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by

Erika G Flynn

May 2018

PARENTING CHARACTERISTICS AS A PREDICTOR OF CHILD
EXTERNALIZING PROBLEM BEHAVIORS

A Dissertation Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Doctor of Philosophy

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May 2018

Acknowledgement

This dissertation would not have been possible without the guidance, support, encouragement, tolerance, and love from various individuals.

First, I would like to thank my advisor, methodologist, and chairperson, Dr. Samuel D. McQuillin. He has not only tirelessly supported and tolerated me throughout the entire dissertation and graduate school process, but has also demonstrated a sincere sense of compassion and caring that is lacking in so many professionals of his status. I owe so much of my professional development to Dr. McQuillin.

Next, I would like to thank each of my remaining committee members. To my favor, Dr. Sarah Mire was willing and able to be a part of my dissertation journey and provided so much knowledge and support along the way. Dr. Mire truly helped shape a final product that I am sincerely proud to call my doctoral dissertation. Dr. Norma E. Olvera has provided me with continued support and encouragement long before the dissertation process began. I am genuinely grateful to have had her as a committee member and mentor. I was first taught by Dr. Kristen Hassett during a mandatory assessment course my first year in graduate school. From that moment forward, I knew I wanted her as a committee member. Dr. Hassett is kind, intelligent, caring, and respectful; and she lived up to my expectations by demonstrating all of those qualities while serving on my committee. I am beyond thankful for her support throughout this process.

I would also like to thank Dr. Jack R. Dempsey. Dr. Dempsey served not only on my dissertation committee, but my candidacy committee as well. Dr. Dempsey always brings a sense of humor and fun to any situation, while maintaining the ability to be

supportive, knowledgeable, and encouraging. Dr. Dempsey is the “cheerleader” any student would be lucky to have on their committee. Dr. Marni E. Axelrad has provided me the opportunity to work with her and her data since my first year in graduate school. Without Dr. Axelrad my candidacy and dissertation would not exist, and, for that, I am truly grateful.

Finally, and above all, I would like to thank my family. My parents have been my greatest supporters throughout my entire life and graduate school has been no exception. They have loved and tolerated me throughout this entire process and provided me with the guidance I needed to continue to push forward. Thank you, mom and dad. I love you. My husband, Howard. There are no words to express the gratitude I have for him. Howard has been my rock, my support, my strength, my everything throughout this entire process, especially when all I wanted to do was quit. I truly believe he deserves an honorary doctoral degree for all that I have put him through. I love you mucho, Howard Flynn. And thank you for being the best husband and support system anyone could ever ask for.

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Flynn, Erika. "Parenting Characteristics as a Predictor of Child Externalizing Problem Behaviors." Unpublished Doctor of Education Dissertation, University of Houston, March 2016.

Abstract

Background: The presentation and diagnosis of disruptive behavior (DB) and disruptive behavior disorders (DBDs) is common in school-aged children and adolescents. Increasing evidence indicates a trend in the identification of DBDs in younger, preschool-aged children. Theories on the development of DBDs posit that parenting practices directly and significantly influence the development of DB in children. Therefore, interventions designed to improve parent-child interactions is essential for effective treatment outcomes. Empirically supported and evidence-based parent management training (PMT) programs exist to teach parents and caregivers strategic parenting skills proven to reduce child problem behaviors. Notable factors affecting parent's psychological health play a significant role in determining a parent's ability to use positive parenting behaviors. Specifically, parenting stress is associated with undesirable child behavior and treatment outcomes. The separate relationships between parenting stress and ineffective parenting behavior; and ineffective parenting practices and child DB are well-established; however, conclusive studies investigating the interplay among all three variables are limited. The purpose of this study was to gain a better understanding of the predictive and directional relationship among parenting stress, parenting practices, and child externalizing problem behaviors. **Methods:** The relationship between parenting stress, parenting practices, and child externalizing behavior was examined in a sample of 47 children between 2 and 6 years old, who had a range of disruptive behavior disorders, and their primary caregiver pre- and post-

completion of an evidence-based parent management training intervention. **Results:** The results of two primary autoregressive cross-lagged regression models indicated a significant relationship between punitive parenting (i.e., discipline techniques) and child externalizing (i.e., disruptive) behavior. Specifically, as child externalizing problem behavior increased, parent engagement in punitive parenting practices decreased. To further explore the relationship among parenting stress, parenting practices, and child behavior, additional exploratory analyses were conducted. **Conclusions:** Though findings of this study indicated significant change across most individual variables following treatment, it remains unclear *how* change across variables (e.g., stress) predict change across other variables (e.g., parenting practices) within the context of an evidence-based parent management training intervention. Moreover, PMT remains effective for reducing child problem behavior and increasing positive parenting practices; however, the effects of PMT and the positive outcomes of PMT on parenting stress remain unclear. For these reasons, further research examining the interplay between parenting stress, parenting practices, and child externalizing problem behavior is needed.

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Chapter I

Introduction

The relationship between the use of ineffective parenting practices and the development of disruptive behavior disorders (DBDs) and other neurodevelopmental disorders in children and adolescents is well-established. Specifically, inconsistent parenting, poor parental monitoring (Duncombe, Havighurst, Holland, & Frankling, 2012), ineffective disciplinary practices, and low parental involvement (Bornovalova, Blazei, Malone, McGue, & Iacono, 2012) are specific parenting practices associated with the development of disruptive behaviors in children. Moreover, serious problem behaviors in children are strongly associated with parenting stress, and parents who experience stress are more likely to use ineffective parenting practices (Deater-Deckard, 1998). This presents a parenting conundrum, wherein parents of children with behavior problems are faced with the challenge of managing their children's behavior while simultaneously experiencing emotions that may negatively influence their ability to use positive parenting practices.

Parent management training (PMT) programs teach parents to use positive parenting skills (i.e., praising prosocial behaviors) and alternate forms of discipline (e.g., planned ignoring, time-out) to improve parenting performance and reduce child behavior problems (Kazdin, 1997). Though many specific programs have been developed, PMT consists of evidence-based interventions (EBI) developed for parents of children with externalizing behavior problems (McKee, Colletti, Rakow, Jones, & Forehand, 2008). Typically, PMT programs are evaluated based on how well they are associated with a reduction in children's disruptive behavior. One may also wonder whether PMT

programs affect parenting stress. Thus, a pragmatic research question related to the impact of PMT programs is how parenting stress influences, and is influenced by, changes in child disruptive behaviors.

Understanding the directional relationship between parenting stress, parenting practices, and child externalizing problem behavior is essential for improving treatment outcomes. If parenting stress changes as a result of increased implementation of positive parenting strategies learned within a PMT treatment program and child behavior problems change as a result of effective intervention implementation, then the usefulness of PMT may expand beyond improvement of child behaviors to include improvement in parenting stress. Conversely, parenting stress may increase as a result of PMT. Therefore, if parenting stress interferes with a parent's ability to effectively implement PMT strategies then this may negatively affect child outcomes and additional approaches to treatment may be warranted for the parent (i.e., individual therapy or other means to address parental stress).

In sum, there is a dearth of research examining the relationship between parenting stress, parenting practices, and child externalizing problem behaviors over time. The aim of this study was to expand upon the extant literature by examining the predictive relationship between changes in parenting stress, parenting practices and child disruptive behaviors following completion of an evidence-based PMT program. It was hypothesized that, following the intervention, a reduction in parenting stress would predict change (i.e., an increase) in effective parenting strategies; and that the change in effective parenting strategy implementation would predict a reduction in externalizing child problem behaviors.

Chapter II

Literature Review

Disruptive Behavior and Disruptive Behavior Disorders

The most common referral for children and adolescents to mental health clinics is disruptive behavior (Frick & Silverthorn, 2001). Disruptive behavior (DB) may begin to emerge as early as preschool. DBs in early childhood are strongly associated with the development of more severe problem behaviors later in life (i.e., patterns of antisocial behavior; MacMahon & Frick, 2005). Lying, duplicity, manipulating others for personal gain (Calkins & Keane, 2009), temper loss, aggression, noncompliance, and low concern for others (Wakschlag, Tolan, & Leventhal, 2010) are examples of problem behaviors, all of which range from mild to more severe, that may develop from early child DB. The expression of specific DBs may result in a child meeting criteria for a disruptive behavior or neurodevelopmental disorder diagnosis. Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), and Attention-Deficit/Hyperactivity Disorder (ADHD) are among the more commonly diagnosed externalizing disorders in children.

ODD, CD, and ADHD comprise separate, but correlated, dimensions of problem behavior severity that underlie a spectrum of externalizing behaviors (Hankin, Abela, Auerbach, McWhinnie, & Skitch, 2005). ODD consists of a pattern of negative, disobedient, and hostile behaviors (e.g., deliberately bothering others, losing temper, or non-compliance). CD consists of more severe antisocial and aggressive behaviors than are found in ODD, which are categorized into four groups: 1) aggressiveness to people and animals, 2) property destruction, 3) deceptiveness or theft, and 4) serious rule violations (McMahon & Frick, 2005). ODD and CD commonly co-occur and, in general,

ODD precedes the development of CD (Hankin et al., 2005). Although ODD typically precedes CD, diagnosis of ODD does not always predict CD.

ADHD is the most prevalent mental health disorder in children (Brault & Lacourse, 2012). ADHD occurs in approximately 5% of children in most cultures (American Psychiatric Association [APA], 2013). Inattention, hyperactive-impulsive behavior, and combined inattention and hyperactive-impulsive distinguish three dimensions of ADHD (Barkley, 2003). A valid distinction between aggressive, antisocial behaviors and the inattentive/impulsive/overactive symptoms of ADHD exists within the spectrum of externalizing problem behaviors (Hankin et al., 2005), such that there is a distinguishable difference between more and less severe presentations of externalizing problem behaviors. Just as ODD commonly occurs with more severe CD symptomology, ADHD behaviors often co-occur with more aggressive and delinquent behaviors. Evidence suggests a possible developmental pathway beginning with ADHD, progressing to ODD, which eventually culminates in aggression and delinquency (Hankin et al., 2005). However, as previously mentioned, ODD is not an established predictor of CD. The age of onset of externalizing problem behavior may influence DB presentation, severity, and diagnostic disorder (Hankin et al., 2005).

Age of onset of behavioral problems. The Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-V; APA, 2013) differentiates between “childhood onset” and “adolescent onset” in the presentation of DB associated with CD, based largely on Moffitt’s (1993) developmental taxonomy of life-course persistence and adolescent-limited behavioral problems (Hankin et al., 2005; Hinshaw & Lee, 2003). CD denotes specified subtypes (childhood-onset type and adolescent-onset type) used in

conjunction with identified symptoms to warrant diagnosis (Hinshaw & Lee, 2003). Youth who display an early age of onset of behavioral problems are more likely to meet diagnostic criteria for ADHD and ODD, than those who display a later age of onset of disruptive behaviors. Early-onset behavior problems and comorbid ADHD and ODD may result in worsening or persistent disruptive behaviors prevalent later in life (Hankin et al., 2005). Moreover, early-onset of DB has been associated with increased risk for chronic antisocial behavior and substance abuse (Gardner, Dishion, Shaw, Burton, & Supplee, 2007). Tolan (1987) indicates the importance and accuracy of determining the age of onset as a discriminator of extent and subsequent delinquency. Participants in Tolan's (1987) study with early-onset DB self-reported more delinquent behaviors and were more likely to be adjudicated. In sum, early-onset presentation of DB (i.e., DB expression in early childhood) increases the likelihood of more severe and persistent DB in adolescence and beyond. The general presentation of DBs (regardless of onset) places a child at risk for a variety of functional impairments.

Disruptive behavior disorders and functional impairments. Externalizing problem behaviors (e.g., DBs) are presumed to be more easily observed and cause greater disruption and impairment within family, peer, and school contexts than internalizing disorders (e.g., anxiety and depression) (Calkins & Keane, 2009). Multiple studies have demonstrated the relationship between DB and increased impairment in distinguishable areas of functioning (i.e., social functioning v. academic functioning). Children who display DB experience greater psychological, academic, emotional, and social impairment (Barkley et al., 2002), resulting in problems with adjustment (McMahon & Frick, 2005). Separate but equally important constructs of peer relationships and

academic performance play an important role in functioning within the overall school environment. Children spend a majority of their day at school interacting with peers and learning skills necessary for academic success. A disruption in the development of peer relationships and academic functioning in school could directly impact current and future relational and academic success. Children who display DBs in the school setting may experience such academic and social difficulties (McMahon & Frick, 2005).

Comorbidity among externalizing disorders is well-established (i.e., ADHD and ODD). However, externalizing behavior disorders may also co-occur with internalizing disorders, such as anxiety and depression. DBs may be a result of a comorbid condition (e.g., impulsivity associated with ADHD) or DBs may precede development of internalizing disorders (McMahon & Frick, 2005). Regardless of the primary diagnosis, the outcome of comorbid diagnoses may increase impairment in psychological adjustment. For example, a study conducted by Stein et al. (1995) demonstrated significantly lower levels of adaptive functioning relative to intelligence for children with ADHD compared to children without an ADHD diagnosis (Barkley et al., 2002), implying heightened psychological impairment for those children with an ADHD diagnosis. Overall, increased functional impairment (e.g., academic, social, psychological, and emotional) has been associated with the initial age of onset of DB (Barkley et al., 2002).

Functional impairment in younger children. High levels of DB in children and adolescents increase the likelihood of the persistence of DB, development of CD, delinquency, and criminal activities (Barkley et al., 2002). This directly corresponds to the age of onset of DB. Barkley et al. (2002) replicated and extended previous research

indicating that preschool children with high levels of DB have more severe and more numerous areas of concurrent and future impairment than children with significantly lower levels of DB. Preschool children with externalizing behavior disorders, specifically ODD and ADHD-Combined Type, appear to have increased negative affect, low levels of effortful control (Martel, Gremillion, & Roberts, 2012), and a significantly high risk of psychiatric disorders in later life (Cunningham & Boyle, 2002). Existing evidence suggests behavior problems in the classroom negatively impact literacy outcomes in preschool and interfere with a teachers' ability to focus on teaching (Bulotsky-Shearer & Fantuzzo, 2011). For example, preschool children with ADHD perform poorly on academic tasks and interact less competently with peers (Cunningham & Boyle, 2002). Among other areas of functioning, early literacy and language skills predict early school success; therefore, identifying and addressing preschool emotional and behavioral problems should occur in order to promote opportunities to foster success (Bulotsky-Shearer & Fantuzzo, 2011).

A caveat to the relationship between early DB presentation and DB severity and persistence described by Barkley et al. (2002) is that, in some cases, early onset presenters mature into typically functioning adolescents (Campbell, 2002). Some longitudinal studies of preschool children who display discipline problems and peer aggression suggest such difficulties may be transient (2002). In some cases, but not all, these behaviors are considered developmentally appropriate and do not lead to deficits in future areas of functioning or externalizing behavior diagnoses. Though early-onset presenters may develop into typically functioning adolescents and adults, the focus of the

current study is to address the identified association between early-onset DB presentation and DB severity and persistence throughout development.

Diagnostic debate of disruptive behavior disorders in children. Wakschlag et al. (2010) describes the disruptive behavior disorders (DBD) taxonomy as “a descriptive list of heterogeneous symptoms, which is not organized in terms of developmental variations or etiologic heterogeneity” (p. 3). This statement implies that potentially influential factors are disregarded in the DSM DBD diagnostic criteria. Moreover, several DBD symptoms may be exaggerated by parent reporting and clinician subjective interpretation and be outgrown and depictive of developmentally age-appropriate behaviors (Campbell, 2002). Criticism surrounds the diagnosis of childhood disorders (including DBDs) as a “downward extension” of adult and adolescent disorders. This approach to diagnosis ignores the emphasized importance of age- and developmental-specific symptoms. On the basis of this diagnostic debate, Wakschlag et al. (2010) proposes the need for a compelling case empirically grounded and clinically relevant to justify a change from the classification systems currently used to diagnose childhood disorders (e.g., DSM-V diagnostic criteria, largely based on Moffitt’s (1993) theoretical model). Wakschlag et al. (2010) postulates a basis for such a shift is possible by linking normative developmental studies to clinical research and theory grounded in the etiology of psychopathologies. This notion posits that differential responsiveness to treatment may depend less on symptoms and more on causes, which is inconsistent with current diagnostic approaches to DBDs. Therefore, a shift in diagnostic criteria may be necessary to include the underlying and identifiable “causes” of childhood disorders to better inform treatment.

Development of Disruptive Behavior Disorders in Children.

Research in developmental psychopathology has identified several hypothesized pathways for the development of DBDs in children. Externalizing problem behaviors, a component of DBDs and other neurodevelopmental disorders (i.e., ADHD), vary in presentation, symptomology, age of onset, and many other factors. The heterogeneity of problem behaviors suggests more than one possible pathway to the development of antisocial behaviors (Calkins & Keane, 2009). Developmental models of antisocial behavior address individual differences in antisocial youth by hypothesizing subgroups with varying developmental courses, rather than symptomology, resulting in different causal explanations (e.g., Moffit, 1993; Lahey, Waldman, & McBurnett, 1999). The clear distinction in characteristics between subgroups implies different causal mechanisms and risk factors operating on the development of disruptive behavior. This information gives rise to the concept of *equifinality* and *multifinality*. Equifinality is the concept of different developmental processes leading to the same outcome (McMahon & Frick, 2005). For example, research supports distinctions within the early-onset pathway to DBDs (i.e., CD). Subgroups of youth within the early-onset group were identified; specifically, youth displaying callous and unemotional traits (e.g., lacking empathy and guilt). These youth are less sensitive to cues of punishment and more aggressive than their non-callous and unemotional, antisocial peers (McMahon & Frick, 2005), yet the outcome (i.e., diagnosis of CD) of subgroups is equivalent. In relation to equifinality, multifinality is the concept of similar developmental processes leading to different outcomes (Campbell, 2002; McMahon & Frick, 2005; Mash & Dozois, 2003). For example, young siblings raised in the same household with near identical environmental

upbringing may develop into functionally different adolescents (i.e., one child with a DBD diagnosis and the other child without). These concepts are described by varying developmental perspectives, or models, that may be useful in identifying treatment goals for children diagnosed with externalizing problem behavior disorders.

Theoretical Models of Development.

A number of theoretical models exist to explain human development; debate surrounds the predictability of individual outcomes based on early life predispositions and experiences. Developmental perspectives exist that address such debate and extend further to explain causal factors that influence human behavior. Normal development serves as the backdrop for study of individual differences in human processes and outcomes (Campbell, 2002). The developmental psychopathology perspective of human development focuses primarily on determinants of individual differences in development. This perspective takes into account a range of biological, psychological, and social factors that interact to influence behavior and adaptation at different time points throughout an individual's life, which may also account for changes in functioning (e.g., social and emotional) over time (Cummings, Davies, & Campbell, 2000; Campbell, 2002).

Transactional models of development. Transactional models provide a framework for thinking about the different pathways humans follow from infancy to adulthood and acknowledges the near impossibility of predicting developmental outcomes based on individual cases alone (Campbell, 2002). Sameroff (1995) outlines the basic premises of the transactional systems perspective. First, human development is “discontinuous and characterized by qualitative change and reorganization” (Campbell,

2002, p. 13). Second, a young child is an active participant in their own development. Third, interactions between child and caregiver are bidirectional (Sameroff, 1995; Campbell, 2002; Bell, 1968) - a child's response to adult stimulation and the influence of a child's response on adult behavior are equally relevant. Fourth, child characteristics and the child's environment are constantly changing over time. Lastly, most infants inherently follow a typical developmental trajectory that is genetically controlled (Sameroff, 1995). Taken together, these premises indicate the process of development as active and dynamic.

Beginning in infancy, a child is constantly moving towards more complex functioning while simultaneously reorganizing cognitive and social processes throughout developmental stages (Campbell, 2002). In the context of child DB presentation, a responsive caregiver should appropriately respond to a child's maturing needs (i.e., reading cues of hunger and sleep towards requirements for social and cognitive stimulation); otherwise the child may be at a greater risk to display DBs as they develop. As a child's needs change, so should the caregiver's responses. The child and caregiver interaction is continuously changing in a mutually regulated and reciprocal manner (2002). For example, an irritable and inconsolable infant may develop into a toddler with behavior problems if the caregivers are unresponsive and neglecting; however, if the same infant is provided a responsive and supportive family environment, the likelihood of future behavior problems is lower- though not entirely implausible. This systemic perspective indicates the ability to intervene at multiple time points to improve child behavior.

Transactional models posit that individual vulnerability and environmental stress interact to produce disordered behavior. Moreover, there exists the possibility of biological resiliency, such that a genetically vulnerable individual may not become “disordered” if the environment is generally supportive and free from strain (Campbell, 2002). Specifically, remediation within this model can occur by identifying infants and young children most at risk for disorder and intervening (e.g., making changes in the affective and physical environment) to reorganize the system, thereby leading to improved functioning (2002). Other models move beyond the caregiver-child relationship, as the sole interactive variable in development, to include additional ecological factors.

Ecological model of development. The ecological perspective assumes that multiple factors within a child’s environment affect development. Such factors interact within various identified environmental systems: 1) the Microsystem, 2) the Mesosystem, 3) the Exosystem, 4) the Macrosystem, and 5) the Chronosystem (Bronfenbrenner, 1979; Bronfenbrenner, 1986). Mesosystem models extend beyond family context (i.e., home, child care, daycare, and face-to-face interactions within the Microsystem) as the primary influence on development to include interactions between two or more Microsystem influences such as school, peers, and church groups. Developmental processes operating across different settings are interdependent in that circumstances at home may affect a child’s progress at school or conversely, that school may affect the home environment. The Macrosystem is fundamentally different than the other systems in that it embraces institutional systems such as the economic, social, educational, legal, and political systems. The influence of the Macrosystem is reflected in the lower level systems (i.e.,

family functioning). The Exosystem encompasses settings “external” to the developing child. For example, a parent’s circle of friends or work environment may affect a child’s development, despite existing outside of a child’s immediate surroundings. Lastly, the Chronosystem takes into account change, within the individual and their environment, over time. Moreover, this system highlights the dynamic relationship between the individual and the environment. Therefore, it is possible to explore influences on a child’s development over time within the environment in which they are living (Bronfenbrenner, 1986).

The ecological systems model proposed by Bronfenbrenner (1986) is interactive and continuous. This perspective suggests influences within one system may affect influences within another system and continually change as time passes. For example, marital discord (Exosystem) at home may affect a child’s interpersonal relationships (Mesosystem) at school which in turn may affect how a child behaves within their home environment (Microsystem); and the influence within each system may change across a child’s life course as the child and their environment progress. The bi-directional relationship between environmental systems (and the individual) and individual and environmental change across time represent how ecological factors affect child development. There is a generally strong consensus among researchers and developmental psychopathologists that a number of ecological factors influence child development (Campbell, 2002). The ecological perspective has been expanded to further explain what influences child development and functioning.

Bioecological model of development. The term *continuity* refers to general similarities in behavior or personality and *discontinuity* refers to a lack of notable

stability in behavior or personality (Campbell, 2002). According to Bronfenbrenner and Morris (2007), the bioecological model addresses the “continuity and change in the biopsychological characteristics of human beings” (p.795) and has four defining properties: 1) Process, 2) Person, 3) Context, and 4) Time. The Process construct encompasses interactions between organism and environment, called proximal processes, which occur over time and are considered the primary mechanisms producing human behavior (Bronfenbrenner & Morris, 2007). Processes vary as a function of the developing Person, environmental Contexts, and Time periods in which the proximal processes occur.

Three types of Person characteristics exist within the bioecological model: 1) dispositions, 2) resources, and 3) demand. Dispositions set proximal processes in motion and maintain their operation within specific developmental domains. Resources of ability, knowledge, and skill are necessary for effective functioning of proximal processes at any given stage of development. Lastly, demand characteristics evoke reactions from the social environment that may influence the operation of proximal processes (Bronfenbrenner & Morris, 2007). The differentiation in Person characteristics helps account for differences in the power of proximal processes and their effects on developmental outcomes. Moreover, distinguishable Person characteristics shape an individual’s development and expand further on the conceptualization of nested systems ranging from meso to chrono (Bronfenbrenner, 1986).

In Bronfenbrenner’s (1979) original conceptualization of the environment, time is briefly discussed. In the revised bioecological model (Bronfenbrenner & Morris, 2007), Time occurs at three successive levels: 1) Micro-, 2) Meso-, and 3) Macro-. Microtime

refers to continuity over discontinuity in ongoing episodes of proximal processes. Mesotime describes the periodic occurrence of proximal processes episodes over broader intervals of time (e.g., days and weeks). Finally, Macrotime focuses on “the changing expectations and events in the larger society, both within and across generations, as they effect and are affected by, processes and outcomes of human development over the life course” (Bronfenbrenner & Morris, 2007, p.796). This final component of time addresses the role of developmental processes and outcomes over time that can influence societal changes both in the broad current sense and future holistic sense. The bioecological model contains numerous components and expansive factors to address the complexity of child development. In summary, the bioecological model expanded on previously conceptualized ecological models of development to explain how interactive components of self and environment may influence and predict human development.

Vulnerability-stress perspective. The vulnerability-stress perspective builds upon the aforementioned theoretical models by including critical concepts in child development. Stressors play a vital role in the development of psychopathology (Hankin & Abela, 2005) and are influential on child development (e.g., Bronfenbrenner Ecological Systems model; Bronfenbrenner, 1979; Bronfenbrenner, 1986). Theoretical framework in the study of DB acknowledges that stressors represent environmental contributions of risk (e.g., SES, parenting), which interact with multiple forms of vulnerability (e.g., genetics, biological) that may lead to psychopathology (Hinshaw & Lee, 2003; Ingram & Luxton, 2005). For example, a child with a predisposed vulnerability (i.e., hearing loss) may exhibit problem behaviors as a result of parental neglect (i.e., risk).

A single and concise definition of stressors has not been established; and, unlike DB symptoms, no such taxonomy of stressors for young children is currently used. Lazarus and Folkman (1984) offer a widely accepted definition of stress, which is commonly used when referring to stress in adults: “Psychological stress involves a particular relationship between the person and the environment that is *appraised* by the person as taxing or exceeding his or her resources and endangering his or her well-being” (Grant & McMahon, 2005, p.4). Faults with this definition stem from the use of the term *appraisal* in the definition of stress, as it focuses on the perception of the person and minimizes the need for emphasis to be placed on moderating and mediating processes (e.g., risk) that either change or explain the relationship between stressors and psychopathology (Grant & McMahon, 2005). The vulnerability-stress perspective addresses the operational limitations within the definition of stress proposed by Lazarus and Folkman (1984).

Not every individual who experiences stress develops a disorder. Another component recognized in the development of psychopathology is vulnerability (Ingram & Luxton, 2005). When examined together, the interaction of stress and vulnerability can assist in understanding the development of psychopathology in children. The term “stress” embodies multiple factors, and infers multiple definitions. To address the limitations of the previously mentioned definition of stress (e.g., *appraisal*), “stress” can be referred to as “life events (major or minor) that disrupt those mechanisms that maintain the stability of individuals’ physiology, emotion, and cognition” (Ingram & Luxton, 2005, p.33). Multiple factors can influence the degree to which a child experiences stress. Vulnerability is typically conceptualized as “a predispositional factor,

or set of factors, that makes possible a disordered trait” (Ingram & Luxton, 2005, p.34). Vulnerability is often regarded as enduring (e.g., permanent), stable (e.g., resistant to change, but not absolute), endogenous (e.g., residing within the person), stemming from genetic, biological, psychological, or learning processes, and latent (e.g., requiring activation). Risk is not synonymous with vulnerability, as risk factors are not informative about the actual mechanisms that generate psychopathology (2005). For example, gender is a risk for certain disorders (e.g., DBDs), but this knowledge alone does not inform *why* a specific gender experiences certain mental health disorders at a greater rate.

Additionally, research has hypothesized infant/early childhood temperament as a risk factor for externalizing problems at later ages (Campbell, 2002). However, temperament alone does not *cause* future impairments, rather it informs the potential risk for certain vulnerabilities. Current vulnerability-stress models possess varying principles and vary in type (e.g., vulnerability-stress perspective with regards to transactional theory). The various approaches to these models do in fact overlap views on the relationship between vulnerability and stress and maintain emphasis on the causal processes that influence the development of psychopathology.

Gottfredson and Hirschi (1990) provide a conceptual example of the vulnerability-stress perspective with regards to child DB. Gottfredson and Hirschi (1990) propose individual differences in antisocial propensity (i.e., a natural tendency towards antisocial behavior) explain variations in antisocial behavior. Individual differences in behavior problems infer antisocial propensity; and multiple child factors contribute to antisocial propensity. As age of onset for DB increases, the vulnerabilities which comprise antisocial propensity will likely become less significant, and certain

environmental factors (e.g., peer influence) will contribute increasingly to the development of problem behaviors (Hankin et al., 2005; Campbell, 2002). Stressful environmental factors, in conjunction with other vulnerabilities, may predict DB displayed during childhood. Viewing specific environmental stressors from a vulnerability-stress model perspective further conceptualize childhood risk factors as they relate to the development of DBDs.

Parenting as an environmental stressor in the development of DBDs. The term *parenting* is broad. Parenting may represent the way a mother or father disciplines, offers praise, or interacts with their child. Within the current study, the term “parenting” is conceptualized as a single component within the context of the family environment, and multiple parenting-related factors have been identified as stressors in the development of childhood DB. Aspects of the family environment include parental stress and parental motivation (Semke, Garbacz, Kwon, Sheridan, & Woods, 2010), parental antisociality and family discord (Bornovalova et al., 2012), and family interaction (Pettit, Bates, & Dodge, 1993), which have shown to affect childhood development. Maladaptive parenting, marital conflict, and divorce are associated with higher rates of child DB. Maternal parenting behaviors, above the father’s, appear to have a greater impact on child DB presentation (Bornovalova et al, 2012; Campbell, 2002).

Parenting is a general term used to describe the interaction between a parent and their child. The term *parenting styles* encompass certain types of behaviors expressed by a parent. Baumrind (1971) assists in framing commonly employed styles of parenting. Authoritative parents emphasize parental control, value the child as an individual, and aim to foster independence within the child. Authoritarian parents tend to be controlling,

value obedience, and use punishment techniques (i.e., spanking). Permissive parents lack parental control and make few demands on the child. Authoritative parents tend to be controlling and demanding; however, they are responsive while also warm. Authoritarian parents are detached and controlling and less warm than other parents. Lastly, Permissive parents are noncontrolling, nondemanding, yet generally warm. Authoritative parenting is commonly associated with positive outcomes for children and adolescents (Woolfson & Grant, 2006). Distinguishable from parenting style, research indicates the presence of specific parenting *practices* that predict childhood behavioral outcomes.

Positive and ineffective parenting practices. According to Darling and Steinberg (1993), parenting style is a “contextual variable that moderates the relationship between specific parenting practices and specific developmental outcomes” (p.493). This distinction implies parenting style and parenting practice as separate, yet interconnected, constructs. Parenting practices are specific parenting behaviors that may be associated with certain parenting styles. Ineffective parenting practices are parenting behaviors often associated with undesirable child outcomes. Numerous studies have shown inconsistent discipline and corporal punishment as specific types of discipline related to child oppositional and aggressive behaviors (Stormshak, Bierman, McMahon, & Lengua, 2000), severe DBs (Bornovalova et al., 2012; Frick, Christian, & Wootton, 1999) and emotional dysregulation (Duncombe et al., 2012). The use of corporal punishment, specifically spanking, as a form of punishment is widely debated. Evidence indicates harsh and frequent spanking may be associated with undesirable mental and physical outcomes in children, yet child outcomes in regards to mild and occasional spanking is

not well-established (Kazdin & Benjet, 2003). Therefore, conclusive research does not posit all varying degrees of spanking as forms of ineffective parenting practices.

A study conducted by Stormshak et al. (2000), examines three narrowband dimensions of child problem behaviors and the relationship to parenting practices. Consistent with previous research, results indicated hyperactivity, aggression, and oppositional behavior were associated with elevated levels of punitive punishment and spanking. Results from the Stormshak et al. (2000) study also indicate ineffective parenting practices may be more highly associated with hyperactivity and oppositional behaviors combined than either dimension alone. Inconsistent discipline and corporal punishment are two dimensions of parenting practices, among other ineffective parenting practices, shown to increase the probability for negative child outcomes.

Loeber and Stouthamer-Loeber (1986) conducted a meta-analysis concluding that inconsistent parental monitoring, supervision, and involvement are the strongest and most consistent parenting practices associated with antisocial behavior in children (Frick et al., 1999). Ineffective parenting practices have been shown to relate to the development of DBs in children. Inversely, evidence exists supporting a relationship between parenting practices and more desirable child outcomes.

Parenting practices that promote desirable child outcomes refer to positive parenting practices (i.e., praise and positive attention). Wymbs (2011) observed that parental positive affect was associated with lower levels of child DB. Stormshak et al.'s (2000) study demonstrated an inverse relationship between positive parenting (i.e., warmth) and involvement and oppositional behavior. These results imply that increased levels of positive parenting and positive parent involvement are related to lower levels of

DB in children. The absence of positive parenting practices may contribute to the onset of child externalizing problem behaviors; however, the absence of positive parenting practices does not indicate subsequent increases in child problem behaviors (Pettit et al., 1993). In sum, ineffective parenting practices may function as an environmental stressor that interacts with a child's vulnerability (e.g., genetic predisposition to psychopathology) to increase the probability of DB presentation and persistence (which may result in diagnosis) throughout a child's development. Use of positive and effective parenting practices, on the other hand, may assist in managing DBs as a result of various forms of vulnerability; however, it does not infer the absence of all types of DB and subsequent diagnoses. Understanding the positive or inverse relationship between stressor and development of DBDs in children can aid in obtaining the necessary information for proper intervention strategies.

Evidence-Based Practice

There is continued debate in the field of mental health over a widely accepted definition of Evidence-Based Practice (EBP; e.g., American Psychological Association [APA] Presidential Task Force on Evidence-Based Practice, 2006; Chorpita et al., 2011). The controversy surrounds the type of evidence that should be required to support practice. For example: should two randomized control trials suffice when implementing a treatment? What additional factors were studied to guide practice? The APA Presidential Task Force on Evidence-Based Practice outlines that evidence-based practice in psychology "should be evaluated in terms of two separate dimensions: *efficacy* and *clinical utility*" (APA, 2006, p. 2). The efficacy dimension suggests criteria for evaluating the strength of evidence supporting causal relationships between intervention

chosen and outcomes of the disorders under treatment. The clinical utility dimension suggests that the available evidence (via research and clinical consensus) on the generalizability, feasibility, patient acceptability, and costs and benefits of the intervention implemented should be considered (APA, 2006). Evidence-based intervention or treatment is a critical component in EBP in psychology.

The implementation of evidence-based intervention (EBI) has evolved from a list of interventions with limited empirical support, to a decision-making process for integrating exhaustive research evidence, clinical expertise, and patient characteristics, to intervention selection and process (APA, 2006). Prior to the evolution of EBI (e.g., shift to decision-making process), EBI relied almost exclusively on “leveling systems”, which emphasized the importance of replications and nature of control groups to define efficacy in practice, rather than focusing on indicators of effectiveness (Chorpita et al., 2011). Despite limitations on a globally accepted definition of EBP and its components, EBI is considered best practice for treating a number of child externalizing disorders.

The empirical and practical support of EBI indicates an expectation for change. Specifically, if an EBI is intended to modify a targeted patient’s (i.e., child’s) behavior, it would be expected that behavior of the patient would change from time point 1 to time point 2 (i.e., pre-intervention to post-intervention). The assumption of change results from the effort put forth to call an intervention evidence-based. Therefore, outcomes from EBIs indicate an expected change in behavior over time (i.e., pre- to post-intervention).

Parent training programs. Parent management training (PMT) programs are evidence-based treatment for the prevention and treatment of child DBs (Forehand,

Lafko, Parent, & Burt, 2014). PMT is considered one of the best evaluated and empirically supported modalities for child externalizing behaviors (Kazdin, 1997; Kazdin & Weisz, 1998; Nixon, 2002). Use of PMT alone shows the largest number of “successful” outcomes in the treatment and prevention of childhood inattention and hyperactivity; and positive findings continue to support PMT as the treatment of choice for child DBs (Chorpita et al., 2011; Forehand et al., 2014). A wide range of PMT programs exist that are based on Patterson and Guillion’s (1968) *Living With Children*, with additional notable influences from B.F. Skinner’s operant conditioning and Patterson’s research on the role of ineffective discipline practices on childhood aggression (Kazdin, 1997; Pearl, 2009). PMT programs teach parents basic behavior principles to modify their child’s behavior (Pearl, 2009).

PMT programs are theoretically based on social learning principles, in addition to behavior theory principles (i.e., Skinner’s operant conditioning; Kazdin & Weisz, 1998; Pearl, 2009; Forehand et al., 2014; Nixon, 2002). Parents learn how their child’s externalizing problems can be inadvertently shaped and maintained through reinforcement and consequences. Additionally, parents are taught the science of behavior so they can systematically and strategically use learned principles to increase child prosocial behaviors and decrease undesirable behaviors (Forehand et al., 2014; Pearl, 2009; Kazdin & Weisz, 1998). An additional influence on the development of PMT is Patterson and colleagues proposed a social interactional model to explain how parents can shape their child’s behavior (Forehand et al., 2014). A critical component to the social interaction model is coercion. Coercion is the implication that parents and children mutually “train” each other to behave in ways that will increase the probability that the

child will develop problem behaviors and the parent's control over child aversive behaviors will decrease (Forehand et al., 2014). For example, when a child is given a command by a parent and the child refuses to comply and escalates into a tantrum, the parent escalates with their own negative parenting behavior (e.g., threats of punishment), and eventually surrenders to the child's tantrum. The coercive interchange between parent and child may account for the emergence and stability of child externalizing behavior (Forehand et al., 2014). PMT aims to alter the pattern of interchanges (Kazdin & Weisz, 1998) by teaching specific strategies designed to modify the parenting practices most related to DB presentation and persistence.

Key components of PMT. PMT is based on the view that DBs develop and are sustained (in the home) as a result of maladaptive parent-child interactions (Kazdin & Weisz, 1998). Maladaptive parent-child interactions typically occur as a result of ineffective parenting practices and include attending to undesirable/disruptive behaviors, using frequent and ineffective commands and harsh punishment, and failing to attend to appropriate/desired behaviors (Kazdin & Weisz, 1998). Within PMT, positive parenting (e.g., attention and praise), discipline, and structure (e.g., monitoring and instructions) are strategically modified to shape and manage child externalizing behaviors (Forehand et al., 2014). One of the primary purposes of PMT programs is to replace harsh and permissive parenting practices and inconsistent discipline with effective (i.e., positive) behavior management strategies (Pearl, 2009).

PMT programs begin by teaching positive interactions skills prior to introducing discipline and punishment procedures (Pearl, 2009). A study conducted by Kochanska, Forman, Aksan, and Dunbar (2005) found that children who enjoyed interactions with

their mothers showed increased compliance; and discipline applied in the context of a positive parent-child relationship promoted adaptive outcomes. PMT highlights key components of behavioral modification that may generalize across various environments (Pearl, 2009).

Antecedents, Behaviors, and Consequences (commonly referred to as the ABC's) are foundational features of PMT that inform implementation. Antecedents include setting events and stimuli that occur prior to the onset behavior. Behaviors refer to the positive, prosocial behaviors to be developed. The focus of PMT is to increase positive, prosocial behaviors, thereby reducing the likelihood of undesirable behaviors (Kazdin, 1997). Lastly, Consequences refer to a range of responses that immediately follow a behavior with the intent to alter the likelihood of such a behavior in the future. Taken together, the ABC's guide the specific strategies taught to parents in most PMT programs.

PMT teaches parents the use of positive reinforcement (i.e., tangible rewards and praise) to increase child prosocial behaviors (Pearl, 2009). Positive reinforcement is most effective when specifically labeled, consistently administered, and immediately contingent on small increments of behavior (Kazdin, 1997; Pearl, 2009). Parents may be taught to use specific praise statements (McMahon et al., 2010), such as "Thank you for listening" or "I like how you're playing quietly." PMT also teaches parents about the use of "planned ignoring." Planned ignoring asserts that parents should ignore undesirable and attention seeking behaviors (i.e., non-violent behaviors such as screaming) and attend to and praise the positive opposite behaviors (e.g., speaking quietly; Kazdin, 1997; Pearl, 2009). As previously noted, research demonstrates positive

change occurs as a result of positive parenting. In addition to positive parenting techniques, parents must learn effective limit setting (i.e., time-out) strategies to increase the probability of producing clinically significant child behavior outcomes (Wells, 1997).

Positive reinforcement techniques alone are not sufficient to modify child DB; therefore, parents must learn additional strategies to address ineffective disciplinary practices (Wells, 1997). PMT teaches parents how to effectively give instructions (commands) to their child. Effective commands improve child compliance (Pearl, 2009). Instructions should be framed in the form of a statement (rather than a question), be specific (e.g., “Keep your hands by your side” vs. “Stop fidgeting!”), and be age appropriate (Pearl, 2009; McMahon et al., 2010). Additionally, to improve compliance, parents are taught to allow 5-10 seconds for the child to initiate compliance. The final component used in most PMT programs is time-out (Pearl, 2009). The specifics of time-out typically vary by age. For example, when time-out is taught for younger, preschool aged children, the recommended length of time varies (Pearl, 2009). A multitude of factors, including child’s age, reflect the need for adaptations in commonly employed PMT programs.

Some adaptations of the primary components of PMT programs exist to address variability of culturally-based expectations and child developmental stage. For example, Leung, Tsang, Heung, and Yiu (2009) found that use of facial expression was a more effective form of praise for Chinese parents who struggled to learn the types of praise typically taught in PMT programs. Other adaptations address the child’s developmental level. For example, as previously mentioned, the length of time a parent is taught to keep their child in time-out must be adapted for children of different ages, both in terms of

chronological and developmental age. Additionally, many PMT programs include a psychoeducational component (i.e., teaching the parents the principles of why the strategies taught are effective) which has been shown to increase positive child outcomes (Deater-Deckard, 1998; Lui & Wang, 2014). Adaptations in PMT programs exist to improve treatment fidelity and assist in improving clinical outcomes.

PMT programs. The “Helping the Noncompliant Child” is a parent training program specifically designated for preschool and early school-aged children ages 3 to 8 with noncompliant behavior. Drs. Forehand and McMahon developed this program for younger children while maintaining the core principles of PMT (Pearl, 2009). In approximately eight to ten sessions, Helping the Noncompliant Child employs objectives to address styles of parent–child interaction, improve parenting skills, increase child prosocial behaviors and decrease child conduct problem behaviors. Dr. Carolyn Webster-Stratton developed the Incredible Years Training series for children 2 to 8 years old who are referred for DB problems (Pearl, 2009). The Incredible Years is a training series comprised of child, parent, and teacher training programs and has demonstrated positive outcomes for use with diverse ethnic groups (e.g., Hispanic and African American; Gross et al., 2003). Parent-Child Interaction Therapy (PCIT) is an evidence-based treatment supported by more than 20 years of research and practice (Herschell, Calzada, Eyberg, & McNeil, 2002). PCIT was originally developed for use with parents of children 2.5 to 7 years of age, yet PCIT has been adapted and successfully used with a variety of populations (e.g., older children aged 7 to 12, children with anxiety disorders, and children exposed to domestic violence; Pearl, 2009). PCIT employs a two-stage approach to enhance the parent-child relationship and is not bound by duration or number

of sessions. The Brief Behavior Intervention (BBI) program is a *brief* parent training program designed for parents of toddlers and preschoolers with externalizing problems (Axelrad, Garland, & Love, 2009). BBI maintains the core principals of PMT, while adjusting length of treatment to account for this as a potential confounding factor for treatment dropout. The average number of sessions is 7 and outcomes indicate improvement in child behavior (2009). All of the aforementioned programs are specific PMT interventions that are adaptable to “meet the needs” of patients and improve treatment outcomes. Additional factors may disrupt treatment and play a significant role in treatment efficacy. It is important to move beyond a clinical understanding of PMT and consider extraneous factors that may influence overall treatment success.

Parental Stress

“Parenting stress is a distinct type of stress that arises when a parent’s perceptions of the demands of parenting outstrip his or her resources for dealing with them” (Theul, Wiener, Tannock, & Jenkins, 2013, p. 3). Abidin (1990) developed a dominant model of parenting stress comprised of two major components: 1) Child Domain, which arises directly from child characteristics, and 2) Parent Domain, which is affected by parental functioning. Total Stress is considered to be a combination of child- and parent-based stress (Abidin, 1990). Parenting stress can result from a number of factors, including parental mental health, psychopathology, single parenthood (Tichovolsky, Arnold, & Baker, 2013), divorce, poverty (Forehand et al., 2014), family income, education, job satisfaction (Deater-Deckard, 1998), and child behavior (e.g., Liu & Wang, 2015), all of which influence overall family functioning. Stress as a result of parenting is typical and is experienced throughout a child’s development. Parents of preschool aged children

report high levels of stress related to raising their child (Anthony et al., 2005). The level at which a parent experiences stress (i.e., “low” to “extreme”) and how they respond to certain stressors is related to their ability to employ positive parenting practices (Deater-Deckard, 1998).

Parenting stress is also viewed as “a complex process linking (a) the task demands of parenting, (b) the parent’s psychological well-being and behavior, (c) the qualities of the parent-child relationship, and (d) the child’s psychosocial adjustment” (Deater-Deckard, 1998). A general theory of psychological and physiological stress assists in understanding the complex processes associated with parenting.

A conceptual theory of parenting stress. Lazarus (1993) suggests four components underlie the stress process (previously mentioned in brief): 1) an external, causal event or agent, 2) a cognitive appraisal of the event or agent to determine degree of harm, 3) coping mechanisms to reduce harm of the event or agent, and 4) consequential effects on the body and mind (stress reaction). This theory could posit the expectations of parenting practices as the causal agent. For example, parents must meet the needs of a dependent infant and continue to uphold the social role of parent far beyond infancy (Deater-Deckard, 1998). Appraisal of a causal agent (e.g., the child and the social role of parenting) varies by individual differences between families and possibly cultures; therefore, altering parent stress reactions. Parental coping styles differ greatly. Some parents may exhibit positive coping styles (e.g., problem focused coping strategies) - which are associated with lower levels of parenting stress- while other parents use passive and emotional coping styles (e.g., denial and rumination) (Deater-Deckard, 1998). Stress reactions in parents are individual and observed as parent’s

behavior and affect. Stress reactions are general and influence a parent's overall psychological functioning (Deater-Deckard, 1998). There are a myriad of factors that impact individual stress reactions (e.g., mental health and social/emotional support); however, some factors that impact an individual's stress reaction are factors that contribute to overall parenting stress.

A number of factors are likely to contribute to parenting stress. For example, the birth of another child, access to social and emotional support, and marital discord may exacerbate feelings of stress related to parenting (Deater-Deckard, 1998). Moreover, research shows the impact of adult psychosocial functioning on adjustment (e.g., Gelfand, Teti, & Fox, 1992). Parents who experience depressive symptoms report higher levels of parenting stress when compared to non-depressed parents (Gelfand et al., 1992; Webster-Stratton & Hammond, 1988). Theule et al. (2013) found that co-occurring child DB and parenting depressive symptoms predicted parenting stress. Furthermore, Theule and colleagues highlight the relationship of parent psychopathology and parent stress resulting from factors of child behavior, consistent with previous research (i.e., Johnston & Mash, 2001; Fischer, 1990). Additionally, parenting stress is shown to mediate the relationship between parent depressive symptomology and parenting behavior (Gerdes et al., 2007). Findings indicate that parenting stress may exist as a function of multiple confounding factors. However, for the purpose of the current study, the conceptualization of the stress process will focus on the influence of parenting stress on child DB.

Parenting stress and child DB. Research has demonstrated a significant association between child DB and elevated levels of parental stress (Theule et al., 2013;

Tichovolsky et al., 2013; Forehand et al., 2014); however, the predictive directionality between parenting stress and child DB is unclear. In numerous studies, parents of children with ADHD show elevated levels of total stress (e.g., Theule et al., 2013). It is suggested that child ADHD characteristics result in parenting stress (Theule et al., 2013). Beernink, Swinkels, Van der Gaag, and Buitelaar (2012) demonstrated a significant interaction between attentional/hyperactive behavior and parent stress and that oppositional/aggressive behavior had a strong main effect on parent stress. Furthermore, parenting stress affects informant agreement of child ADHD and ODD symptoms which may influence proper child diagnosis (Oord, Prins, Oosterlaan, & Emmelkamp, 2006). Deater-Deckard (1996) found parenting stress was significantly associated with child emotional and hyperactive misbehavior. Despite study outcomes, the conclusions are cross-sectional and warrant further investigation. A more clearly directional relationship is the negative impact of parenting stress on parent behavior (Deater-Deckard, 1998).

Parental stress and PMT. Studies have shown high parental stress affects the magnitude and maintenance of change for treatment completers (Kazdin, 1997). This is likely due to the effect parenting stress has on the ability of parents to consistently use positive parenting practices. Considering the focus of PMT programs is to increase the use of positive parenting strategies (i.e., praise and limit setting) and teach parents social learning principles to increase treatment outcomes (Kazdin, 1997), parenting stress may interfere with a parent's ability to comprehend and implement the strategies learned. Further research is necessary to understand the interactive variables that effect treatment outcomes.

Parenting stress, parenting practices, and child behavior. Abidin's (1990) parenting stress model postulates that parenting stress may lead to ineffective parenting behaviors, which in turn would lead to child DB (e.g., Loeber & Stouthamer-Loeber, 1986; Stormshak et al., 2000). Deater-Deckard (1998) hypothesized causal and mediating relationships between parenting stress, parent behavior, and child adjustment. Specifically, the study examined parenting stress as the cause of ineffective parenting behaviors, ineffective parenting behaviors causing child maladaptive behaviors, and ineffective parenting behaviors mediating the relationship between parenting stress and child adjustment (Liu & Wang, 2014). Deater-Deckard (1998) concluded that parenting stress and ineffective parenting behaviors covary, with more stress leading to less effective parenting behaviors. Research examining the mediating role of ineffective parenting behaviors in the relationship between parenting stress and child externalizing behaviors is scarce and inconsistent (Liu & Wang, 2014). Even without the presence of mediating effects, notable relationships between parenting stress, parenting, and child behavior exist.

It is possible to speculate alternate methods for establishing predictive relationships between these variables. Research showing relationships between parenting stress and parenting practices, and parenting practices and child externalizing behaviors is lacking. Based on the extant literature, it could be hypothesized that parenting stress would indirectly affect child DB treatment outcomes when parents ineffectively implement the parenting strategies learned through an evidence-based PMT program. It would follow, then, that a reduction in parenting stress as a result of increased positive parenting may lead to a reduction in child DB. Therefore, an important implication of

these hypotheses is that stress reduction in parents may not only positively affects the parent's psychological health (i.e., reduced stress), but may also increase the efficacy of parent-implemented (or parent-mediated) interventions targeted at reducing child externalizing problem behaviors (Kazdin, 1997). Additionally, examining relationships among parenting stress, parenting practices, and child externalizing problem behaviors may assist in further understanding the causal mechanisms of child externalizing behavior disorders.

Current Study

Children who display elevated levels of disruptive behavior have markedly greater deficits in psychological, academic, emotional and social functioning (Barkely et al., 2002). Theoretical models of child development posit a significant interaction between the individual and their environment that may produce child disordered behavior (i.e., Bioecological model). Moreover, such models indicate parenting as a causal factor in the development of child externalizing problems. The stability of behavior across development may change as a result of individual characteristics (i.e., maturation), environmental stressors (i.e., parenting), and vulnerability (i.e., genetics). Thus, it is necessary to understand the relationship between variables across time to inform practice.

Evidence-based interventions exist that teach parents positive strategies proven to improve child disruptive behavior outcomes (Starace, 2011; McKee et al., 2008). The empirical support of evidence-based PMT programs indicates an expectation for change in both parenting and child behavior post-treatment. These expectations may be effected as a result of parent psychological state (i.e., level of parenting stress). For example, environmental stressors may influence a parent's ability to use positive parenting

techniques and result in significant parenting stress, which in turn may affect a parent's ability to implement learned parenting strategies.

The relationship between parenting stress, parenting behaviors, and child externalizing problem behaviors has been well-established. Parents who experience parenting stress are more likely to use ineffective parenting strategies (Deater-Deckard, 1998); and ineffective parenting practices are associated with an increase in child behavior problems (Loeber & Stouthamer-Loeber, 1986; Frick et al., 1999; Bornovalova et al., 2012). However, less is known about the relationship between these variables (i.e., parenting stress, parenting practices, and child externalizing problem behaviors) following completion of an evidence-based treatment program. Does parenting stress change in response to newly learned and implemented intervention strategies, or do parenting strategies vary as a result of parenting stress? Similarly, do child externalizing problem behaviors improve related to the increased use of positive parenting, or does positive parenting increase from a reduction in child DBs?

The current study explored the directionality of predictive relationships among parenting stress and positive parenting practices (i.e., positive reinforcement and limit setting), and positive parenting practices and child externalizing problem behaviors. Specifically, this study examined whether changes in parenting stress predict changes in use of positive parenting strategies or, alternatively, whether changes in positive parenting strategies predict changes in parenting stress. Additionally, this study examined the predictive directionality (e.g., increase or decrease) of changes in parenting strategies and child externalizing problem behaviors. The predictive relationships among variables that were tested can be found in Figure A1. It was hypothesized that changes in

parental stress would predict changes in parenting strategies; and changes in parenting strategies would predict changes in child externalizing behaviors (see Figure A2). This study was undertaken with the goal of not only informing practice on several levels (i.e., how to address parenting stress and reduce child problem behaviors), but also to contribute additional information on individual variables that affect the well-established relationship between parent and child behavior.

Chapter III

Method

Participants

Participants were the caregivers of one child presenting with a DBD or other externalizing behavior disorder (i.e., ADHD), receiving parent management training through an ongoing PMT program, BBI (Axelrad et al., 2009), at Texas Children's Hospital in Houston, TX. BBI treatment guidelines include that the child from the parent-child dyad be less than 6.5 years old and present with symptoms that indicate an externalizing behavior disorder (e.g., DBD NOS). Specific to the study, child participants must have an elevated disruptive behavior (i.e., oppositionality) T-score greater than or equal to 60 on the Eyberg Child Behavior Inventory (ECBI) at intake. Children with one or more significant medical health impairments capable of affecting behavior (i.e., seizure disorder) or severe receptive language disorder are not considered appropriate participants for the current study or the BBI treatment program. Intervention data was gathered pre-intervention and three times post-intervention (i.e., immediately following the intervention and 3 months and 12 months following intervention completion). Pre-intervention and immediate post-intervention data were used for the following study. The University of Houston and Baylor College of Medicine/Texas Children's Hospital granted IRB approval, consent was obtained from all participants, and participant information remained de-identified throughout the study.

Analyses were restricted to participants who completed the full treatment protocol, returned immediate post-intervention measures, and completed all study measures (N= 47). Parental participants came from various educational backgrounds

(21% high school graduate, 10% some college, 36% college graduates, and 33% obtained post-graduate degrees), and all were married or living with a co-parenting partner. The mean number of sessions attended was 6.5. Demographic characteristics of the sample can be found in Table B1.

Child participants were between 2 and 6 years old (24 and 72 months, $M= 58.06$ mos, $SD=11.74$ mos). Eighty-three percent of the children were male, 17% female, 65% Caucasian, 9% African American, 15% Hispanic, 7% Asian, and 4% identified as other. Child participants presented with a range of disruptive behavior disorders (DBD, nos= 54%, ADHD= 22%, ODD= 11%, ADHD+ODD= 13%). At the start of treatment, 5% of the children were taking some form of stimulant medication. Following treatment, the number of children taking medication had increased to 20%. Though medication management is not a part of the BBI program, an increase in medication usage is to be expected, as children completed a diagnostic process during the course of treatment.

Measures

Parenting Stress Index (PSI). The Parenting Stress Index, 3rd Edition (PSI-3; Abidin, 1990) is a 120-item parent-completed measure of the magnitude of stress in the parent-child relationship. The primary focus of the PSI-3 is on the preschool child; however, it is suitable for children 12 years and younger. There are six child-related subscales: 1) Adaptability, 2) Acceptability, 3) Demandingness, 4) Mood, 5) Distractibility/Hyperactivity, and 6) Reinforcement of Parent; and seven parent-related subscales: 1) Depression, 2) Attachment, 3) Restriction of Role, 4) Sense of competence, 5) Social Isolation, 6) Relationship with Spouse, and 7) Health. Additionally, there is a 19-item life-stress subscale. The PSI-3 is based on the theory that parent stress is a

function of certain child characteristics, parent characteristics, and situations that are directly related to parenting a child. It is designed for the early identification of parents at risk for dysfunctional parenting; and predicts the potential for parental behavior problems. The PSI-3 is particularly helpful for prevention programs aimed at reducing stress, family functioning and parenting skills, and intervention and treatment planning. Cronbach's alpha for the parent-related scales range from .55 to .80 and .62 to .70 for the child-related scales. The current study used the Child Domain score for primary analyses.

The Alabama Parenting Questionnaire. The Alabama Parenting Questionnaire (APQ) is a 42-item, parent-completed measure of parenting characteristics associated with DBDs and is rated on a 5-point Likert scale (Shelton et al., 1996). Items on the APQ consist of previously researched items assessing parental involvement with their child, use of positive reinforcement, monitoring and supervision of the child, consistency in applying discipline, and use of corporal punishment and are grouped into five constructs, based on face validity: 1) Parental Involvement (10 items), 2) Positive Parenting (6 items), 3) Poor Monitoring/Supervision (10 items), 4) Inconsistent Discipline (6), and 5) Corporal Punishment (3). The APQ shows low to good internal consistency ($.46 \leq \alpha \leq .80$), good criterion validity in clinical and control groups of school-aged children, and a mean r^2 across all 5 factors of .24 for predicting symptoms of ODD and CD (Frick et al., 1999; Elgar, Waschbusch, Dadds, & Sigvaldason, 2006).

The APQ was initially validated for use with school-aged children. Researchers have attempted to validate a pre-school revision of the APQ (APQ-PR; e.g., Clerkin, Marks, Policaro, & Halperin, 2007; de la Osa, Granero, Penelo, Domènech, & Ezpeleta,

2014). The psychometric studies of the APQ-PR identified a 3-factor structure: Positive Parenting, Inconsistent Parenting and Punitive Parenting (Clerkin et al., 2007; de la Osa, 2014). A confirmatory replication of the APQ-PR validation studies was conducted on a sample of children 2-6 years old with disruptive behavior diagnoses. Results indicated an improper fit of both the original APQ 5- factor structure and the proposed APQ-PR 3-factor model (Flynn, 2013). However, for the purpose of the current study, item-level data of the full APQ was assessed prior to determining if the 3-factor structure proposed by Clerkin and colleagues (2007) was an appropriate measure of parenting for the study sample. The items used to construct the 3-factor structure proposed by Clerkin et al. (2007) appear developmentally appropriate and consistent with aspects of PMT (e.g., “You threaten to punish your child and then do not actually punish him/her” aligns with the need for consistent follow through and implementation of learned PMT strategies). Therefore, the Positive Parenting, Inconsistent Parenting and Punitive Parenting composite scores were used to assess parenting practices as they relate to parental stress and child externalizing problems.

The Behavior Assessment System for Children, Second Edition. Developed by Reynolds and Kamphaus (2004), the Behavior Assessment System for Children, Second Edition (BASC-2) is a multi-informant measure that consists of rating scales designed to help understand the behaviors and emotions of children and adolescents. Additionally, the BASC-2 is designed to evaluate various aspects of behavior and personality, including positive (adaptive) and negative (clinical) dimensions. Information from the BASC-2 is gathered from parents and teachers (and from the child, if developmentally appropriate) to understand the child’s behavior and functioning across

settings. The BASC-2 parent rating scale (PRS) contains items that form nine clinical scales: Aggression, Anxiety, Attention Problems, Atypicality, Conduct Problems, Depression, Hyperactivity, Somatization, and Withdrawal; and five adaptive scales: Activities of Daily Living, Adaptability, Functional Communication, Leadership, and Social Skills. The clinical and adaptive scales are used to generate four Composites: Externalizing Problems, Internalizing Problems, Behavioral Symptoms Index, and Adaptive Skills. Specific to this study, the Externalizing Problems Composite of the parent rating scale reports the degree of child engagement in oppositional, disruptive, and aggressive behaviors. The intraclass coefficient ranges from .95 to .97 (dependent on age) and the test-retest reliability ranges from .86 to .90.

Procedure

The purpose of the BBI program is to assess the long term effectiveness of treatment on child behavioral difficulties. The BBI program and research is conducted at Baylor College of Medicine/Texas Children's Hospital (BCM/TCH). Prior to beginning the intervention, participants are asked to complete the following measures: measures of child behavior and functioning (e.g., ECBI, Disruptive Behavior Rating Scale [DBRS], and BASC-2), one measure assessing the child's attainment of developmental milestones (e.g., BCM/TCH Patient History and Environmental Assessment), a measure of parenting stress (e.g., PSI-3), a measure of parental mood (e.g., Center for Epidemiologic Studies Depression; CES-D) and a measure of parenting behavior (e.g., APQ). If the child is enrolled in school or daycare, the child's teacher is asked to complete a series of measures assessing child behavior and functioning. . Participants eligible to participate in the research study (e.g., have an elevated ECBI T-score) are asked to sign a consent

form, which outlines procedures of the research study, confidentiality, and any potential risks and discomforts associated with participation. The BBI program lasts approximately 6-8 weeks (meeting once a week at the same time), with sessions lasting approximately 50 minutes each. The duration of treatment may vary depending on the participant's need for additional problem-solving sessions. Each session focuses on teaching parents specific strategies to effectively modify their child's behavior (see Table B2). Following the final session, participants return for a follow-up/booster session. The follow-up session typically occurs two-weeks following the final session. Parent participants are asked to complete post-intervention measures (same measures completed prior to treatment) at the close of their last training session, and asked to return measures at or prior to their booster session. During the booster session, measures are reviewed with the participants to assess their child's behavioral change following the BBI program. The remainder of the session is used to problem-solve any ongoing concerns and encourage parents to continue to use the strategies learned outside of treatment.

Statistical procedures. Two autoregressive cross-lagged panel models were used to examine the reciprocal relationship between changes in parenting stress and changes in parenting practices, and changes in parenting practices and changes in child externalizing behaviors. These structural equation models (SEM) for repeated measures data examine the structural relations of variables measured at multiple time points. For the current study, two separate two wave, two variable models were used and are described with the following equations:

$$(1) X_2 = \beta_1 X_1 + \beta_2 Y_1 + \zeta_X$$

$$(2) Y_2 = \beta_3 Y_1 + \beta_4 X_1 + \zeta_Y$$

In these equations, X and Y represent constructs measured at two different time points. Specific to the current study, X and Y represent parenting stress (X) and positive parenting (Y), and positive parenting (X) and child externalizing behaviors (Y) measured pre and post BBI intervention. The β_1 and β_3 describe the effect a construct or variable has on itself measured at a later time (autoregressive effects). The autoregressive effects describe the stability of a construct from time point 1 to time point 2 (Selig & Little, 2012). Alternatively, β_2 and β_4 represent cross-lagged effects. Cross-lagged effects represent the effect one construct or variable has on another variable at a different time point. Using the terms from the equations above, controlling for stability from X_1 to X_2 , the cross-lagged effect is the effect Y_1 has on X_2 . Additionally, the predictive relationship of the constructs is reciprocal (i.e., just as Y_1 predicts X_2 , X_1 predicts Y_2). Put in simpler terms, an autoregressive cross-lagged panel model examines the predictive relationship between changes in one construct (i.e., X_1 to X_2) and changes in another construct (i.e., Y_1 to Y_2).

Data Analysis Procedure

Power analyses were conducted in G*Power 3 in order to assess the sample size needed to appropriately test the hypotheses of the study. A single a priori analysis was run using a power of .8, alpha level of .01, and a small effect size estimate of .15. Using these parameters, a total of 311 participants were necessary to detect a small effect size. Additional post hoc power analyses were run using a power of .8, alpha level of .01, and medium (.25) and large (.40) effect sizes. Using these parameters, a total of 45 participants were necessary to detect both a medium and large effect size.

Autoregressive cross lagged analyses are a special case of path analyses, which is a special case of SEM. As such, the assumptions of this model are consistent with the assumptions of SEM. Descriptive statistics were used to assess the primary assumptions. The assumption of normality among single variables was assessed by skewness and kurtosis. The follow up treatment (Time 2) data on child externalizing behavior (i.e., parent reporting of child externalizing problems as noted on the BASC-2) was non-normally distributed with skewness of 1.71 (SE= .354) and kurtosis of 3.85 (SE= .695). A visual inspection of scatterplots assessed the assumption of linearity. Following visual inspection, it is reasonable to assume a linear relationship between most variables. Other variables appear to violate the assumption of linearity, which is reflected in the correlations being near 0. See Table B3 for examples of scatterplots. Box plots were used to evaluate outliers. Parenting stress (i.e., PSI-3 Child Domain [CD]) at both time points (pre- and post-intervention), Punitive Parenting (as indicated by the APQ) at pre-intervention, and child externalizing behavior (i.e., BASC-2 Externalizing Problems Composite [EXT]) at post-intervention contained outliers. The outliers observed for parenting stress was consistent across participants in that the participants whose data were outliers at time 1 were also outliers at time 2. All outliers from the APQ were within the range of the Likert scale; similarly, the outlying scores on the BASC-2 EXT do not appear to be errors in entry or score miscalculation. The answers provided by the parents are intended to reflect the parent's subjective opinion of themselves and their children; therefore, all outlier values were included in analyses. See box plots in Table B4. Collinearity was examined using the variance inflation factor. There were no notable concerns with collinearity among variables (VIF= 1.04 - 2.81).

The autoregressive cross-lagged models analyses were conducted in MPlus Version 7. Full information maximum likelihood (FIML) was the estimation method used to test the models. FIML was used due to the anticipation of missing data (10%). Percentages of missing data for individual variables are as follows: Parenting stress at time 1 (6%), parenting stress at time 2 (9%), and child externalizing problem behaviors at time 2 (4%). All other variables contained 100% valid data. Simulations conducted by Enders and Bandalos (2001) demonstrated FIML as a preferred missing data method in SEM, above other estimation methods, with regards to parameter bias, efficiency, and Type I error rates.

Chapter IV

Results

The means, standard deviations, and bi-variate correlations of the scales/Composites of the PSI-3, APQ and BASC-2 can be found in Table B5. Additionally, the change in mean scores across variables from pre- to post- treatment can be found in Table B5. Paired-sample *t* tests confirm significant change in the average score of all relevant variables from pre- to post- treatment, with the exception of Punitive Parenting: parenting stress ($t(40)= 6.67, p=.000$), Positive Parenting ($t(46)= -2.58, p=.013$), Inconsistent Parenting ($t(46)= 5.92, p=.000$), and child externalizing problems ($t(44)= 5.60, p=.000$). Significant results yielded change in the predicted direction for each variable: parenting stress, inconsistent parenting practices, and child problem behavior decreased; and positive parenting increased.

Two primary autoregressive cross-lagged models were fit to test the reciprocal relationships between parenting stress and parenting practices, and between parenting practices and child externalizing behavior. For purpose of analyses in this study, parenting practices is defined by the Positive Parenting, Inconsistent Parenting, and Punitive Parenting scores on the APQ; therefore, multiple cross-lagged regressions were run. Results indicated significant relationships between pre- and post-intervention scores on these measures ($\beta_1= .80(.139, t= 5.75, p<.001)$ for parenting stress and $\beta_3= .66(.088, t= 7.50, p<.001)$ for Positive Parenting; ($\beta_1= .70(.153, t= 4.60, p<.001)$ for parenting stress and $\beta_3= .56(.116, t= 4.82, p<.001)$ for Inconsistent Parenting; ($\beta_1= .87(.148, t= 5.85, p<.001)$ for parenting stress and $\beta_3= .49(.118, t= 4.18, p<.001)$ for Punitive Parenting; $\beta_1= .66(.086, t= 7.61, p<.001)$ for Positive Parenting and $\beta_3= .54(.137, t= 3.97,$

$p < .001$) for child externalizing behaviors; $\beta_1 = .61(.097, t = 6.28, p < .001)$ for Inconsistent Parenting and $\beta_3 = .53(.135, t = 3.96, p < .001)$ for child externalizing behaviors; $\beta_1 = .55(.106, t = 5.22, p < .001)$ for Punitive Parenting and $\beta_3 = .56(.135, t = 4.15, p < .001)$ for child externalizing behaviors. The significant stability coefficient across each model implies that parents' reported level of stress, engagement in particular parenting practice, or degree of externalizing behavior problems were stable relative to other participants in the study (i.e., similar rank order). However, as discussed previously, the average report of stress, engagement, and externalizing problems changed in the desired direction following treatment. Cross-lagged path coefficients yielded that only pre-intervention child externalizing problems influenced post-intervention reporting of parental engagement in inconsistent parenting behaviors. That is, child externalizing problems predict residualized variability in inconsistent parenting practices at post-intervention ($\beta_2 = -.009(.097), t = 6.28, p < .05$). This relationship did not appear to be reciprocal. Levels of engagement in inconsistent parenting practices at pre-intervention did not predict variability on post-intervention reports of child externalizing problems ($\beta_4 = 4.07(3.08), t = 1.32, p = .19$). These results demonstrate a negative relationship between inconsistent parenting and child externalizing problems, such that as child behavior problems increased following treatment, reported level of engagement in inconsistent parenting decreased. The perimeter estimates obtained from the significant model is presented in Figure A3 (inconsistent parenting and child externalizing problem behaviors).

Previous research has identified that parental stress likely results in the use of ineffective parenting techniques (e.g., punitive parenting practices; Deater-Deckard,

1998). Results from this study show a near significant relationship between parenting stress and punitive parenting practices ($\beta_4=.005(.003)$, $t=1.90$, $p=.057$), such that pre-intervention parent reported stress would influence post-intervention reporting of punitive parenting practices. A significant result from this particular model would indicate that as parenting stress increases, use of punitive (i.e., ineffective) parenting practices increases.

The consistent use of positive parenting strategies has shown to result in lower levels of child problem behavior (e.g., Wymbs, 2011); therefore, following primary statistical analyses, additional exploratory analyses were conducted. A number of exploratory autoregressive cross-lagged models were run to test the reciprocal relationships between alternative measures of parenting stress, parenting practices, and child externalizing behavior. Only one model yielded significant findings. Child conduct problems, as reported by the parent on the Conduct Problem Scale of the BASC-2, appear to significantly predict residualized variability in positive parenting practices at post-intervention ($\beta_2= .007(.003)$, $t= 2.38$, $p<.05$). As with the previously reported model, this relationship did not appear to be reciprocal. Levels of engagement in positive parenting practices at pre-intervention did not predict variability on post-intervention reports of child conduct problems ($\beta_4=2.03(7.39)$, $t=.28$, $p=.78$). This result implies a positive relationship between variables such that as child conduct problems increase, positive parenting practices increase.

Chapter V

Discussion

The purpose of the current study was to assess the relationship between parenting stress and parenting practices, and parenting practices and child externalizing problem behaviors at dual time points. More specifically, the aim was to assess the predictive and directional relationships between these variables following completion of an evidence-based parent management training (PMT) program designed to teach parents strategic parenting skills intended to reduce child disruptive behavior. The outcomes of this study did not yield anticipated results in that the findings did not support the hypothesized pathways. Knowledge on how or if the specific variables assessed in the study effect (or predict) treatment outcomes remains unclear. However, the results do provide supportive information on the effects of PMT for reducing parenting stress and child disruptive behavior, and increasing parents' use of positive parenting strategies. Following completion of a brief PMT intervention (i.e., BBI), several notable changes (in the desired direction) were found: parenting stress decreased, Positive Parenting increased, Inconsistent Parenting decreased, and child externalizing problems decreased. No changes were noted in the use of Punitive Parenting. The extant literature support desired change in parenting stress, parenting strategies, and child externalizing problem behaviors (e.g., Lui & Wang, 2014, Axelrad et al., 2009; Roberts, 2006; Wells, 1997) following PMT. This finding further supports that completion of a PMT program, such as the BBI program, will likely result in significant and desired change in these variables. Though the possibility of maturation and regression to the mean must be considered in

any treatment study, BBI is a brief PMT program that occurs over a 6-8 week period and maturation is likely not to occur in such an abbreviated amount of time.

Previous literature has demonstrated that the amount of stress experienced by a parent may directly hinder their ability to implement positive parenting practices (i.e., such as those learned in PMT) (Deater-Deckard, 1998). Furthermore, the level of stress a parent experiences may not only influence their use of positive parenting practices, but may also affect their ability to learn the strategic parenting skills taught in treatment. Child response to treatment is largely dependent on parents' implementation of PMT content. Results of the current study showed a near significant relationship between parenting stress and punitive parenting ($p=.057$), such that as parents experience more stress they are more likely to engage in punitive parenting practices. This is consistent with the literature (e.g., Deater-Deckard, 1998). A distinguishable factor to the current study is the context in which data was gathered. The current study gathered information on parenting stress prior to and following a PMT treatment program; therefore, potential influences of treatment must be considered when evaluating the relationship between parenting stress and parenting practices. Had this outcome been significant, it would support and expand upon previous literature noting the influence of parenting stress on use of positive and effective parenting strategies following a PMT treatment program. The initial degree of parent reported stress would demonstrate a direct effect on the change (specifically, reduction) in punitive parenting practices following treatment. A number of studies have assessed the effects of PMT on reducing parenting stress using various sample populations and statistical methods. Roberts (2006) reported significant reductions in parent reported stress for parents completing an adapted parent training

program when compared to control groups. Maintenance and reduction of stress was found for treatment completers; however, conclusive statements could not be made for the usefulness of treatment for reducing parenting stress. Additional studies (e.g., Gerdes, Haack, & Schneider, 2012; Heath et al., 2015) have reported significant reduction in parenting stress following completion of various PMT protocols. It remains plausible that parents' who complete a PMT treatment program may report significant reductions in parenting stress; however, it is equally plausible that the initial level of reported stress may prevent a parent from reducing their use of punitive parenting practices, despite completing treatment. Therefore, it would remain unclear if PMT is a sufficient and effective treatment for significantly reducing parenting stress while remaining an effective treatment for reducing child externalizing problem behaviors and increasing positive parenting skills.

Additional findings from this study demonstrate that after completion of the BBI program, parents increased their use of positive parenting practices in response to increased reports of child problem behavior. This is an encouraging finding since a primary component of PMT is to teach parents the use of intentional and effective attention and praise for desirable behaviors exhibited by their child (Pearl, 2009). As well as to remove their attention and actively ignore their child's undesirable behaviors. When used in conjunction, these skills are intended to increase desirable child behavior and reduce child externalizing problem behaviors that function as a result of parental attention.

However, even as parents begin to effectively implement positive parenting skills, their child will likely respond with instances of *escalated* problem behavior. An

extinction burst is defined as “a temporary increase in the frequency, intensity, or duration of the target [behavior]” (Lerman & Iwata, 1995, p. 93). When parents remove the reinforcement maintaining their child’s attention seeking behavior, a child will likely display an extinction burst. For example, if a child receives their parent’s attention by engaging in a mild tantrum, once the reinforcement (i.e., attention) is removed from the child for engaging in that behavior, the child’s tantrum may happen more often, last longer, and/or become more intense, in an effort to gain their parents attention. It is highly unlikely that parents present to treatment with a single isolated event when they felt unable to manage their child’s behavior. More probable is the constant and frequent occurrence of unmanageable child problem behaviors. While specific behaviors may be targeted during treatment, additional problem behaviors are likely to present throughout and following intervention completion. Though it would require additional information, this result may indicate a parent’s ability to independently maintain intervention benefits beyond completion of treatment; and, furthermore, demonstrate that PMT may effectively teach parents to respond to child problem behavior with positive parenting skills.

How a parent responds to child problem behavior may influence the persistence and maintenance of the problem behavior. As previously noted, PMT teaches parents positive parenting strategies (e.g., praise and active ignoring) to increase desirable and reduce undesirable child behavior. Primary findings demonstrated that as child problem behavior increased post-intervention, parents decreased their use of inconsistent parenting practices. Consistent in the literature is the relationship between effective parenting practices and reduction in child problem behavior. The result from this study may appear to contradict previous findings. However, it is important to acknowledge the context in

which the data was gathered (e.g., a PMT treatment program). Inconsistent Parenting, as operationalized through the APQ, indicates a lack of follow through (e.g., Item 3: “You threaten to punish your child and then do not actually punish him/her”). The lack of follow through may be an initial contributing factor to the presentation of child externalizing problem behaviors if other, more effective, parenting practices are not present. Just as desirable child behavior is expected to increase and undesirable behavior is expected to decrease following treatment, positive parenting strategies are expected to increase and ineffective (e.g., inconsistent parenting practices) parenting strategies are expected to decrease. Parents are taught how to appropriately respond to their child’s undesirable behavior. The reduction in inconsistent parenting practices may be a direct result from the content learned in PMT. As previously noted, an increase in child problem behaviors positively predicted an increase in parents’ use of positive parenting strategies- demonstrating a parent’s ability to use effective strategies in response to their child’s problem behavior. Therefore, this finding does not indicate a parent’s inability to use effective parenting techniques, but rather this result indicates that parents’ respond to an increase in their child’s problem behavior by reducing their use of ineffective strategies and potentially increasing their use of more effective strategies learned within treatment.

Understanding the results of this study can inform clinicians, researchers, and parents alike on the potential efficacy of PMT for reducing parenting stress and child externalizing problem behaviors, increasing use of positive parenting strategies, and how these variables may interact to effect change in expected outcomes. The intention of this study was to provide preliminary information to assist in understanding if stress predicts

parenting behavior and parenting behavior predicts child problem behaviors or, conversely, if parenting behavior predicts stress and child problem behavior predicts parenting behavior. Following the BBI program, parents reported a decrease in stress and child problem behavior, and an increase in use of positive parenting practices.

Additionally, results indicated that as child problem behavior increased post-intervention, parents' increased their use of positive parenting strategies and decreased their use of inconsistent parenting strategies. Parenting plays an important role in the development and maintenance of child problem behavior. Use of ineffective parenting practices may function as a stressor to increase the likelihood of problem behavior presentation (Loeber & Stouthamer-Loeber, 1986; Stormshak et al., 2000); and use of positive parenting practices can assist in managing child problem behaviors (Wymbs, 2011). The parenting strategies learned within a PMT program can provide parents with the effective skills to manage and reduce their child's problem behavior that function as a result of ineffective parenting practices. Results from the current study support previous findings demonstrating that PMT yields positive outcomes in child problem behavior and use of effective parenting practices. Furthermore, the results indicated that parents' modified their engagement in parenting practices in direct response to an increase in their child's problem behaviors. Therefore, child problem behavior may continue to reduce overtime as parents' consistently respond to such behavior with effective PMT strategies. What remains unclear is how parenting stress is affected by the change in parenting practices. Though reported parenting stress did decrease following treatment, the source for this decrease was not noted from the findings. Previous literature posits a myriad of sources for parenting stress (e.g., child behavior, parental psychopathology, single parenting)

(Tichovolsky, Arnold, & Baker, 2013; Liu & Wang, 2015). Moreover, parents of preschool aged children (such as those who participated in the current study) experience high levels of stress related to raising their young children (Anthony et al., 2005). This study focused on child factors (as defined by the PSI-3 CD) as the primary source of parenting stress. The reported reduction in stress may have been a result of unmeasured variables, or may have been a result of PMT program completion. The relationship between parenting stress and PMT implementation remains unclear. A number of limitations existed that may have influenced the overall outcomes and findings of the current study.

Limitations

A number of limitations exist that may have directly impacted the outcomes of this study. First, the study's sample size was limited. This raises concerns because an insufficient sample size may not provide the power needed to properly test the study hypotheses. The sample size of this study resulted in an inability to detect a small effect size. The ability to detect a small effect size increases the probability of finding a statistically significant result (e.g., how parenting practices effected change in parenting stress). However, detection of medium to large effect sizes was supported. Therefore, it may be plausible that the effects of change in parenting stress on change in parenting practices, and change in parenting practices on change on parenting stress are significant, yet are undetectable by the current study's sample. Nevertheless, the sample used is appropriately representative of a clinic setting. Participants were recruited from an ongoing treatment within a functioning hospital and depict a "real-world" representation of participants involved in an evidence-based intervention within this setting. Drop-off,

attrition, insufficient measure completion, and other confounding factors that typically occur within this setting may have contributed to the limited sample size of this study and, in turn, affected the outcomes (e.g., analyses approaching significance).

A second limitation that should be considered is related to the generalizability of the findings. The sample may be considered representative of children with disruptive behaviors who are seeking treatment within a hospital-based setting; however, it may not be representative of the general population of children displaying externalizing problem behaviors and their parents who are *not* seeking treatment, or in such a setting. Certain factors may exist that distinguish between parents seeking treatment and those who are not (e.g., sources of stress, use of parenting practices, access to services). This study did not capture those potential differences to appropriately generalize findings to all parents of and children with externalizing behavior problems. Furthermore, the sample characteristics contributed to the limitations in generalizability. Child participants were primarily Caucasian (65%), and parents reportedly earned an average income of \$58,950.65 (see Table B1 for additional demographic data). Limitations in diversity among the sample may have equally effected the ability to generalize study findings.

Thirdly, the increase in child participant stimulant medication use from pre- to post-intervention may be a limitation to study outcome interpretations. Participants of the study are recruited through a broader system. The children involved in the study undergo a diagnostic intake process, which results in a number of recommendations (e.g., PMT and/or referring to a physician to discuss medication options). Therefore, the increase in use of medication during study participation is probable; and the effective and appropriate use of stimulant medication to manage child behavior may have influenced

treatment gains in reported child behavior. Though it is necessary to acknowledge this potential limitation, the reported reduction in child problem behavior found from this study remains consistent with the extant literature supporting PMT as an effective intervention for reducing child externalizing problem behavior.

Lastly, the measures used in this study were chosen to assess parenting stress experienced in response to child behavior (PSI- 3 CD); positive, inconsistent, and punitive parenting practices (subscales from the APQ); and child externalizing problem behaviors (BASC-2 EXT). The PSI-3 and the BASC-2 are well-studied and appropriately validated measures for the study's sample population (i.e., parents of preschool aged children). The APQ, however, was intended for a different population (e.g., school-aged children) and minimally validated for use with younger populations (e.g., Clerkin et al., 2007; de la Osa, 2014). Additionally, the APQ assess very specific aspects of parenting practices (i.e., positive, inconsistent, and punitive parenting) as defined by the authors of the measure and may not fully represent the strategies and principles learned within BBI or other PMT treatment programs. Moreover, the PSI-3 CD and BASC-2 EXT are composite scores derived from multiple subscale scores, whereas the APQ measures parenting practices with single subscale scores (i.e., positive, inconsistent, and punitive parenting). Additionally, the BASC-2 is comprised of separate parenting forms based on age of the child (e.g., preschool (ages 2 to 5), child (ages 6 to 11), and adolescent (ages 12 to 21)). The CP scale on the BASC-2 is included on the child and adolescent forms, but not on the preschool form. The mean age of the study participants was 58.06 months (approximately 4.8 years of age). Therefore, a majority of the sample may have been administered the preschool form and results from the study

may not have appropriately captured the relationship between child CP and parenting behavior.

Furthermore, it is important to recognize that all primary variables within the study are observable and/or measureable through means beyond subjective assessment. All of the measures used to assess study variables are self/parent-report measures. Parents' involved in the study reported an elevated mean level of stress prior to beginning the BBI intervention. The level of stress experienced by the parent participants may have affected their ability to accurately report. Various factors can influence a parents' perception of stress and child behavior (e.g., parent psychopathology; Reyno & McGrath, 2006). Parent participants in the study were assessed for certain pathology (e.g., depression); however, the results of those measures were not included in the current study in an effort to exclusively assess the study's hypotheses. Parents' interpretation of stress and, parent and child behavior may have been affected by parent's initial level of stress or accuracy of employing self/parent-report measures. Alternative methods of measurement may have resulted in more accurate findings. For example, salivary cortisol is an effective and commonly used biomarker in stress research (Rosmond, Dallman, & Björntorp, 1998). It is minimally invasive and could provide further understanding on the level and change of stress parents experience in response to parenting their child. Additionally, child disruptive behavior and parenting practices are observable constructs that could potentially be observed by clinicians and researchers alike. In addition to gaining the perception of child and parent behavior from the parent, observation of these variables pre-, during, and post-intervention could provide additional information to better inform study analyses and outcomes. It is important to acknowledge that the

findings from this study are preliminary and are intended to inform practice as well as future research. The use of self-report measures to identify internalized feelings and parent-report measures to identify young child externalizing problems remain effective measurement protocols for the assessment of such variables within the context of this study.

Conclusions

Parent management training (PMT) is an evidence-based intervention shown to reduce the presentation and persistence of child externalizing behavior problems. Results of the current study indicated that a brief PMT program designed for preschoolers produced significant reduction in parenting stress, ineffective parenting practices, and child behavior problems; and significant gain in the implementation of positive parenting strategies. Furthermore, the results of the current study provided preliminary information on the predictive relationships between parenting practices, and child problem behavior in the context of a PMT program. Specifically, increases in reported child problem behavior predicted an increase in positive parenting strategies and a reduction in punitive parenting practices. These findings contribute to the intervention literature by indicating that completion of an evidence-based PMT intervention results in positive outcomes for both parent and child. In addition to positive change in parent and child behavior following PMT, parents' increased their use of positive parenting skills in response to their child's problem behavior, which may indicate parents' ability to maintain treatment effects beyond treatment completion. Therefore, the findings from this study support the use of PMT as an effective intervention for increasing positive parenting practices and reducing child externalizing problem behavior.

The outcome that remains unknown is the predictive relationship between parenting stress and parenting practices. How is change in parenting stress predicted by change in parenting practices? Or, how is change in parenting practices predicted by change in parenting stress? Significant findings to these questions would provide necessary information to determine if the reported reduction in stress is due to implementation of specific PMT strategies or other extraneous variables. The introduction of individual treatment for reducing parental stress or modifying PMT protocol to include elements intended to specifically address parenting stress seem like viable options. However, the extant literature is inconclusive on the effects of concurrent treatment of parental stress on the treatment outcomes of PMT (Reyno & McGrath 2006). Therefore, the effects of individualized treatment to address parenting stress may or may not positively affect PMT treatment gains. The implication that PMT alone is an effective intervention for reducing child-related parenting stress is unclear. Further research is necessary to determine the effectiveness of PMT for outcomes beyond reduction in child problem behavior.

Limitations to the study may have affected the ability to fully assess the predictive and directional relationships between parenting stress, parenting practices, and child externalizing problem behaviors. Future research should focus on addressing the noted limitations and expanding the study's methodology. This particular study resulted in findings that offer preliminary conclusions to inform practitioners and researchers of how specific PMT outcome variables change following treatment. Extensive research has demonstrated that parenting stress, parenting practices, and child problem behavior are influenced by one another in various contexts. This study aimed to assess the effects of

these variables within the context of an evidence-based PMT program. The ability to make causal inferences and additional conclusions could have been enhanced by employing an experimental design that used alternative sampling methods. The use of momentary time sampling (MTS) and partial interval recording (PIR) have been used to estimate both absolute behavioral levels and relative change (Harrop & Daniels, 1986). The use of MTS or PIR within an experimental design that randomly assigns participants to one of multiple treatment (e.g., individual stress treatment, PMT only, PMT + individual stress treatment) or control (e.g., waitlist) groups would allow for more causal and conclusive inferences following study completion. The implications from using the current study as a preliminary guideline to inform future research and practice indicates the potential to provide practitioners with information to improve treatment choice and application; and researchers with a better understanding of how specific PMT outcome variables change following treatment. Furthermore, a better general understanding of and interaction between parenting stress, parenting practices, and child externalizing behavior problems could be inferred. Future research should focus on addressing the limitations of this study to expand upon the findings and further assess the efficacy of PMT for reducing parenting stress while maintaining overall treatment gains.

Appendix A

Figures

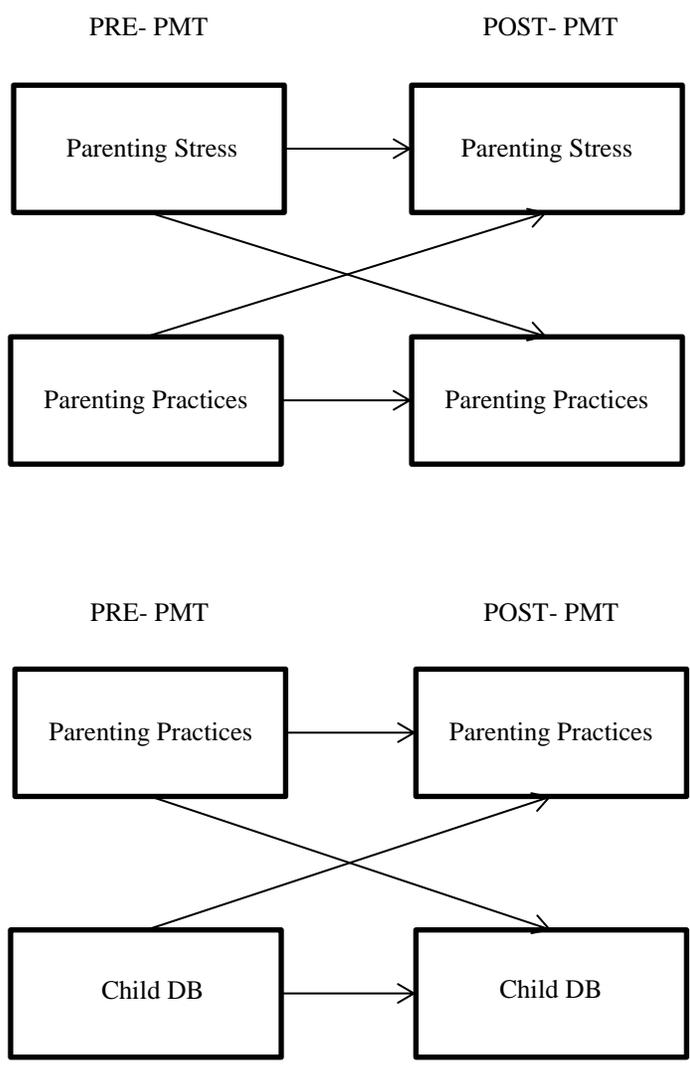


Figure A1. The model assessing the relationship between changes in parenting stress and parenting practices, and changes in parenting practices and child externalizing problem behaviors.

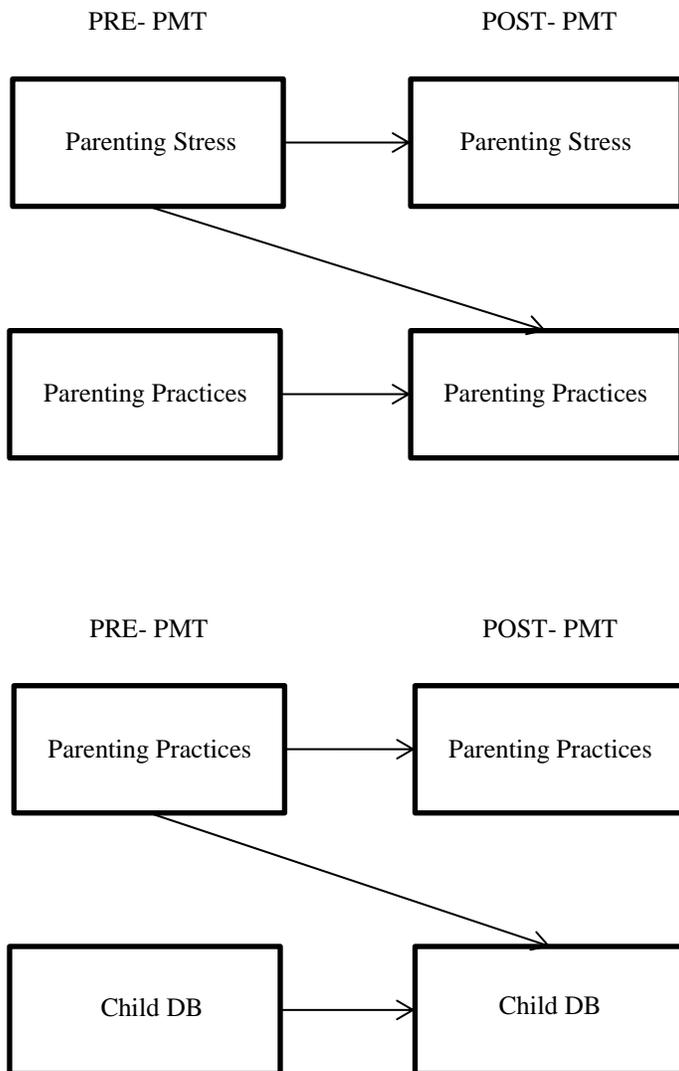


Figure A2. The hypothesized relationship between parenting stress, parenting practices, and child externalizing problem behaviors.

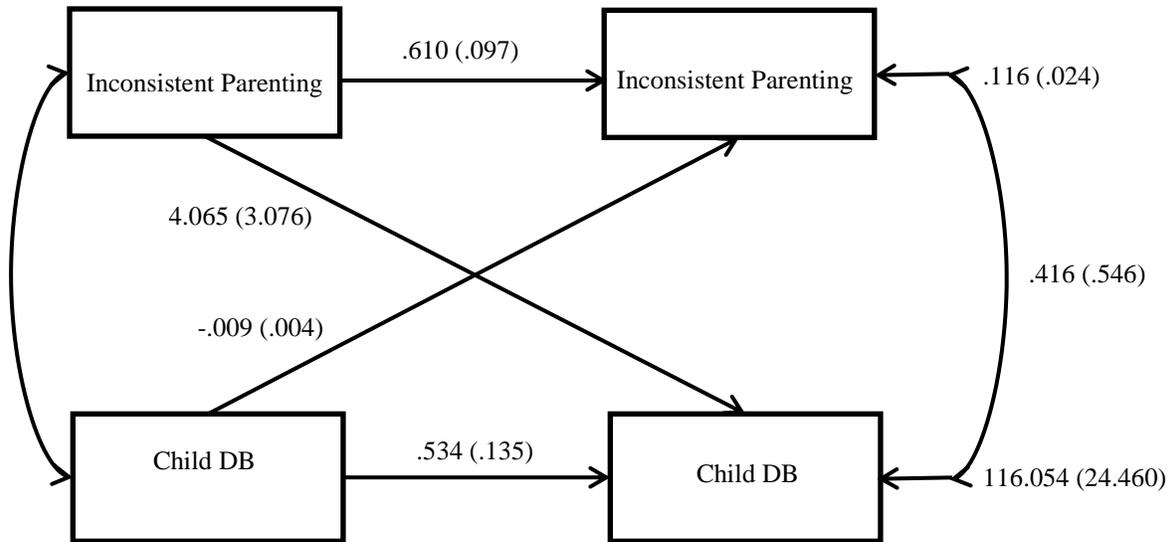


Figure A3. Autoregressive cross-lagged model with standardized solution.

Appendix B

Tables

Table B1

Sample demographics

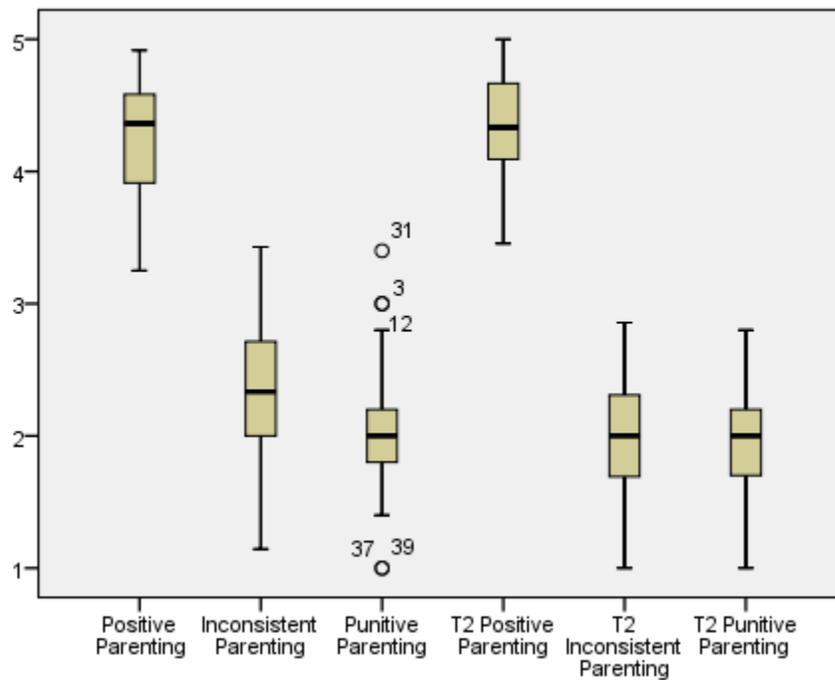
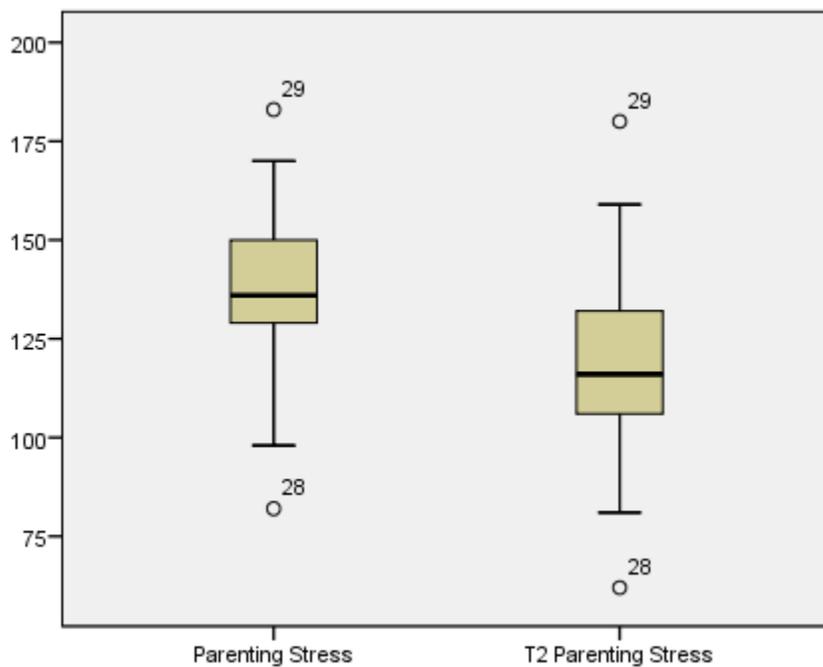
	Parent	Child
Age M(SD)		58.06 (11.74) mos
Gender (%)		
Male		83%
Female		17%
Nationality (%)		
Caucasian		65%
African American		9%
Hispanic		15%
Asian		7%
Other		4%
Diagnosis (%)		
DBD, NOS		54%
ADHD		22%
ODD		11%
ADHD+ODD		13%
Education		
High school graduate	21%	
Some college	10%	
College graduate	36%	
Post-graduate degree	33%	
Income M(SD)	58,950.65 (17,112.94)	
Marital status (%)		
Married or living as such	100%	
Number of sessions M(SD)	6.5	6.5

Table B2

BBI curriculum outline

Session Number	Session Title	Description
1	Daily Routines	Meet with family to review child's daily routine (ABC's of daily behavior) and previously completed pre-intervention measures, provide overview of BBI program, and introduce weekly parent-completed ABC charting of child behavior
2	Special Time	Child directed interaction (CDI): A positive technique that teaches parents to be a play therapist and allow their child the opportunity to take the lead. Parents learn to narrate their child's play and avoid corrective feedback and questioning. Special Time is intended to occur daily for approximately 5- 15 minutes.
3	Differential Attention	Differential attention introduces the concept of positive attending and active ignoring for attention seeking behaviors. Parents learn to use frequent and specific praise for desirable behavior; and to consistently, briefly, and immediately ignore undesirable or negative behaviors.
4	Effective Commands	Effective commands are used in conjunction with differential attention. Parents are taught how to provide children with commands to increase compliance. Techniques used in effective commands includes gaining child's attention, transitional warnings, if-then statements, and follow through.
5	Problem Solving	Problem solving sessions allow parents to openly process and problem solve any issues with strategy implementation at home.
6	Time Out	Time out is not taught as a punishment technique, but rather a strategy to remove the child from all forms of reinforcement. Time out is most effective when the previous strategies are consistently and appropriately implemented. Time out is to be used only for aggressive behaviors.
7	Optional Problem Solving	The optional problem solving session is provided on a needs basis and occur only if a family requires additional problem solving sessions.

Table B4

Box Plots

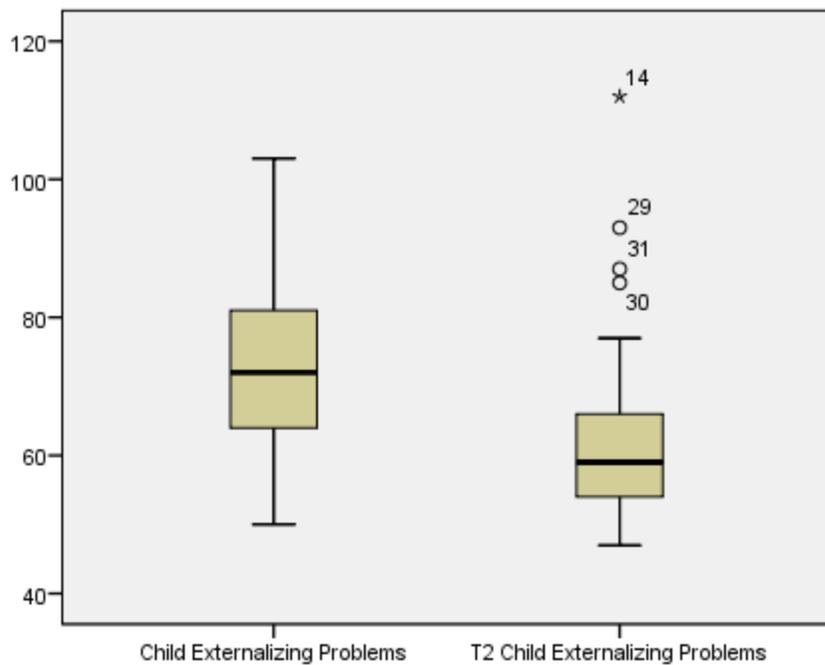


Table B5

Means, Standard Deviations, and Correlation Matrix for Measures

Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10
1. T1 PSI	136.09 (19.00)	-									
2. T1 PosPar	4.23 (.44)		-								
3. T1 IncPar	2.33 (.53)	.483**		-							
4. T1 PunPar	2.10 (.45)	.362*	-.346*	.497*	-						
5. T1 BEX	72.53 (12.04)	.350*				-					
6. T2 PSI	119.37 (22.12)	.655**		.414*			-				
7. T2 PosPar	4.34 (.39)		.754*	-.328*	-.384*			-			
8. T2 IncPar	1.96 (.47)	.350*	-.292*	.641*	.473*			-.446*	-		
9. T2 PunPar	2.01 (.41)	.423*	-.404*	.517*	.606*			-.362*	.512*	-	
10. T2 BEX	62.56 (13.06)	.458*				.526*	.510*				-

Note. PSI = Parenting Stress Index Child Domain; BEX = Externalizing scale from the Behavior Assessment System for Children, Second Edition, Parent Form; PosPar= Positive Parenting factor from the APQ-PR; IncPar= Inconsistent Parenting factor from the APQ-PR; PunPar= Punitive Parenting factor from the APQ-PR; T1 = Pre-intervention; T2 = Post-intervention.

**p < .001, *p < .01

Appendix C
IRB Approval

Ms. Gonzalez,

Your amendment to revise the following has been approved. The renewal date remains **April 1, 2018**. You may begin to implement this amendment.

I am requesting a revision to the currently approved protocol to include additional assessments to answer different research questions for my doctoral dissertation. The data is from an ongoing research study that utilizes multiple assessments. In the previous protocol, I requested access to a limited number of the administered assessments to answer a very specific research question. I would like to expand my research question and would like to access all of the administered assessments. All other aspects of the study remain identical to the previous protocol.

Please remember that no change in this research protocol can be initiated without prior review by the CPHS. You are obligated to report any unanticipated problems involving risks to participants, complications, and/or any adverse events to the Committee for the Protection of Human Subjects (CPHS) immediately.

We ask that you notify the CPHS when your study is completed or terminated. Please contact us if you have any questions.

Thank you,

Alicia Vargas, CPHS Coordinator
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