
<td>3.5</td>
<td>7.3</td>
</tr>
<tr>
<td>Labeled Praise</td>
<td>1.3</td>
<td>4.9</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Table 4

*Median Frequency of Michael’s Father’s Positive Behaviors across Phases.*

<table>
<thead>
<tr>
<th>Behavioral Description</th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Labeled Praise</td>
<td>1</td>
<td>4</td>
<td>6.5</td>
</tr>
</tbody>
</table>

**Jennifer. Baseline.** Jennifer’s mother participated in this intervention. There were three baseline sessions needed before a stable trend was established. Her mother’s mean and median frequency of behavioral descriptions was 2. She displayed a mean of 0.3 and median of 0 for reflections. She exhibited 0 labeled praises through baseline, yielding a mean and median of 0. This demonstrated a zero level and stable trend of positive behaviors during baseline, which allowed the study to move to Phase I. In addition, all of her mother’s positive behaviors were considered significantly below PCIT mastery level of ten during baseline and prior to learning the skills.

**Intervention Phase I.** Jennifer’s mother’s recordings of positive behaviors during intervention Phase I, CDI, displayed a gradual upward trend and higher level over eight sessions.
Her mean frequency of behavioral descriptions used during Phase I was 6.3, and median frequency was 6.5. The mean reflection frequency was 8.5 and the median frequency was 9. Lastly, labeled praises used by her mother was a mean of 7 and the median frequency is 7.5. Visually, this data displays a significant upward trend, and it can be assumed the effects of Phase I of the intervention had a positive increasing effect on Jennifer’s mother’s positive behaviors through the phases. She was able to attain mastery criteria of a frequency of 10 with all recorded positive behaviors. The data indicates that the positive behaviors used by her mother had an overall positive and increasing level and trend. As such, it was agreed to move on to Phase II of the intervention.

**Intervention Phase II.** In Phase II, Jennifer’s mother’s behavioral descriptions maintained a stable trend over five sessions with a frequency mean of 6.8 and median of 7. The reflections used during this phase slightly decreased to a mean frequency of 8.5 and median of 9 although were visually analyzed to remain stable. Labeled praises increased to a mean of 9 and median of 8. She did not maintain mastery frequency of behavioral descriptions or reflections. She did achieve mastery of 10 labeled praises in earlier sessions of Phase II but was unable to maintain this frequency throughout all sessions. Tables 5 and 6 below summarize the results of Jennifer’s mothers mean and median frequency of positive behaviors.

Table 5.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Description</td>
<td>2</td>
<td>6.3</td>
<td>6.8</td>
</tr>
<tr>
<td>Reflection</td>
<td>0.3</td>
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<td>7.6</td>
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<tr>
<td>Labeled Praise</td>
<td>0</td>
<td>7</td>
<td>9</td>
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Table 6.

<table>
<thead>
<tr>
<th>Behavioral Description</th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection</td>
<td>0</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Labeled Praise</td>
<td>0</td>
<td>7.5</td>
<td>8</td>
</tr>
</tbody>
</table>

Brandon. Baseline. Brandon’s mother participated through this intervention. Three baseline sessions established stable trend in positive behaviors with no significant changes. She displayed a mean frequency of 0.7 behavioral descriptions, and median frequency of 1. Her reflections were both observed at a mean and median frequency of 2, and she did not exhibit any labeled praises during baseline. This demonstrated a low level and stable trend of positive behaviors during baseline, which allowed the study to move to Phase I. In addition, positive behaviors were significantly below PCIT mastery level of 10.

Intervention Phase I. Brandon’s mother’s recordings of positive behaviors during intervention Phase I, CDI, display a higher level and gradual upward trend over six sessions. Her mean frequency of behavioral descriptions used during Phase I was 11.2, and the median frequency was 11. For reflections, she also demonstrated a mean of 11.2 reflections and a median of 11. Labeled praises also increased, but at a slower rate, giving a mean frequency of 7.7 and median frequency of 7. Compared to baseline levels, this shows a significant jump in the data and it can be assumed the effects of Phase I of the intervention also had a significant change on Brandon’s mother’s shown positive behaviors. She was able to attain mastery criteria of a frequency of 10 using behavioral descriptions, reflections, and labeled praises. As seen in Figure 1 through 3, it was decided that the positive behaviors for her exhibited an overall positive level and trend and it was agreed to move on to Phase II of the intervention.
**Intervention Phase II.** During Phase II, Brandon’s mother showed a gradual decrease in all positive behaviors across five Phase II sessions as compared to Phase I. Her mean and median frequency of behavioral descriptions was 7. The reflections mean and median was 9, and both mean and median frequencies for labeled praises was 8. Her use of reflections and labeled praises through Phase II shows mastery during the first session, but a decreasing trend overall in these specific behaviors. Behavioral descriptions did not reach mastery in Phase II, but she maintained a high level and stable trend with little change, although overall decreasing. Tables 7 and 8 below summarize the mean and median frequency of Brandon’s mother’s positive behaviors across three phases.

Table 7.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Description</td>
<td>0.7</td>
<td>11.2</td>
<td>7</td>
</tr>
<tr>
<td>Reflection</td>
<td>2</td>
<td>11.2</td>
<td>9</td>
</tr>
<tr>
<td>Labeled Praise</td>
<td>0</td>
<td>7.7</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 8.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Description</td>
<td>1</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Reflection</td>
<td>2</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Labeled Praise</td>
<td>0</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

**Research Question 2.**

*Research Question 2:* Does the CALM program have an effect on parent-child interactions, shown through a decrease in negative parent behaviors?

*Hypothesis 2:* The CALM program will decrease the number of negative parent behaviors as measured by the DPICS coding system.
Michael. Baseline. Throughout the baseline three sessions, Michael’s mother’s mean frequency of questions was 4.3, and the median frequency was 5. Visually, this showed a stable, and slightly increasing trend during baseline. The displayed commands had a mean of 1.3 and a median of 1, again showing a stable trend in baseline behaviors. She did not demonstrate any observed criticisms during baseline as coded by PCIT. Taken together, these behaviors were indicative of progressing to Phase I of the intervention due to the stability in the trend and overall high level.

Michael’s father’s mean frequency of questions during baseline was 11.6, and a median of 11. Visually, these behaviors showed a decreasing trend, although considered to be high in frequency and significantly higher than mastery criteria of zero per session. He also exhibited commands at both a mean and median of 4. This trend demonstrated a stable, increasing direction of these behaviors in baseline. Similar to Michaels’ mother, his father showed 0 criticisms through each phase of baseline. As previously stated, these negative behaviors overall were considered at a frequency high and stable enough to continue to Phase I of the intervention.

Intervention Phase I. During seven sessions of Phase I of the intervention, CDI, Michael’s mother’s questions decreased to a mean of 0.4 and a median of 0. Her commands also showed a decrease to a mean and median of 0. This shows a significant decrease in questioning and command behaviors, ultimately extinguishing them in later sessions and throughout this phase. The data indicates that the negative behaviors used by his mother had an overall low level and decreasing effect from the intervention. Again, she did not display any criticisms during Phase I of the intervention and maintained this though the phase, yielding a mean and median of 0. Michael’s mother met mastery criteria for all three of the observed negative behaviors, by
demonstrating 0 questions, commands, and criticisms throughout the sessions. This stable, low level and decreasing trend evidenced a progression to Phase II of the intervention.

Michael’s father during this phase displayed a significant decrease from questions during baseline recordings, to a mean frequency of 1.1 and median frequency of 1. His commands also decreased in frequency to a mean of 0.3 and median of 0. This shows a significant decrease in level of questioning and command behaviors, eventually extinguishing them as well as maintaining stability in later sessions and throughout this phase. The data shows this phase of the intervention had this effect on both questions and commands for his father. He did not display any criticisms during Phase I of the intervention and maintained this though the phase, which demonstrated a mean and median of 0. Michael’s father also met mastery criteria for all three of the observed negative behaviors, by demonstrating 0 questions, commands, and criticisms throughout the sessions. As such, the intervention progressed to Phase II.

**Intervention Phase II.** In the second phase of the intervention, Michael’s mother did not demonstrate any negative behaviors, such as questions, commands, and criticisms. During frequency recordings, there were none observed and were overall extinguished. All behaviors were considered to be at a mean and median frequency of 0 for this phase. As such, the data displayed a stable trend and zero level, as well as met mastery criteria at a frequency of zero.

Similarly, Michael’s father did not exhibit any of the coded negative behaviors of questions, commands, and criticisms. These behaviors were also considered to be extinguished and showed a mean and median frequency of zero. As such, the data displayed a zero level and stable trend, as well as met mastery criteria at a frequency of zero. Michael’s mother and father’s data for mean and median of negative behaviors is displayed in the following tables.
Tables 9-12 summarize the mean and median frequency of Michael’s mother’s and father’s negative behaviors through three phases.

Table 9

*Mean Frequency of Michael’s Mother’s Negative Behaviors across Phases.*

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions</td>
<td>4.3</td>
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<td>0</td>
</tr>
<tr>
<td>Commands</td>
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<td>0</td>
</tr>
<tr>
<td>Criticisms</td>
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<td>0</td>
</tr>
</tbody>
</table>

Table 10

*Median Frequency of Michael’s Mother’s Negative Behaviors across Phases.*

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Commands</td>
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<td>0</td>
</tr>
<tr>
<td>Criticisms</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 11

*Mean Frequency of Michael’s Father’s Negative Behaviors across Phases.*

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions</td>
<td>11.7</td>
<td>1.1</td>
<td>0.25</td>
</tr>
<tr>
<td>Commands</td>
<td>4</td>
<td>0.3</td>
<td>0</td>
</tr>
<tr>
<td>Criticisms</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 12

*Median Frequency of Michael’s Father’s Negative Behaviors across Phases.*

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions</td>
<td>11</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Commands</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Criticisms</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Jennifer. Baseline.** Jennifer’s mother’s recorded frequency of questions during baseline phase shows a mean of 13.3 and a median of 13. Her questions visually demonstrated a stable trend with little change and was also considered to be significantly higher than mastery criteria.
of 0 for negative behaviors. She also demonstrated a mean frequency of 4.3 and median frequency of 1 for commands. These behaviors were more variable during baseline and did not display a stable or increasing trend during baseline. Overall, she did not demonstrate any criticisms thoughts baseline sessions, giving a stable mean and median frequency of 0. Apart from commands recorded during baseline, the data of Jennifer’s mother’s negative behaviors showed high levels and stable trends, which were indicative of moving forward with Phase I of this intervention.

**Intervention Phase I.** Jennifer’s mother’s behavioral recordings of questions through eight sessions of Phase I showed a significant decrease in these behaviors. She demonstrated a mean frequency of 5.9 and a median frequency of 6 of questions. Visually, the data displays an overall decreasing trend in these overall behaviors. However, her mother did not reach mastery criteria of zero with this behavior. Her mother exhibited a decrease in command behaviors with both a mean and median frequency of 1. The graphed data also shows a decreasing and stable trend for this behavior. She was able to meet mastery criteria of using zero commands. She also did not use criticisms through this phase, also yielding a mean and median frequency of 0 criticisms. While the level of question behaviors remained high, overall, the data of Jennifer’s mother’s negative behaviors demonstrated decreasing and stable trend, which is indicative of moving to the next phase.

**Intervention Phase II.** The recordings of questions during Phase II continued to decrease in frequency to a mean of 1.6 and a median of 1. She also demonstrated a decrease in commands to a mean and median of 0, as they were not observed or recorded in this phase. Similarly, there were no observed or recorded criticisms, leading to a mean and median frequency of 0 for this behavior. Both commands and criticisms met mastery frequency criteria
of 0 per session. Mastery of questions was unable to be attained in this phase however, visually, the data demonstrates a stable decreasing trend in these behaviors. Tables 13 and 14 summarize the frequencies of Jennifer’s mother’s negative behaviors across three phases.

Table 13.

Mean Frequency of Jennifer’s Mother’s Negative Behaviors across Phases.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions</td>
<td>13.3</td>
<td>5.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Commands</td>
<td>4.3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Criticisms</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 14.

Median Frequency of Jennifer’s Mother’s Negative Behaviors across Phases.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions</td>
<td>13</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Commands</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Criticisms</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Brandon. Baseline. Brandon’s mother’s frequency of questions during three baseline sessions reflected a mean of 18.7 and a median of 19. Visually, this data did not display a stable baseline, but ended in an increasing trend in the last session. Additionally, these frequencies were considered significantly higher than mastery criteria of 0 for negative behaviors. His mother showed a mean and median frequency of 4 for commands during baseline. This was considered a stable pattern when analyzed visually with data. As with other participants, there were no observed criticisms during baseline for Brandon’s mother, giving a stable and low mean and median frequency of 0. Apart from questions recorded during baseline, the data of Brandon’s mother’s negative behaviors showed high levels but stable trends which were indicative of moving forward with Phase I of this intervention.
**Intervention Phase I.** During the first phase of this interventions, Brandon’s mother showed a significant decrease in questions used during the sessions. The mean frequency for displayed questions was 3.3 and the median was 2.5. This visually demonstrated a significant, continuous decrease in the data. As such, the data shows that Phase I of this intervention had a significant impact on the decrease of Brandon’s mother’s question behaviors. The recorded frequency of her commands also decreased to a mean of 1.2 and median of 1. The visual data demonstrated a stable decreasing trend in these behaviors. Additionally, there were no criticisms displayed, indicating a mean and median of 0 during this phase. She did not reach mastery of 0 behaviors in questions or commands. However, the decreasing and stable trends and low levels suggested moving the intervention to Phase II.

**Intervention Phase II.** During the second phase of the intervention, Brandon’s mother’s questions continued to decrease, with a mean of 1.2 and median of 1. She did not meet mastery criteria of 0 in this behavior throughout the phase. Her commands also decreased to a mean frequency of 0.2 and median frequency of 0. She was able to maintain mastery criteria for commands and was able to extinguish this behavior overall. For both questions and commands, the visual data suggests a stable and significant decrease in trend when compared to baseline. This also gives evidence to the effectiveness of the intervention though both phases. Criticisms were again recorded at a mean and median frequency of 0 as there were no criticisms displayed in this phase. This demonstrates stability in this behavior’s trend as well. Tables 15 and 16 display the mean and median frequencies of Brandon’s mother’s negative behaviors across three phases.
Table 15.

Mean Frequency of Brandon’s Mother’s Negative Behaviors across Phases.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions</td>
<td>18.7</td>
<td>3.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Commands</td>
<td>4</td>
<td>1.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Criticisms</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 16.

Median Frequency of Brandon’s Mother’s Negative Behaviors across Phases.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions</td>
<td>19</td>
<td>2.5</td>
<td>1</td>
</tr>
<tr>
<td>Commands</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Criticisms</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Research Question 3.

Research Question 3: Does the CALM program significantly reduce the level of anxiety symptoms experienced in a young child?

Hypothesis 3: The CALM program will significantly reduce the levels of parent reported anxiety symptoms experienced in a young child as measured by the Preschool Anxiety Scale-Revised (PAS-R).

Preschool Anxiety Scale-Revised (PAS-R). As previously described, the PAS-R uses five subscales and one overall total anxiety scale. In addition, the PAS-R uses a standardized T-score, with a mean of 50, and standard deviation of 10. A T-score of 10 above the mean of 50 represents elevated levels of anxiety. This measure is not an overall clinical diagnostic measurement but is recommended to be used with other diagnostic techniques. For the purposes of this study, the PAS-R is utilized as a progress monitoring tool of parent report of his or her child’s anxiety. Visual analysis was also used to compare the level, trend, and variability of T-
scores of this assessment for each subject. Effect sizes are also reported below for time 1 to time 2, time 2 to time 3, and time 1 to time 3.

**Michael.** Michael’s mother and father both completed the PAS-R at time 1, during baseline. However, Time 2 and 3 were unable to be collected. As such, data is unable to be analyzed for change in effect sizes. His mother reported an overall total anxiety score in the clinically elevated range ($t = 80$). There was also clinically elevated obsessive-compulsive disorder ($t = 72$), social anxiety ($t = 61$), separation anxiety ($t = 84$), physical injuries ($t = 72$), and generalized anxiety ($t = 85$).

Michael’s father rated his total anxiety scale as clinically elevated ($t = 72$). He also indicated the following scales to be in the clinically elevated range, social anxiety ($t = 69$), separation anxiety ($t = 88$), and generalized anxiety ($t = 66$). At this time, he is reporting obsessive-compulsive disorder ($t = 58$) and physical injuries ($t = 56$) to be within the average range. Table 17 displays the results of Michael’s mother’s and father’s ratings on the PAS-R at time 1.

<table>
<thead>
<tr>
<th></th>
<th>Time 1 Mother</th>
<th>Time 1 Father</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCD</td>
<td>72</td>
<td>58</td>
</tr>
<tr>
<td>Social Anxiety</td>
<td>61</td>
<td>69</td>
</tr>
<tr>
<td>Separation Anxiety</td>
<td>84</td>
<td>88</td>
</tr>
<tr>
<td>Physical Injuries</td>
<td>72</td>
<td>56</td>
</tr>
<tr>
<td>Generalized Anxiety</td>
<td>85</td>
<td>66</td>
</tr>
<tr>
<td>Total Anxiety</td>
<td>80</td>
<td>72</td>
</tr>
</tbody>
</table>

**Jennifer.** Jennifer’s mother completed the PAS-R during baseline (time 1), after Phase I (time 2), and after Phase II (time 3). With this data, Jennifer’s level of anxiety, based on her
mother’s report, was able to be tracked and graphed across phases and through the intervention. This data was visually analyzed and is found in figure 9. At time 1, Jennifer’s mother reported an overall clinically elevated total anxiety \((t = 77)\). There was also clinically elevated separation anxiety \((t = 94)\), generalized anxiety \((t = 79)\), physical injuries \((t = 72)\), and obsessive-compulsive disorder scales \((t = 63)\). Social anxiety was reported to be within normal limits \((t = 51)\).

When measured at time 2, her overall total anxiety T-score decreased by more than one standard deviation \((t = 65)\) with a significant and large effect size \((ES = -1.2)\). However, this score remains within the clinically elevated range. The separation anxiety scale also decreased by two standard deviations, \((t = 74)\) although also remaining in the clinically elevated range. From baseline, the impacts of this intervention showed a large and significant effect size \((ES = -2)\). In terms of generalized anxiety, Jennifer’s mother indicated a decrease of one standard deviation with large, significant effect sizes \((t = 66, ES = -1.3)\), which remains in the clinically elevated range. Physical injuries scale decreased to within the average range with large effects \((t = 57, ES = -1.5)\) and social anxiety continued to remain at an average range with calculated small effects since baseline \((t = 50, ES = 0.1)\).

Upon completion of the intervention at time 3, Jennifer’s total anxiety score increased \((t = 78)\) and remains in the clinically elevated range. When compared to time 2, there were a large effect was seen \((ES = 1.3)\), however a small and insignificant effect from time 1 \((ES = 0.1)\). The obsessive-compulsive scale remained at the same rating \((t = 67)\), which continues to be in the clinically elevated range. There was no change seen from time 2, \((ES = 0)\), and a significant but small overall effect from baseline to time 3 \((ES = 0.4)\). The social anxiety scale \((t = 89)\) increased by two standard deviations, which indicates it being in the clinically elevated range for
Running head: CHILDHOOD ANXIETY

the first time during this intervention. There was a large and significant effect from time 2 ($ES = 2.1$) as well as from the beginning of the intervention ($ES = 2$). Physical injuries scale ($t = 65$) also increased to within the clinically elevated range during this phase with a large and significant effect size ($ES = 0.3$) from time 2, but an overall decreasing large effect size from time 1 ($ES = -0.7$). Lastly, the generalized anxiety scale also showed a slight increase with small but significant effects ($t = 69, ES = 0.3$), from time 2, and an overall insignificant change from time 1 to time 3 ($ES = 0.1$). The results of Jennifer’s mother’s PAS-R are summarized below in table 18 across three times.

Table 18.

Preschool Anxiety Scale, T-Scores at Time 1, Time 2, and Time 3 and Effect Sizes for Jennifer’s mother.

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
<th>ES 2-1</th>
<th>ES 3-2</th>
<th>ES 3-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCD</td>
<td>63</td>
<td>67</td>
<td>67</td>
<td>0.4</td>
<td>0</td>
<td>0.4</td>
</tr>
<tr>
<td>Social Anxiety</td>
<td>51</td>
<td>50</td>
<td>71</td>
<td>-0.1</td>
<td>2.1</td>
<td>2.0</td>
</tr>
<tr>
<td>Separation Anxiety</td>
<td>94</td>
<td>74</td>
<td>89</td>
<td>-2.0</td>
<td>1.5</td>
<td>-0.5</td>
</tr>
<tr>
<td>Physical Injuries</td>
<td>72</td>
<td>57</td>
<td>65</td>
<td>-1.5</td>
<td>0.8</td>
<td>-0.7</td>
</tr>
<tr>
<td>Generalized Anxiety</td>
<td>79</td>
<td>66</td>
<td>69</td>
<td>-1.3</td>
<td>0.3</td>
<td>-1.0</td>
</tr>
<tr>
<td>Total Anxiety</td>
<td>77</td>
<td>65</td>
<td>78</td>
<td>-1.2</td>
<td>1.3</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Note. The effect size direction has been adjusted to make increases or decreases in T-scores reflect directional assessment on the scale.

Brandon. Brandon’s mother completed the PAS-R during baseline (time 1), after Phase I (time 2), and after Phase II (time 3). With this data, his level of anxiety, based on his mother’s report, was able to be tracked and graphed across phases and through the intervention. The data was visually analyzed using T-scores. At time 1, Brandon’s mother reported a total anxiety score in the clinically elevated range ($t = 72$). Additionally, the obsessive-compulsive disorder ($t = 82$), social anxiety ($t = 82$), and generalized anxiety scales ($t = 89$) were in the clinically
elevated ranges. Brandon’s separation anxiety \((t = 40)\) and physical injury scales \((t = 46)\) were within the average range.

At Time 2, there was a significant, large decrease by in Brandon’s total anxiety scale when compared to baseline \((t = 61, ES = -1.1)\), although it continued to remain in the clinically elevated range. His obsessive-compulsive scale decreased with large and significant effects as well \((t = 67, ES = -1.5)\). The generalized anxiety scale also decreased with large and significant effects \((t = 66, ES = -2.3)\). The social anxiety scale also decreased with significant but small effects \((t = 78, ES = 0.4)\). Even with these decreases, the obsessive-compulsive, generalized anxiety, and social anxiety scales continue to remain in the clinically elevated range. The separation anxiety scale increased with small but significant effects \((t = 45, ES = 0.5)\). Additionally, physical injuries remained in the average range \((t = 42, ES = -0.4)\) with a small but significant decrease.

At time 3 when the intervention was completed, Brandon’s total anxiety scale decreased \((t = 58)\), which is below the clinical threshold for this measure. From time 2, this shows significant but small changes \((ES = -0.3)\), however significant and large effects were observed at the end of the intervention from baseline \((ES = -1.4)\). The obsessive-compulsive scale increased with medium effects from time 2 \((t = 73, ES = 0.6)\) but decreased with significant and large effects \((ES = -0.9)\) from baseline. Social anxiety \((t = 67)\) showed a significant, large decrease from time 2 \((ES = -1.1)\) as well as from baseline \((t = -1.5)\). His separation anxiety scale at time 3 \((t = 40)\) showed significant medium increase since time 2 \((ES = 0.5)\), but no change since baseline \((ES = 0)\). Physical injuries continued to be stable \((t = 42)\) with no change from time 2 \((ES = 0)\) and small but significant decrease from time 1 \((ES = -0.4)\). The generalized anxiety scale showed a slight increase to a \((t = 69)\) which is a small but significant increase from time 2,
Running head: CHILDHOOD ANXIETY

but there is an overall significant and large decrease overall from baseline ($ES = -2$). The results from Brandon’s mother’s PAS-R are summarized below in table 19 across three times.

Table 19.  
Preschool Anxiety Scale, T-Scores at Time 1, Time 2, and Time 3 and Effect Sizes for Brandon’s mother.

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
<th>ES 2-1</th>
<th>ES 3-2</th>
<th>ES 3-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCD</td>
<td>82</td>
<td>67</td>
<td>73</td>
<td>-1.5</td>
<td>0.6</td>
<td>-0.9</td>
</tr>
<tr>
<td>Social Anxiety</td>
<td>82</td>
<td>78</td>
<td>67</td>
<td>-0.4</td>
<td>-1.1</td>
<td>-1.5</td>
</tr>
<tr>
<td>Separation Anxiety</td>
<td>40</td>
<td>45</td>
<td>40</td>
<td>0.5</td>
<td>-0.5</td>
<td>0</td>
</tr>
<tr>
<td>Physical Injuries</td>
<td>46</td>
<td>42</td>
<td>42</td>
<td>-0.4</td>
<td>0</td>
<td>-0.4</td>
</tr>
<tr>
<td>Generalized Anxiety</td>
<td>89</td>
<td>66</td>
<td>69</td>
<td>-2.3</td>
<td>0.3</td>
<td>-2.0</td>
</tr>
<tr>
<td>Total Anxiety</td>
<td>72</td>
<td>61</td>
<td>58</td>
<td>-1.1</td>
<td>-0.3</td>
<td>-1.4</td>
</tr>
</tbody>
</table>

Note. The effect size direction has been adjusted to make increases or decreases in T-scores reflect directional assessment on the scale.

Research Question 4.

Research Question 4: Does the CALM program have an effect on the overall quality of the parent-child relationship?

Hypothesis 4: The CALM program will significantly increase the overall quality of the parent-child relationship, as measured by the Parent Relationship Questionnaire-Child/Adolescent (PRQ-CA).

Parent Relationship Questionnaire-Child/Adolescent. As previously reported in the methods of this study, the PRQ-CA uses seven subscales; attachment, communication, discipline practices, involvement, parenting confidence, satisfaction with school, and relational frustration. The PRQ-CA uses a standardized T-score, with a mean of 50, and standard deviation of 10. T-scores from 41 to 59 indicate an average range for each subscale. Scores between 60 and 69 represent a significantly above average range, and scores 70 and above indicate an upper extreme
range. Conversely, scores between 31 and 40 are in the significantly below average range and scores 30 and below are considered in the lower extreme range. For the purposes of this study, the PRQ-CA is utilized as a progress monitoring tool of parent report of his or her child’s anxiety. Visual analysis was also used to compare the level, trend, and variability of T-scores of this assessment for each subject.

**Michael.** Michael’s mother and father both completed the PRQ-CA at time 1, during baseline. However, Time 2 and 3 were unable to be collected. As such, data is unable to be analyzed for change or progress. At time 1, Michael’s mother reported attachment ($t = 53$) in the average range. Communication ($t = 45$), involvement ($t = 49$), parenting confidence ($t = 45$), and relational frustration ($t = 50$) were also in the average range. She rated discipline practices ($t = 38$) as being within the significantly below average range. She did not respond to items corresponding to the satisfaction with school scale, as Michael was home-schooled at the time of this assessment. Effects sizes were unable to be calculated for this measure.

Michael’s father reported attachment within the average range ($t = 44$). He also indicated communication ($t = 56$), involvement ($t = 48$), and satisfaction with school ($t = 59$) were in the average range. He also reported his parenting confidence to be in the below average range ($t = 31$) and discipline practices to be within the lower extreme range ($t = 27$). Lastly, he rated relational frustration ($t = 65$) to be in the significantly above average range. Again, effect sizes were unable to be calculated for this measure. The time 1 scores for both Michael’s mother and father can be seen below in table 20.
Table 20

*Parenting Relationship Questionnaire, T-Scores at Time 1 for Michael’s mother and father.*

<table>
<thead>
<tr>
<th></th>
<th>Time 1 Mother</th>
<th>Time 1 Father</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment</td>
<td>52</td>
<td>44</td>
</tr>
<tr>
<td>Communication</td>
<td>45</td>
<td>56</td>
</tr>
<tr>
<td>Discipline Practices</td>
<td>38</td>
<td>27</td>
</tr>
<tr>
<td>Involvement</td>
<td>49</td>
<td>48</td>
</tr>
<tr>
<td>Parenting Confidence</td>
<td>45</td>
<td>31</td>
</tr>
<tr>
<td>Satisfact. With School</td>
<td>N/A</td>
<td>59</td>
</tr>
<tr>
<td>Relational Frustration</td>
<td>50</td>
<td>65</td>
</tr>
</tbody>
</table>

**Jennifer.** Jennifer’s mother completed the PRQ-CA at time 1 during baseline, time 2 after CDI, and time 3 when the intervention was completed. During time 1, her mother reported the following scales were within the average range: attachment (*t* = 46), discipline practices (*t* = 45), involvement (*t* = 43), and relational frustration (*t* = 47). Jennifer’s mother rated her parenting confidence (*t* = 31) and satisfaction with school (*t* = 37) to be within the significantly below average range. Lastly, the communication scale was measured to be within the lower extreme range (*t* = 27).

At time 2, the attachment scale remains in the average range with small but significant decrease (*t* = 43, ES = -0.3). Discipline practices (*t* = 38; ES = -0.7) showed a medium, significant decrease at time 2. The involvement scale (*t* = 35, ES = -0.8) demonstrated a large and significant decrease as well. Jennifer’s mother’s parenting confidence scale (*t* = 26, ES = -0.5) decreased with medium significant effects. Communication (*t* =27; ES = 0) did not change and remained in the lower extreme range. The satisfaction with school scale (*t* = 42; ES = 0.5) increased with medium and significant effects. The relational frustration scale (*t* = 65; ES = 1.8) also increased with large and significant effects.
At time 3 upon conclusion of the intervention, Jennifer’s mother rated her attachment ($t = 34$), which is a significant and large decrease from time 2 ($ES = -0.9$) and time 1 ($ES = -1.2$). Discipline practices ($t = 40$) showed a stable trend throughout with small but significant increases from time 2 ($ES = 0.2$) but an overall medium decrease from time 1 ($ES = 0.5$). The involvement scale ($t = 41$) showed a medium and significant increase from time 2 ($ES = 0.6$) but a small and significant decrease when compared to time 1 ($ES = -0.2$). Parenting confidence ($t = 24$) continued to demonstrate a slight decreasing trend with small and significant changes from time 2 ($ES = -0.2$) and medium, significant decrease from time 1 ($ES = -0.7$). Jennifer’s mother’s satisfaction with school remained the same from time 2 with no significant effects ($t = 42$, $ES = 0$), but a medium significant increase from time 1 ($ES = 0.5$). Similarly, the communication T-score ($t = 27$) again did not change and showed no effects when compared to time 2 or time 1 ($ES = 0$). The results of Jennifer’s mother’s PRQ and effect sizes are summarized below in table 21.

Table 21.

*Parenting Relationship Questionnaire, T-Scores at Time 1, Time 2, and Time 3 and Effect Sizes for Jennifer’s mother.*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
<th>ES 2-1</th>
<th>ES 3-2</th>
<th>ES 3-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment</td>
<td>46</td>
<td>43</td>
<td>34</td>
<td>-0.3</td>
<td>-0.9</td>
<td>-1.2</td>
</tr>
<tr>
<td>Communication</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Discipline Practices</td>
<td>45</td>
<td>38</td>
<td>40</td>
<td>-0.7</td>
<td>0.2</td>
<td>-0.5</td>
</tr>
<tr>
<td>Involvement</td>
<td>43</td>
<td>35</td>
<td>41</td>
<td>-0.8</td>
<td>0.6</td>
<td>-0.2</td>
</tr>
<tr>
<td>Parenting Confidence</td>
<td>31</td>
<td>26</td>
<td>24</td>
<td>-0.5</td>
<td>-0.2</td>
<td>-0.7</td>
</tr>
<tr>
<td>Satisfact. With School</td>
<td>37</td>
<td>42</td>
<td>42</td>
<td>0.5</td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>Relational Frustration</td>
<td>47</td>
<td>65</td>
<td>68</td>
<td>1.8</td>
<td>0.3</td>
<td>2.1</td>
</tr>
</tbody>
</table>

*Note.* The effect size direction has been adjusted to make increases or decreases in T-scores reflect directional interpretation of the scale.
Brandon. Brandon’s mother completed the PRQ-CA at time 1 during baseline, time 2 after CDI, and time 3 when the intervention was completed. During time 1, she reported attachment and communication in the average range, both with a T-score of 50. Also, in the average range at baseline were parenting confidence \((t = 49)\) and relational frustration \((t = 52)\). She rated her involvement to be within the significantly above average range \((t = 62)\). She rated both discipline practices \((t = 31)\) and satisfaction with school \((t = 32)\) in the significantly below average range.

At time 2, Brandon’s mother reported no change in attachment \((t = 50; ES = 0)\) which remained in the average range. Communication \((t = 57, ES = 0.8)\) showed a significant and large increase since time 1. Involvement \((t = 60, ES = -0.2)\), and relational frustration \((t = 50, ES = -0.2)\) demonstrated a small but significant decrease. Parenting confidence \((t = 53, ES = 0.4)\) exhibited a small but significant increase since baseline. Discipline practices \((t = 24, ES = 0.7)\) showed a medium and significant decrease. Satisfaction with school \((t = 39, ES = 0.7)\) showed a significant and medium increase on this scale since measured at time 1.

At time 3, there was a significant and large increase in attachment when compared to time 1 and time 2 \((t = 63, ES = 1.3)\). Communication \((t = 60)\) showed a small increase from time 2 \((ES = 0.3)\) but an overall large and significant increase from time 1 \((ES = 1.1)\). The involvement scale \((t = 60)\) remained stable with a small increase \((ES = 0.2)\) from time 2, but no overall change from time 1 \((ES = 0)\). Parenting confidence \((t = 53)\) showed no change from time 2 \((ES = 0)\), but an overall small and significant increase \((ES = 0.4)\) from time 1. Relational frustration \((t = 53)\) showed a small but significant increase since time 2 \((ES = 0.3)\) but no significant changes from time 1 \((ES = 0.1)\). Discipline practices \((t = 36)\) demonstrated a large and significant increase \((ES = 1.2)\) from time 2, and an overall medium and significant increase when compared to time 1 \((ES = 0.7)\).
= 0.5). Satisfaction with school \((t = 39)\) displays no change since time 2 \((ES = 0)\) but an overall medium and significant increase from time 1 \((ES = 0.7)\). The results of Brandon’s mother’s PRQ and effect sizes are summarized below in table 22 at three different times.

Table 22

*Parenting Relationship Questionnaire, T-Scores at Time 1, Time 2, and Time 3 and Effect Sizes* for Brandon’s mother.

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
<th>ES 2-1</th>
<th>ES 3-2</th>
<th>ES 3-1</th>
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<tr>
<td>Attachment</td>
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<td>50</td>
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<td>57</td>
<td>60</td>
<td>0.8</td>
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<td>Discipline Practices</td>
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<td>-0.7</td>
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<tr>
<td>Involvement</td>
<td>62</td>
<td>60</td>
<td>62</td>
<td>-0.2</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>Parenting Confidence</td>
<td>49</td>
<td>53</td>
<td>53</td>
<td>0.4</td>
<td>0</td>
<td>0.4</td>
</tr>
<tr>
<td>Satisfact. With School</td>
<td>32</td>
<td>39</td>
<td>39</td>
<td>0.7</td>
<td>0</td>
<td>0.7</td>
</tr>
<tr>
<td>Relational Frustration</td>
<td>52</td>
<td>50</td>
<td>53</td>
<td>-0.2</td>
<td>0.3</td>
<td>0.1</td>
</tr>
</tbody>
</table>

*Note.* The effect size direction has been adjusted to make increases or decreases in T-scores reflect directional assessment on the scale.
Figure 1. Frequency of behavioral descriptions displayed by participants across sessions.
Figure 2. Frequency of reflections displayed by participants across sessions.
Figure 3. Frequency of labeled praises by participants across sessions
Figure 4. Frequency of questions displayed by participants across sessions.
Figure 5. Frequency of commands displayed by participants across sessions.
Figure 6. Frequency of criticisms displayed by participants across sessions.

- Michael's Mother
- Michael's Father
- Jennifer's Mother
- Brandon's Mother

Date of Session
Figure 7. Visual display of Michael’s mother’s PAS-R at time 1.

![Figure 7](image1)

Figure 8. Visual display of Michael’s father’s PAS-R at time 1.

![Figure 8](image2)

Figure 9. Visual display of Jennifer’s mother’s PAS-R across time 1, time 2, and time 3.

![Figure 9](image3)
Figure 10. Visual display of Brandon’s mother’s PAS-R across time 1, time 2, and time 3.

Figure 11. Visual display of Michael’s mother’s PRQ at time 1.

Figure 12. Visual display of Michael’s father’s PRQ at time 1.
Figure 13. Visual display of Jennifer’s mother’s PRQ at time 1, time 2, and time 3.

![PRQ Chart for Jennifer's Mother]

Figure 14. Visual display of Brandon’s mother’s PRQ at time 1, time 2, and time 3.

![PRQ Chart for Brandon's Mother]
Chapter V: Discussion

Summary

The purpose of the current study was to examine the effectiveness of the Coaching Approach behavior and Leading by Modeling (CALM) adaptation to PCIT for children diagnosed with anxiety, by assessing the changes in the child’s anxiety levels, through its association with child attachment and parent behaviors. More specifically, it was hypothesized the change in a child’s anxiety may be attributed to an increase in parent’s positive behaviors, a decrease in parent’s negative behaviors, an increase in parent’s confidence, or increase in overall attachment and parent-child relationship. The participants in this study demonstrated different responses to the intervention.

Michael. The CALM intervention to PCIT appeared to be effective in increasing Michael’s mother’s and father’s positive behaviors across the phases. They were both able to consistently use behavioral descriptions, reflections, and labeled praises during the sessions. In addition, there appeared to be an overall, significant decrease in both his mother and father’s use of negative behaviors, which were ultimately extinguished in Phase II for both parents. As such, the CALM intervention had a positive effect on the parent-child interactions as shown through an increase in positive parent behaviors and a decrease in negative parent behaviors, as hypothesized.

Behaviorally, Michael was observed to progress through his fear hierarchy with little observed anxiety or nervous behaviors. It was also noted that he was able to begin Kindergarten with no reported separation concerns. Overall, Michael’s parents demonstrated low buy-in with the skills and difficulty using them at mastery levels. Michael also exhibited very imaginative and pretend play which was often difficult for his mother and father to follow using positive
skills and not using questions to clarify his play. Since the parent rating scales were unable to be collected for progress, it is unclear if the increase in positive behaviors and the decrease in negative behaviors can be attributed to any changes in Michael’s anxiety levels, or an increase in the overall relationship with his parents. However, the combination of an increase in positive parent behaviors, decrease in negative parent behaviors, as well as gradual exposures to anxiety-provoking stimuli may have played a role in alleviating his anxiety about separating from his parents.

**Jennifer.** Jennifer’s mother showed an overall increase in positive behaviors, although she demonstrated a more variable and slower progression. Her negative behaviors showed an overall decrease through the sessions. As such, the CALM intervention had a positive effect on the parent-child interactions as shown through an increase in positive parent behaviors and a decrease in negative parent behaviors, as was hypothesized. However, her mother qualitatively reported difficulty using the skills at home and in real-life situations. She indicated a lack of buy-in from her husband as he demonstrates a different parenting style than her own. She also relied on her own frustrations in anxiety provoking situations.

There was an observed decrease in Jennifer’s total anxiety score after the CDI skills were taught in Phase I; however the T-score increased to starting baseline levels upon completion of the intervention. All of the subscales on the PAS-R remained in the clinically elevated range at the end of the intervention. On the scales of the most concern for Jennifer, there were decreasing, medium effects seen in her social anxiety levels, but a large increase in her social anxiety from baseline to the end of the intervention. This could be due to the exposures of the CALM intervention to anxiety-provoking situations for Jennifer and her mother’s perceptions of Jennifer’s anxiety. It can be assumed the CALM intervention did not have an effect on
Jennifer’s anxiety levels, as there was no significant change noted, which is contrary to the hypothesis. On the PRQ, Jennifer’s mother rated their attachment as decreasing from the average range to the significantly below average range. Results on the parenting confidence and involvement scales also showed small to medium decreases through the intervention.

Behaviorally, Jennifer demonstrated the most difficulty with the fear hierarchy and often showed anxiety and frustration behaviors when presented with tasks she perceived as difficult, such as reading or completing mathematics. She would often shut down, not respond, and ignore directives. This led to a delay the progression of the intervention as a similar exposure was used the following week for Jennifer to increase brave behaviors and help to decrease her anxiety. She also frequently became mad at or argued with her mother as well as showed difficulty asking for help. When her mother would use skills such as labeled praises or reflections, Jennifer often voiced irritation and wanted her mother to stop. Jennifer reported that her mother often talked too loudly or sounded weird when using the skills. Her mother is a speech-language pathologist and believes Jennifer may have some auditory processing concerns. However, this adverse responding from Jennifer may have played a role in the decrease in her mother’s perceptions of attachment and parenting confidence. During Phase II, there was also an observed decrease in usage of positive behaviors. This may have been related to Jennifer’s dislike of the PRIDE skills as well as the focus on exposure tasks, rather than a focus on CDI skills. Due to the above-mentioned reasons, it can be assumed the CALM intervention demonstrated an opposite effect for Jennifer and her mother, showing no positive changes in attachment or behaviors in the overall parent-child relationship, which is contradictory to the hypothesis.

Brandon. Brandon’s mother demonstrated an overall significant increase in positive behaviors through the intervention, even though she showed a slight decrease in Phase II. There
was a significant decrease in her overall negative behaviors, as negative behaviors were largely extinguished at the end of the intervention. As such, the CALM intervention had a positive effect on the parent-child interactions as shown through an increase in positive parent behaviors and a decrease in negative parent behaviors, as was hypothesized.

On the PAS-R, Brandon’s total anxiety significantly decreased from the clinically elevated range to the average range. Of most concern for Brandon, his social anxiety and generalized anxiety scale also demonstrated a large decrease at the end of the intervention, although remaining in the clinically elevated range. As such, it is assumed the decrease in Brandon’s observed overall, social, and generalized anxiety can be attributed to the effects of the CALM intervention which is consistent with the hypothesis.

On the PRQ, Brandon’s mother reported an overall increase in attachment from the average range to the significantly above average range. Communication also increased from the average range to the significantly above average range. Involvement remained stable within the significantly above average range, and parenting confidence remained stable in the average range through the intervention. As such, it is assumed the increase in Brandon and his mother’s attachment, communication, involvement and parenting confidence can be attributed to the effects of the CALM intervention, which is consistent with the hypothesis.

Brandon’s success in the intervention can be attributed to a number of reasons. Brandon’s mother was also previously an educator and showed good comprehension of the skills. She and her husband reported high buy-in for the skills and motivation. She reported using them at home on multiple occasions such as helping Brandon learn to ride a bike and get involved in t-ball. Also, in Brandon’s sessions, his two younger siblings were often present for the beginning of the hour. Although distracting to Brandon, his siblings were often utilized as
part of his exposure session to frustrations and changes in routines. This could have also helped with generalizability to real-life situations. Brandon responded well to labeled praise and verbal reinforcement, both from his mother and therapist. This may have positively influenced his mother’s perceived attachment and parenting confidence. He was also able to engage in the exposures as well as discussions about his anxiety and coping skills. He showed minimal frustration or anxiety behaviors. He would often rush through some of the exposures but was able to be redirected to the task. As noted for other participants, there is also an observed decrease in usage of positive behaviors during Phase II. This may be due to the focus on exposure tasks, rather than a focus on CDI skills.

**Conclusions**

Along with overall emotional functioning, the most significant and observable impacts of childhood anxiety are typically seen within family functioning and social relationships. As such, parent-focused, behavioral interventions are increasingly becoming utilized to effectively treat anxiety symptoms in early childhood. Specifically, traditional Parent-Child Interaction Therapy (PCIT) has been used to effectively treat externalizing behavioral disorders in young children. More recent studies have supported the use of PCIT for children with separation anxiety (Chase & Eyberg, 2008; Choate et al., 2005) as well as initial evidence for the use of the CALM intervention (Comer et al., 2012; Puliafico, Comer, & Albano, 2013). Overall, the implementation of the CALM adaptation to PCIT in this study contributes mixed results in decreasing anxiety in an early childhood population.

As previously stated, anxiety research in young children has focused on parents’ over-controlling and negative behaviors as a contributing and preservation factor to childhood anxiety (Bayer, Sanson, & Hemphill, 2006; Edwards et al., 2010; Hudson & Rapee, 2001). The current
implementation of the CALM program focused on strengthening the parent and child relationship with an increase in positive parent behaviors and decrease in negative parent behaviors. For all three participants in Phase I, there was an overall increase in the parents’ frequency of positive behaviors, such as behavioral descriptions, reflections, and labeled praises. There was also a decrease of negative behaviors, such as questions and commands for all three participating families. There were no criticisms used by parents at any time through this study.

For Jennifer and Brandon after Phase I, there was an observed significant decrease in their overall anxiety score on the PAS-R. Brandon was the only participant to maintain this decrease in overall total anxiety after Phase II. This may be attributed to the higher parental buy-in and motivation in using the positive PRIDE skills as shown and reported by his mother. Overall, the findings in this study provide support that more positive and supportive parenting behaviors as well as a decrease in negative or over-controlling parent behaviors during interactions diminishes their child’s exhibited anxiety, as also found in existing literature. However, the Phase II exposure sessions of this intervention showed mixed results overall and the overall effects of it are unclear in this study.

There were variable results in parent-rated attachment at the end of the study. Michael’s attachment was unable to be assessed for change. Jennifer’s mother rated a significant decrease in overall attachment after Phase I and Phase II, when compared to baseline. Other behaviors that play a role in the parent and child relationship as identified by the PRQ-CA, such as parenting confidence and involvement, showed overall decreases through the intervention for her as well. There was a decrease in discipline practices at the end of the intervention, whereas relational frustration showed a significant increase, as reported by Jennifer’s mother. This is contrary to the hypothesis and previously described research. As previously mentioned, Jennifer
typically became frustrated and would shut down during the exposures, which resulted in lack of progression to higher level exposures. She also verbally expressed irritation when her mother would use some of the pride skills such as reflections and labeled praises. Her mother feels Jennifer may have some auditory processing concerns, which may also have played a role in her reactions and dislike of the PRIDE skills. Due to Jennifer’s frustration and adverse reactions, this may have negatively impacted Jennifer’s mother’s perceptions about parenting confidence and overall attachment. Taking these behaviors together, this could have also caused the lack of change in social anxiety for Jennifer.

Brandon’s mother did not report any difference in attachment after learning the CDI skills in Phase I but did report a significant increase in attachment at the end of the intervention. There was also an overall increase in communication both after Phase I and at the end of the intervention, and an increase after Phase I in reported parenting confidence which remained stable through the end of the intervention. Involvement as well as relational frustration remained relatively stable throughout. Brandon’s attachment could be due to his positive responding to his mother’s positive behaviors such as labeled praises and reflections. He also showed brave, approach behaviors when prompted by his mother during the exposure sessions. Overall, his mother expressed the most satisfaction to this intervention. This positivity and minimal frustration for both Brandon and his mother may be a reason why attachment and other related behaviors showed positive increases at the end of the study.

Overall, for both Jennifer and Brandon, these findings suggest there are differences in parent and child attachment or overall relationship as a result of the implementation of the CALM program. However, these differences coincide inversely with the differences in total anxiety scores. Specifically, Jennifer’s assessments showed high anxiety scores and decreasing
attachment scores, whereas Brandon demonstrated a decrease in anxiety and a significant increase in attachment at the end of the intervention. The scores also reflect the motivation and buy-in of the parents as well as how the child responded to the parent’s behaviors and intervention. As such, this contributes to the notion that a more positive parent and child relationship as demonstrated by perceived attachment can decrease a child’s anxiety.

Anecdotally, there were observed significant, but also variable results. For Michael, it was reported he was able to attend kindergarten without any exhibited separation anxiety concerns. He and his family fully terminated treatment after the last session of Phase II, and maintenance of these behaviors was unable to be monitored. When asked, Jennifer was unable to report feeling any different or learning anything in treatment. She was able to say she felt she was crying less in school, although it could also be due to the school year ending. Her mother indicated another family member reported Jennifer appeared less frustrated. Brandon and his mother reported the most positive change and use of the skills. She indicated he felt more confident when learning to ride a bicycle and play t-ball, as well as begin 1st grade next year. He was also able to recall some of the learned skills and did not report feeling anxious or worried.

These results may be attributed to the effects of the individualized exposures created for each child in Phase II due to the differences in anxiety symptoms. Specifically, Jennifer’s exposures were more related to academic and social frustrations which were often difficult to recreate in an office setting. After multiple sessions, she appeared to become more comfortable with her mother and therapist, leading to less feelings of social anxiety. In addition, her mother and therapist used other behavioral modification techniques or other tangible rewards to increase engagement when she refused, which is probably less typical in the classroom when she becomes frustrated or anxious. Brandon’s exposures were easier to recreate in an office setting as they
were focused around changes in routine and trying new things. His mother was also able to provide him with support and confidence when he would become frustrated through her own brave behaviors and verbal encouragement. He responded well to this in session and his mother reported using the learned skills in real-life situations to decrease anxiety.

As identified in previous literature, exposures to anxiety-provoking stimuli can help to decrease anxiety. However, the CALM program encourages parents to model brave and reinforcing behaviors when the child is experiencing anxiety during these exposures. Therefore, Phase II of this study adds mixed results to the literature of the effectiveness of utilizing parent-based, exposure therapy to childhood anxiety treatments.

**Limitations**

Although there is varying support found in this study for the CALM adaptation and techniques, there remains limitations that are of note. First, this study utilized a nonconcurrent, multiple baseline design across subjects. This design was considered the most appropriate for this study due to the small sample size and provides researchers an ability to determine variability in the data rather than statistical effects. As with all single-subject methodology, a limitation to its use is a small sample size (n=3), which can limit generalizability and reliability. In addition, the visual analysis can lead to subjectivity in the analysis of results (Richards, Taylor, & Ramasamy, 2014). The demographics of the participants in this study were relatively similar and can inhibit generalizability. All three participants were Caucasian and six years old at the beginning of the intervention. However, they differed in their presenting anxiety diagnoses and concerns as well as variability in their gender.

In terms of the overall intervention, a typical PCIT set-up was not utilized in that a one-way mirror and bug-in-the-ear device was not easily accessible within the clinical setting.
Typically, the therapist or coach is also not in the room with the parent and child dyad, as was the case in this study. In addition, the entire intervention lasted four months for Michael and five months for both Jennifer and Brandon. Whereas traditional PCIT is typically an intervention that lasts for the duration of a few months, the length of the intervention may be a threat to the internal validity of the findings. Specifically, maturation, which is the usual development of a subject over time, could also impact the results due to the amount of time spent in the intervention.

Another limitation to the overall research, is the lack of child input or child rating scales, and its reliance on parent observations. Previous research indicates the difficulty of obtaining child input at this young of age due to the lack of insight to their emotions and anxiety as well as question comprehension. The participants in this sample may have been able to read, comprehend, and answer self-rating scales, however the overall proposed target population of this intervention of three to six-year-olds may not have been able to complete this independently or accurately.

**Implications for Practice**

This study examines the effectiveness and efficacy of the CALM adaptation to PCIT for an early childhood population diagnosed with anxiety. The results provide overall mixed support for the use of this intervention within a clinical, outpatient setting. However, there are elements of this intervention that can be used within a more practical setting in order to effectively decrease a child’s anxiety. First, the increase of positive behaviors such as behavioral descriptions, reflections, and labeled praises can be easily conveyed and taught to parents, caregivers, and educators with whom the child interacts. Negative behaviors should also be discouraged. Taken together with the established evidence base of the skills used in traditional
PCIT, these behaviors should be encouraged in clinicians and parents to increase the overall parent and child relationship as well as potentially alleviate internalizing and externalizing behaviors. Second, the CALM program enables the parent to be the main implementer of the treatment with simple coaching and guiding from the clinician. This allows skills to be transferred more easily and used in real life situations, as opposed to only being utilized in the clinic. This is also another important aspect of interventions targeted for early childhood populations. Lastly, this intervention can be useful in helping parents identify what often makes their child feel anxious. This awareness can help the parent to model braver, approach behaviors, rather than demonstrate their own avoidant or anxious behaviors, in hopes to decrease or extinguish the maintenance of anxiety for their child. Although this study yielded mixed results, this intervention has elements that can be effective in practice to decrease a young child’s anxiety.

Recommendations for Future Research

Further research is needed to provide further and more specific support for the CALM adaptation to PCIT. Specifically, additional and more diverse individuals of a larger sample size can help to add to the effectiveness and generalizability. Children from three to six-years and eleven months were included in this sample to match the norming samples of the chosen assessments. Future studies should include children of a slightly broader age range, such as up to eight years of age, to determine if there are differing effects at early to middle childhood. It would also be beneficial to conduct the intervention using more traditional elements of PCIT, such as coaching via a two-way mirror using a bug-in-the-ear device. In addition, it may worthwhile to evaluate the effects of Parent-Directed Interaction (PDI) as an addition to the CDI and DADS phases of CALM.
As previously stated, future studies should include a child self-report measure of anxiety to determine the changes in their reported emotions and feelings. However, this is often not appropriate for very young populations due to lack of insight and comprehension. Similarly, a measure of parent anxiety or stress should be included to determine differences during the course of treatment. Future studies should also consider obtaining early developmental information as well as utilizing a maintenance phase after the intervention to determine the long-term effects of the CALM adaptation to PCIT. Overall, this intervention requires continued replication of predictions and verifications in order to determine overall efficacy. This will lead to higher external validity as well as an established evidence base for this approach to treating childhood anxiety.

Summary

Anxiety is one of the most common disorders in children that can often lead to detrimental outcomes (APA, 2015). In addition to emotional functioning, the largest, observed impact of anxiety disorders is typically seen in family functioning and relationships, as well as with peers and in the child’s social competence (Ezpeleta et al., 2001; Rapee, Schniering, & Hudson, 2009). Empirically-supported risk factors for child anxiety include the child’s temperament and behavioral inhibition, insecure attachment, parental over-controlling behaviors, parental anxiety, and the impact of adverse life events on the child. Targeting these risk factors early on has the ability to lead to a decrease in anxiety symptoms later in adolescence and adulthood.

There is a myriad of evidence suggesting behavioral, therapeutic interventions are effective for treating anxiety and other mood disorders for middle childhood and adolescents, such as depression, anxiety, and phobias (David-Ferndon & Kaslow, 2008; Kendall, Hudson,
Gosch, Flannery-Schroder, & Suveg, 2008; Silverman, Pina, & Viswesvaran, 2008). However, the research has lacked the examination of utility in early childhood populations. Currently, there is little evidence for appropriate treatments for anxiety and other internalizing disorders in very young children, due to the be attributed to the higher-level insight and cognitive skills needs to recognize one’s emotions and feelings in these anxiety interventions for older children (Carpenter, Puliafico, Kurtz, Pincus, & Comer, 2014).

Recent research has begun to focus on developmentally-appropriate adaptations for younger children to benefit from these current therapies, such as using play techniques and incorporating parental involvement (Carpenter et al., 2014; Hirshfeld-Baker, et al., 2010; Rapee, Kennedy, Ingram, Edwards, & Sweeny, 2010). Specifically, Parent-Child Interaction Therapy (PCIT; Eyberg, Nelson, & Boggs, 2008) has been adapted from an evidence-based treatment of disruptive disorders in young children, to its utilization in treating internalizing behaviors. PCIT is rooted in the theoretical basis of attachment theory as well as social learning and behavioral theory. Due to the theoretical basis and overall impact of PCIT on the parent and child relationship, the CALM program was developed as an adaptation for PCIT to decrease child anxiety symptoms as well as strengthen the overall parent and child relationship. It is the aim of this study to add to the literature base of the CALM program as an adaptation to PCIT. Additionally, it is the aim of this study to more clearly identify the mechanisms of change most consistently linked with improvements to a child’s anxiety levels after the implementation of the CALM program.

This was accomplished using a non-concurrent multiple baseline single subject design across subjects design using the CALM program with three children with anxiety, Michael, Jennifer, and Brandon, and their parents. The independent variable was the CALM adaptation to
PCIT, which consisted of three phases, Baseline, Phase I, and Phase II. The dependent variable was the child’s anxiety, assessed with the PAS-R, parent-child relationship, assessed with the PRQ-CA, and positive and negative parent behaviors, assessed with the DPICS coding system. Visual analysis and effect sizes were used to determine changes in the parent’s positive and negative behaviors, child anxiety levels, as well as parent and child relationship constructs such as attachment and parenting confidence.

This current study yielded mixed results for the CALM adaptation to PCIT using an early childhood population for early childhood. For Michael, the CALM intervention appeared to be effective in increasing Michael’s mother’s and father’s positive behaviors across the phases. In addition, there appeared to be an overall, significant decrease in both his mother and father’s use of negative behaviors, which were ultimately extinguished in Phase II for both parents. As such, the CALM intervention had a positive effect on the parent-child interactions as shown through an increase in positive parent behaviors and a decrease in negative parent behaviors, as hypothesized. His anxiety levels and parent-child relationship were unable to be assessed for change.

Jennifer’s mother showed an overall increase in positive behaviors, although she demonstrated a more variable and slower progression. Her negative behaviors showed an overall decrease through the sessions. As such, the CALM intervention had a positive effect on the parent-child interactions as shown through an increase in positive parent behaviors and a decrease in negative parent behaviors, as was hypothesized. There was an observed decrease in Jennifer’s total anxiety score after the CDI skills were taught in Phase I; however, the T-score increased back to starting baseline levels upon completion of the intervention. All of the subscales on the PAS-R remained in the clinically elevated range at the end of the intervention.
On the PRQ, Jennifer’s mother rated their attachment as decreasing from the average range to the significantly below average range. It can be assumed the CALM intervention did not have an effect on Jennifer’s anxiety levels or the parent and child relationship, as there was opposite change noted, which disagrees with both of the hypothesis.

Brandon’s mother demonstrated an overall significant increase in positive behaviors and significant decrease in negative behaviors through the intervention. As such, the CALM intervention had a positive effect on the parent-child interactions as shown through an increase in positive parent behaviors and a decrease in negative parent behaviors, as was hypothesized. On the PAS-R, Brandon’s total anxiety significantly decreased from the clinically elevated range to the average range. Of most concern for Brandon, his social anxiety and generalized anxiety also decreased by the end of the intervention, although remaining in the clinically elevated range. On the PRQ, Brandon’s mother reported an overall increase in attachment from the average range to the significantly above average range. As such, it is assumed the decrease in Brandon’s observed overall, social, and generalized anxiety as well as the increase in the parent and child relationship can be attributed to the effects of the CALM intervention which is consistent with the hypothesis.

As with most studies, there are limitations in the generalizability of these results due to the single subject design and small sample size, research design, and limited diversity in the participant’s age and ethnicity. However, the results lend themselves to the practice of psychology in that practitioners are encouraged to be more aware of the individualized needs of an early childhood population when treating anxiety. For future studies, researchers should include larger and more diverse sample sizes, as well as incorporating more rating scales to assess the child’s perceptions of anxiety when possible and changes in parent anxiety.
References


