The Effects of Core Parenting Skills and Treatment Exposure on Behavioral Outcomes at the End of Childhood

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Abstract of Dissertation

The Effects of Core Parenting Skills and Treatment Exposure
on Behavioral Outcomes at the End of Childhood

This study employs structural equation modelling to analyze core parenting behaviors developed from Baumrind's paradigm through a social learning lens. It applies then to a non-clinical, ethnically diverse, urban population in the United States. It analyzes relationships of behavioral management, parent-child relationship, problem solving and communication, and parenting stress to child behavioral outcomes at the ninth year including mediation and moderation effects at years 1, 3, and 5. Treatment exposure was explored as a major moderator of pathways. Behavioral management, problem solving and communication, and parenting stress at year 5 predict child behavioral outcomes. Parent-child relationship at years 1 and 3 predict improvements in child behavioral outcomes. Contrary to expectation, prediction of outcomes from both parenting stress and behavioral management at year 3 is negative: increases in the use of spanking and in stress increased positive behaviors. The effects from these at year five, however, are consistent with previous literature. Key mediations are behavioral management and problem solving and communication of parent-child relationship year 3 effects. The moderation by treatment exposure is significant in increasing the effect of parenting stress and problem solving and communication. The application of core parenting skills provides useful pathways for increasing positive behavioral outcomes and for prevention of behavioral problems in early adolescence. Such prevention should focus on resiliency and early parent-child relationship. Future research should focus on

additional moderating and moderated mediational pathways and analysis of the elements of treatment exposure.

Keywords: parenting behaviors, child behavioral outcome, treatment exposure

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Chapter One: Introduction

Summary of Problem

Nearly half of adolescents in the United States experience some sort of mental disorder and almost a quarter experience such disorder in a debilitating and severe way (Merikangas et al., 2010). Affecting these high rates are the approximately six million children, 2-8 years old, who have been identified as having a mental, behavioral, or developmental disorder (Bitsko et al., 2016). Even earlier in childhood development, around 4.5 million preschoolers already display some type of conduct disturbance (Egger & Angold, 2006; Webster-Stratton & Hammond, 1998). This incidence at such a young age, that will predispose so many children to higher risks later on (Loeber, Burke, & Pardini, 2009; Mordre, Groholt, Kjelsberg, Sandstad, & Myhre, 2011), requires attention and continued research to develop ever better and more effective treatments. While the best type of treatment is prevention, it is essential to identify the pathways towards these less severe behavioral disruptions in order to avoid the more severe disorders.

As is extensively discussed by Mash and Barkley (2006), within this occurrence of disorders, the most prevalent are behavioral disorders, characterized by presentations of problematic behaviors. These disorders are often a result of a failure of socialization resulting in behaviors that disregard the rights of others and/or social norms and are primarily the target of psychiatric, psychotherapeutic, and counseling treatments. Conduct problems, as the opposite from socially appropriate behaviors, require improved socialization through parenting as a key element towards prevention. Preventative measures will be able primarily to avoid initial incidence at younger ages, but also decrease the continuity of problematic behaviors through the child's development.

To target and treat conduct problems effectively, there is consensus that parenting and parent-child interaction need to be targeted along with direct child work. Through research, this has led the field to focus on parenting skills and behaviors that establish healthy outcomes. Other factors are certainly at play in the development of the child, such as biological and genetic factors, other environment effects (e.g., neighborhoods and schools), and socio-economic status. Nevertheless, parenting behaviors are the most easily assessed and influenced through intervention especially for the consideration of prevention for those children already at risk for problematic behaviors.

Knowledge Gaps

There is an overwhelming plethora of studies on the effects of parenting behaviors on the development of children. Recently, research has gone one of two ways: towards specific treatment effectiveness studies focusing on whether a certain model works (e.g. Kazdin, Bass, Siegel, & Thomas, 1989; Klein et al., 2011; Miller & Prinz, 2003), or towards increasing our knowledge of mediating and moderating factors of child development alongside parent-child interaction patterns (e.g. Belsky & Pluess, 2009; Helwig, 2006; Shaw, Gilliom, Ingoldsby, & Nagin, 2003). These studies are extremely important both to the advancement of the field and to the implementation of treatments that do stem the tide of cascade effects toward negative outcomes. Most current research, however, targets a minimally diverse population and extreme severity of diagnosis and symptoms while being less interested in moderators of these pathways especially in regard to reduced severity (D. R. Powell, 2013). Few studies test developmental models of such "spreading effects" with designs that control for concurrent associations among characteristics and their stabilities to evaluate developmental cascades with all of the

foregoing features. That is, the developmental literature normally fails to disentangle direction and specificity of effects or control for co-varying and stability effects when parsing out specific parental behaviors, and it often fails to institute appropriate or meaningful exogenous controls to isolate unique effects; as a result, developmental findings are often more suggestive than determinative (Bornstein, Hahn, & Suwalsky, 2013).

It is also important to take into account risk factors that may increase the above prevalence and prevention of the same risk factors to facilitate development of positive CBO. In the late 1990's Kaiser Permanente and the Center for Disease Control (CDC) ran the famous study on adverse childhood experiences (ACE) (Felitti et al., 1998). The goal was to outline environmental and relational aspects of development that impact mental health and physical outcomes in adulthood. The ACE studies focus on ten elements that are especially pertinent to parenting and child development. Six of the ten questions deal directly with parenting interactions with their children. These six specifically targeted areas are parental emotional sensitivity and interest in the child (feeling loved), minimum caretaking skills, physical or emotional abuse or punishment, and parental separation.

The past and current research has substantially added to this base of knowledge of child development linked to parenting behaviors. Yet, there is a need to increase and expand our knowledge of specific parenting behaviors to a more diverse population. The ACE study draws its conclusions from a primarily white, middle class, volunteer population. In Felitti's original study, approximately 75% of the sample is white and has at least some college education (Felitti et al., 1998). This illustrates the need for

expanding our understanding of time-sensitive pathways to a more diverse population, both economically and ethnically.

Focus on prevention of negative mental health outcomes has also been increasingly present in the field and is particularly relevant to this study. The majority of studies, however, include clinically engaged samples or samples representing higher severity (Pinquart, 2017). The expansion of our knowledge of pathways to a more inclusive population and one with reduced severity is even more important for preventative goals. Investigating pathways that lead to positive behaviors and prevent negative outcomes will necessarily include reduced severity as well as effective parenting behaviors that might not be demonstrable and are usually not of interest in treatment efficacy studies (Möller, 2011).

Finally, moderators are rarely investigated in parenting outcome studies (D. R. Powell, 2013). This is especially true within parenting behaviors themselves and regarding at which time they are most effective at prevention of negative outcomes and increase of positive. With the increase in size of the population targeted, however, many moderators cannot be accounted or controlled for. Yet, primary parenting targets can demonstrate the moderation they have on each other, thus displaying where parenting interventions may reap the most fruit.

Therefore, this study will take into account the need for more investigation into moderators, disentangling the direction and specificity of effects for expanding our understanding of pathways to a more diverse population towards the prevention of risk, adversity, and negative outcomes. For example, such an investigation into moderation could display that behavioral interventions are most effective only if there is first

established a reduction in the parent's level of stress. Then, being able to do this in a time-sensitive manner—indicating when improvement or deterioration of a parenting behavior is most impactful on the other behaviors and on the outcome—provides additional insight into moderating paths towards prevention and treatment.

Theoretical Framework

This analysis looks at behaviors from Albert Bandura's Social Learning Theory (Bandura, 1977, 1986, 1997) within a developmental frame. Bandura's theory developed out of behaviorism with an emphasis on mediational cognitive processes as well as reciprocal determinism in explaining the way humans learn actions from the environment, that learning is a social act. This expansion of behavioral theory is especially important for the parental teaching models that are effective for child socialized behavior and treatment (e.g. Kazdin, 2005). That the child will learn vicariously and that the environment will affect the child's behavior beyond solely a reinforcement schedule is an essential tenet of this present study (Eisenberg, Damon, & Lerner, 2006). The parent-child relationship is the context in which the socialization of behaviors takes place and it is this context that affects cognitions about the meaning of these parental behaviors for the child (Grusec, Danyliuk, Kil, & O'Neill, 2017). With this, the child's capacities to behave appropriately in the social world emerge from positive experiences in close relationships within the family (Hartup, 1989).

From a developmental perspective, this study is interested in helping to define the developmental pathway, identifying risks and protective factors and contextual elements at play (Masten & Cicchetti, 2010). As developmental in perspective, this study responds to the fact that correlations change as the child progresses and how the CPB may change

in effect over time. The prospect of future studies being able to analyze the changes in pathways during adolescence and compare and contrast them with the pathways present in childhood—and so make treatment more age specific and more effective—are also of interest. Additionally, the developmental approach is appropriate as CPB were developed with much consideration given to Diana Baumrind's parenting styles (Baumrind, 1966, 1996; Maccoby & Martin, 1983; Steinberg et al., 1994). This study does not employ the specific parenting styles themselves. However, the elements that make up her four parenting styles, namely responsive and demanding, are taken as a starting point for reduction of behaviors and skills to the CPB. The CPB are parent-initiated behaviors towards the child that a long history of research has demonstrated as central to the development of appropriate behaviors in children for the best outcome. Baumrind's theoretical tradition gives us a most useful body of research from which to identify these types of behaviors.

The Core Parenting Behaviors (CPB) that this study investigates are the results of an analysis of the behaviors essential to Baumrind's principle interaction types that lead to the development of her parenting typology. The elements that Baumrind uses to determine her parenting typology are demandingness and responsiveness. Two CPB involved in demandingness are Behavioral Management and Communication and Problem Solving. The two CPB related to Responsiveness are Parenting Stress and Positive Parent-Child Relationship. A review of effective treatment and research further validate these CPB. Social Learning Theory is also present due to the focus not solely on strictly behavioral interactions in the CPB, but also relational behaviors and attitudes. Similarly, this study incorporates elements of transactional processes into the analysis

and study of CPB beyond direct behavioral learning and into this study's theoretical development and discussion.

Research Questions

Taking into account the need for more detailed knowledge on the direction and specificity of effects and additional insight into moderating paths towards prevention and treatment, the study will investigate parenting behaviors as the most impactful on childhood outcomes. Furthermore, to help in the above endeavor and to parse out these behaviors and their impacts, the study will investigate CPB and their longitudinal effect on Child Behavioral Outcomes (CBO) in a diverse nation-wide sample. Four factors make up the CPB: Problem Solving and Communication (PSC), Behavioral Management (BM), Parent-Child Relationship quality (PCR), and Parenting Stress in childrearing (PAS). The aim of the current study is to examine the pathways of CPB to CBO. The purpose is two-fold: expanding the current knowledge of precise pathways to a more diverse population and identifying the times at which certain CPB are more effective in preventing negative outcomes.

More specifically, the first aim is to identify that the CPB correlate to CBO in a non-clinical, less-severely symptomatic, and ethnically diverse sample and that there will be a positive relation. Secondly, it is expected that several CPB serve as moderators of the pathways of other CPB on CBO and on their development through time. Following this, this study anticipates that the earlier the increase in CPB, the greater the effect on CBO. Finally, though the sample is not a clinical sample, the possible effects of past treatment cannot be negated *a priori*. Therefore, the analysis takes into account those

parents who sought treatment in the past and compare them to those without any history of treatment.

Those parent-child dyads that have treatment exposure are expected to have stronger CPB-CBO correlations and present different moderating CPB on other CPB-CBO correlations. The process will be to analyze immediate relations to CBO at year 9 and then progress to more distal relations and then investigate possible moderation and mediation pathways. Taking the above into consideration, the following questions are asked:

RQ1. Do PAS, PSC, BM, and PCR at year five show significant pathways to CBO at year 9 while controlling for CBO at year 5?

H1.1: PAS will have a significant direct effect on CBO at year 9.

H1.2: PSC will have a significant direct effect on CBO at year 9.

H1.3: BM will have a significant direct effect on CBO at year 9.

H1.4: PCR will have a significant direct effect on CBO at year 9.

RQ2. In the treatment exposure group will PSC, PCR, PAS, BM effects on CBO at year nine be of a greater magnitude than those of the non-treatment exposure group?

H2.1: PAS will have a significant direct effect on CBO at year 9 of greater magnitude than the non-treatment exposure group.

H2.2: PSC will have a significant direct effect on CBO at year 9 of greater magnitude than the non-treatment exposure group.

H2.3: PCR will have a significant direct effect on CBO at year 9 of greater magnitude than the non-treatment exposure group.

$H2.4_{0:}$ BM will not have a significant direct effect on CBO at year 9 in the treatment exposure group.

$H2.4_{A:}$ BM will still have a significant direct effect on CBO at year 9 in the non-treatment exposure group.

The following questions will be asked concerning the full sample, the treatment exposure group, and the non-treatment exposure group.

RQ3. Will PAS at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5?

H3: PAS from year 3 will have a significant direct effect on CBO in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

RQ4. Will the effect of PAS at year 3 on CBO at year 9 be significantly mediated by PSC at year 5?

H4: PSC at year 5 will mediate the effect of PAS at year 3 on CBO at year 9.

RQ5. Will the effect of PAS at year 3 on CBO at year 9 be significantly mediated by PCR at year 5?

H5: PCR at year 5 will mediate the effect of PAS at year 3 on CBO at year 9.

RQ6. Will the effect of PAS at year 3 on CBO at year 9 be significantly mediated by BM at year 5?

H6: BM at year 5 will mediate the effect of PAS at year 3 on CBO at year 9.

RQ7. Will PSC at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5?

H7: PSC from year 3 will have a significant direct effect on CBO in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

RQ8. Will the effect of PSC at year 3 on CBO at year 9 be significantly mediated by PAS at year 5?

H8: PAS at year 5 will mediate the effect of PSC at year 3 on CBO at year 9.

RQ9. Will the effect of PSC at year 3 on CBO at year 9 be significantly mediated by BM at year 5?

H9: BM at year 5 will mediate the effect of PSC at year 3 on CBO at year 9.

RQ10. Will the effect of PSC at year 3 on CBO at year 9 be significantly mediated by PCR at year 5?

H10: PCR at year 5 will mediate the effect of PSC at year 3 on CBO at year 9.

RQ11. Will BM at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5?

H11: BM from year 3 will have a significant direct effect on CBO in addition to the effects at year 5.

RQ12. Will the effect of BM at year 3 on CBO at year 9 be significantly mediated by PCR at year 5?

H12: PCR at year 5 will mediate the effect of BM at year 3 on CBO at year 9.

RQ13. Will PCR at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5?

H13: PCR from year 3 will have a significant direct effect on CBO in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

RQ14. Will the effect of PCR at year 3 on CBO at year 9 be significantly mediated by PSC at year 5?

H14: PCR at year 3 will be significantly mediated by PSC at year 5.

RQ15. Will the effect of PCR at year 3 on CBO at year 9 be significantly mediated by PAS at year 5?

H15: PCR at year 3 will be significantly mediated by PAS at year 5.

RQ16. Will the effect of PCR at year 3 on CBO at year 9 be significantly mediated by BM at year 5?

H16: PCR at year 3 will be significantly mediated by BM at year 5.

RQ17. Will PCR, BM, PAS, or PSC from year 1 have significant effects in addition to the significant effects of CBO from years 3 and 5?

$H17.1_0$: PCR at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

$H17.2_0$: PAS at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

$H17.3_0$: PSC at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

H17.4$_0$: BM at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

RQ18. Will the moderation of PSC on PCR at year five have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5?

H18: The moderation of PSC on PCR at year five will have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5?

RQ19. Will the moderation of PAS on PCR at year five have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5?

H19: The moderation of PAS on PCR at year five will have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5?

RQ20. Will the moderation of PSC on PAS at year five have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5?

H20: The moderation of PSC on PAS at year five will have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5?

Implications

Primarily, this study could influence the ability for practice-focused research to generalize more credibly the previous gained knowledge to a more diverse population. It

looks to expand the knowledge of both risk factors and preventative factors within the child's system to a more representative population. Secondly, it may be able to shed light onto how the experience of treatment affects the pathways of parenting behaviors to outcomes as an important factor in prevention. This study also provides new information with a more complex and complete investigation of the Fragile Families and Child Wellbeing Study (FFCWS) sample that previous research using the sample has not yet done.

Additionally, this study could have implications for the empirically based target skill sets for parent-child interactions before the child transitions to full adolescence (Mclaughlin, 2016). Children at the end of the study period in this present analysis are at the edge of drastic change and this study will identify what processes are most preventative of CP before children enter a more individually focused period of their lives. This is especially important, as any deficits or dysfunctions in childhood may become crystalized patterns prejudicing healthy development through adolescence (Fontaine, Yang, Dodge, Pettit, & Bates, 2009). Additionally, it could produce a benchmark for further adolescent studies as types of behaviors, difficulties, and pathways are different between childhood and adolescence.

This investigation into child behavioral socialization and development is founded on the hope that it will shed light onto developmental pathway so that it will be useful to developers of manualized interventions. Thus, it could also supply valuable information for the practicing psychotherapist, the intervention developer, and the understanding of the interplay of aspects within this realm of parenting skills. By accessing a non-clinical sample with less intervention-specific theory-base, it keeps us in contact with the

inductive evidence (Hunsberger, 2007) of our field in the hopes of facilitating research to practice translation and continuity. This is important for the advancement of current empirical interventions, the application of specific elements of these interventions as most effective, and the continued development of evidence based interventions. It looks not at a specific theoretical mechanism, but rather the targeted intervention areas, and could assist as a guide to interventions for more effective future development, implementation, and structure (McHugh & Barlow, 2010).

Summary

With nearly 6 million children and 20 million adolescents facing mental health issues, prevention in addition to treatment is a necessity. Preventative measures will be able to avoid initial incidence at younger ages, and thus decrease the continuity of problematic behaviors through the child's development. This type of prevention requires identifying the parenting behaviors that most effectively reduce negative outcomes. The majority of these children and parents are not in treatment before these problems arise and this creates a disparity between the clinical trials and the applicability to prevention. For this reason a non-clinical study is required as well as a more diverse one to expand our understanding of time-sensitive and behavior-specific pathways to a more general population. Moderators and mediators of the parenting behaviors have not always received the most attention, yet they will be able to display where intervention and prevention may reap the most fruit. Finally, to strengthen our ability to enhance prevention, it is necessary to know at what time these parenting behaviors most affect outcome. This study will respond to the need for analysis of mediators and moderators and the time-effectiveness of behaviors. It will expand our knowledge to a more

representative population in the United States in order to add to the current preventive efforts for negative behavioral outcomes and conduct problems especially for the very young. This study does this while making use of Social Learning Theory with a developmental frame.

Methodology

The current study will use secondary data constructed and collected by Princeton University's Center for Research on Child Wellbeing and Center for Health and Wellbeing, the Columbia Population Research Center and the National Center for Children and Families at Columbia University. The current Principal Investigators are Sara McLanahan at Princeton University and Irwin Garfinkel at Columbia University. Current co-investigators and research partners include Janet Currie and Dan Notterman at Princeton University and Jeanne Brooks-Gunn, Ron Mincy, and Jane Waldfogel at Columbia University. The FFCWS is a data set of almost 5,000 children born in U.S. cities between 1998 and 2000 originally collected to identify conditions and relationships of unmarried parents and how their children fare. The main cause for lack of response rates is attrition through the years. Following Little's test for data missingness and analysis of patterns, imputation will be used for single responses that are missing.

This study investigates a longitudinal non-clinical sample of families to enhance the evidence-base for effective treatment and so to improve quality, parsimony and efficiency, and applicability; as well as a way to test effects in a non-clinical and more diverse sample. With the particular sample chosen, the study will be able to expand current and past research and follow parenting behaviors through the growth of the child. It reviews the impact of CPB on childhood outcomes for several purposes. The first is

what kind of correlation these skills have with behaviors in a non-clinical sample when behaviors skew towards the average rather than skew towards more severe (as in a clinical sample). The second is to discover where the focus of treatment should be regarding these CPB and how they moderate each other's effect for the improvement of effective parenting.

This present study will use Structural Equation Modeling to establish pathways and interactions of the CPB. Initially, data will be analyzed for assumptions in SPSS v.22 and then exported to Version 3.1.3 of the R system for statistical computing (R Development Core Team, 2014) using Rstudio IDE for both a Confirmatory Factor Analysis followed by a Full Model SEM with multiple group comparisons between treatment exposed and non-treatment exposed families. This study takes these common elements and analyses both their moderating paths and their individual effect on child behavioral outcomes in order to achieve better efficacy in these treatments with pre-adolescents. It looks to illustrate which intervention strategies will encourage positive and reduce negative child outcome, as well as, how this is different for those who have not experienced treatment. These core targets include parental problem solving and communication skills, behavioral management, positive regard, and parental stress (Sharma & Sargent, 2015; Sturmey & Hersen, 2012; Weisz & Kazdin, 2010).

Key Terms

The following are major terms used throughout this study. Here their conceptual meaning is briefly outlines. Chapter 3 presents specific operational definitions.

Core Parenting Behaviors

Core Parenting Behaviors (CPB) are those behaviors in a parent that treatments tend to focus on, that have the most data for influencing later child behaviors, and that have the most effect on child behaviors. As such, they are the behaviors that increase the likelihood that children develop behaviors according to social norms. CPB are those behaviors that fall into parental problem solving and communication skills, behavioral management skills, parent's positive outlook on the child, and responsiveness skills.

Problem Solving and Communication

Problem Solving and Communication (PSC) are characterized by the parent's ability to resolve conflicts, communicate appropriately and coherently, and avoid resorting to conflictual behaviors or aggressive tactics. These include being fair and willing to compromise, communicating about the child's needs, not hitting or slapping when angry, as well as similar behaviors.

Behavioral Management

Behavioral Management (BM) is the collective of parenting behaviors that display effective discipline without resorting to coercion or violence. These are characterized by the parent's ability to guide the child toward socialized behaviors in a socially appropriate way and in a way that respects the child. BM includes behaviors such as spanking and shouting (detrimental tactics), time-out (appropriate tactics), and how responsive the child is to these tactics (shouts and screams, throws tantrums, etc.).

Parent-child Relationship

The Parent-Child Relationship (PCR) includes behaviors such as giving positive regard and attention to the child, the time to the child, and positive affirmation. PCR is characterized by the availability, responsiveness, cohesion in the family that takes into account a nurturing and positive interaction between the parent and child.

Parenting Stress

Parenting Stress (PAS) is the spectrum of cognitions and experiences affecting the parent-child interaction. PAS measures the stance of the parent towards childrearing and is exemplified by how the parent engages positively with the demands of childrearing and other life demands. PAS includes how the parent views taking care of the child, financial stress, and the impact the child has on the parent's life. The operationalization of Parenting Stress was competed such that as the value of PAS increases, reported stress decreases.

Child Behavioral Outcome

Child Behavioral Outcome (CBO) is the measure of how socialized the child's behaviors are. These behaviors are rated from multiple sources, namely, the child, the parent, and a third party. CBO is characterized by the child's ability to engage effectively with others and includes behaviors such as helpfulness and empathy as well as aggression, oppositional, and rule breaking behaviors. The operationalization of CBO5 was conducted such that as its value increased so does the measure of negative behaviors. CBO9 was operationalized conversely, with increases in value associated with increases in socialized behaviors. This was done primarily as CBO5 was considered a control variable for negative behaviors.

Treatment Exposure Group

The Treatment Exposure Group is the subpart of the sample that has engaged in any personal counseling in the years before waves 3, 5, and 9 of the FFCWS survey.

Chapter Two: Literature Review

Child Behavioral Health Outcomes

In our concern for child well-being and positive development, behaviors are a major point of focus as they are the practical element for developing a taxonomy of disorder and treatment and, accordingly, for developing an understanding of pathways to behavioral outcomes (Achenbach & Rescorla, 2006). Behaviors in general are classified as appropriate or expected dependent upon how they respect and are adapted to the rights of others and societal norms. As the child develops, behaviors are socialized appropriately or problematically according to norms and rights. The measurement of these child behavioral outcomes (CBO) can be divided into "socialized behaviors" and problem behaviors or more typically, "conduct problems" (CP). Conduct Problems are characterized as negative externalizing behaviors that include opposition or non-compliance, delinquency, aggression, impulsive and inattentive behaviors, tantrums, and acting-out (Fossum, Handegård, Adolfsen, Vis, & Wynn, 2016; Kaminski et al., 2008). CP that directly violate the rights of others or major societal norms manifest the symptoms of serious disruptive behavior disorders (DBD), particularly Conduct Disorder and Antisocial Personality Disorder, of the current Diagnostic and Statistical Manual (DSM-5). Less severe CP still manifest poor control and a lack of regulation on the part of the individual by these societal norms and rights such as in Attention Deficit Hyperactivity Disorder (ADHD), Intermittent Explosive Disorder (IED), and Oppositional Defiant Disorder (ODD) or other more behaviorally specific disruptive disorders (e.g., kleptomania or pyromania).

Opposed to CP, appropriate behavioral outcomes are measured by the child or individual being able to control and manage emotion and behavior in a way that allows for socially expected behaviors that respect others' rights. For example, a child may be excited and still put on his seat belt. These socialized behaviors are conceptualized as the opposite of conduct problems in that they manifest this self-control and regulation of the individual by the rights of others and social norms. CP, from this point of view, are learned maladaptations to the social environment. This avoids any confounding with diagnostic anti-social criteria and marks the outcomes from a distinctly strengths based perspective. Additionally, to mark behaviors that are accepted socially—those developmentally appropriate—simply as "socialized" behaviors rather than as prosocial indicates that socialized behaviors are not necessarily motivated for some end. That is, they are not necessarily for the good of society, but rather simply socially normed as expected. The elements of hyperactive, angry, aggressive, egotistical, oppositional behaviors (i.e., CP) on one hand and, on the other, socially integrated, calm, prosocial, and cooperative behaviors (SB) are the CBO that follow from the socialization process through development.

The prevalence of CP even in early to middle childhood is of great concern: for children age 2-8, prevalence of a mental, behavioral, or developmental disorder is at 15.4% (Perou et al., 2013; Bitsko et al., 2016). For children and young adolescents ages 8-13, the prevalence of CP is 13.1%. Other reports on the prevalence of any DBD show roughly 6% with a range of 5-14% (Merikangas, Nakamura, & Kessler, 2009). In the United States, 46.3% of adolescents ages 13-18 will have experienced some sort of

mental disorder during their early life. Furthermore, 21.4% of adolescents experience a disorder in a debilitating and severe way (Merikangas et al., 2010).

For the 8-13 year old age group, ADHD is the highest single diagnosis at 8.6% according to the Center for Disease Control and Prevention (*National Survey of Children's Health*, 2016). ADHD is a major risk factor for later adolescent DBD, early-onset CP, alcohol and substance use, and other health risks. The risk associated with ADHD is due to the high comorbidity rate with ODD type behaviors, which have been shown to be a precursor to CD (Frick, 2012; Frick & Morris, 2004; Murray & Farrington, 2010; Taylor, Chadwick, Heptinstall, & Danckaerts, 1996). Children with ADHD display increased negative behaviors and refusal of compliance which, in turn, generates more negative interactions from parents (Barret & Ollendick, 2004). Despite possible construct overlap and correlation in past studies on this developmental trajectory (namely: Mordre, Groholt, Kjelsberg, Sandstad, & Myhre, 2011; Rowe, Costello, Angold, Copeland, & Maughan, 2010), the similarity in externalizing presentation suggests a psychopathological commonality to ADHD, ODD, and CD (Ghosh & Sinha, 2012). Affecting the rates of DBD is that 4–6% of preschool children already display CP. This prevalence of CP even reaches rates of 35% for lower income families (Egger & Angold, 2006; Webster-Stratton & Hammond, 1998). Children with these difficulties will experience increased academic, behavioral, social, and adaptive difficulties (Mash & Barkley, 2006).

All disruptive behavior disorders have a high rate of comorbidity and lifelong effects such as increased risk of chronic physical health, epilepsy, asthma, and diabetes (Biederman et al., 2008; Frick, 2012; Guevara, Mandell, Rostain, Zhao, & Hadley, 2003).

This is especially true for those younger children who display CP. Children (both boys and girls) who have a high rate of disruptive behaviors do not successfully learn socialized behavior and are at risk in adolescence and adulthood for antisocial and criminal behaviors (Hann & Borek, 2001; Keenan, Loeber, & Green, 1999; Kratzer & Hodgins, 1997; Pajer, 1998). This rate of incidence and its increased risks shows the importance of addressing variables in influencing these outcomes, both by reducing risk and increasing positive development.

The strong continuity of CP from childhood to adolescence to adulthood with generational transmission indicates an important parental effect and social learning element to the etiology of negative CBO (Mash & Barkley, 2006). Parental interactions that affect social learning and development of children are central to the reduction and prevention of CP especially in early and middle childhood. Additionally, the prevalence at early and middle childhood demand increased research on the most powerful parenting skill sets that prevent CP from developing at an early age.

Treatment for Behavioral Outcomes

To counteract this prevalence, recent applications of behavioral interventions have shown an increasing sensitivity to developing skills and competencies in both the child and his or her social environment, while also minimizing adverse outcomes through the use of maintenance and prevention strategies (Mash & Barkley, 2006; Webster-stratton, Reid, & Hammond, 2010). By looking at such treatment, this study validates the CPB and illustrates the importance of the present research model. Treatments that utilize combined direct child intervention and parental skill intervention approaches, integrating therapy types and settings, have the most empirical support. These multicomponent approaches

(usually composites of behavioral, cognitive-behavioral, and family system orientations) respond to evidence from the multifaceted evolution of CP among youth (McCart & Sheidow, 2017). The common targets of these treatments give evidence-in-practice to the factors of CPB that this study identifies from Baumrind's developmental work.

Diverse programs have been instituted that achieve effective outcomes using a combined approach (Mash & Barkley, 2006; Sexton & Alexander, 2002; Weisz & Kazdin, 2010). The Patterson program from the Oregon Social Learning Center teaches parents defining, tracking, positive reinforcement, appropriate monitoring and supervision, and problem solving. In this program, 30% of treatment is dedicated to parental relationship issues (Forgatch & Patterson, 2010). Functional Family Therapy is a program that focuses on negative behaviors as a relational issue, incorporating skills training, communication, conflict resolution, and cognitive-behavioral strategies for improved family functioning. Multisystemic Therapy also targets the family as the core of the intervention and takes into account other environments (Henggeler et al., 1999; Henggler & Schaeffer, 2010). These effective treatments require the active involvement of child and parent in a composite model.

Another such treatment model, which targets pre-adolescent children, was developed by Kazdin originally in 1996 and then revised in 2005 (Kazdin, 1996, 2005a). Kazdin's use of a multimodal approach has been successful with pre-adolescent children. It incorporates a cognitive-behavioral model (Problem Solving Skills Training; PSST) with a behavioral parent-training approach (Parent Management Training: PMT). This combined treatment is more effective than either of them alone and with outcomes of treatment from more severe cases meeting the outcomes of less severe cases (Weisz &

Kazdin, 2010). In other words, it reduces occurrences of CP regardless of previous severity.

The prevalence of CP presents an ecology of pathology and the problem does not remain solely within the treated individual who carries a diagnosis. Rather, CP is taking place in and maintained by the family or system and the family holds a primary role in the development and maintenance of CP (Barret & Ollendick, 2004; Sexton & Alexander, 2002) (Webster-Stratton et al., 2010). How the family environment affects child outcome is the major area of intervention in psychotherapeutic treatment especially for early child development and pre-adolescent child behavioral difficulties. These above models identify parenting influence and behaviors as a key part of treatment. They demonstrate in their effectiveness that intervening with these parenting behaviors is a consistent and effective predictor of CBO.

Since parenting behaviors primarily dictate the family environment, it is on parenting behaviors that research must focus. These diverse, but similar, treatment models mentioned above point to a possible consolidation of gains into a model of core parenting skillsets for maximum benefit in treatment and especially prevention. Research into this has begun but is insufficient for our national population. The current research will endeavor to increase the knowledge base available about parenting behaviors' effect on CBO. It will establish specific behaviors as common elements—the CPB—that can be measured across time. By doing this, it hopes to enhance effective treatment and better detail the pathways towards positive CBO development.

Adverse Childhood Experiences

As mentioned earlier, the ACE study gives remarkable insight into important risk factors, which can be operationalized towards preventing development of negative CBO. The ACE studies focus on ten elements that are especially pertinent to parenting and child development. The ACE measurement of adversity leading to multiple long-term negative outcomes can also be seen as risk factors with the greatest risk factors for negative CBO being abuse and neglect. In a cascade of events, they negatively impact physical and mental health, behavioral and developmental outcomes, and early drug use (Bellis, Lowey, Leckenby, Hughes, & Harrison, 2014; Dube et al., 2003; Hilt, 2015; Marie-Mitchell & O'Connor, 2013). They also show effects in later parental and adult relationships (Pitzer, Fingerman, & Lefkowitz, 2011). These risk factors are crucial to the developmental pathways of CBO such that as the number of items experienced increases, so does the negative impact (Felitti et al., 1998). With three or more items experienced by age five, CBO are negatively affected even four years later at age nine with increased internalizing and externalizing symptoms, incidence of ADHD, and other CP without significant gender differences (Hunt, Slack, Berger, & Slack, 2017). Indirectly, the ACEs affect CBO through parental transmission, in that parents who experience these in childhood will have increased parental stress and so more often will transmit these ACEs to their children (Steele et al., 2016).

There are effective treatments even for those children who have experienced 4+ ACE measures and they include a parental element (Ghosh Ippen, Harris, Van Horn, & Lieberman, 2011). Yet it is not sufficient simply to reduce and/or treat abuse and neglect (Finkelhor, Shattuck, Turner, & Hamby, 2015) because of stigma involved and legal

issues surrounding it. Reporting on current or past abuse and neglect is skewed by underreporting due to social desirability, and more importantly, due to the mandate on the part of the interviewer to report ongoing abuse and duty to warn. These create an inherent difficulty in measuring and targeting abuse/neglect directly. Therefore, the goal should be to *prevent* risk factors from occurring at the outset to reduce treatment need and adverse outcomes. An early focus on prevention by strengthening parenting skills, especially in families at high risk of abuse/neglect, will have the biggest impact on reducing adverse outcomes. Targeting parental skills and factors as a means of prevention is less threatening, more likely to correctly assess, and a more effective mode of treatment (Chartier, Walker, & Naimark, 2010). These are what the current research will target in order to extend the knowledge available for effective preventative models.

Additionally, an increase in study of diverse populations that tend to be at higher risk is lacking. The majority of ACE studies investigate white, privileged, higher SES, and volunteer populations. At times, it is assumed that correlations apply across the board, but this is not always the case. Hunt et al. (Hunt et al., 2017) display that racial and education variables have a higher significance than gender. The studies that fully implement these differences are lacking. The current research will extend ACE studies by looking at these connections among a large, low SES, ethnically diverse population.

Finally, central to the ACE studies are the elements of abuse, neglect, dysfunction, and affection (Finkelhor et al., 2015; Hilt, 2015). The CPB that look at increasing effective behavioral management, problem solving, and the parent-child relationship and affection will be elements that reduce the risk of ACEs. Thus, prevention would be effected through interventions for problem solving skills that do not resort to

physical or emotional violence towards the partner or child, parenting skills that maintain a safe and secure environment for the child, skills that allow communication that is constructive and supportive without emotional manipulation or threats of violence, and a positive regard towards the child so that he or she feels accepted, valued, and understood.

The current research will, therefore, consolidate the effective pathways from diverse treatment models and extend the ACE studies across a more diverse population and one that is not often found in clinical settings in order to increase the knowledge base of developmental pathways towards CBO and reduce risks in order to prevent negative outcomes.

Parenting Behaviors in Developmental Research

Parenting behaviors are central to reducing and preventing CP, and the risks associated with negative outcomes from the ACE are greatly moderated by the family environment created by the parent-child interactions. Parenting behaviors have long been a focus of treatment concerning CBO and reference nurturance behaviors, monitoring behaviors, and discipline behaviors. The ways that parenting behaviors have been investigated tend to revolve around the importance of discipline and the importance of emotional and affectionate availability. These two elements have been valued in different ways during the history of psychology, but remain the fulcrum for research and intervention regarding the effect of parenting on CBO.

Generally psychodynamic and psychoanalytic theories primarily have focused on the early mother-child relationship (especially as repressive) as a paradigm for later relationships (Guntrip, 1977; Kernberg, 2004; Lerner & Damon, 2006). These theories center on how the created unconscious desires or patterns are being played out usually

later in adulthood (though not so much in adolescence), and therefore the following research has been more attuned to nurturance behaviors. Such theories tend to base negative developmental patterns within a child on the parents' nurturance and emotionally sensitive behaviors. Object-relations theorists, for example, posited that a calm, responsive mother allows her child to internalize splitting instead of projecting it (Greenberg, 2013). These types of theories established that a dysfunctional primary mother-child relationship dynamic was the root of negative processes within interpersonal relationships, the concept of self and ego, and conflict in general (Deal, 2007, Mohd, 2004). The later social-relational studies in psychoanalytical research were impacted by Bandura's revolutionary integration (Lerner, 2006). Ego- and process-focused theories reacted against behaviorism—even those that were modified to take into account social elements— of Skinner and Watson, exemplified by Benjamin Spock (1946). Spock emphasized reducing parenting power assertion or coercive discipline to the minimum while increasing the freedom for the child to grow and learn. This trend away from behaviorism underlined the importance of the early relationship and its qualities of care and of acceptance.

On the other hand, behavioral theories focused on structures of reinforcement towards the learning of behaviors, and therefore researched discipline behaviors (O'Donohue & Krasner, 1995). Behavioral theorists were interested in the development of behaviors. They did take into account parental interactions, but primarily as a method of reinforcement, not as a variable in its own right. Their focus on discipline regimes and training of children was precisely what the process-oriented theories reacted against. The behaviorist model, however, did not produce a model sufficient on its own for a full

explanation of CBO (Lerner & Damon, 2006). Rather, the approach to reinforcement structures is helpful to teach behavior but not sufficient in explaining the relationship of reinforcement to healthy developmental pathways.

Appropriately, the subsequent and more modulated and integrationist behavioral theories have been better at this task. To this end, Albert Bandura revitalized social learning perspectives by drawing it further away from pure behaviorist theories. He insisted that behavioral learning was a social process meaning it was not solely a reinforcement procedure but also an informational transmission. He used cognitive processes as foundational for his theory such that observation and modeling became key to socialization and transgenerational learning (Lerner, 2006). Vicarious learning, attention, and retention were mediated by cognitive processes and not directly dependent on reinforcement (Bandura, 1977, 1986).

The importance of modelling and socializing transmissions gave renewed impetus to psychoanalytic theories to incorporate and revitalize the original relationship elements of its theory. John Bowlby's research on attachment was an example of this change. Attachment does not focus on specific behaviors as much as one specific quality of the relationship between a child and caregiver that is involved with making the child safe, secure and protected. This research reinvented the elements of early psychoanalysis as measurable variables and showed that there was a link between discipline and nurturance. The caring quality of the primary mother-child relationship Bowlby describes as either accepting, rejecting, and confused/resistant is the indicator of three types of attachment (Ainsworth, 1978; Bowlby, 1969). Later the third category was divided into inconsistent and disorganized to produce the well-known four types. These four types lead to differing

distress strategies in children and are associated with later socialized behavioral outcomes. These have withstood decades of research and present a powerful explanation of CBO, although they do not incorporate all parenting behaviors that play a role in socialization. It marks out that there are essential elements in the development of CBO that depend upon the style of interactions that the parent engages with the child—a point that the current study will work from and further develop for a wider and non-clinical population.

The change in approach by Bowlby also revitalized the move away from solely treating the child with CP. Accordingly, in the late 1960's there was a shift away from juvenile detention and forms of treatment solely targeting the child. This was especially due to the efforts of Bandura's work (Kaminski et al., 2008). Since the 1970's there has been an increasing body of evidence on adolescent and developmental psychotherapy; this is a continuously studied area, especially in the area of parent-child interactions (Baumrind, 1967; Maccoby & Martin, 1983). The sources of impact on child development and learning of socialized behaviors encompass parenting style, genetics, child temperament, and the wider context and environment in which the child and family lives. These behaviors are learned in context, vicariously or directly, with a degree of reciprocal determination that is not free from biology: Social learning theory from a developmental perspective. The socialization of behaviors is now more often seen as taking place within the developing biopsychosocial child (Bandura, 1986).

Along with this developmental perspective, socialization theories offer ample arguments regarding links between positive parenting and children's prosocial behavior (Hastings, Miller, & Troxel, 2015). However, they all share the basic assumption that

children's capacities to behave positively in the social world emerge from positive experiences in close relationships within the family (Hartup, 1989). To highlight the importance of the parental interaction, Diana Baumrind (Baumrind, 1971) argued from a foundation of principles derived from behavioral, psychodynamic, and developmental theorists such as Lev Vygotsky, Eleanor Maccoby, and John Martin (Maccoby & Martin, 1983; Vygotsky, 1962). Additionally, Kurt Lewin's field theory and his experiments on leadership as autocratic, democratic, and laissez-faire (Lewin, 1939; Lewin, Lippitt, & White, 1939) were important in the development towards parenting style research. Baumrind, with a more developmental mindset, wanted parenting behavior to mark out a pathway for development of CBO. The resulting responsive/demanding parenting interaction create 4 styles of parenting: authoritative, authoritarian, permissive, neglectful (Steinberg et al., 1994).

The current study uses this framework in finding the central parenting behaviors that best predict pathways towards positive gains in CBO through early and middle childhood. The quadratic responds to the multifaceted development dynamic of CBO, by relying not solely on the modelling of certain behaviors, but also the immediate and larger context of the modelling (Siegler, DeLoache, Eisenberg, Saffran, & Leaper, 2014); not solely on behavioral reinforcement, but also on parental care. As a widely researched framework, it also promises to offer a viable model for consolidation and extension of effective pathways towards risk prevention.

Parenting Behaviors

Baumrind's solution finds some discipline good and some bad, that caring is necessary but not sufficient and can even be detrimental if unmeasured. The use of

parenting styles as a structure for measurement of the behaviors leading to CBO avoids extremes of authoritarian or permissive parenting and advances balanced childrearing practices (Baumrind, 1996). There is some disagreement, however, about the application of the authoritative style across cultures, which is particularly pertinent to the present study. For example, in Mexican families a five factor solution might better explain effects instead of the 2 factor of Baumrind (Hernández-Guzmán, Montesinos, Bermúdez-Ornelas, Freyre, & Alcázar-Olán, 2013). That study, however, demonstrates a shift from defining the parenting skills from an interaction point of view to one of emotional affect. In the Hernández-Guzmán et al. study, Rejection, Punishment, Support, Responsiveness, and Warmth are indicated as the major factors of positive and negative affective expression.

Nevertheless, only limited evidence contributes to how contextual factors affect effective parenting across various ethnic groups. At the same time, research indicates that these four elements are applicable effectively to parental behaviors across cultures. For instance, the Parental Acceptance-Rejection Questionnaire (PARQ) establishes invariance of variables indicating acceptance and rejection and is reliable for use internationally and in the United States (Artemis & Touloumakos, 2014; Khaleque & Rohner, 2002; Rohner & Ali, 2016). The Parental Behavior Scale assesses observable parental behavior and consists of scales that target positive parenting, stimulating child's autonomy, and behavioral management techniques (Manrique Millones, Ghesquière, & Van Leeuwen, 2014; Van Leeuwen & Vermulst, 2004). To this point, this study looks to continue analyzing how the nurturance and discipline behaviors as core parenting

behaviors influence outcomes in a more culturally and ethnically inclusive sample within the United States. The Fragile Family data allows us to pursue this end (Table 3).

Nurturance and Discipline. The parenting typology offers a sufficient structure to look at parenting behaviors while they can also be divided into nurturance behaviors, monitoring behaviors, and discipline behaviors. The use of the general nurturance/discipline separation of behaviors also offers us a way to structure parenting behaviors in their relationship to CBO while taking into account the extensive heritage of Baumrind's work. This offers an integration of the varying schools of psychological theories into the elements of acceptance/involvement or nurturance behaviors (support, warmth, responsiveness, reciprocity, communication, focus on child's needs, affection, love, care comfort, support or nurturance or the opposite of these) and strictness/supervision or discipline behaviors (regulation, high demands, compliance, attentiveness, monitoring, discipline, psychological control, or the opposite) according to Khaleque (2013).

Responsive parenting includes behaviors that encourage joint engagement and reciprocity in dyadic interactions (e.g., Bakeman & Adamson, 1984; Trevarthen, 1988). Responsiveness has been researched through nurturance behaviors such as warmth, reciprocity, communication, focus on the child's needs, love, affection, care, and support. It includes behaviors such as positive affective input (e.g., warmth, smiling) and the absence of highly negative behaviors (e.g., harsh voice tone, physical intrusiveness) that communicate affectively the parent's interest and acceptance (e.g., Darling & Steinberg, 1993).

Hand-in-hand with responsiveness goes demandingness. Demandingness characterizes the parent who has norms the child is expected to live up to and adhere to. The role of control and power-assertion in Authoritative parenting has been often seen with distrust as demonstrated by the negative effects of coercive and abusive behaviors. For example, Gallarin and Alonso-Arbio (2012) conceptualize demandingness as coercion/imposition as opposed to responsiveness as acceptance/involvement. However, the positive or negative role of demandingness is dependent upon the appropriateness of the expectation and its implementation or the methods used. When balanced with responsiveness, demandingness is an element of a parenting style that promotes positive CBO (Baumrind, 2012; Fletcher, Steinberg, & Sellers, 1999; Lerner & Steinberg, 2004). The core of demandingness is that socialized behaviors are expected with appropriate and contingent mandates surrounding certain activities (wear a seatbelt, stay close to parent in the store, don't steal…) that demonstrate the rights and norms of social interaction. These or other less consequential behaviors (putting a toy down, ceasing to bang on the floor, etc.) can be inconsistently, coercively, or analytically reinforced or demanded. In such a case, demandingness gives way to discipline meted out without consideration of the circumstances or the child's age and development, or simply aimed at obedience to the parent's rules.

An implicit difficulty with demandingness is that it is easier to arrive to a consensus on how to be responsive than on how to implement expectations and consequences (Fletcher et al., 1999). The lack of a clear definition of demandingness also limits our understanding of mechanisms underlying the association between disciplining and outcomes. For example, it is clear authoritative parenting is the best, but not whether

demandingness is helpful when the spectrum of parenting behaviors meeting the qualifications of authoritative parenting is not fully present.

Demandingness—along with responsiveness—is often studied within clearly defined parenting dyads divided into the four styles. This creates an additional difficulty in analyzing whether these skills on their own are able to impact behavioral outcomes in families that lie between clearly marked groups. Furthermore, research suggests parenting styles characterized by very high levels of control are not always associated with negative outcomes for adolescents (Hoskins, 2014). The subcategories of parenting behavior need to be separately analyzed—a gap that this study looks to fill by investigating core parenting behaviors and their separate influences on CBO.

There are two additional complications with the information available. First, how do the effects of discipline apply to families at risk, especially single parent families of a more diverse population? Second, although research has demonstrated that parental disciplining leads children to develop less antisocial behavior (Bosmans, Braet, Beyers, Van Leeuwen, & Van Vlierberghe, 2011), it is important to investigate whether these effects hold out in less extreme behavioral outcomes. The present study will be able to accommodate these gaps in our current research by looking at a non-clinical sample of single-parent families.

Unresponsive/ rejecting: Emotional Maltreatment. On the opposite side of the spectrum from nurturance is not discipline, but neglect. The lack of nurturance has the aspects of indifference and rejection as the absence of responsiveness is not neutral. It encompasses emotional and physical unavailability, withdrawing attention, care, or encouragement. The negative effects of this absence include insecure attachments,

psychopathic traits, and the callous-unemotional traits of Conduct Disorder (Bisby, Kimonis, & Goulter, 2017; Eshel, Daelmans, Melo, & Martines, 2006; Gao, Raine, Chan, Venables, & Mednick, 2010). Emotional neglect, an absence of parental responsiveness, has been found to be even more important than restrictive, coercive discipline in the etiology of externalizing behaviors (Baumrind, 1996). Additionally, neglect and emotional maltreatment has been primarily linked to internalizing symptoms (Ackard, Neumark-Sztainer, Story, & Perry, 2006), but also externalizing CP (Dube et al., 2003; Rothbaum & Weisz, 1994).

A child experiences indifference or neglect when they perceive that a parent, for example, pays no attention to the child, appears too busy to answer questions, or pays no attention when the child asks for help. A child experiences rejection when the parent "sees me as a big nuisance," "seems to dislike me," and "makes me feel unloved if I misbehave"(Artemis & Touloumakos, 2014; Rohner & Ali, 2016). Further examples of emotionally harmful behaviors include developmentally inappropriate overprotection, restrictions on exploration, unrealistic expectations, or using a child in order to fulfil a parent's psychological needs. Such parental behaviors are a failure to accept a child's individuality and psychological boundaries or to distinguish the needs of a child from those of the parents. They eliminate any possibility for the parent to be responsive or communicate warmth (Iwaniec, Larkin, & McSherry, 2007).

Unresponsive and rejecting behaviors range from negative attitudes towards the child, lack of interest in the child, and failure to attend events the child takes part in; to more serious and harmful interactions such as telling a child that it is unwanted, exposure to confusing or traumatic events and interactions, even killing a pet or destroying a

favorite toy as a punishment for not doing what was asked (Iwaniec et al., 2007). When this lack of acceptance becomes the schema for interactions in the home environment through repeated and sustained actions, it becomes emotional maltreatment. While trauma of any sort is detrimental to CBO (Bernstein et al., 1994; Bernstein, Stein, Newcomb, & Walker, 2003), a number of research projects have highlighted the potential negative short-term and long-term consequences of emotional maltreatment specifically for later functioning (Glaser & Prior, 2002; Iwaniec, Herbert, & Sluckin, 2002). However, these tend not to measure the effects of too much bad coupled with too little good (Bradley & Corwyn, 2013). This present study is able to use discipline and nurturance measuring both increases and decreases in negative and positive parenting practices.

Finally, it is not difficult to see that such early emotional maltreatment leads to later CP in youth, adolescence, and adulthood. Effects include withdrawal, academic underachievement, and emotional instability; social adjustment and interpersonal problems; difficulties in forming secure attachment, damaging self-esteem, and self-harming behavior; and even stunted physical growth and inhibiting the development of interpersonal skills necessary for adequate performance outside of the family environment. The child identifies with these experiences and this internalization of sustained negative criticism increases incidence of CP (Iwaniec et al., 2007; Morimoto & Sharma, 2004). The additional harm of the consistent lack of responsiveness is that reactive treatment to address the negative experience has been shown to be ineffective and actually harmful.

Any effective treatment must be preventative and focus on the responsiveness of parent-child interactions (Gagné & Melançon, 2013). Remediating a behavior problem, even if successful, may not affect progression to long-term consequences if a cascade has already initiated (Bornstein et al., 2013). This is where the present study picks up in the preventative focus of the model while expanding the ACEs across a wider population.

Laxity & over-reactivity. As the negative attribute of demandingness, laxity is the absence of demands or demands that give way and over-reactivity is punishment unrelated to—or out of proportion to—expectations and rules. Laxity is exemplified when a parent threatens what the parent knows they will not do, does not set limits, or ends up doing themselves what they asked the child to do. It often has a high response to negative emotions such that the parent backs down when the child gets upset or is sorry and lax parents end up resorting to bribing, coaxing, or begging the child to behave (Arnold, O'Leary, Wolff, & Acker, 1993).

Over-reactivity in parenting is discipline meted out without taking into consideration the context or a consequence appropriate to the infraction. This is often displayed when parents use raised voices, long lectures, or even harsh discipline. The over-reactive parent will get picky when upset or stressed and gets visibly angry or frustrated when there is a problem (Arnold et al., 1993). Parental over-reactivity is affected by stress and negative affective attitude towards the child. It changes how they view daily hassles with increases in their expectations for misbehavior and the harshness of punishment (Maccoby, 1992). Harsh discipline often relies on foul language, name-calling and insults, slapping, grabbing, and hitting as the primary and default disciplinary interactions. These harsh and abusive reactions affect a number of CBO including later

externalizing CP and depression (Lloyd et al., 2017; Miller-Lewis et al., 2006; Murray & Farrington, 2010; Parent, McKee, & Forehand, 2016).

It is clear that physical abuse is correlated to negative CBO especially with CP development (Murray & Farrington, 2010), while parental over-reactive non-harsh discipline is understudied. Still, children exposed to less extreme forms of parental harsh discipline experience an increased risk of behavioral problems and psychiatric disorders later in life (Mackenbach et al., 2014). At the same time, laxity in parenting increases CP on both internalizing and externalizing scales (Parent et al., 2016). Both laxity and over-reactivity produce negative outcomes. The balance of discipline, warmth, interest, and communication is the key to effective parenting and positive CBO.

Monitoring. Monitoring behaviors are sometimes factored into nurturance/discipline behaviors or as a separate category. Monitoring and supervision make up an essential element of discipline behaviors due to the fact the parent needs to be aware of the child's behaviors so that appropriate corrective measures can be put in place. Monitoring is typically measured by how well the parent is aware of the child's actions, whereabouts, and whether demanded behaviors are performed outside of immediate parental supervision. The purpose of well-executed monitoring within demandingness is to promote self-regulation and planning in children (Baumrind, 1996), not control or retribution. There are, however, difficulties in measuring monitoring as it relates to parental knowledge and the child's divulging of activities and experiences (M. Kerr & Stattin, 2000). These difficulties relate to differences in the conceptualization and operationalizing of monitoring since it is not solely a parenting skill (such as tracking and supervisory efforts). Monitoring is more closely tied to children's willingness to disclose

and therefore better measured as knowledge than skill (M. Kerr, Stattin, & Burk, 2000) or even as a behavioral outcome. It is for this reason that monitoring relies on a solicitation-disclosure process where the child engages in self-monitoring through the parent and the parent responds accordingly (Hayes, Hudson, Matthews, University, & Australia, 2003; Patrick et al., 2005). In this way, it situates itself more within communication and responsiveness than as a separate skill group.

Core Parenting Behaviors

With the present study the previous knowledge is applied to a more ethnically and socio-economically diverse population, while incorporating the specific parenting factors into our model. Additionally, the majority of investigations into the correlations of parenting skills and CBO investigate those relationships with higher symptomatic expression. This study will increase our understanding of how these apply to a lower severity but more at risk population. This study will analyze the propensity for effective skills to prevent negative CBO in a large, ethnically and socioeconomically diverse, non-clinical sample.

The use of nurturance and discipline behaviors also reflects the balance Baumrind sought between psychoanalytic schools and the behavioral schools in psychology. Looking at parenting behaviors in this way outlines the dynamic of discipline and caring. It is with the division into nurturance and discipline that this study will analyze the data at hand. This will also allow the study to step away from the specific discussion on authoritative parenting towards a more general discussion on parenting behaviors. Additionally, most studies focus on authoritative parenting and not the effects of externalizing behaviors relative to other styles (Pinquart, 2017). This study will

individually track the variables that would define parenting styles and so be able to analyze externalizing behaviors in relation to all the styles' elements.

Consensus from research indicates that the optimal parent interaction for child outcome is an empathic and responsive acknowledgment of the child and the child's world along with an organized, communicated, predictable, and consistent discipline. This type of optimal interaction reduces negative mental health outcomes in general, conduct and emotional difficulties, and antisocial behaviors (Luyckx et al., 2011; Oldfield, Humphrey, & Hebron, 2016). During the continuous stream of investigation and practice into parenting and child behavioral outcomes, the wave of emphasis has changed from adolescent-parent conflict to genes to more complex viewpoints on the role of parents and the impact of genes, peers, and socio-environmental factors along with interaction effects.

These all play a role in the development of the child, however, the evidence continues to support that, in general, children have better developmental outcomes when at least one parent exhibits authoritative qualities (Lerner & Steinberg, 2004; Steinberg, 2001). The parent-child relationship is the context and force for socialization since parents are the shapers of social experience of their children and play an active role in managing it (Lerner & Steinberg, 2004). As such, when the parents are able to engage with the child with a balance of responsiveness and demandingness, children develop better behavioral outcomes. The key to helping children thrive lies in the family environment and the parenting skills that assist in constructing this environment. When the family environment is one where investment and interest are shown by the parents,

the child's development and learning is given the best advantage possible (Daelmans et al., 2015).

Parenting affects behavioral regulation in the home and the balance of nurturing and disciplining parental interaction with children creates the optimal behavioral outcome (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Steinberg, 2001). Effective parenting practices are important factors in the promotion of optimal early childhood development. This may even be the case regardless of demographics (Lamborn, Mounts, Steinberg, & Dornbusch, 1991). Specific parenting practices such as poor monitoring, permissiveness, and the lack of communication, warmth, and support are associated with CP (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2006; Keenan et al., 1999). Understandably, therefore, negative disruptions in parenting such as neglect and conflict are particularly relevant in development of aggression and covert CP, respectively (Loeber & Stouthamer-Loeber, 1986).

The specific developmental pathway, however, towards both CP and socialized behaviors (SB) within CBO is complex and multifaceted with no single category of factors displaying absolute prediction. The determining factors for the conceptualization of CP in children are varied and heterogeneous, present across multiple domains, and influence outcomes differently over time interdependently (Loeber, Burke, & Pardini, 2009; Patterson, Dishion, & Yoerger, 2000). In addition to this, the same factors at times influence outcome simultaneously with indirect and direct effects (McCart & Sheidow, 2017) such as, if over-bearing parenting increased defiance in a child, but also increased the effect of negative peer influences that increase defiance.

Through effective treatments' common targets, CPB are confirmed as significant to CBO outcome. The CPB have been shown to be essentially important through the treatments that target the elements of demandingness and responsiveness. Such treatments typically have beneficial effects (Eshel et al., 2006; Landry, Smith, & Swank, 2006). Looking at a variety of European studies, Popov demonstrates the importance of implementing parental skills interventions for the reduction of coercive behavior (Popov & Ilesanmi, 2015). Interventions for responsiveness target improvements in social, emotional, and cognitive outcomes. These effects are superior for children who are younger and for those who are on the high risk spectrum (Landry et al., 2008; Stephen Scott & O'Connor, 2012). To this purpose, a number of models have been created to ensure effective treatment. As mentioned above, Kazdin developed and researched a composite treatment of behavior problem solving training and parent training (Kazdin, 1996, 2005a). Likewise PMTO, MST, and Parent-Child Interaction Treatment (PCIT) all incorporate elements of parent-child interactions and parental management (Forgatch & Patterson, 2010) (Henggeler et al., 1999; Henggler & Schaeffer, 2010) (Mash & Barkley, 2006; Sexton & Alexander, 2002; Weisz & Kazdin, 2010).

Forms of parent management have the best responses in general (Eyberg, Nelson, & Boggs, 2008) and they focus on problem solving, discipline, positive involvement, relationship skills, and emotional regulation and have positive effects in aggression, delinquency, social competence, adaptive skills, and social skills (Bjørnebekk & Kjøbli, 2017; Harpell & Andrews, 2006; Niec, Barnett, Prewett, & Shanley, 2016; Weiss, Han, Tran, Gallop, & Ngo, 2015; Werba, Eyberg, Boggs, & Algina, 2006). Meta-analysis of treatments for CBO demonstrate both nurturance and discipline, the two major factors of

parenting behavior, are targeted, but also that there are key components behind these treatments (Kaminski et al., 2008; Kazak et al., 2010). These factors are represented, yet rarely examined. This study makes an effort to improve interventions through the longitudinal study of these elements by investigating their long-term effects and inter-correlations (Fossum et al., 2016; Kaminski et al., 2008). There are sustained long term effects from treatment; however, it seems that most fade out after three years without much information on moderators of this fading effect (van Aar, Leijten, Orobio de Castro, & Overbeek, 2017). This supports the consensus that the use of programs that target parental behaviors for ameliorating or preventing CP are most effective in reducing symptoms (Fossum et al., 2016; Johnson, Hawes, Eisenberg, Kohlhoff, & Dudeney, 2017; Kazdin & McWhinney, 2018). Programs that incorporated parenting behaviors had a larger effect size than those that did not (Kaminski et al., 2008).

The specific components identified as the most effective and common are eight, according to Kaminski et al. (2008): 1) child development knowledge and care, 2) positive interactions with child, 3)responsiveness, nurturing, and sensitivity, 4) emotional communication (relationship-building communication skills), 5) disciplinary communication (clear and appropriate directions; boundaries, expectations), 6) behavioral management, 7) promoting child´s social skills, and 8) promoting child´s academic-cognitive skills. The quality of the parental relationship is mentioned by a number of sources and research (Sharma & Sargent, 2015; Sturmey & Hersen, 2012) and other systems literature although it does not seem that the etiology of CP is moderated by inter-parental relationship quality (Burt, Wildey, & Klump, 2015).

Of these eight that Kaminski identifies, the most consistently related to larger effects in decreasing CP are increases in positive parent-child interaction and emotional communication skills. Increasing parental problem solving and promoting child's cognitive and social skills also predicted consistent decreases in CP but with smaller effects. In addition to parental problem solving, self-management and behavioral management are effective at reducing symptoms of disruptive behaviors and increasing positive outcomes (Litschge, Vaughn, & McCrea, 2009). This points us towards particular protective factors and parenting skills central to positive growth and promising development of the child.

The major components of effective treatment center, on the one hand, on nurturance through positive interactions and emotions and, on the other, on discipline through communication/problem solving and behavioral management. These, then, are the most likely to have the highest impact on CBO. Given the similarities across parent training programs, core targets can be draw out from these programs consistent with the developmental work of Baumrind and the learning theories of Bandura. These core targets or Core parenting behaviors (CPB) are Problem Solving and Communication (PSC), Behavioral Management (BM), Parent-Child Relationship (PCR), and Parenting Stress (PAS). These dimensions of responsive and demanding parenting include the elements of discipline and parenting skills along with emotional and positive interactions. Similarly, since the ACE studies show that these events shape later adult and adolescent mental health and lifespan, improvements in these core principles will benefit the child through development. To this end, responsiveness that includes communication and warmth and the demandingness that avoids harsh and emotional punishment will reduce

the likelihood that children experience these events that are detrimental to CBO. The CPB of PSC, BM, PCR, and PAS account for these elements shown to be consistently important in the development of CBO.

Problem Solving and Communication

Among these four factors, PSC is one of the most common elements in interventions. Effective parenting practices explain up to 30% of variance in the reduction of antisocial problems in boys. Also, parental problem solving accounts for 11% of the variance in effective parenting (Forgatch & DeGarmo, 2007). Accordingly, communication skills are one of the prime targets of interventions looking to advance parenting skills. It is a prerequisite skill for BM and an integral part of PCR. PSC is required for the appropriate presentation of limits, application of consequences, and distinction between affection and discipline. PSC is a targeted element in Parent-Child Interaction Therapy, Problem Solving Skills Training, The Oregon Model, The Incredible Years, Multisystemic Therapy, and Functional Family Therapy. These interventions are all termed probably efficacious for DBD and much more effective typically for children rather than adolescents (Sturmey & Hersen, 2012).

In addition to this, social-pragmatic communication deficits are associated with level of CP in children (Oliver, Barker, Mandy, Skuse, & Maughan, 2011). On one hand, this deficit as a CBO may be avoided if the parent is able to both communicate well and teach appropriate and effective communication through modelling and environmental learning of the child. An example of this is how effective and functional parental relationships assist in treatment effectiveness (Kazdin & McWhinney, 2018). On the other hand, poor problem solving and conflict resolution in the home in general is

detrimental to child developmental socialization of behaviors. Critical or negative parenting and low emotional availability may mediate this effect to a degree, but the communality between negative parenting and ineffective parental conflict management point to the fact that children will still be directly affected by sub-par abilities of a parent to problem solve, communicate, and regulate affect—along with positive parenting skills (Webster-Stratton & Hammond, 1999). Similarly, the shared environmental effects on CP increased seven times over in families with high parent-child conflict (Burt & Klump, 2014).

Appropriate communication and conflict resolution also avoid the need to resort to manipulative, indirect, or coercive communication styles, which put children at risk for CP. When the parents are able to implement effective parenting strategies, they less often resort to aversive tactics and can break the coercive cycle (Forgatch & Patterson, 2010). The importance of problem solving, communication, anger and affect regulation, are undeniable in the pathways towards CBO.

Communication skills have long been a focus of intervention and the development of CBO. Language and communication are important facets to socialized behaviors. This is displayed in how it is the perceived styles of the parents that are most useful, in other words, the communicated content and the communicated approach, how rules and expectations are communicated by more than only words. The use of words, however, is important as demonstrated in how early conversations with infants, including imitation and vocal responsivity support early language development (Landry et al., 2006). These language skills form the foundation for later effective communication. Effective communication between parent and child increases secure attachment, self-reliance,

expression, and socio-emotional competence for the child while decreasing both internalizing and externalizing symptoms for CP (Chen, Lin, & Li, 2012; Jung, 2007; Kochanska & Kim, 2014; Leibowitz, Ramos-Marcuse, & Arsenio, 2002; Luczynski & Hanley, 2013; Patrick, Snyder, Schrepferman, & Snyder, 2005).

Much empirical research shows that certain parenting behaviors are associated with specific adolescent outcomes. Less research, however, identifies these associations in younger and middle childhood with the focus not solely on parent-child communication, but the parents' ability to communicate in general. This general ability of the parent is the context within which the parent-child communication takes place. The present study looks to investigate how effective communication and problem solving influences early behavioral outcomes in the less often investigated early and middle childhood. The present study will again be able to investigate this using a more diverse and higher risk population in general.

Behavioral Management

Behavioral Management is the domain of parenting skills having to do with setting limits, effectively communicating boundaries, distinguishing present emotional states from the appropriate behavioral demands placed on the child, being consistent in discipline, and the application of negative punishment such as "time-out". These behavioral skills model and shape the child's behavior and aid in the appropriate socialization of behaviors. BM takes into consideration the elements of demandingness such as discipline and monitoring and is the prime element for most behavioral models including Applied Behavior Analysis and Social learning theory. Whether from

behavioral theories or system theories, the way parents model and manage child behavior with appropriate consequences is a relied on element for child interventions for CP.

There are two additional gaps with the information currently available. First, how do the effects of demandingness apply to families at risk, especially single parent families of a more diverse population? Second, although research has demonstrated that parental disciplining leads children to develop less antisocial behavior (Bosmans et al., 2011), it is important to investigate whether these effects hold out in less extreme behavioral outcomes. The present study will be able to accommodate these gaps in our current research by looking at a non-clinical sample of single-parent families.

Discipline is the core element of behavioral management that is usually focused on when discussing childrearing and appropriate interactions. Discipline as the appropriate presentation of limits and application of consequences is also the core of behavioral interventions and reinforcement theories. Discipline is not categorically negative or positive. When it is applied consistently (same limits/same consequences) and used contingently (contextual/responsive) it is effective and beneficial. Discipline of this sort avoids both harshness or permissiveness and uses positive strategies whenever possible (Baumrind, 1996, 2012). External supports with coherent and understanding structure are a requirement to improve child behavioral outcomes with CP. In fact, parents can act as a "surrogate frontal lobe" in the way Barkley speaks about externalizing structure for ADHD behaviors and neurological deficiencies (Barkley, 2006; Mash & Barkley, 2006). Guidelines and consequences are necessary tools in the disciplinary encounter with children to encourage maintenance and generalization of skills (Baumrind, 1996).

There is a spectrum of behaviors often included in disciplinary techniques and they all require prudence and appropriateness in application. The dimensions of discipline inventory outlines 9 groups of parenting behaviors: corporal punishment, deprivation of privileges, diversion, explain/teach, ignore misbehavior, penalty tasks and restorative behavior, psychological aggression, reward, and monitoring (Straus & Fauchier, 2007).These outline the general ways that a parent may interact when confronting a behavior. There is a hierarchy to these behaviors in that some are to be used more often than others and some very sparingly.

Spanking as physical discipline has been one of the most highly contested areas of research and the variance is usually dependent on how the construct is measured and culturally embedded. Within physical discipline, mild to moderate spanking is very open to varying interpretations (Fréchette, Zoratti, & Romano, 2015). Excluding mild to moderate spanking, physical discipline in general is shown to have negative consequences in terms of CBO such as increased aggressive CP. Children who experience physical discipline are up to twice as likely to have emotional and behavioral issues (Gershoff, 2002; Piché, Huỳnh, Clément, & Durrant, 2017; Sonya Scott, Lewsey, Thompson, & Wilson, 2014). Accordingly, when physical discipline is avoided as a practice, children tend to experience reduced externalizing CP (Kerr, Lopez, Olson, & Sameroff, 2004).

Discipline in general finds its pitfalls and extremes in inconsistency, inflexibility, and the use of high power tactics. High power behaviors are an element very closely linked to coercive confronting behaviors and tactics and can be experienced as hostility and aggression: father/mother “hits me, even when I do not deserve it,” “punishes me

severely when she is angry," and "says many unkind things to me" (Artemis & Touloumakos, 2014). Such behaviors often include physical discipline but not always. High power disciplinary behaviors are punitive in nature and out of proportion to the incident or used when discipline is already detached from the context or perceived as ineffective. High power tactics communicate the norms or importance of the situation, but fail in contingency. This type of discipline focuses on compliance to the adult and, thus, falls back on coercive tactics, whereas, lower power behaviors, in fact, favor increased discipline effectiveness and parent-child relationship (Van Leeuwen, Fauchier, & Straus, 2012). The true failure in high power discipline is that the confrontation becomes more about forcing a child to comply than about socialization. Demonstrated by the fact effectiveness in reducing externalizing behaviors of their adolescent is influenced by parental motivations for using physical discipline (Hoskins, 2014). This current study will be able to elucidate further these correlations by means of investigating both the effects of positive responsiveness parallel with physical discipline.

Beyond the use of high power tactics, inconsistency and inflexibility or rigidity are characteristics of parental management that are related to development of CP (Capaldi, Chamberlain, & Patterson, 1997). They introduce discipline that is not responsive to the context and often based on the whims and emotional state of the parent. Inconsistent and inflexible discipline behaviors are also ineffective behavioral management techniques and they introduce an escalating cycle of coercive interactions (Chamberlain, Reid, Ray, Capaldi, & Fisher, 1997). This is in accord with the findings of Rothbaum and Weisz (1994) that show higher levels of parental control—especially when they became coercive—are related to a diminished behavioral control in children.

The same is true when parents constrain children's psychological and emotional experiences.

Parents who have difficulties in PSC will also encounter difficulties with appropriate BM due to disruption in the management of their affect and their authoritative role. It confounds the communication to the child because it is no longer simply a behavioral requirement. The behaviors of parents who are not able to effectively manage the child's behaviors tend toward coercion or lax permissiveness and the resulting coercive processes (Dishion & Patterson, 2005; Snyder et al., 2008). Coercive tactics from parents arrest expected socialization and increase difficulties adjusting for children (Smith et al., 2014). When harsh discipline is decreased and positive strategies such as ignoring, logical consequences, redirecting, monitoring, and teaching problem solving are increased, appropriate socialization is positively affected (Menting, Orobio de Castro, & Matthys, 2013). Both harsh and lax discipline as well as limited monitoring and supervision are parenting skills that have been linked to increased negative behaviors, especially overt problem behaviors. Appropriate discipline with the required monitoring to implement it consistently is the key element of BM included in the treatments that train parents.

Behavioral management behaviors include the parent's ability to implement contingent positive reinforcement negative consequences based solely on the topography of the child's misbehavior as a way to reduce reliance on coercive methods and offer the parent a road map and security when engaging with challenging child behaviors. This is in contrast to parents who need to resort to corporal or emotional punishment to force the child to act in a certain way. This forcing eliminates the necessity for the child to

independently engage in the socialized behavior and consequently to never learn it or—more importantly—internalize it.

Parent-Child Relationship

PCR and PAS are two emotive-relational skill indices within nurturance. Certainly, social learning takes place through the PCR and PAS interactions with the child. More specifically, however, PCR takes into account positive attention and involvement, child directed play, and emotional availability. These elements are linked to both the two previous skills as well as outcomes and appropriate socialization (Mash & Barkley, 2006). Teaching parents how to engage in these positive interactions and emotional communication skills focused on improving quality of relationship has determined superior outcomes for interventions (Kaminski et al., 2008). Additionally, the relationship quality when perceived by the child as positive is able to reduce the severity of symptoms (Booker, Ollendick, Dunsmore, & Greene, 2016). From a relational-emotional point of view, a warm, nurturing relationship is a necessary foundation for establishing effective limit setting and consistency in discipline, which will lead to lasting change in the behaviors of both parent and child (Burke, Loeber, & Birmaher, 2002; Hupp, Reitman, Forde, Shriver, & Lou Kelley, 2008).

Before the parent can express positive affection, there must be a relationship: involvement is a prerequisite for affection. The child's understanding of this affection depends more closely on the parent's reaction to—and ability to share—negative emotions rather than on the parent's response to positive emotion. This is essential for parenting in the early stages especially as parenting becomes more proximal as children grow (Johnson et al., 2017).

On the other side of the equation, a lack of parental involvement, less parental acceptance of the child, and low emotive responsivity mediates and increases conduct problem outcomes (Webster-Stratton & Hammond, 1999). An increase in affective and relationship variables may buffer and mediate negative outcomes, but does not eliminate deficits in PSC and BM. Other characteristics of PCR such as availability, responsiveness, cohesion in the family, and emotional neglect are correlated to both internalizing and externalizing symptoms and CP (Chorpita & Barlow, 1998; Rothbaum & Weisz, 1994; Steinberg et al., 1994). PCR correlates to increases in CP in a way that is not bidirectional and that evocative gene-environment correlations do not provide a sufficient explanation (Klahr, McGue, Iacono, & Burt, 2011). Such findings indicate that PCR is a pertinent and essential element to include in CPB, keeping in mind mediational and moderating effects with other CPB indices.

This provides sufficient support for the hypothesis that the correlation between parenting practices and CP depends in part on the parent-child relationship. This has been shown to be the case for adolescence (Simons-Morton, Chen, Hand, & Haynie, 2008), yet, the correlational patterns change from childhood to adolescence. It seems that parental sensitivity influences CP in children, whereas in adolescence this direction of influence may shift (Bradley & Corwyn, 2013). This difference in correlational patterns with children may be to the extent that they rule out the relative importance of temperament variations in the development of CP (Kochanska & Kim, 2014). Beyond sensitivity, other elements such as parental engagement with child have multiple benefits even when it is measured with participation in activities similar to the child-led interactions of PCIT. Parental participation with the child in games, sports, and

homework was associated with fewer CP symptoms and reduced developmental difficulties (Tong et al., 2015).

Parenting Stress

The emotional stance of the parent affects the content and context of communication, activities spent together, and discipline. This does not wish to indicate that single mothers cannot work and endure stress while providing a warm affectionate relationship to the child. Alternatively, warmth and positive affectivity alone are not sufficient for positive outcomes, though they do buffer against some negative parenting, especially corporal punishment (Piché et al., 2017). It also seems to increase positive behaviors rather than decreasing negative. Warmth and positive affectivity may also act as a type of differential moderator on the higher control parent-child groupings (Repetti, Taylor, & Seeman, 2002).

This is in accord with the findings of Rothbaum and Weisz (1994) that show higher levels of parental control—especially when they became coercive—are related to a diminished behavioral control in children. The same is true when parents constrain children's psychological and emotional experiences (Barber, 1996). At the same time, it seems that the warmth of a parent's interactions is independently predictive of later socialization of behaviors (Repetti et al., 2002). A lack of warmth, likewise, influences a number of measures including availability, responsiveness, cohesion in the family, and emotional neglect. Research measuring these characteristics have shown that they are correlated to both internalizing (Chorpita & Barlow, 1998; Kaslow, Broth, Smith, & Collins, 2012) and externalizing symptoms (Rothbaum & Weisz, 1994; Steinberg et al., 1994). These more positive parenting styles, marked by emotional availability and

positive regard, assist with re-entry youth and with reducing CP and increasing socialized behaviors (J. Jackson, López, Klomhaus, Bath, & Milburn, 2016).

Parental stress affects the positive regard and warmth available for a parent to offer a child. Additionally, negative viewpoints of the child entering and affecting the parent's life are going to impact attitude and positive empathy. Parenting Stress is strongly related to social competence and socialization of behaviors and problem behaviors and is an important factor to consider in intervention research (Anthony et al., 2005; Maughan, 2001; Sroufe, 2003). Stress diminishes the ability to interact non-coercively, to use effective coping systems, and to "step-out" of an emotional state to supply effective BM and PSC. Hand-in-hand with stress, a negative attitude and negative emotional reactions of mother with infants plays a role in early-onset CP (Lorber & Egeland, 2017). In some cases, regardless of the quality of parenting, negative affective attitudes, such as how the mother views the daily hassles and conflicts with child, uniquely predict development of behavioral difficulties and later CP (Waller, Gardner, Dishion, Shaw, & Wilson, 2012). These effects for children already suffering from ADHD further exposes them to increased risk of negative PCR and development of CP (Danforth, Connor, & Doerfler, 2016) and increased symptom expression (Keown, 2012).

PAS is a promising pathway towards CBO as shown above. What is not known in regards to a more at-risk and inclusive population is whether they predict out outcome within a range of other parental behaviors. This needs to be tested across a wider population. The present study will be able to take these together and mark out pathways alongside positive and negative elements of demandingness and so measure the effect both alongside and in the absence of coercive behaviors. Secondly, research tends to

evaluate this as a primary pathway earlier on. The present study will be able to identify at which time in the child´s life PAS is most important in the socialization of behaviors.

Fragile Families Study Meta-Analysis

The FFCWS provides a log of articles using the dataset for research. This study reviewed the log to investigate the pertinence of this proposed study to the work already done with this dataset in order to insure no replication and that this study will introduce new information to the history of this sample. FFCWS (ffpubs.princeton.edu) records 876 works. This study searched through published articles with the available keywords of "Child well-being", "Mental Health and Stress," and "Parenting." This resulted in 437 articles that had their abstracts reviewed for relevance. A number of articles specifically focusing on spanking were removed for their specificity to that particular behavior. From these, 84 articles were selected that identified elements of the present study in their models. These 84 articles were further analyzed and resulted in 35 using child behavioral outcomes as a dependent variable. Several other articles identified behavioral outcomes as a dependent variable but the independent variable (IV) in such studies was not pertinent to this study (IVs such as television, soda consumption, and prison time). One meta-review was removed also. The results of this analysis are presented in Tables 1 and 2 with a brief conclusion and the general method of analysis that was used.

The previous research using FFCWS discussed many of the issues presented in this study (Tables 1 and 2). The study led by Keyser (Keyser, Ahn, & Unick, 2017) is the study that is closest in model and intent to this current study. It measured attachment

Table 1

Summary of Articles using Fragile Families &Child Wellbeing Data Set

Article	Conclusion	Method
James, Donnelly, Brooks-Gunn, & McLanahan, 2018	Childhood exposure to violent contexts is associated with risky adolescent health behaviors.	Regression
Kuckertz, Mitchell, & Wiggins, 2018	Bidirectional relationship between child and maternal internalizing psychopathology that is partially explained by depressed mothers' greater use of psychological aggression toward their children.	SEM
Wang & Maguire-Jack, 2018	The most common ACE was intimate partner violence (IPV), followed by child emotional abuse.	SEM
M. Jackson, Kiernan, & McLanahan, 2018	Cross-national analysis reveals a good deal of similarity between the United States and UK in patterns of family life during early childhood	SEM
Ros Pilarz & Hill, 2018	Overall, findings showed little evidence that parenting stress mediated the associations between care instability and child behavior problems among the full sample.	SEM
Jiménez, Wade, Schwartz-Soicher, Lin, & Reichman, 2018	ACEs occurring before age 5 years as well as between the ages of 5 and 9 years were associated with ADHD at age 9 years	Regression
Ma & Grogan-Kaylor, 2017	Results indicate that both maternal corporal punishment and low neighborhood collective efficacy were significantly associated with increased behavior problems.	HLM
Hunt et al., 2017	Exposure to ACEs is strongly associated with externalizing and internalizing behaviors and likelihood of ADHD diagnosis in middle childhood.	Regression
Fomby & Osborne, 2017	Family instability was consistently predictive of behavior problems for children born to mothers who were unmarried. Multipartner fertility was robustly related to self-reported delinquency and teacher-reported behavior problems among children born to mothers who were married.	Regression
R. Powell & Parish, 2017	Children of mothers with intellectual impairments had poorer behavioral and cognitive outcomes	Regression
Walters, 2018	Parental reports of animal cruelty may be more useful as indicators of delinquent involvement than child reports.	Regression
Jiménez, Wade, Lin, Morrow, & Reichman, 2016	Experiencing ACEs in early childhood was associated with below-average, teacher-reported academic and literacy skills and behavior problems in kindergarten.	Regression
C. C. Huang, Vikse, Lu, & Yi, 2015	Children's exposure to IPV at Year 1 and Year 3 had direct effects on their tendency toward delinquent behavior at Year 9. Parental involvement, child neglect, and physical punishment also had significant mediating effects	Regression
Turney & McLanahan, 2015	Externalizing problems at age 3 and attention problems at age 5, as well as externalizing and attention problems at both ages 3 and 5, are associated with poor cognitive development in middle childhood. Maternal engagement at age five does not mediate these associations.	Regression
Wiggins, Mitchell, Hyde, & Monk, 2015	Results highlight the importance of accounting for both internalizing and externalizing symptoms from an early age to understand risk for developing psychopathology and the role harsh parenting plays in influencing these trajectories.	SEM
Walters, 2015	Results indicate that dysphoria and negative maternal attitudes toward parenting are equally important in predicting offspring physical aggression.	SEM
Berger & Mclanahan, 2015	Children living in stepfather families experienced above-average levels of parental relationship quality and parenting quality.	Regression
Lucero, Barrett, & Jensen, 2015	Parenting stress was positively associated with early delinquency and school belonging was negatively associated with early delinquency.	Regression
Paat, 2011	Children who experience interparental discord have a higher disposition toward displaying antisocial behaviors.	SEM

Table 2

Summary of Articles using Fragile Families & Child Wellbeing Data Set (continued)

Article	Conclusion	Method
Yildirim & Roopnarine, 2015	For European Americans, maternal psychological aggression and hostility is directly correlated to children's externalizing behaviors. For Hispanic Americans, additionally, the link was direct between maternal physical assault and internalizing behaviors. For African Americans, maternal warmth partially mediated maternal hostility/ physical assault and externalizing behaviors. Associations between psychological aggression and both externalizing and internalizing behaviors were direct.	SEM
Font & Berger, 2015	Effects of early childhood maltreatment emerge immediately, though developmental outcomes are also affected by newly occurring maltreatment over time.	HLM and SEM
Mack & Chavez, 2014	Young motherhood and unintended births each provide distinct mechanisms for the formation of aggressive behavior in childhood.	Regression
Ros Pilarz & Hill, 2014	Long-term instability between birth and age 3, as measured in both the survey and calendar data, is associated with higher levels of externalizing behavior problems.	SEM
Goldberg & Carlson, 2014	More positive couple interactions are beneficial for children residing with both of their biological parents.	SEM
Turney, 2012	Children exposed to both chronic and intermittent maternal depression have more problem behaviors than their counterparts with never depressed mothers.	Regression
Mackenbach et al., 2014	Negative consequences are associated with widely endorsed punishment based parenting practices.	Regression
Zhang & Eamon, 2011	Aggressive parenting practices were positively related to child aggression, and partially mediated the effect of mothers' violence exposure on child aggressive behaviors.	SEM
Turney, 2011	Multipartnered fertility (MPF) is associated with a greater likelihood of depression	Regression
Craigie, Brooks-Gunn, & Waldfogel, 2012	While family structure has persistent links to early child outcomes, the effects are significantly altered by stability of the family structure over time.	Regression
C.-C. Huang, Wang, & Warrener, 2010	Domestic violence at Year 1 had a direct effect on maternal mental health at Year 3, which had direct effects on children's externalizing behavior problems at Year 5.	SEM
C.-C. Huang & Lee, 2008	Engagement activities between mothers and children were high over the first-three years and that their use of spanking was low at first but increased over time. Adolescent mothers were more likely to spank their children.	Regression
Spjeldnes & Choi, 2008	Disharmonious interparental relations predicts greater preschool child behavior problems directly and indirectly through maternal parenting factors and father contact.	SEM
Keyser et al., 2017	Insecure attachment type at age 3 has the largest increasing impact on child behavior problems from age 3 to 9. Children's cognitive ability also had an increasing impact on child behavior problems over time and the impact of parenting stress at age 3 had a decreasing impact on behavior problems from age 3 to 9.	HLM
Walters, 2014	The respective roles of a difficult temperament, maternal involvement, and externalizing behavior in a proximal chaining process may be partially responsible for the continuity that has been observed in antisocial behavior over time.	SEM
Carlson & Berger, 2013	Children living with their married biological parents are advantaged in both parental engagement and household income, while children living in other family types are less advantaged in one or both domains.	Regression

styles through years of impact on child behavior and found that insecure attachments increase CP at years 3, 5 and 9. It did not parse out, however, the parenting behaviors as this study proposes to do. The work of Huang et al. (2015) is especially pertinent to our study as it demonstrated that the negative effect of negative PSC is mediated by both PCR and BM behaviors. Additionally, Spjeldnes and Choi (2008) offer insight into BM as a moderator of effects due to BM interacting with internalizing and externalizing problems towards the development of psychopathology, similar to our neuroticism factored onto CBO.

None of the articles reviewed intend to look at our identified CPB together concomitantly through the various waves of the FFCWS. These studies, however, present sufficient background and evidence for the present study. The importance of PAS is demonstrated by several studies in that negative elements of PAS are positively correlated to increases in aggression, delinquency, and problem behaviors (Lucero et al., 2015; Mack & Chavez, 2014; Ros Pilarz & Hill, 2018; Walters, 2015). Physical discipline, the major element of how this study will measure BM has been correlated to increases in CP (C. C. Huang et al., 2015; Ma & Grogan-Kaylor, 2017; Mackenbach et al., 2014; Wiggins et al., 2015; Zhang & Eamon, 2011). PCR as involvement has also featured in some of these studies as negatively related to CP(C. C. Huang et al., 2015; Walters, 2014; Yildirim & Roopnarine, 2015). Finally PSC (as positive couple interactions, agreement and discord, and relationship aggression) has been correlated to increases in negative CBO (Goldberg & Carlson, 2014; C. C. Huang et al., 2015; Paat, 2011). Hopefully, this study will add to the base of research with this dataset and be able

to demark the types of parenting behaviors that have the most impact and the moderators and mediators thereof.

Summary

The CPB above demonstrates several areas of exploration in order to continue to advance research on child outcomes. The first is to extend the parsing out of specific CPB to CBO pathways to a non-clinical, ethnically diverse, non-volunteer sample. This will enhance both the knowledge base on parenting behaviors and on the ACE. Secondly, the field needs similarly to extend the knowledge of moderating relations between CPB within such a sample, as these may be different from more homogenous samples. Third, it is necessary to know at which time each of these CPB have the greatest effect on CBO both in regards to interventions that use these and to help in researching the potency of prevention of the negative effects of negative parenting behaviors and the ACE in general. Finally, the question of whether parents who access treatment experience a stronger correlation between CPB and CBO needs to be analyzed.

Present Study

A developmental perspective is the main theoretical stance of this study as it looks to parse out specific behaviors that contribute to pathways towards healthy development of CBOs. Additionally, however, Social Learning Theory also holds a place in the present study as it seeks to identify socialized behaviors and it recognizes these are learned in multiple ways. SLT is able to acknowledge the diverse theoretical origins in the developmental perspective while retaining a focus on behavioral outcomes. The environment created by the parents for the child is the experience from which and in which the child will learn and become socialized. In this regard, in addition to the

parenting style, effective parenting practices are important factors in the promotion of optimal early childhood development. This study aligns with the applied developmental science framework described by Lerner and Steinberg (2004) in that it takes knowledge from research and interventions towards the enrichment of their uses and this "synthesis" is a product of the focus on system influences and changes that will be the most effective in improving outcomes, not only reducing risk.

The current study, therefore, looks to describe and identify the effects of specific parenting behaviors on behavioral outcomes. There are several elements of import mentioned above. The first is applying components of some of the ACE risk factors to develop further understanding of how and when CBO develops and to increase preventative efforts. This study points to prevention as long-term remediation that obviates the initiation of negative cascades towards negative outcomes (Bornstein et al., 2013). This interest includes both the expansion of specific parenting behaviors towards a more diverse sample, and also the identification of which moments the impact of parenting behaviors have the most effect. An advantage to using the FFCWS sample is that the current final sampling year is when the child is 12 years old. This gives us a benchmark for later adolescent studies as the difference both in efficacy of intervention and types of behaviors and difficulties are categorically different between pre-adolescence and true adolescence.

Secondly, the study takes the CPB and analyses both their moderating paths and their individual effect on CBO. In this interest, moderating paths, their "spreading effect" (Bornstein et al., 2013), and also the effects of past treatment through parental treatment exposure will be identified. Though positive change in the parenting behaviors and

parent-child interaction are supposed to decrease CP and increase SB, the process towards discerning outcomes of parenting focused treatment is a dynamic process, one that needs to establish and improve targeted treatment and parent efficacy (D. R. Powell, 2013). It is interested in the behaviors and the pattern of parental interaction in these supportive and regulatory ways that is especially predictive in both clinical and non-clinical samples (Rothbaum & Weisz, 1994).

The goal of this study is to take what has been substantiated as effective skill target areas—the CPB—and produce a predictive longitudinal analysis both to show the differences these make in outcome, and to enhance the knowledge base about which ones are significant mediators or moderators of these effects. From a developmental perspective this will help define the developmental pathway, identify risks and protective factors and contextual elements at play (Achenbach & Rescorla, 2006).

Chapter Three: Methods

This chapter presents the analysis of the dataset and analytical procedures in order to answer whether the core parenting behaviors are correlated to child behavioral outcomes. This study analyzed Core Parenting Behaviors (CPB) and their longitudinal effect on Child Behavioral Outcomes (CBO) in a diverse nationwide sample. The Core Parenting Behaviors were made up of four factors: Problem Solving and Communication (PSC), Behavioral Management (BM), Parent-Child Relationship quality (PCR), and Positive Attitude towards the child and Stress involved in childrearing (PAS). More specifically, the study sought to answer: 1) what are the pathways by which parenting behaviors affect outcomes and do some of the CPB moderate others? 2) At which time are they most aptly targeted for maximum effect on behavioral outcomes? 3) How does treatment exposure affect these pathways?

This study analyzed the FFCWS dataset to enhance the evidence base for effective treatment to improve quality, parsimony and efficiency, and applicability; as well as a way to test effects of targeted parenting skills in a non-clinical sample in a quasi-experimental way. As this sample was heavily weighted with separated parents and single-parent families, this study is able to account for whether the CPB can provide some buffering from ACEs. The family structure of the sample was complex and unstable for 78% of the children in the study.

Research Questions

For the above reasons, the study investigated the pathways by which CPB can predict behavioral outcomes at the end of childhood. It sought to establish (1) whether the CPB explained CBO and (2) at which time they had the strongest correlation. Taking

these single strongest correlations from each CPB, this analysis then checked (3) for any mediating and then (4) moderating CPB on these pathways to CBO. Finally, the study wished (5) to see if the treatment exposure matters in a non-clinical sample. At each stage, non-significant pathways were eliminated for developing the most parsimonious model. To achieve these five goals, the following questions were investigated.

RQ1. Do PAS, PSC, BM, and PCR at year five show significant pathways to CBO at year 9 when controlling for CBO at year 5 (Figure 1)?

Given the importance of the four CPB as extensively discussed above, the following hypotheses in relation to the effects of CPB on CBO were proposed (Baumrind, 2012; Fletcher et al., 1999; Khaleque, 2013; Lerner & Steinberg, 2004).

H1.1 PAS will have a significant direct effect on CBO at year 9.

H1.2 PSC will have a significant direct effect on CBO at year 9.

H1.3 BM will have a significant direct effect on CBO at year 9.

H1.4 PCR will have a significant direct effect on CBO at year 9.

RQ2. In the treatment exposure group, will PSC, PCR, PAS, BM effects on CBO at year nine (Figure 1) be of a greater magnitude than those of the non-treatment exposure group?

It is expected that attendance to treatment of any sort has improved parental efficacy and interaction patterns which in turn will affect child behavioral outcomes (D. R. Powell, 2013; Rothbaum & Weisz, 1994). For this reason, this study proposes the following hypotheses in regards to the treatment exposure group.

H2.1 PAS will have a significant direct effect on CBO at year 9 of greater magnitude than the non-treatment exposure group.

H2.2 PSC will have a significant direct effect on CBO at year 9 of greater magnitude than the non-treatment exposure group.

H2.3 PCR will have a significant direct effect on CBO at year 9 of greater magnitude than the non-treatment exposure group.

H2.4 $_{0:}$ BM will not have a significant direct effect on CBO at year 9 in the treatment exposure group.

H2.5 $_{A:}$ BM will still have a significant direct effect on CBO at year 9 in the non-treatment exposure group.

The remaining questions will be asked concerning the full sample, the treatment exposure group, and the non-treatment exposure group. The four CPB even at more distal points, such as year 3, will have a direct effect on CBO at year 9 both from a process-oriented stance (Greenberg, 2013) and one of social learning (Hastings et al., 2015). With each CPB tested in the model, the study also investigates paths of mediation of effect through the diverse year 5 effects from questions RQ1 and RQ2.

RQ3. Will PAS at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5 (Figure 2)?

H3: PAS from year 3 will have a significant direct effect on CBO in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

RQ4. Will the effect of PAS at year 3 on CBO at year 9 be significantly mediated by PSC at year 5 (Figure 3)?

H4: PSC at year 5 will mediate the effect of PAS at year 3 on CBO at year 9.

RQ5. Will the effect of PAS at year 3 on CBO at year 9 be significantly mediated by PCR at year 5 (Figure 4)?

H5: PCR at year 5 will mediate the effect of PAS at year 3 on CBO at year 9.

RQ6. Will the effect of PAS at year 3 on CBO at year 9 be significantly mediated by BM at year 5 (Figure 5)?

H6: BM at year 5 will mediate the effect of PAS at year 3 on CBO at year 9 (Piché et al., 2017).

RQ7. Will PSC at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5 (Figure 6)?

H7: PSC from year 3 will have a significant direct effect on CBO in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

RQ8. Will the effect of PSC at year 3 on CBO at year 9 be significantly mediated by PAS at year 5 (Figure 7)?

H8: PAS at year 5 will mediate the effect of PSC at year 3 on CBO at year 9 (Webster-Stratton & Hammond, 1999).

RQ9. Will the effect of PSC at year 3 on CBO at year 9 be significantly mediated by BM at year 5 (Figure 8)?

H9: BM at year 5 will mediate the effect of PSC at year 3 on CBO at year 9.

RQ10. Will the effect of PSC at year 3 on CBO at year 9 be significantly mediated by PCR at year 5 (Figure 9)?

H10: PCR at year 5 will mediate the effect of PSC at year 3 on CBO at year 9 (Webster-Stratton & Hammond, 1999).

RQ11. Will BM at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5 (Figure 10)?

H11: BM from year 3 will have a significant direct effect on CBO in addition to the effects at year 5 (Gershoff, 2002; Piché et al., 2017; Sonya Scott et al., 2014).

RQ12. Will the effect of BM at year 3 on CBO at year 9 be significantly mediated by PCR at year 5 (Figure 11)?

H12: PCR at year 5 will mediate the effect of BM at year 3 on CBO at year 9 (Hoskins, 2014).

RQ13. Will PCR at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5 (Figure 12)?

H13: PCR from year 3 will have a significant direct effect on CBO in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

RQ14. Will the effect of PCR at year 3 on CBO at year 9 be significantly mediated by PSC at year 5 (Figure 13)?

H14: PCR at year 3 will be significantly mediated by PSC at year 5.

RQ15. Will the effect of PCR at year 3 on CBO at year 9 be significantly mediated by PAS at year 5 (Figure 14)?

H15: PCR at year 3 will be significantly mediated by PAS at year 5.

RQ16. Will the effect of PCR at year 3 on CBO at year 9 be significantly mediated by BM at year 5 (Figure 15)?

H16: PCR at year 3 will be significantly mediated by BM at year 5.

Despite, expecting the significance of year 3 CPB over and above the effects of year five, the significance of year 1 CPB over and above those of previous years is disputed. Though expecting, that alone they may display significant direct effects, this study recognizes the majority of the effect to most likely be auto-regressive in regards to specific variables and as such expect to be unable to reject the null hypothesis. For this reason, the following hypotheses about year 1 CPB are proposed.

RQ17. Will CPB from year 1 have significant effects in addition to the significant effects of CBO from years 3 and 5?

H17.1 $_0$: PCR at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5 (Figure 16).

H17.2 $_0$: PAS at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5 (Figure 17).

H17.3 $_0$: PSC at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5 (Figure 18).

H17.4 $_0$: BM at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5 (Figure 19).

RQ18. Will the moderation of PSC on PCR at year five have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5 (Figure 20)?

H18: The moderation of PSC on PCR at year five will have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5. This is based on the connection of communication with effective relationships and interactions with children (Burke et al., 2002; Hupp et al., 2008; Johnson et al., 2017).

RQ19. Will the moderation of PAS on PCR at year five have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5 (Figure 21)?

H19: The moderation of PAS on PCR at year five will have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5. This is expected since these two indexes are related to each other through acceptance/nurturance behaviors Khaleque (2013).

RQ20. Will the moderation of PSC on PAS at year five have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5 (Figure 22)?

H20: The moderation of PSC on PAS at year five will have a significant effect on CBO at year 9 above and beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5. This is expected due to the effect of problem solving and communication skills on the expressions of stress (e.g. Carrère & Bowie, 2012).

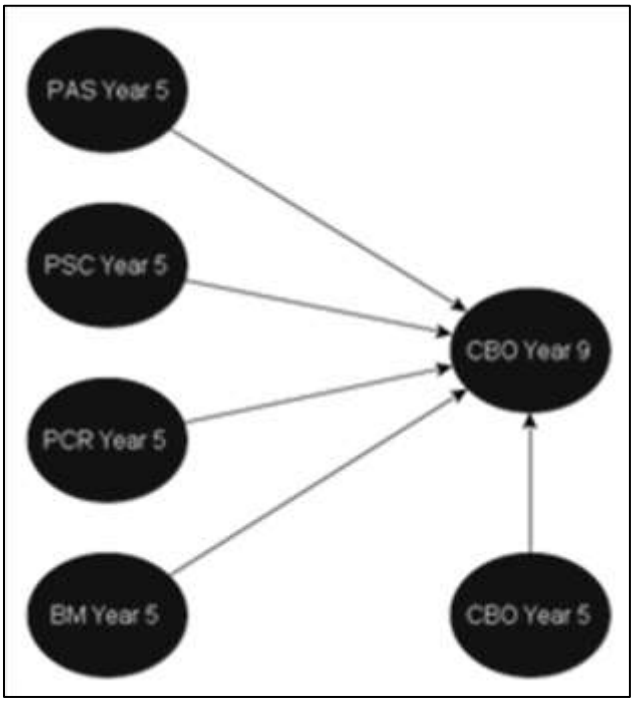

Figure 1. Pathways from CPB at year five to CBO at year 9 for RQ1 and RQ2

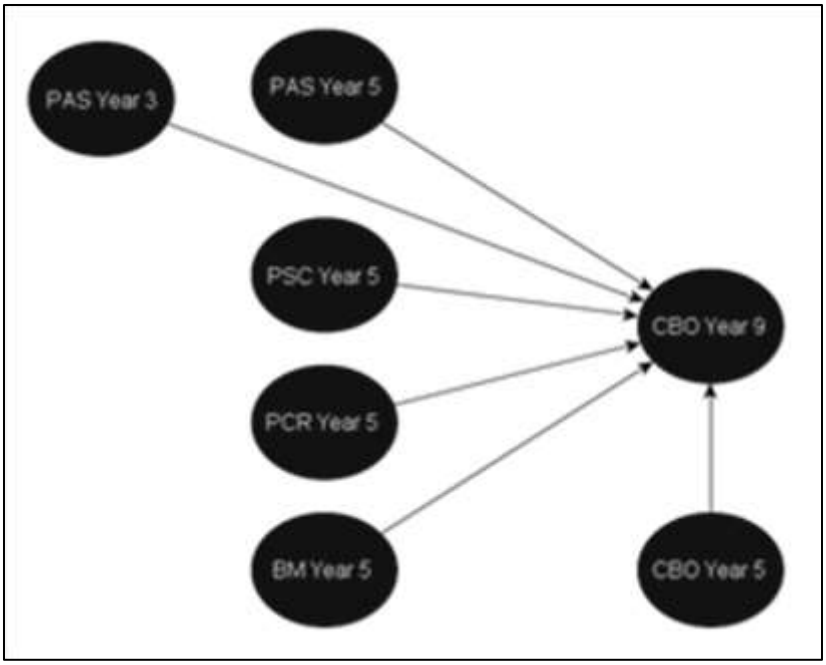

Figure 2. PAS at year 3 add to CPB at year 5 for RQ3

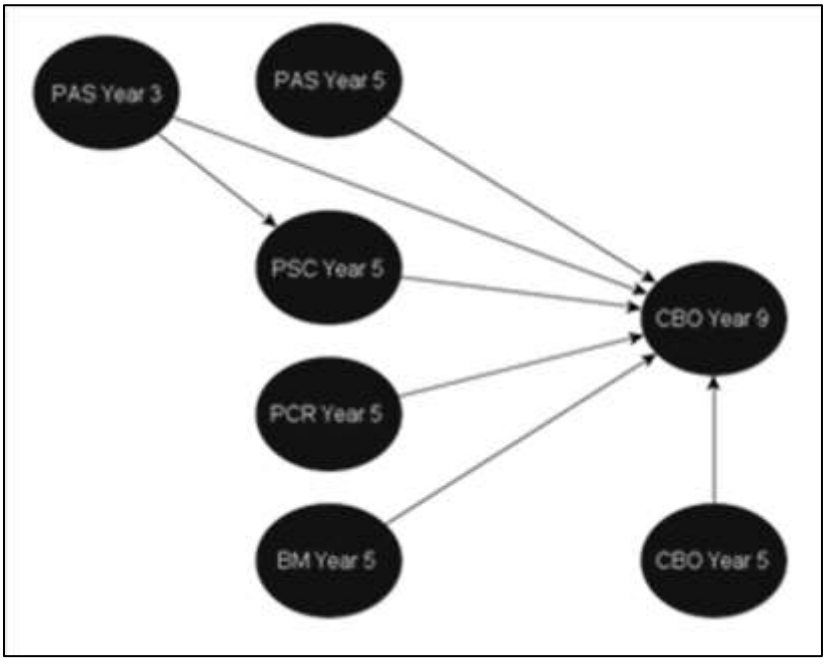

Figure 3. Mediation of PAS by PSC for RQ4

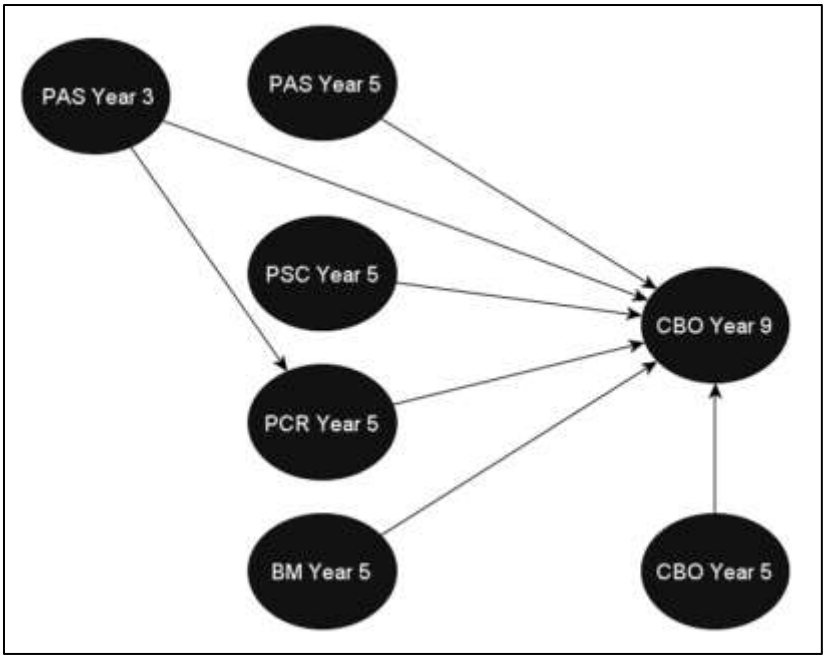

Figure 4. Mediation of PAS by PCR for RQ5

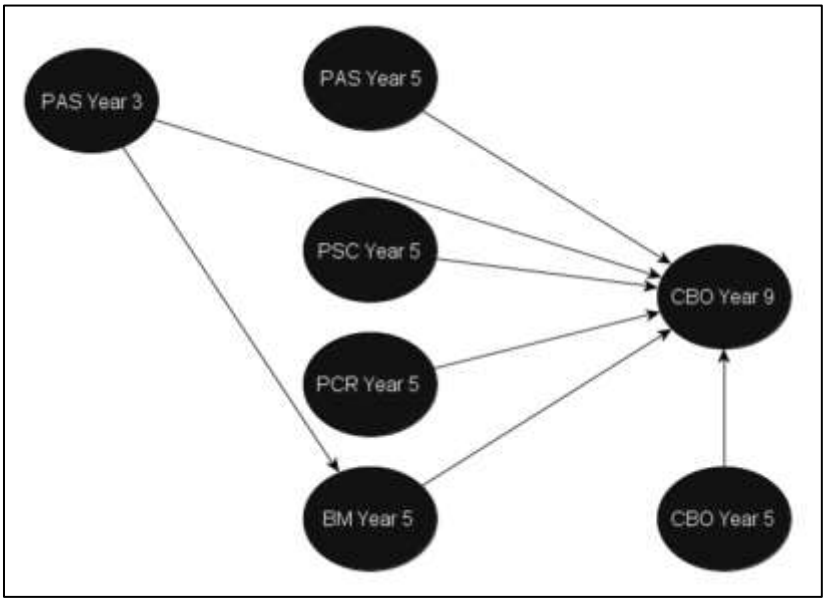

Figure 5. Mediation of PAS by BM for RQ6

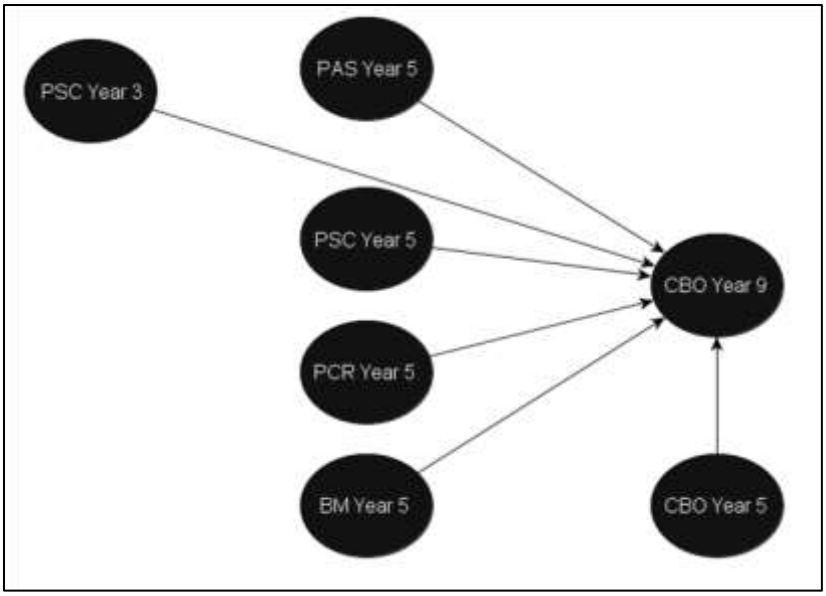

Figure 6. PSC at year 3 add to CPB at year 5 for RQ7

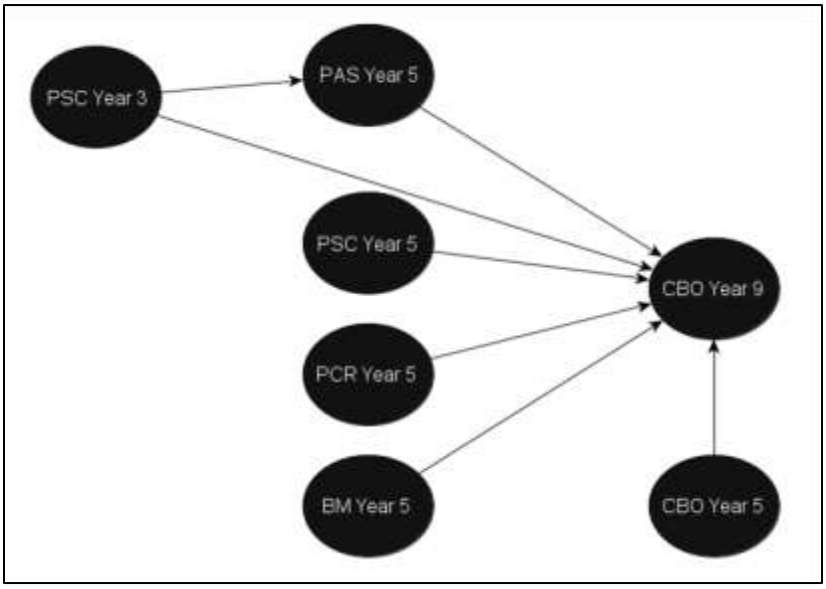

Figure 7. Mediation of PSC by PAS for RQ8

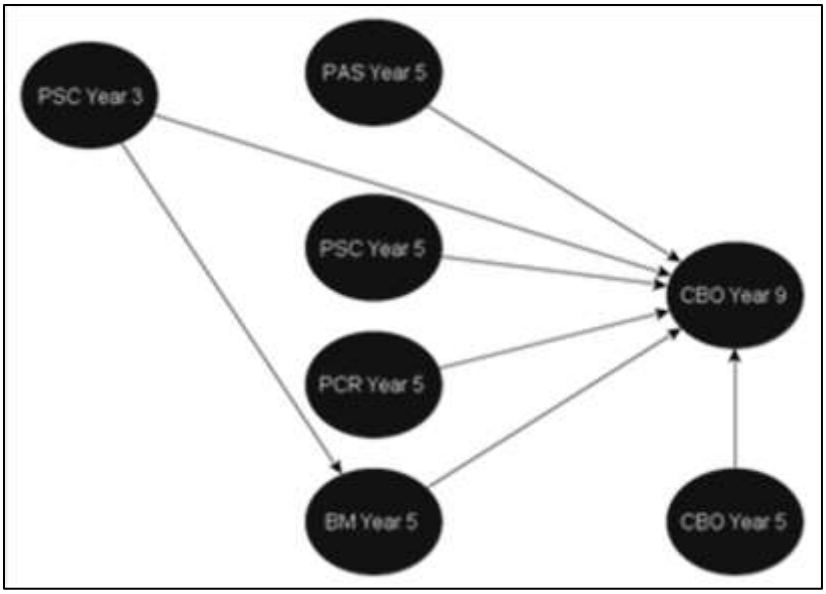

Figure 8. Mediation of PSC by BM for RQ9

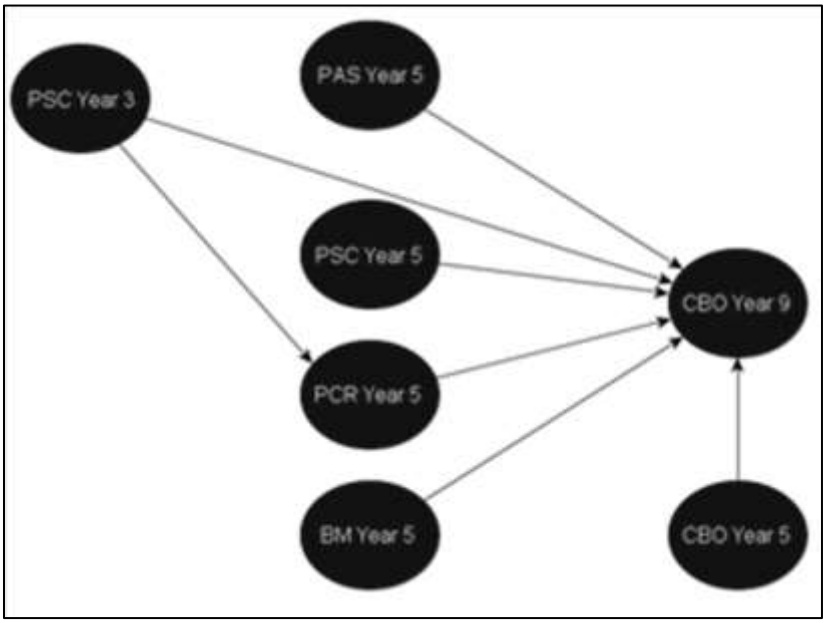

Figure 9. Mediation of PSC by PCR for RQ10

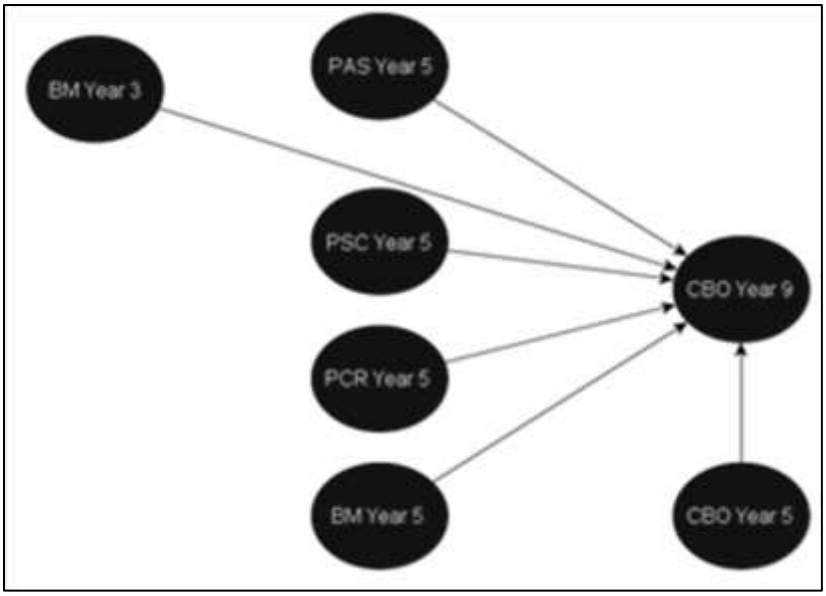

Figure 10. BM at year 3 add to CPB at year 5 for RQ11

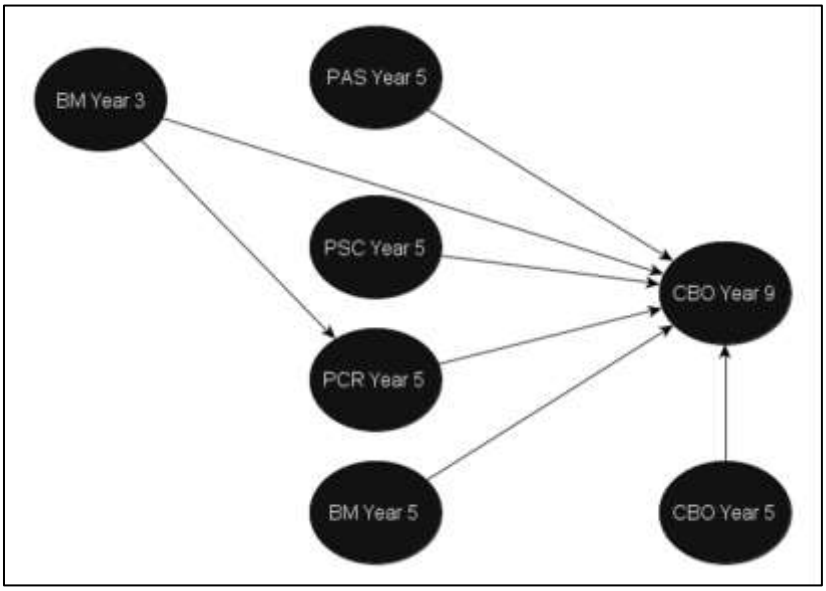

Figure 11. Mediation of BM by PCR for RQ12

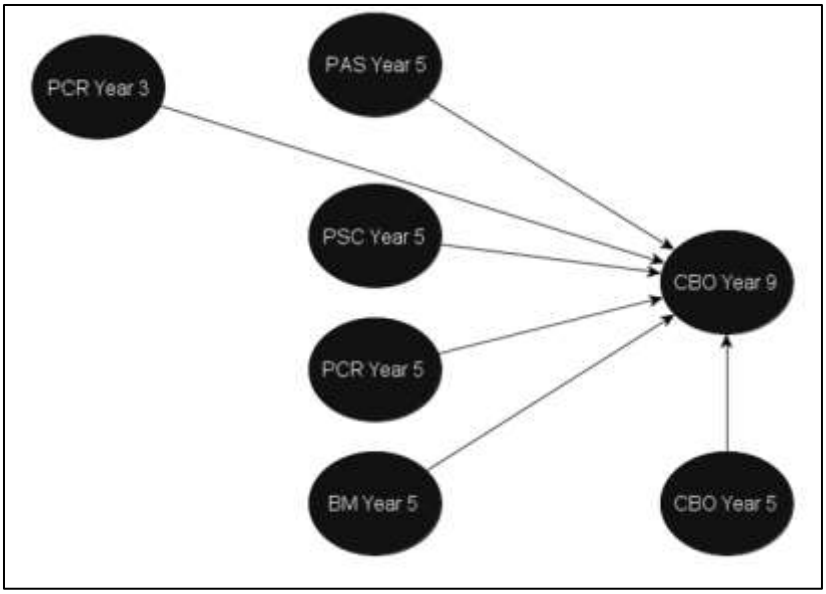

Figure 12. PCR at year 3 add to CPB at year 5 for RQ13

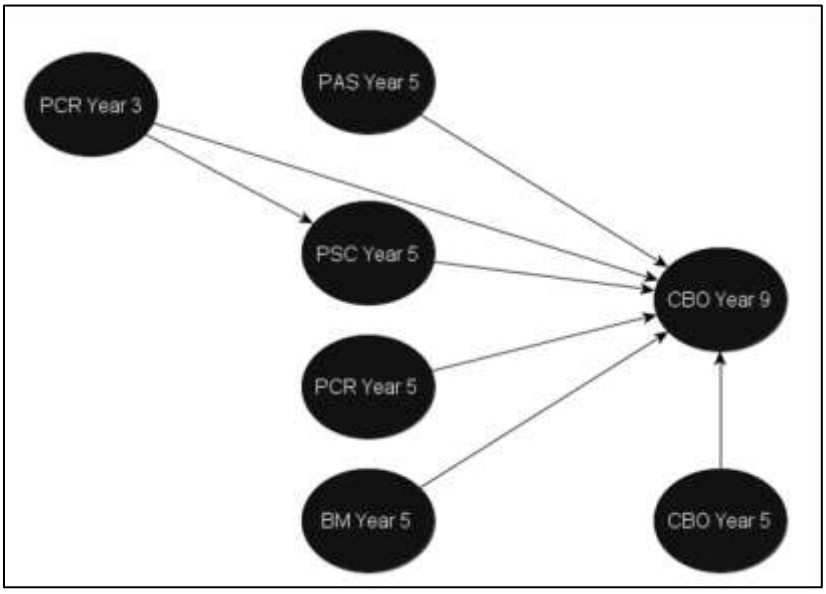

Figure 13. Mediation of PCR by PSC for RQ14

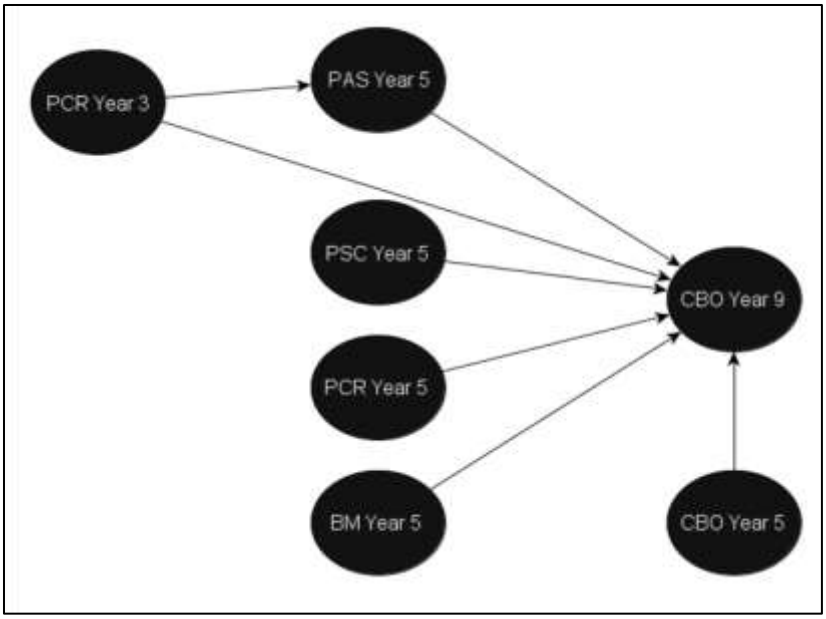

Figure 14. Mediation of PCR by PAS for RQ15

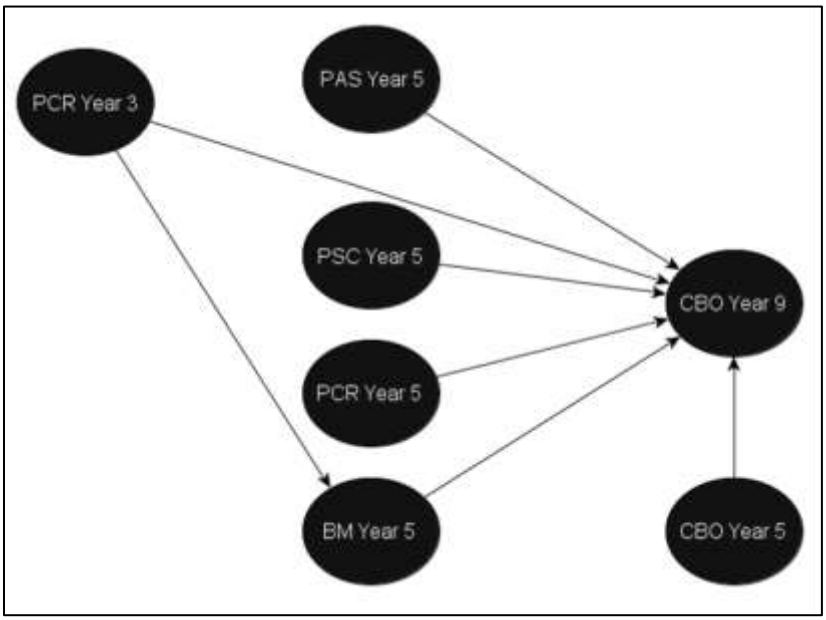

Figure 15. Mediation of PCR by BM for RQ16

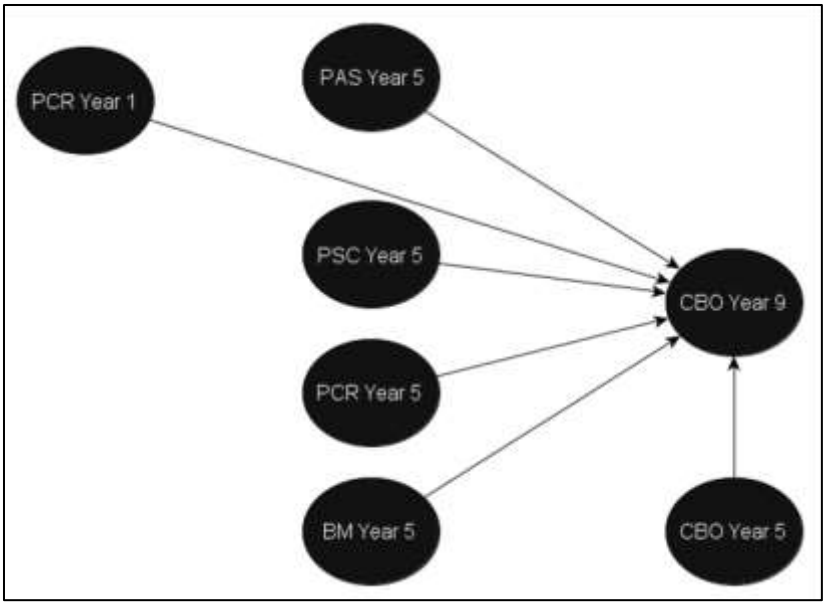

Figure 16. Year 1 PCR for RQ17

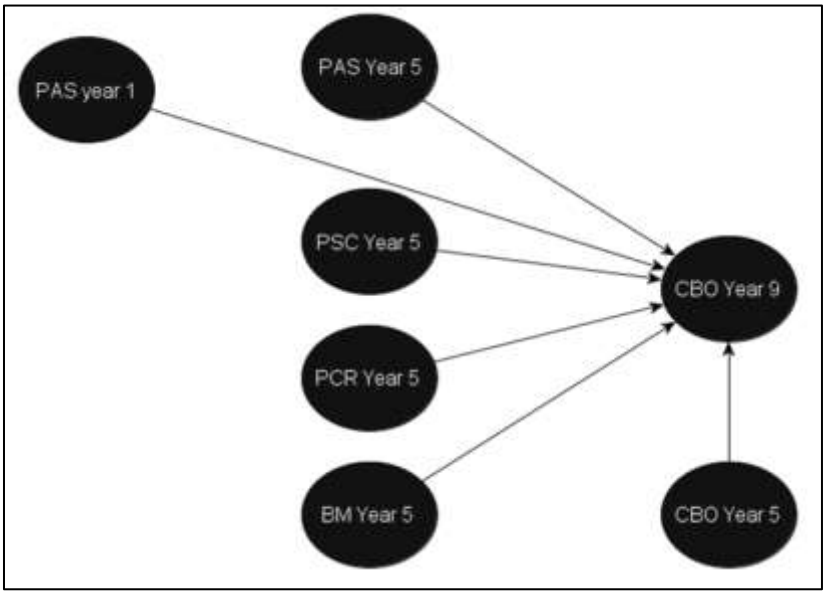

Figure 17. Year 1 PAS for RQ17

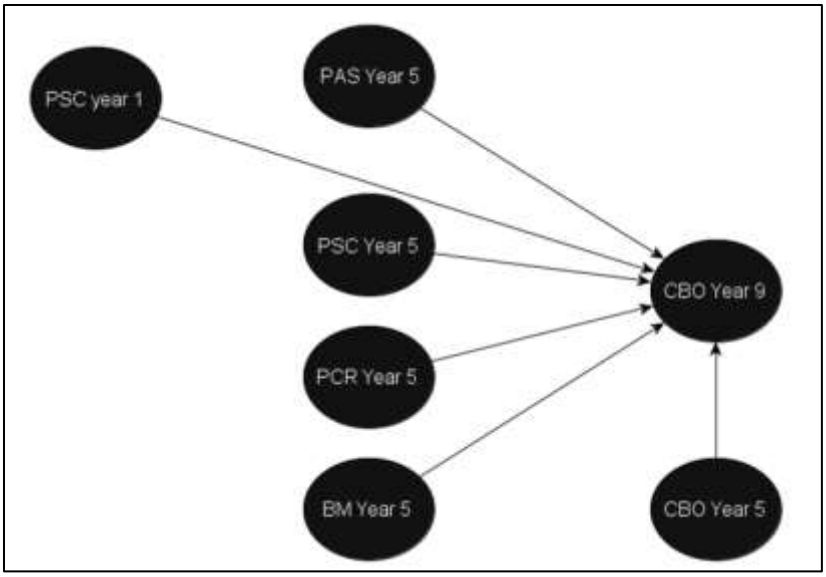

Figure 18. Year 1 PSC for RQ17

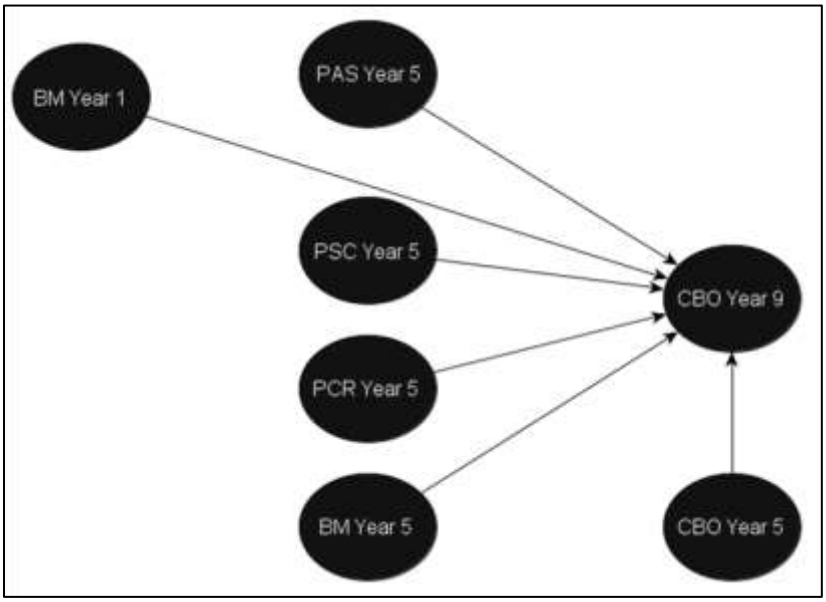

Figure 19. Year 1 BM for RQ17

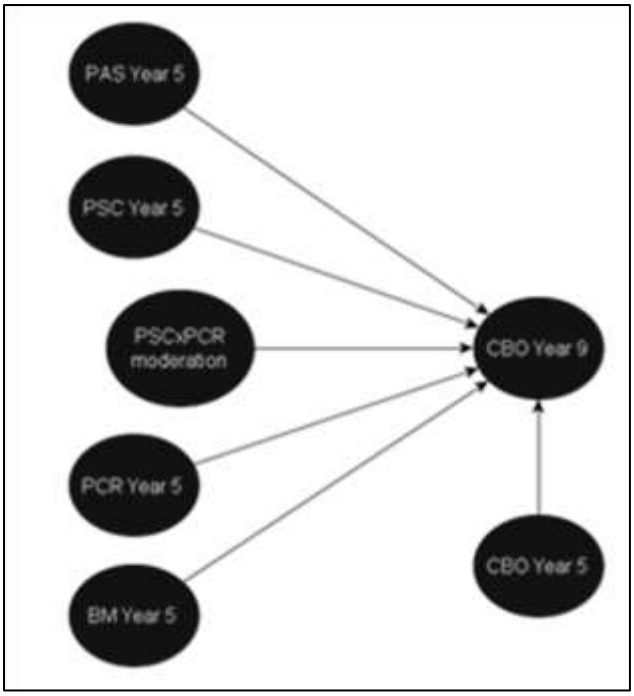

Figure 20. PSC-PCR Moderating effects added to model for RQ18

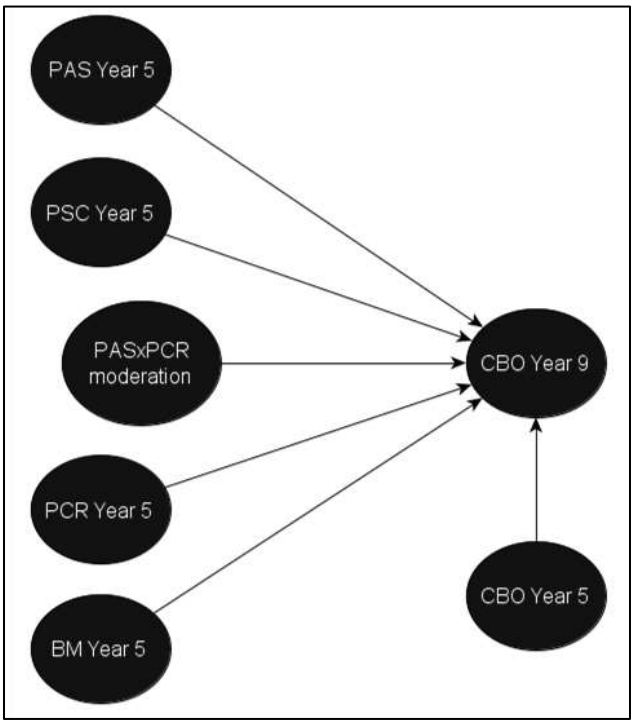

Figure 21. PAS-PCR Moderating effects added to model for RQ19

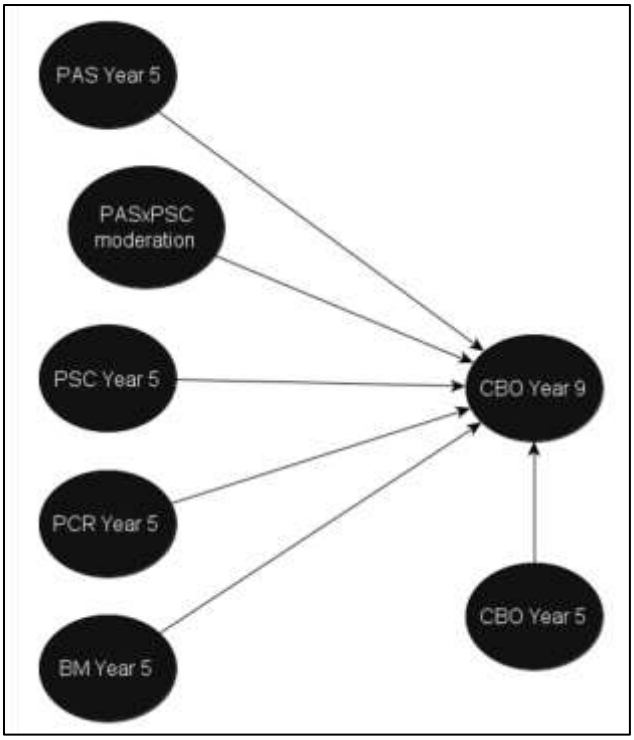

Figure 22. PAS-PSC Moderating effects added to model for RQ20

In the analysis of competing pathway models that were nested, $\chi 2$ difference tests were used, with acknowledgement of the large sample size affecting inflation and increase in Type A error rates (Cochran, 1966; Werner & Schermelleh-Engel, 2010). For any non-nested comparisons, the Akaike's Information Criterion (AIC) was initially considered for non-nested models (Akaike, 1987; Dimitrov, 2006). However, as an asymptotically free distribution estimation method (diagonally weighted least squares) was used, the AIC was not available. Inferential comparisons were made through CFI and other fit statistics. For the comparison of the group differences, a configural model was used using both groups against which the treatment exposure and non-treatment exposure models were compared. This was done first by comparing loadings, then constraining loadings, and then comparing the free models in order to identify group differences.

Participants

The population targeted in this study is children born in major cities in the United States. In order to access this population the FFCWS dataset was analyzed. It was collected through Princeton University's Office of Population Research. The data was collected using a stratified random sampling process that over-sampled children born to

Table 3

Summary of basic statistics for respondents

Characteristic	N	percentage
Participants	4898	
Focal Child Gender		
Female	2331	47.60%
Mother's age at birth		
≤18	456	9.30%
≤21	1670	34.10%
22-34	2767	56.50%
≥35	460	9.40%
Mother's race/ethnicity		
White	1029	21%
Black	2327	47.50%
Hispanic	1337	27.30%
Other	196	4%
Poverty		
Deep poverty	931	19%
Total in poverty	1773	36.20%
Marital Status		
Married	1200	24.50%
Unmarried Cohabitating	1783	36.40%
Single Not Cohabitating	1915	39.10%
Mother living with both parents at age 15	2101	42.90%
Born in US	4056	82.80%
Maternal Education		
less than high school	1940	39.60%
High school	1239	25.30%
more than high school	1714	35%
Interviewed in Spanish	362	7.40%

single parent homes. Participants were parents of children born in 16 different cities in the United States beginning in 1998 through 2000. Mothers were interviewed from zero to 112 days after their baby's birth, with 99 percent occurring within the first week after birth. For a full explanation of sampling methods see "Introduction to the Fragile Families Public Use Data" (Bendheim-Thoman Center for Research on Child Wellbeing, 2008). General respondent data for the sample is presented in Table 3.

Father data

Three difficulties presented themselves in considering whether to use father data. The first was that not all cases were complete with father data even at baseline. This corresponded to a much lower response rate than mothers during data collection. Table 4 displays that there is a minimal percentage of father data collected at the 4th wave at year 9. Secondly, the fathers in the sample were sought out secondarily to the mothers representing a sampling bias between mother and father data. For example, if a mother interview was not eventually completed, the father was dropped from the sample. Thirdly, by using a "primary caregiver" option or the separate measure of both due to sample imbalances allows, the possible elements of differential causation could be confounded.

Table 4

Percentage of participants in final wave by parental role

Parental role	n	Valid Percent	Cumulative Percent
Not in wave	696	14.2	14.2
Bio Mother	3828	78.2	92.4
Bio Father	180	3.7	96.0
Other	194	4.0	100.0
Total	4898	100.0	

Fathers do have a role in the development of their children (Opondo, Redshaw, Savage-McGlynn, & Quigley, 2016). Simultaneously, children who have at least one supportive parent score higher on cognitive assessments, regardless of parent gender, than those with none (Ryan, Martin, & Brooks-Gunn, 2006). Nevertheless, regarding treatment goals and targets, mothers are usually primary to treatment and rates of parental involvement are especially low where fathers are concerned (Piotrowska et al., 2017). Additionally, as most of these fathers had limited contact with child, including them in the study would skew the analysis of CPB influences and correlation. This displays a bias in research, sampling, and practice in which this study perforce participates and therefore constitutes a limitation.

Attrition

Loss in sample size from base line to year 9 is 4898 to 3515 (Figure 23), a loss of 28.2% and assuming the lost data is missing completely at random (MCAR) or missing at random (MAR), there will be little bias effect (Kristman, Manno, & Cte, 2015). Yet, as more than 20% of participants are missing, this loss needs to be analyzed to assure that there is not a mechanism at work, i.e., data that would be missing not at random (MNAR).

Human participation and ethical concerns

The present study utilizes the dataset that Princeton University's Office of Population Research has stripped of personally identifying information and has classified as publically available information. The researcher has no access to the identifying code matrix or identifying marker keys. The study was proposed under the

	Mother - 20 cities			Mother - national sample			Father - 20 cities			Father - national sample		
	Total	Married at birth	Unmarried at birth	Total	Married at birth	Unmarried at birth	Total	Married at birth	Unmarried at birth	Total	Married at birth	Unmarried at birth
Sample sizes												
Baseline	4789	1141	3648	3442	820	2622	3742	1015	2727	2726	732	1994
One-year	4270	1029	3241	3082	745	2337	3306	932	2374	2409	679	1730
Three-year	4140	1012	3128	2973	734	2239	3225	928	2297	2315	677	1638
Three-year in-home (any)[1]	3288	802	2486	2338	580	1758	n/a	n/a	n/a	n/a	n/a	n/a
Three-year in-home (assessments)[2]	2581	578	2003	1819	407	1412	n/a	n/a	n/a	n/a	n/a	n/a
Five-year	4055	975	3080	2927	717	2210	3087	870	2217	2235	637	1598
Completion rates = complete interview/mother baseline complete in city or national sample												
Baseline	100	100	100	100	100	100	78	89	75	79	89	76
One-year	89	90	89	90	91	89	69	82	65	70	83	66
Three-year	86	89	86	86	90	85	67	81	63	67	83	62
Three-year in-home (any)[3]	79	79	79	79	79	79	n/a	n/a	n/a	n/a	n/a	n/a
Three-year in-home (assessments)[3]	62	57	64	61	55	63	n/a	n/a	n/a	n/a	n/a	n/a
Five-year	85	85	84	85	87	84	64	76	61	65	78	61
Core response rates = (interviewed + obtained all relevant info)/(mother baseline in city or national sample - ineligible)												
Baseline[4]	86	82	87	86	82	87	78	89	75	79	89	77
One-year[5]	90	91	90	91	91	91	74	82	71	74	83	71
Three-year[5]	88	89	88	88	90	88	72	82	69	72	83	68
Five-year[5]	87	86	87	87	88	87	70	78	67	70	79	67

Notes:

The sample sizes are the maximum number of cases you could expect for your analyses before losing cases for item non-response. There are 109 cases in the data file that are not included in this table. Those cases were not randomly selected for the core sample (some were randomly selected only to be part of a separate study – the TLC3 study). These cases do not have national sample or city sample weights. Data users can identify and remove these cases using the weights sample flags (cm1citsm = 0 or incitysm=0).

1 Includes mothers with any available in-home data (telephone, assessment, and/or observation). See in-home documentation for more detail.

2 Includes mothers with any in-home assessments (e.g. child achievement tests). May not have all in-home measures. See in-home documentation for more detail.

3 As percentage of core completes for that wave. Note: not all in-home respondents are mothers.

4 Baseline mother response rates are percentage of eligible mothers approached in the hospitals. Father response rates are relative to completed mother baseline interviews.

5 Core follow-up mother and father response rates are the percentage of completed interviews over the number of mother baseline interviews minus ineligibles at the follow-up. For the purposes of the response rates, deaths and cases not interviewed because child was living outside of the home are treated as completed interviews. Information re: eligibility and nonresponse can be found in c*samp variables and more information about eligibility is documented in Section VII of this guide.

Figure 23. Sample attrition, completion, and response rates (Bendheim-Thoman Center for Research on Child Wellbeing, 2008)

exempt status to the Institutional Review Board (IRB) of The George Washington University, which accepted that this study does not constitute human subjects research.

Data Analysis & Preliminary Data Handling

Assumption Checking. A number of different measures were used to check for the assumptions required for appropriate analysis in SEM. All assumption testing was run SPSS v.22 and include for multicollinearity using Tolerance and Variance inflation factor; for outliers using Mahalanobis Distance; normality using kurtosis, skew, and histogram charts; linearity and homoscedasticity using X&Y plots and residual plots. Due to individual items being ordinal variables having few categories, normality could not be appropriately tested. The composite factor indicator indexes were tested for assumptions.

Univariate normality. In order to test an assumption of univariate normality skew and kurtosis was measured. Skew values less than +/- 3.00 and kurtosis values less than +/- 8.00 are considered that the variable displays a univariate normal distribution (Kline, 2011). Most of the variables found were in violation of kurtosis measures exhibiting leptokurtic patterns. Some variables with higher levels of kurtosis exhibited violations of skew also. To address this, these scales were inverted [(1/x) or (1/(x+1)-x) depending on direction of skew]. This addressed the majority of the violations. Some violations persisted after the linear transformations and so an estimation method to account for this was used.

Multicollinearity. Multicollinearity was examined calculating the Variance Inflation Factor (VIF= $1/[1/R^2]$). Levels of VIF above 10.0 are generally considered to reflect serious multicollinearity (Cohen, West, Aiken, & Cohen, 2003). None of the study variables violated this assumption.

Linearity and homoscedasticity. The analysis examined the scatterplot of the standardized residuals of the factor indicators by the three main outcome reports (child, parent, and teacher) and examined the standardized residuals against the predicted residuals. These plots suggested that the assumption of linearity was met, as far as there was a positive linear relationship between these variables.

Multivariate Normality. To investigate Multivariate normality, the Mahalanobis distance was compared to the Chi squared distribution of all variables. Examination of the scatter plot displayed that the values did not display multivariate normality (Figure 24). To account for this a more robust estimator was chosen for the analysis.

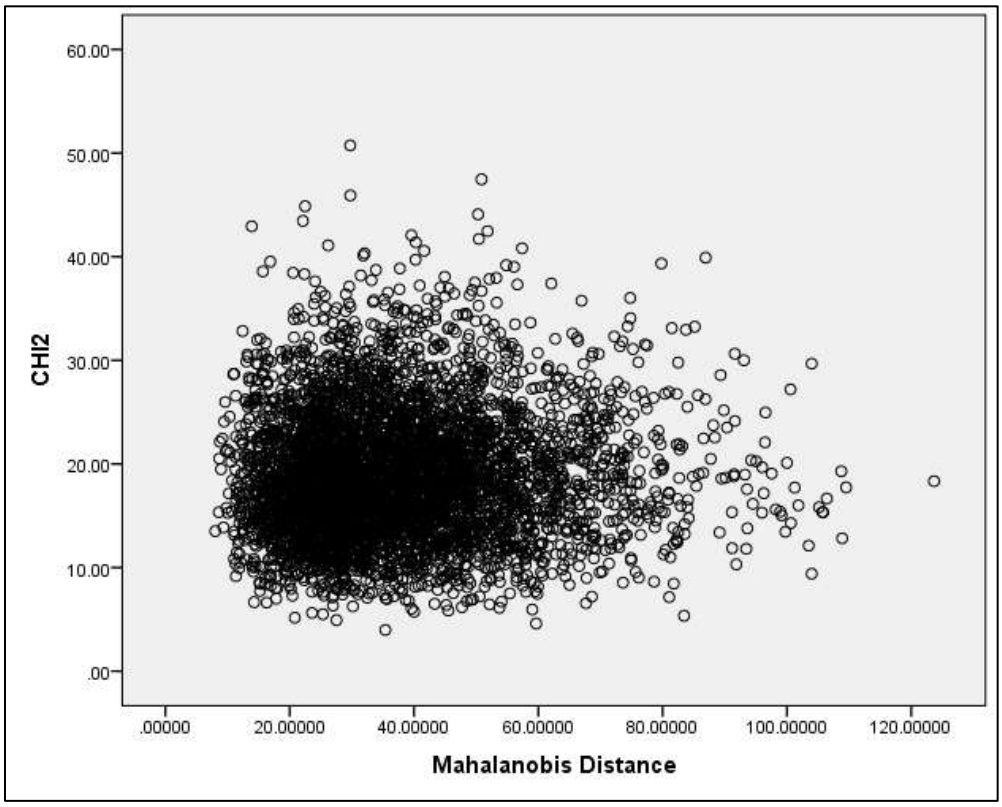

Figure 24. Multivariate Normality Plot

Outliers. To assess for outliers percentiles and the Tukey Hinge (z-score = +3.0.) were analyzed through SPSS. Percentiles indicated that there were some outliers,

however, due to the degree of kurtosis, rather than deleting or ignoring outliers, this analysis choice to employ a more robust estimator such as diagonally weighted least squares (DWLS). In addition, without being able to identify any mechanism behind the outliers, it is better to use a more robust estimator as these outliers may display real effects of the sample.

Due to the failure of some variables to meet the normality assumptions, an estimator that does not assume equal variance or normality was chosen. Weighted least squares is an asymptotically distribution-free estimator when data are continuous but non-normal and a consistent estimate of the asymptotic covariance matrix of sample-based variances and covariances is used (Li, 2016). Weighted Least Squares was chosen as it does not assume that the distributions of the values or the errors is normal (Kerns, 1980). The biggest disadvantage of weighted least squares is probably the fact that the theory behind this method is based on the assumption that the weights are known exactly. However, due to the large sample size, this effect is minimized as it increases the probability that weights can be estimated precisely relative to one another.

Additionally, Weighted Least Squares is also sensitive to the effects of outliers. For this reason, a more robust method of dealing with outliers is necessary and as such, Diagonally Weighted Least Squares was used. The use of DWLS is also able to deal with polychoric correlations and the use of variables with limited response range and Likert style item responses suggests that such a method of estimation would better perform (Li, 2016). The majority of the variables in this study is not made up of true interval or ratio variables and a more exact and appropriate method such as DWLS is appropriate.

As demonstrated by Hu and Bentler (1999), in general, a cutoff value of.96 for CFI in combination with SRMR > .09(or .10) results in the least sum of Type I and Type II error rates. Additionally, failing to reject the null hypothesis when RMSEA > .06 and SRMR > .09 (or .10) resulted in the least sum of Type I and Type II error rates as long as the sample is sufficiently large (N>250). These should be considered a rule of thumb and not a hard and fast statistical measure especially due to the underperformance on index fit measures of estimations methods such as asymptotically free distribution or generalized least squares as this study employs.

Missing data

As a structure in the survey, certain questions were skipped (coded -6). As this was a procedure, they were not included as missing data. Data was also coded "-9" to indicate that the individual was not in the wave. The remaining unanswered questions labelled by the study as "missing," 'N/A," "refused", "out of range", and "no answer" were analyzed using Little's test through SPSS v.22 to determine whether data is missing completely at random (MCAR). These responses had a statistically non-significant - probability of the pattern of missing values depending on the data values (p>.05) and so the null hypothesis was not rejected and these missing responses were assessed to be MCAR.

With the amount of loss from attrition, Little's test for items coded as -9 "not in wave" came back with a statistically significant probability of the pattern of missing values depending on the data values (p<.001). Patterns of missingness were visually investigated using the 30 most common patterns of missingness in order to see whether missingness was based on a variable or another factor (MNAR), or random (MAR). Data

were assessed not to be missing due to another variable or factor as patterns displayed appropriate randomness and data were assessed to be MAR.

Due to data being identified as MAR, a Multivariate Imputation by Chained Equations (MICE) method (Buuren & Groothuis-Oudshoorn, 2011) also known as "sequential regression multiple imputation" was employed in this study. MICE has certain advantages over both Monte Carlo methods and traditional Multiple Imputation methods as well as Maximum Likelihood methods (Gelman & Hill, 2007). The imputation and analysis of the data was done in separate steps. With MICE there is no need to specify a model (thus limiting model bias and Type I error) and that imputed values are never used to predict another imputed value (Allison, 2002). It is also able to account for categorical and continuous variables using multivariate or logistic regression sequences as appropriate. These qualities reduce bias while reducing the chance of convergence. There is some disadvantage using MICE compared to model based imputation methods such as those available in MPLUS. MPLUS employs a one-step method of imputation that reduces the approximation toward the mean that occurs in model-less imputation as done in this study. This study used MICE for R version 3.3 (Stef et al., 2015) to impute values for the individual items.

Measures

The present study analyzes four latent constructs representing the CPB based on latent variables with factors produced from items presented in the FFCWS. Factors for latent variables are indices made from single item responses to items in each area. The majority of single items from the study were scored on a 4-point Likert scale (Table 6). These items were rated on Likert scales and averaged together to create an index.

Baseline was removed from analysis due to drastic unavailability of item responses consistent with the other waves. The items used for each index are presented in Appendix A (Table A1). For each latent variable, construct validity was measured through CFA. A preliminary factor analysis was performed using Version 3.1.3 of the R system for statistical computing (R Development Core Team, 2014), using the add-on package *Lavaan* 0.5–17 (Rosseel, 2012) for the factor analysis. Factors were analyzed in a year by

Table 5

Percentage of items by scale type

Scale	Items
Likert	
4	40.99%
3	25.47%
Dichotomous	25.47%
Continuous	9.94%

Table 6

Latent variables and identifying factor indices

Latent Variable	Year 1	Year 3	Year 5
Problem Solving and Communication	Problem Solving Conflict Resolution	Problem Solving Conflict Resolution Communication	Problem Solving Conflict Resolution Communication
Parenting Stress	Economic Stress Emotional Stress Work Stress	Economic Stress Emotional Stress Work Stress	Economic Stress Emotional Stress Work Stress
Behavioral Management	Spanking	Spanking	Spanking
Parent-Child Relationship	Child-Directed Play Parent-Directed Play Display of Affection	Child-Directed Play Parent-Directed Play Display of Affection	Child-Directed Play Parent-Directed Play Display of Affection

Table 7

Child behavioral outcome and identifying factor indices

Child Behavioral Outcome	Factor Indices		
Year 5	Over-Dependent Social Difficulties Tantrums Irritability Apathy		
Year 9	Child Report Rule Breaking Truancy Vandalism Violence Task Completion	Mother Report Violence Self-harm Drug Use Opposition Anger Respect Socialized Behaviors Empathy	Teacher Report Problem Solving Empathy Obstinacy

year context and are addressed later in the section. The indices used for each latent variable is displayed in Tables 6 and 7. Correlation tables are available in Appendix B. Additional descriptive data tables are located in Appendix C.

Problem Solving and Communication

Problem Solving and Communication (PSC) is a measure of the ability of the parent to handle daily childrearing as well as how the parent could manage conflict in general. Factors for PSC consider the parent's ability to manage conflict, avoid conflict, and be constructive in communication. Factors for PSC are Problem Solving, Conflict Resolution, and Communication. PSC at year 1 only had problem solving and communication indexes available, due to the changes in questions over the phases of the study. Communication index was based on items indicating the ability to communicate

positively and effectively based on items indicating how often the mother was willing to talk about difficulties and avoid arguments such as "You and father talk about problems that come up with raising child." The Problem Solving index was based on how often they agreed on fundamental relationship issues such as being faithful. The Problem Solving index at year 1 was created from one item indicating the amount of arguments with father. Problem Solving was created from six items at year 3 and 2 items at year 5 such as "I often say things without considering the consequences," "Plans don't work out because I don't go over them carefully," and "I make up my mind without considering situation from all angles." These indicate poor Problem Solving skills. Using the above items for PSC index demonstrates how well and how often the parents were able to engage in conversations and solve problems and conflicts without engaging in detrimental conflict tactics. The Conflict resolution index was measured only at year 3 (one item) and 5 (two items) and contained items indicating the methods parent engaged in to resolve conflict displaying ineffective conflict resolution. These were items such as "I lie or cheat" or "I often get into fights" at year five and at year 5 how often mother would argue with father. These factor indices displayed similar descriptives across points of measurement (Table 8).

Table 8

Descriptive statistics for problem solving and communication factor indices at each year

Factor index	Year 5			Year 3			Year 1		
	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD
Problem solving	3.000	3.319	0.660	3.000	2.965	0.614	3.000	2.539	0.787
Conflict resolution	3.000	3.557	0.488	4.000	2.903	0.970	4.000	3.166	0.989
Communication	3.000	3.349	1.020	3.000	3.336	1.015			

Table 9

Descriptive statistics for behavioral management indices

Index year	Range	Mean	SD
Year 5	3.000	3.556	0.725
Year 3	3.000	3.345	0.864
Year 1	2.510	4.479	0.651

Behavioral Management

Behavioral Management (BM) was measured from year 1 to year 5 by a single index, physical discipline, measuring the ability of the parent to be able to discipline effectively without the use of spanking. This included two items "how often did you spank the child" and "how often do you spank the child." As the index increases in value, the use of spanking decreases. As this created a single factor, BM was not treated as a latent variable. The indices across the years displayed similar standard deviations (Table 9).

Parent-Child Relationship

Parent-Child Relationship (PCR) was also measured from year 1 to year 5 by how often the parent spends time with the child, how often the parent engages in activities appropriate to child's age, and how often the parent gives positive affection. PCR was factored onto three indices: Child directed play, parent directed play, and displays of affection. The first measures how often the parent engages in child-centered play by days per week on items such as "play outside in yard, park, or playground with child?" and "play inside with toys with child?" The parent directed play index was made up of similar items such as "How many days per week do you sing songs or nursery rhymes with

Table 10

Descriptive statistics for parent-child relationship factor indices at each year

Factor index	Year 5			Year 3			Year 1		
	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD
Parent-directed play	7.000	4.402	1.609	7.000	4.996	1.630	13.000	3.850	2.333
Child-directed play	7.000	4.348	1.976	7.000	4.990	1.890	5.210	5.682	1.015
Display of affection	0.390	0.439	0.118	2.530	3.135	0.836	1.874	1.874	0.120

child," and "read stories to child?" The display of affection index was measured by items such as "How many days per week do you hug or show physical affection to child" and "hug or show physical affection to child?" These indices were consistent across years 1, 3, and 5 although the scales slightly changed over the years (Table 10).

Parenting Stress

Parenting Stress (PAS) was measured 3 times (year 1 to year 5) by factors indicating whether the parent views the child as a burden or feels trapped by child, encounters stress from childcare and financial difficulties, and how effective the parent feels as a provider. The three indices for PAS are Perceived Emotional Burden due to Childrearing or "Emotional Stress", Economic Stress, and Work Stress. Emotional Stress was measured with items such as: "Being a parent is harder than I thought," "I feel trapped by parental responsibilities," "Taking care of children more work than pleasure," and "I Often feel tired and worn out from raising family." Economic Stress index was observed with 13 items such as "How many times in past month did you miss work/school because care plans fell through," "In past 12 months, did you-Not pay full amount of rent/mortgage," and "In past 12 months, did you-Borrow money from

Table 11

Descriptive statistics for parenting stress factor indices at each year

Factor index	Year 5			Year 3			Year 1		
	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD
Work Stress	2.610	1.662	0.639	3.000	1.692	0.739	6.000	5.857	1.527
Emotional Stress	3.000	2.187	0.683	3.000	2.259	0.665	6.000	5.435	1.611
Economic Stress	6.170	0.955	1.228	7.190	4.594	1.550	0.917	1.300	0.331

family/friends to pay bills," and "In past 12 months, did you-Go hungry?" The work stress category was measured by items indicating the degree to which work was able to accommodate childcare needs such as "My shift & work schedule cause extra stress for me & child" and "My schedule is flexible to handle family problems." The separate factor indices show some discrepancy in scaling across points of measurement (Table 11). The operationalization of Parenting Stress with opposing measures was competed such that as the value of PAS increases, the parental positive attitude increases and reported stress decreases.

Preliminary Factor Analysis for CPB

For each latent variable, construct validity was measured through Confirmatory Factor Analysis using Version 3.1.3 of the R with *Lavaan* 0.5–17. Factors were analyzed in a year-by-year context as factors had perfect fit due to being perfectly specified with

Table 12

Fit for confirmatory factor analysis of core parenting behaviors by year

CFA	CFI	RMSEA	SRMR	χ^2	df
Year1	0.934	0.047	0.037	200.572	17
Year3	0.918	0.053	0.043	351.475	24
Year5	0.961	0.04	0.033	208.1	24

three indicators (df=0). The results of the CFA (Table 12) indicated that the proposed indices were sufficient for pathway analysis. Both year 1 indices (CFI=0.934, RMSEA=0.047, SRMR=0.037) and year 5 indices (CFI=0.961, RMSEA=0.058, SRMR=0.049) sufficiently met major fit indexes. Year 3 indices displayed sufficient fit on the Comparative Fit Index (CFI=0.918), with the RMSEA=0.053 and SRMR = .043 and the structure sufficiently the same. Year 3's CFA indices were assessed to sufficiently express the data available (Lai & Green, 2016). Of note, Communication index for year 5 PSC (Table 13) had a low standardized loading (*B*=0.141) and should be taken into account in interpretation of results.

Table 13

Standardized loadings (Std.ld) for core parenting behavior (CPB) indices

CPB index	Year 5		Year 3		Year 1	
	SE	Std.ld	SE	Std.ld	SE	Std.ld
Parent-child relationship						
Child-directed play	-	0.734	0.076	0.718	-	0.692
Parent-directed play	0.075	0.711	-	0.806	0.158	0.530
Display of affection	0.002	0.416	0.012	0.239	0.004	0.290
Parenting Stress						
Economic Stress	0.115	0.297	0.141	0.416	-	0.225
Work Stress	-	0.370	-	0.381	0.009	0.616
Emotional Stress	0.114	0.586	0.076	0.537	0.117	0.701
Problem solving and communication						
Problem solving	-	0.821	-	0.482	-	0.233
Communication	0.028	0.141	0.078	0.338	0.206	0.366
Conflict resolution	0.039	0.627	0.078	0.374	-	-

Note. All loadings are significant at $p<0.001$

Child Behavioral Outcome

Child Behavioral Outcome (CBO) was measured at year 5 and year 9. CBO at year 5 was factored onto the mother's report to be used mainly as a control variable. The 5 indices for CBO5 are over-dependent ("child clings to adults or is too dependent," "child wants a lot of attention?"), social difficulties ("child is withdrawn child doesn't get involved with others," "child doesn't get along with other children"), tantrums ("child has temper tantrums or a hot temper?"), irritability ("child is stubborn, sullen or irritable," "child has sudden changes in mood or feelings"), and apathy ("child doesn't seem to feel guilty after misbehaving?") The descriptives for these indexes are presented in Table 14.

Table 14

Descriptive Statistics for CBO indices at year 5

Index	Mean	Std. Deviation
Over-Dependent	4.416	0.7348
Tantrums	4.410	0.7005
Apathy	4.537	0.6511
Irritable	4.388	0.6837
Social Difficulties	1.565	0.1913

CBO at year 9 is measured by three compound factor indicator indices based on the child's report, the parent's report, and the teacher's reports. Due to both positive and negative behaviors in this construct, the CBO9 indices were scaled so that higher responses indicated higher levels of socialized behaviors. This required the inversion of negative items. The child's report of CBO was initially factored onto 6 indices of rule breaking behaviors (6 items: "Taken money at home"), truancy (5 items: "Skipped school without an excuse"), vandalism (4 items: "Purposely damaged or destroyed property"), task completion (2 items: "I follow things through to the end,"), violence (2 items:" Hurt

an animal on purpose"), and positive behaviors (3 items: "Amount of time on a weekday you do household chores or help at home,"). The initial CFA with these items resulted in a very low loading for the positive behavior index. This was reflected in the reliability test. The index was removed and the resulting CFA displayed sufficient fit (RMSEA=0.068, SRMR=0.034, CFI=0.937).

The parent's report is constructed with the same seven factors with items similar to those from CBO5 and child's report for CBO9: violent behaviors (8 items), self-harming behaviors (2 items), drug use (4 items), opposition (3 items), anger (4 items), respect (4 items), empathy (3 items), and social behaviors (6 items). When these were initially run in a confirmatory factor analysis the loadings of empathy and social interactions were low and made up from similar items, thus it appeared that a covariance of errors might be appropriate. Modification indices corresponded to this analysis. When this covariance of errors was added, the mother's report of behavioral outcome displayed a satisfactory CFI = 0.905.

The teacher information included a number of activities and behaviors appropriate to the school setting which indicate appropriately socialized behaviors based on context. The teacher report was constructed of three major indices: Problem Solving (9 items: "Child responds appropriately to peer pressure"), Empathy (7 items: "Child comforts or helps other children"), and Obstinacy (9 items: "Child actively defies/refuses to comply with adults' requests"). When a preliminary CFA was run, this met perfect fit due to the number of factor indicators and no degrees of freedom. However, standardized loadings were sufficiently high (1, 0.762, and 0.561) and indicated a satisfactory latent factor relationship.

To make analysis focused on the single indicator of child behavioral outcome and compare loadings between reports while reducing model complications, the above factors, having displayed sufficient fit in CFA (Table 17) were averaged into single compound indicator variables. They were analyzed for reliability and the alpha levels were sufficiently high. The Cronbach's alpha for CBO9 from the mothers report was 0.765. The alpha for CBO9 from teacher's report was very high (0.932). The reliability test for the child's self-report indicated that the positive behavior index should be removed and after this was done, the index had a reliable alpha level (0.758). The child report, mother report, and teacher report were the three indexes used as indicators for Child Behavioral Outcome at year 9.

Table 15

Descriptive statistics for child behavioral outcome indices at year 9

Factor index	Range	Mean	SD
Child Report	8.4	9.107	1.476
Mother Report	7.54	14.625	1.276
Teacher Report	8.53	8.839	1.480

Table 16

Standardized loadings (Std.ld) for child behavioral outcome (CBO)

CBO	SE	Std. ld
Year 5		
Over-Dependent	-	0.399
Tantrums	0.080	0.659
Apathy	0.053	0.449
Irritable	0.077	0.649
Social Difficulties	0.018	0.522
Year 9		
Child Report	-	0.411
Mother Report	0.116	0.579
Teacher Report	0.010	0.471

Note: all loadings are significant at $p<0.001$

Table 17

Fit for confirmatory factor analysis of child behavioral outcome at year 9

CFI	RMSEA	SRMR	$\chi 2$	df
0.987	0.023	0.023	66.451	19.000

Preliminary Factor Analysis for CBO

For the latent variables for CBO at year 5 and year 9, construct validity was measured through Confirmatory Factor Analysis using Version 3.1.3 of the R with *Lavaan* 0.5–17. These indices were measured together as CBO at year 9 had perfect fit due to the index being perfectly specified (df=0). CBO at years 5 and 9 displayed sufficient fit on all major fit indices (CFI=0.987, RMSEA=0.023, SRMR=0.023). The results of the CFA (Table 13) indicated that the proposed indices sufficiently expressed the data available and were suitable for pathway analysis.

Treatment Exposure Group

The Treatment Exposure group was identified through the waves of years 3, 5, and 9 by whether the mother engaged in counseling or treatment for any reason at all. Baseline and first follow-up did not contain any items regarding treatment. This group is made up of 1405 subjects, roughly 28% of the sample (Table 18). The treatment group was operationalized as a dichotomous variable with "0" corresponding to no treatment

Table 18

Treatment Exposed Mothers

Treatment Exposure	N	percent
Yes	1405	28.7%
No	3493	71.3%

exposure and "1" corresponding to treatment exposure. The treatment group was also analyzed to identify if treatment exposure could be working as a proxy variable. Treatment exposure rates were analyzed as the dependent variable for major descriptive categories (poverty, age of mother, gender of child, education of mother, and race of mother). The basic descriptives for the categories of poverty, age of mother, gender of child, education of mother, and race of mother are displayed in Table 3. Analysis of variance (ANOVA) was used in SPSS v.22 to identify meaningful group differences that would predict treatment exposure in such a way as to suggest that treatment exposure was acting as a proxy variable. Child gender did not have any statistically significant difference in treatment rates (p=0.694). Statistically significant between group differences of treatment exposure rates were found for poverty, race, age, and education (Table D1). With the exception of the Child gender analysis, the other tests failed homogeneity of variance and as such, Games-Howell post-hoc comparisons were conducted on the statistically significant group differences (Tables D2, D3, D4, and D5). The mean difference charts are also available in Appendix D. There are interesting statistically significant differences indicating that mothers who are older, more highly educated, poverty-stricken, or members of a marginalized racial group demonstrate higher rates of treatment exposure. Nevertheless, all partial eta-squared results were less than 0.005 for all ANOVA analyses (Table D1). The effect size results as well as the minimal range of scale differences between groups did not indicate that the treatment exposure group was acting as a proxy variable for child gender, mother's age, poverty level, education level, or racial differences.

Moderating Effects

Moderating effects were created with orthogonal mean centered approach using the SemTools package version 0.5-1 for R (Schoemann et al., 2018). Centering is the process by which deviation scores are computed for each variable prior to making the product indicator. Although this does alter the form of the interaction, it avoids multicollinearity issues (Aiken, 1991; Klien & Moosbrugger, 2000). The mediation variables were created from the year 5 and year 3 indicators. PAS3 was the only latent variable not to have three indicators. Since the Confidence index was only included in PAS3 and not in the same measure of the other years, it was not used as a product factor. For the analysis of moderators and mediators, bootstrapping was conducted (Preacher & Hayes, 2008).

Procedural Notes

It is important to note that the χ^2 statistic requires care when interpreting models and results with this current study. This is due to several factors. The failure to meet the assumption of multivariate normality and the use of a weighted least squares approach (Schumacker & Lomax, 2016) makes the interpretation of the χ^2 statistic unreliable. Secondly, our large sample size (N=4898) causes inflation in χ^2 difference tests for nested models (Cochran, 1966; Schermelleh-Engel, Moosbrugger, & Müller, 2003). This is especially in instances where the marginal differences in fit indices and the structures are minimally different.

Additionally, as a non-clinical sample, the expectations were that this sample would demonstrate lower levels of severity. As expected, this sample demonstrates as expected low levels of severity especially in items that would indicate high-risk problem

behaviors (Table 19). Although testing a non-clinical sample provides valuable information, it is also necessary to note the difficulties inherent in such samples. Low levels of severity have, in a sense, a platykurtic property in that they lend themselves more poorly to the measure of differences as the differences are more subtle similar to a uniform distribution. This is partially responsible for the difficulties in normality of variables due to the high density of responses at this extreme. Considering this, lower regression coefficients were expected. As a result, with low regression coefficients, it is necessary to require caution in interpretation and generalization of any results.

Table 19

Percentage of null reports on child problem behaviors

Index	Child report	Parent report
Self-harm	n/a	94.9%
Drug use	n/a	98.0%
Vandalism	84.5%	n/a
Violence	60.2%	69.0%

Chapter Four: Results

This chapter presents the results of statistical analysis with Structural Equation Modelling using R v.3.5.1 with add on packages Lavaan and SemTools and addresses the 5 research questions proposed in chapter 3. As described in chapter 2, these analyses look to answer when CPB have the largest effect on CBO, what pathways are most significant and meaningful, and whether these differ in a group with history of treatment exposure. The previous factor analysis and preliminary checking in Chapter 3 showed that the indicator factors sufficiently described the latent variables. This chapter presents the results from SEM analysis targeting the specific hypotheses, beginning with a full model and reducing to a model that sufficiently and meaningfully explains the data.

Question 1

RQ1. Do PAS, PSC, BM, and PCR at year five show significant pathways to CBO at year 9 when controlling for CBO at year 5?

H1.1: PAS will have a significant direct effect on CBO at year 9.

H1.2: PSC will have a significant direct effect on CBO at year 9.

H1.3: BM will have a significant direct effect on CBO at year 9.

H1.4: PCR will have a significant direct effect on CBO at year 9.

Table 20

Fit indices for research question 1

Model	χ^2	rmsea	srmr	cfi	df
RQ1	981.209	0.037	0.037	0.927	125
RQ1b	412.864	0.049	0.042	0.887	32

Table 21

Regression coefficients for child behavioral outcome by model

Variable	b	SE	β
RQ1			
PSC5	0.118**	0.033	0.099
PCR5	0.002	0.01	0.003
PAS5	0.301*	0.126	0.117
BM5	0.069**	0.016	0.08
CBO5	0.076	0.061	0.038
RQ1b			
PSC5	0.112**	0.032	0.096
PAS5	0.22**	0.079	0.091
BM5	0.069**	0.015	0.08

*p<0.05 **p<0.01

The first question this study investigated was to see if the model proposed sufficiently fit the data and then what changes would allow the model to perform the best. Initially, all years 5 CPB were analyzed simultaneously while controlling for CBO at year 5 (Table 20). This first model had sufficient fit (CFI=0.927, RMSEA= 0.037, SRMR=0.037, χ^2=981.209, df=125), but PCR5 (β=0.003, z-value=0.157, p=0.875) and CBO5 (β=0.038, z-value=1.234, p=0.217) were not statistically significant. These were deleted from the re-specified model. The second model displayed sufficient fit (CFI=0.887, RMSEA= 0.049, SRMR=0.042, χ^2=412.864, df=32). It also produced statistically significant pathways (Table 21) for PSC5 (β=0.096, z-value=3.526, p<0.001), PAS5 (β=0.091, z-value=2.798, p=0.005), and BM5 (β=0.08, z-value=4.467, p<0.001) (Table 21). This model indicated that as the mother problem solving and communication (PSC) and Positive Attitude towards the child increases and stress involved in childrearing (PAS) decreases, there is a decrease in problem behaviors for the child at year 9. It also indicated that an increase in behavioral management and reduction of

spanking resulted in increased positive social behaviors. The standard loadings for this model were low (PSC5, β=0.096; PAS5, β=0.091; BM5, β=0.08). The null hypotheses for RQ1.1, RQ1.2, and RQ1.3 were rejected. The analysis failed to reject the null hypothesis for RQ1.4.

Question 2

RQ2. In the treatment exposure group, will the effects of PSC, PCR, PAS, and BM on CBO at year nine be of a greater magnitude than those of the non-treatment exposure group?

H2.1: PAS will have a significant direct effect on CBO at year 9 of greater magnitude than the non-treatment exposure group.

H2.2: PSC will have a significant direct effect on CBO at year 9 of greater magnitude than the non-treatment exposure group.

H2.3: PCR will have a significant direct effect on CBO at year 9 of greater magnitude than the non-treatment exposure group.

$H2.4_{0:}$ BM will not have a significant direct effect on CBO at year 9 in the treatment exposure group.

$H2.5_{A:}$ BM will still have a significant direct effect on CBO at year 9 in the non-treatment exposure group.

Next, this study analyzed whether treatment history would influence the correlations of parenting behaviors on CBO starting with measurement differences at years 9, 5, and 3. A comparison of Confirmatory Factor Analyses with cumulative constraints added to the model on loadings, intercepts, and means respectively. The use of constrained loadings for these model produced little informative results, especially

when taking into account inflation due to DWLS estimation methods, as all the models displayed sufficient fit (Table 22) both for year 3 models (configural [CFI= 0.893, RMSEA=0.057, SRMR=0.046], loadings [CFI= 0.89, RMSEA=0.055, SRMR=0.047] , intercepts [CFI= 0.89, RMSEA=0.056, SRMR=0.05], means [CFI= 0.87, RMSEA=0.056, SRMR=0.05]), and for year 5 and 9 models (configural [CFI= 0.97, RMSEA=0.025, SRMR=0.027],loadings [CFI= 0.969, RMSEA=0.025, SRMR=0.028], intercepts [CFI= 0.966, RMSEA=0.025, SRMR=0.029], means [CFI= 0.952, RMSEA=0.03, SRMR=0.031]).

Keeping in mind that these may be inflated, the differences in loadings on factors were analyzed. The changes in chi-squared for year 3 between CFA models (Table 23) was significant for the model that constrained the means in addition to the other constraints ($\Delta\chi2=97.339$, $\Delta df=3$, $p<0.001$). When loadings were reviewed for group differences (Table 24), the treatment exposure group displayed a lower incidence of emotional stress (-0.032) in relationship to the non-treatment exposure group. With the year 5 and 9 CFA models, significant chi-squared changes were identified (Table 23) at

Table 22

Fit measures by cumulatively constrained models across groups

Constraint	χ^2	rmsea	srmr	cfi	df
Year 3					
configural	576.403	0.057	0.046	0.893	64
loadings	595.625	0.055	0.047	0.89	71
intercepts	604.111	0.052	0.047	0.89	78
means	701.45	0.056	0.05	0.87	81
Years 5 and 9					
configural	546.148	0.025	0.027	0.97	218
loadings	574.267	0.025	0.028	0.969	230
intercepts	614.76	0.025	0.029	0.966	242
means	778.747	0.03	0.031	0.952	247

Table 23

Chi-squared(χ2) changes by cumulative group constraints

Constraint	ΔX^2	Δdf	*p*
Year 3			
none	-	-	-
loadings	19.222	7	0.29
intercepts	8.486	7	8.01
means	97.339	3	<0.001
Years 5 and 9			
none	-	-	-
loadings	28.119	12	0.18
intercepts	68.612	24	<0.001
means	232.599	29	<0.001

Table 24

Significant standardized loading differences by constraint model

Loadings	Non-treatment	Treatment	Δ
Year 3 means			
Emotional Stress	0.523	0.555	0.032
Year 5 and 9 intercepts			
Problem solving	0.825	0.707	0.118
Communication	0.151	0.261	0.11
Displays of Affection	0.402	0.475	0.073
Tantrums	0.602	0.688	0.086
Teacher Report	0.438	0.529	0.091
Year 5 and 9 means			
Problem solving	0.825	0.707	0.118
Communication	0.151	0.254	0.103
Displays of Affection	0.402	0.475	0.073
Tantrums	0.602	0.679	0.077
Teacher Report	0.438	0.552	0.114

the intercept constraints ($\Delta\chi2=68.612$, $\Delta df=24$, $p<0.001$) and mean constraints models ($\Delta\chi2=232.599$, $\Delta df=29$, $p<0.001$). As significant changes with intercepts should be identified in their impact on means (Meuleman, 2012), the impact of the intercept

changes were carried forward to the mean differences (Table 24). This indicates that treatment exposure does play a role in differences on the indices of Parenting Stress, Parent-Child Relationship, and child behavioral outcomes at years 5 and 9. This is as was expected. As the configuration model and the model with constrained loadings did not display significant changes in fit values (Table 23) the structures were assessed to be similar (Cochran, 1966; Schermelleh-Engel et al., 2003). These tests indicate that the measurement model satisfied the data for both groups while there were some significant changes in fit values. These analyses indicate that the structural and measurement models fit the data sufficiently while there is a difference between the data dependent on group assignment.

Next, does treatment exposure influence the correlations of the model from RQ1? This study was interested in whether treatment exposure would both strengthen CPB-CBO pathways and/or present different CPB-CBO pathways. As above for RQ1, the model was initially run with all year 5 CPB controlling for CBO at year 5 with the group comparison model. As shown in the Table 26, PCR5 was not statistically significant and CBO5 did not have a significant effect. These were deleted from the model, which was re-specified into RQ2b. The second model displayed sufficient fit (CFI=0.892, RMSEA= 0.047, SRMR=0.036, χ^2=415.201, df=64) but BM displayed a non-significant effect (β=0.054, z-value=1.799, p=0.072) for the treatment exposure group. BM was then

Table 25

Fit indices for research question 2 by model

Model	χ^2	rmsea	srmr	cfi	df
RQ2	1048.26	0.036	0.036	0.931	250
RQ2b	415.201	0.047	0.039	0.892	64
RQ2c	177.169	0.033	0.027	0.957	48

Table 26

Regression coefficients onto child behavioral outcome by model

Model	Non-treatment exposure			Treatment exposure		
RQ2	b	SE	β	b	SE	β
PSC5	0.077*	0.037	0.066	0.287**	0.091	0.217
PCR5	0	0.012	0	0.002	0.019	0.003
PAS5	0.191	0.148	0.073	0.792**	0.293	0.314
BM5	0.077**	0.019	0.088	0.047	0.026	0.055
CBO5	0.043	0.072	0.021	0.173	0.133	0.092
RQ2b						
PSC5	0.074*	0.036	0.064	0.238**	0.074	0.195
PAS5	0.143	0.096	0.057	0.535**	0.163	0.235
BM5	0.076**	0.019	0.088	0.047	0.026	0.054
BM5	0.047	0.026	0.055			
CBO5	0.173	0.133	0.092			
RQ2c						
PSC5	0.073*	0.035	0.064	0.235**	0.074	0.195
PAS5	0.141	0.094	0.057	0.529**	0.162	0.235

*p<0.05 **p<0.01

deleted and the model was run again. The third model (RQ2c) had sufficient fit (CFI=0.957, RMSEA=0.033, SRMR=0.027, χ^2=177.169, df=48). It also produced statistically significant pathways for PSC5 (β=0.195, z-value=3.192, p=0.001) and PAS5 (β=0.235, z-value=3.268, p=0.001) (Table 26), but only for the treatment exposure group. This model indicated for the treatment exposure group that as the mother problem solving and communication (PSC) and Positive Attitude towards the child increases and stress involved in childrearing (PAS) decreases, there is a decrease in problem behaviors for the child at year 9 (Table 26). These magnitudes of change were greater than that of the full sample and the effects for the non-treatment exposure group were significant for Problem

Solving and Communication, but not very large (β=0.07) just as was hypothesized. For the treatment exposure group, the null hypotheses for RQ2.1 and RQ2.2 were rejected.

Question 3

RQ3. Will PAS at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5?

H3: PAS from year 3 will have a significant direct effect on CBO in addition to significant effects of PAS, PSC, BM, and PCR at year 5.

Questions 3 through 17 examined whether more distal parenting behaviors affected outcome by supposing that behaviors at year 3 would enhance the total model. To test if PAS from year 3 had an effect beyond that of the year 5 CPB, PAS3 was included in the best model from research question 1 for RQ3. RQ3 resulted in a fitting model (CFI=0.883, RMSEA=0.051, SRMR=0.052, χ^2=1724.544, df=125). However, the standardized covariance between PAS5 and PAS3 was greater than 1. This was consistent with the structure of the index as the same measures taken at different times. To resolve this issue, the correlations between the similar observed variables in each construct were freed. This changed was confirmed through an investigation of the modification indices. In the resulting model (RQ3a), CBO5 displayed a non-significant loading onto CBO9 (β=0.154, z-value=1.425, p=0.154). This was removed and the re-specified model (RQ3b) was run. This resulted in a fitting model (CFI=0.925, RMSEA=0.045, SRMR=0.04, χ^2=623.724, df=56) with statistically significant pathways for PAS5 (β=0.574, z-value=2.205, p=0.027), PAS3 (β=-0.507, z-value=-2.202, p=0.028), BM5 (β=0.081, z-value=4.488, p<0.001), and PSC5 (β=0.128, z-value=2.655, p=0.008). The

Table 27

Fit indices for research question 3 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ3	1724.544	0.051	0.052	0.883	125
RQ3a	1070.69	0.04	0.039	0.93	122
RQ3b	623.724	0.045	0.04	0.925	56
Group model					
RQ3	1809.793	0.05	0.05	0.884	250
RQ3a	1150.139	0.039	0.038	0.932	244
RQ3b	655.737	0.045	0.038	0.928	112

Table 28

Regression coefficients onto child behavioral outcome at year nine by model

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ3									
PSC5	0.057	0.029	0.046	0.023	0.033	0.019	0.186*	0.072	0.139
PAS5	-0.536**	0.163	-0.204	-0.562**	0.211	-0.209	-0.369	0.251	-0.141
PAS3	0.381**	0.122	0.179	0.346*	0.155	0.162	0.509**	0.192	0.228
CBO5	-0.13**	0.048	-0.066	-0.143*	0.06	-0.069	-0.12	0.085	-0.065
BM5	0.07**	0.016	0.081	0.079**	0.02	0.089	0.047	0.026	0.055
RQ3a									
PSC5	0.156*	0.067	0.127	0.109	0.074	0.09	0.349	0.183	0.259
PAS5	1.709	0.962	0.703	1.618	1.178	0.645	2.155	1.933	0.91
PAS3	-1.111	0.61	-0.572	-1.105	0.747	-0.558	-1.117	1.214	-0.578
CBO5	0.304	0.213	0.154	0.292	0.269	0.142	0.356	0.398	0.194
BM5	0.07**	0.016	0.081	0.079**	0.02	0.089	0.047	0.026	0.055
RQ3b									
PSC5	0.155**	0.058	0.128	0.107	0.063	0.088	0.314*	0.148	0.249
PAS5	1.266*	0.574	0.551	1.164	0.682	0.488	1.551	1.108	0.707
PAS3	-0.889*	0.404	-0.507	-0.852	0.473	-0.479	-0.897	0.799	-0.509
BM5	0.071**	0.016	0.081	0.079**	0.02	0.089	0.047	0.026	0.054

*p<0.05 **p<0.01

corresponding group comparison model did not display significant pathways (Table 28) beyond BM5 for the non-treatment group.

Our hypothesis was that PAS3 would present a significant direct effect on CBO in addition to the effects of year 5 CPB. For the full sample over-all, PAS3 indicated a significant direct effect in addition to the direct effect of PAS5 and BM5 while controlling for CBO5. The null hypothesis was rejected for the full sample.

Question 4

RQ4. Will the effect of PAS at year 3 on CBO at year 9 be significantly mediated by PSC at year 5?

H4: PSC at year 5 will mediate the effect of PAS at year 3 on CBO at year 9.

The first model displayed sufficient fit (CFI=0.875, RMSEA= 0.05, SRMR=0.052, χ^2=1917.189, df=144), however the direct effect of PSC5 was nonsignificant (β=0.033, z-value=1.332, p=0.183) along with the indirect effect of PAS3 through PSC5 (β=-0.016, z-value=-1.331, p=0.183). CBO5 displayed a non-significant pathway and so, was removed when the next model was run. RQ4a displayed similar results (Table 29) with the model indicating insufficient fit (CFI=0.841, RMSEA= 0.06 SRMR=0.059, χ^2=1352.749, df=72). PSC5 (β=0.035, z-value=1.578, p=0.115) and the indirect effect of PAS3 through PSC5 (β=-0.014, z-value=-1.576, p=0.115) remained insignificant. Similar results were displayed from the group comparison model (Table 30). As a result, the analysis failed to reject null hypothesis.

Table 29

Fit indices for research question 4 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ4	1917.189	0.05	0.052	0.875	144
RQ4a	1352.749	0.06	0.059	0.841	72
Group model					
RQ4	2013.781	0.049	0.05	0.877	288
RQ4a	1399.076	0.06	0.056	0.842	144

Table 30

Pathway regression coefficients by model

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ4									
PSC5 -> CBO9	0.041	0.03	0.033	0.004	0.034	0.003	0.205**	0.078	0.154
PAS3 -> CBO9	0.828**	0.282	0.229	0.857*	0.399	0.204	0.946*	0.379	0.329
PAS5 -> CBO9	-0.631**	0.213	-0.241	-0.676*	0.266	-0.252	-0.391	0.353	-0.15
CBO5-> CBO9	-0.075	0.049	-0.038	-0.116	0.062	-0.056	0.053	0.085	0.029
BM5 -> CBO9	0.07**	0.016	0.081	0.079**	0.02	0.089	0.046	0.026	0.054
PAS3 -> PSC5	-1.4**	0.076	-0.474	-1.541**	0.113	-0.447	-1.173**	0.097	-0.542
PAS3 indirect	-0.057	0.043	-0.016	-0.006	0.053	-0.002	-0.24*	0.093	-0.083
PAS3 total	0.771**	0.288	0.213	0.851*	0.407	0.203	0.706	0.384	0.245
RQ4a									
PSC5 -> CBO9	0.041	0.026	0.035	0.01	0.031	0.008	0.143*	0.055	0.115
PAS3 -> CBO9	0.901**	0.3	0.238	0.979*	0.43	0.222	0.845*	0.385	0.284
PAS5 -> CBO9	-0.616**	0.207	-0.232	-0.655*	0.26	-0.242	-0.428	0.34	-0.16
BM5 -> CBO9	0.07**	0.016	0.081	0.079**	0.02	0.089	0.046	0.026	0.054
PAS3 -> PSC5	-1.284**	0.082	-0.406	-1.44**	0.121	-0.397	-1.009**	0.104	-0.424
PAS3 indirect	-0.053	0.034	-0.014	-0.015	0.045	-0.003	-0.145*	0.058	-0.049
PAS3 total	0.847**	0.305	0.224	0.964*	0.438	0.219	0.7	0.389	0.235

*p<0.05 **p<0.01

Question 5

RQ5. Will the effect of PAS at year 3 on CBO at year 9 be significantly mediated by PCR at year 5?

H5: PCR at year 5 will mediate the effect of PAS at year 3 on CBO at year 9.

The initial model run with the CPB from RQ1 and the mediation of PAS3 by PCR5 and resulted in sufficient fit (CFI=0.885, RMSEA= 0.046, SRMR=0.048, χ^2=2247.283, df=197). The indirect effect of PAS3 was not significant in this model (β=0.011, z-value=1.644, p=0.1) as well as the direct effect of PCR5 (β=-0.032, z-value=-1.652, p=0.099). PSC5 also displayed a non-significant regression and so PSC5 was removed and the re-specified model (RQ5a) was run. Again, the indirect effect of PAS3 (β=0.011, z-value=1.598, p=0.11) was not significant and the direct effect of PCR5 (β=-0.031, z-value=-1.606, p=0.108) was not significant. The group comparison model did not reveal different results. As a result, the analysis failed to reject null hypothesis.

Table 31

Fit indices for research question 5 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ5	2247.283	0.046	0.048	0.885	197
RQ5a	1869.092	0.049	0.051	0.879	144
Group model					
RQ5	2383.716	0.045	0.047	0.887	394
RQ5a	1986.644	0.049	0.05	0.879	288

Table 32

Pathway regression coefficients for research question 5 by model

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ5									
PCR5 -> CBO9	-0.017	0.01	-0.032	-0.022	0.013	-0.041	0.003	0.019	0.005
PSC5 -> CBO9	0.046	0.033	0.037	0.894	0.465	0.254	0.959	0.533	0.389
PAS3 -> CBO9	0.877*	0.35	0.286	-0.886*	0.39	-0.323	-0.691	0.635	-0.256
PAS5 -> CBO9	-0.862**	0.33	-0.321	0.006	0.037	0.005	0.216*	0.083	0.158
CBO5 -> CBO9	-0.13*	0.057	-0.066	-0.149*	0.07	-0.073	-0.102	0.107	-0.055
BM5 -> CBO9	0.07**	0.016	0.081	0.079**	0.02	0.089	0.047	0.026	0.055
PAS3 -> PCR5	-2.003**	0.106	-0.349	-2.251**	0.155	-0.344	-1.597**	0.135	-0.355
PAS3 indirect	0.034	0.021	0.011	0.05	0.029	0.014	-0.004	0.03	-0.002
PAS3 total	0.911*	0.353	0.297	0.943*	0.47	0.268	0.955	0.537	0.387
RQ5a									
PCR5 -> CBO9	-0.016	0.01	-0.031	-0.022	0.013	-0.041	0.002	0.017	0.005
PAS3 -> CBO9	0.8*	0.344	0.266	0.883	0.479	0.254	0.754	0.466	0.317
PAS5 -> CBO9	-0.827*	0.319	-0.312	-0.879*	0.393	-0.324	-0.641	0.552	-0.243
CBO5 -> CBO9	-0.116*	0.058	-0.059	-0.15*	0.073	-0.073	-0.029	0.101	-0.016
BM5 -> CBO9	0.07**	0.016	0.08	0.079**	0.02	0.089	0.045	0.025	0.054
PAS3 -> PCR5	-1.978**	0.109	-0.345	-2.252**	0.161	-0.347	-1.521**	0.138	-0.336
PAS3 indirect	0.032	0.02	0.011	0.049	0.029	0.014	-0.004	0.026	-0.002
PAS3 total	0.832*	0.347	0.276	0.932	0.484	0.269	0.75	0.47	0.316

*p<0.05 **p<0.01

Table 33

Fit indices for research question 6 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ6	1394.524	0.043	0.045	0.912	141
RQ6b	720.953	0.029	0.03	0.959	138
RQ6c	224.533	0.031	0.028	0.947	40
RQ6d	78.788	0.026	0.022	0.963	18
Group model					
RQ6	1503.508	0.042	0.044	0.913	282
RQ6b	823.616	0.028	0.03	0.961	276
RQ6c	253.877	0.03	0.027	0.949	80
RQ6d	95.783	0.026	0.021	0.963	36

Table 34

Research question 6 pathway regression coefficients

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ6									
BM5 -> CBO9	0.062	0.017	0.071	0.068**	0.021	0.076	0.058*	0.029	0.068
PAS3 -> CBO9	0.745**	0.234	0.204	0.787*	0.328	0.184	0.771*	0.321	0.27
PAS5 -> CBO9	-0.527**	0.177	-0.201	-0.56**	0.215	-0.209	-0.341	0.314	-0.13
PSC5 -> CBO9	0.059*	0.029	0.048	0.023	0.033	0.019	0.198**	0.073	0.148
CBO5 -> CBO9	-0.103*	0.048	-0.052	-0.123*	0.059	-0.059	-0.073	0.086	-0.039
PAS3 -> BM5	-0.927	0.062	-0.221	-1.017	0.09	-0.212	-0.77	0.083	-0.23
PAS3 indirect	-0.057	0.016	-0.016	-0.069**	0.022	-0.016	-0.044	0.023	-0.016
PAS3 total	0.688**	0.234	0.188	0.718*	0.328	0.168	0.726*	0.322	0.255
RQ6b									
PAS3 -> CBO9	-2.271	1.657	-0.716	-3.311	3.396	-0.895	-0.965	1.287	-0.392
PAS5 -> CBO9	2.157	1.544	0.881	2.627	2.759	1.044	1.744	1.585	0.726
PSC5 -> CBO9	0.179	0.092	0.146	0.156	0.143	0.128	0.331*	0.151	0.248
CBO5 -> CBO9	0.292	0.257	0.147	0.38	0.479	0.184	0.243	0.265	0.132
PAS3 -> BM5	-0.894**	0.06	-0.246	-0.974**	0.086	-0.235	-0.747**	0.081	-0.258
PAS3 indirect	-0.055**	0.016	-0.017	-0.065**	0.022	-0.017	-0.045*	0.023	-0.018
PAS3 total	-2.326	1.656	-0.734	-3.376	3.396	-0.912	-1.01	1.285	-0.41
RQ6c									
BM5 -> CBO9	0.065**	0.016	0.074	0.072**	0.02	0.08	0.054*	0.027	0.064
PAS3 -> CBO9	-0.096	0.078	-0.032	-0.21	0.109	-0.061	0.237*	0.115	0.105
PSC5 -> CBO9	0.042	0.026	0.035	0.011	0.031	0.009	0.143**	0.055	0.115
PAS3 -> BM5	-0.504**	0.064	-0.147	-0.516**	0.084	-0.134	-0.447**	0.095	-0.167
PAS3 indirect	-0.033**	0.009	-0.011	-0.037**	0.012	-0.011	-0.024	0.013	-0.011
PAS3 total	-0.129	0.077	-0.043	-0.247*	0.108	-0.072	0.213	0.112	0.094
RQ6d									
BM5 -> CBO9	0.064**	0.016	0.074	0.072**	0.02	0.081	0.05	0.026	0.061
PAS3 -> CBO9	-0.139*	0.062	-0.048	-0.221*	0.089	-0.065	0.117	0.082	0.055
PAS3 -> BM5	-0.444**	0.069	-0.131	-0.476**	0.091	-0.126	-0.344**	0.099	-0.132
PAS3 indirect	-0.029**	0.008	-0.01	-0.034**	0.011	-0.01	-0.017	0.01	-0.008
PAS3 total	-0.168**	0.061	-0.057	-0.255**	0.088	-0.075	0.1	0.08	0.047

*p<0.05 **p<0.01

Question 6

RQ6. Will the effect of PAS at year 3 on CBO at year 9 be significantly mediated by BM at year 5?

H6: BM at year 5 will mediate the effect of PAS at year 3 on CBO at year 9.

The initial model displayed sufficient fit (Table 33): RQ6 (CFI=0.912, RMSEA= 0.043 SRMR=0.045, χ^2=1394.524, df=141). RQ6 demonstrated significant moderation effects indicating an inconsistent mediation (Table 34). However, the covariance between PAS5 and PAS3 was greater than 1. This was consistent with the structure of the index as the same measures taken at different times. To resolve this issue, the correlations between the similar observed variables in each construct were freed as was done in RQ3. This changed was confirmed through an investigation of the modification indices. The re-specified model, RQ6b, displayed sufficient fit (Table 33) though non-significant pathways from CBO5 and PAS5 to CBO9 (Table 34). These were removed and RQ6c was run again with PSC5 as non-significant. RQ6d was run and displayed sufficient fit (CFI=0.963, RMSEA= 0.026 SRMR=0.021, χ^2=95.783, df=36) and significant pathways for the full sample with relatively increased magnitude of effect in the non-treatment exposure group (Table 34). BM5 mediated the effect of PAS3 on CBO9. All effects were small and the indirect effect was not meaningfully interpretable. As a result, the analysis failed to reject the null hypothesis.

Question 7

RQ7. Will PSC at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5?

H7: PSC from year 3 will have a significant direct effect on CBO in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

When PSC3 was added to the model of significant year 5 CPB, the model displayed sufficient fit (CFI=0.858, RMSEA= 0.053, SRMR=0.053, χ^2=1813.14, df=125). Only PSC5 (β=0.129, z-value=2.802, p=0.005) and BM5 (β=0.08, z-value=4.464, p<0.001) retained significance (Table 36). The group comparison model did not display any additional significant differences in results and, therefore, the analysis failed to reject null hypothesis.

Table 35

Fit indices for research question 7 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ7	1813.14	0.053	0.053	0.858	125
Group model					
RQ7	1871.38	0.051	0.051	0.862	250

Table 36

Research question 7 regression coefficients onto child behavioral outcome year 9

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
PSC5	0.162**	0.058	0.129	0.132*	0.062	0.108	0.4*	0.193	0.285
PAS5	0.265	0.17	0.102	0.066	0.214	0.025	0.837*	0.351	0.326
PSC3	-0.079	0.128	-0.045	-0.171	0.163	-0.095	-0.092	0.268	-0.053
CBO5	0.07	0.063	0.036	0.029	0.076	0.014	0.163	0.134	0.088
BM5	0.069**	0.015	0.08	0.076**	0.019	0.088	0.047	0.026	0.055

*p<0.05 **p<0.01

Question 8

RQ8. Will the effect of PSC at year 3 on CBO at year 9 be significantly mediated by PAS at year 5?

H8: PAS at year 5 will mediate the effect of PSC at year 3 on CBO at year 9 (Webster-Stratton & Hammond, 1999).

The model was run and displayed insufficient fit (CFI=0.849, RMSEA= 0.054 SRMR=0.054, χ^2=1927.534, df=127) and multiple non-significant effects that ruled out reconfiguring the model for this question. The group comparisons displayed similar characteristics though with sufficient fit (CFI=0.852, RMSEA= 0.053 SRMR=0.052, χ^2=1987.345, df=254). The analysis failed to reject null hypothesis for RQ8.

Table 37

Fit indices for research question 8 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ8	1927.534	0.054	0.054	0.849	127
Group model					
RQ8	1987.345	0.053	0.052	0.852	254

Table 38

Research question 8 pathway regression coefficients

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
PSC3 -> CBO9	-0.024	0.394	-0.012	-0.389	0.476	-0.183	0.427	0.879	0.206
PAS5 -> CBO9	0.327	0.367	0.125	-0.11	0.458	-0.041	1.251	0.785	0.483
PSC5 -> CBO9	0.162*	0.07	0.13	0.147*	0.074	0.122	0.352	0.228	0.253
CBO5-> CBO9	0.053	0.076	0.027	0.088	0.089	0.043	0.006	0.165	0.003
BM5 -> CBO9	0.069	0.015	0.08	0.076	0.019	0.088	0.047	0.026	0.055
PSC3 -> PAS5	-0.693	0.033	-0.871	-0.695	0.041	-0.873	-0.686	0.056	-0.859
PSC3 indirect	-0.227	0.256	-0.109	0.077	0.319	0.036	-0.859	0.554	-0.414
PSC3 total	-0.251	0.175	-0.12	-0.312	0.198	-0.147	-0.431	0.463	-0.208

*p<0.05 **p<0.01

Table 39

Research question 9 pathway regression coefficients

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
PSC3 -> CBO9	-0.112	0.199	-0.058	-0.298	0.282	-0.15	-0.029	0.341	-0.016
BM5 -> CBO9	0.077**	0.018	0.089	0.089**	0.022	0.103	0.052	0.03	0.061
PAS5 -> CBO9	0.265	0.229	0.102	-0.022	0.323	-0.008	0.867*	0.401	0.336
PSC5 -> CBO9	0.152*	0.06	0.122	0.134*	0.067	0.111	0.343	0.179	0.248
CBO5 -> CBO9	0.072	0.062	0.036	0.029	0.077	0.014	0.161	0.132	0.086
PSC3 -> BM5	0.569**	0.033	0.255	0.543**	0.04	0.236	0.598**	0.058	0.277
PSC3 indirect	0.044**	0.01	0.023	0.049**	0.013	0.024	0.031	0.018	0.017
PSC3 total	-0.068	0.195	-0.035	-0.25	0.278	-0.126	0.002	0.335	0.001

*p<0.05 **p<0.01

Table 40

Fit indices for research question 9 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ9	1405.156	0.046	0.046	0.892	124
Group model					
RQ9	1481.462	0.045	0.045	0.895	248

Question 9

RQ9. Will the effect of PSC at year 3 on CBO at year 9 be significantly mediated by BM at year 5?

H9: BM at year 5 will mediate the effect of PSC at year 3 on CBO at year 9.

The model from RQ1 was run with the addition of PSC3 and the mediated effect of PSC3 through BM5. This model, RQ9, displayed sufficient fit (CFI=0.892, RMSEA=0.046, SRMR=0.046, χ^2=1405.156, df=124), however there were a number of non-significant pathways (Table 39) including the direct effect of PSC3 (β=-0.058, z-

value=-0.564, p=0.573) and the total mediated effect of PSC3 through BM5 (β=-0.035, z-value=-0.349, p=0.727). The analysis failed to reject null hypothesis for RQ9 contrary to what was hypothesized.

Question 10

RQ10. Will the effect of PSC at year 3 on CBO at year 9 be significantly mediated by PCR at year 5?

H10: PCR at year 5 will mediate the effect of PSC at year 3 on CBO at year 9 (Webster-Stratton & Hammond, 1999).

The analysis was run (Tables 41 and 42) which resulted in a model with sufficient fit (CFI=0.869, RMSEA= 0.047 SRMR=0.049, χ^2=2131.881, df=177); however, none of the effects other than the direct effect of PSC3 on PCR5 (β=0.302, z-value=20.024, p<0.001) and BM5 on CBO9 (β=0.08, z-value=4.467, p<0.001) were significant. Multiple non-significant effects ruled out reconfiguring the model for this question. The group comparisons displayed similar characteristics in non-significant loadings though in a model with sufficient fit (CFI=0.873, RMSEA= 0.047 SRMR=0.048, χ^2=2230.883, df=354). The analysis failed to reject null hypothesis for RQ10.

Table 41

Fit indices for research question 10 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ10	2131.881	0.047	0.049	0.869	177
Group model					
RQ10	2230.883	0.047	0.048	0.873	354

Table 42

Research question 10 pathway regression coefficients

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
PSC3 -> CBO9	-0.288	1.036	-0.132	-2.443	7.645	-1.068	-0.198	1.84	-0.094
PCR5 -> CBO9	-0.003	0.01	-0.005	0.001	0.013	0.003	-0.007	0.019	-0.012
PAS5 -> CBO9	0.098	0.849	0.037	-1.937	6.848	-0.715	0.797	0.988	0.3
PSC5 -> CBO9	0.207	0.248	0.164	0.537	1.407	0.44	0.45	0.808	0.316
CBO5 -> CBO9	0.085	0.069	0.044	0.109	0.213	0.054	0.169	0.166	0.091
BM5 -> CBO9	0.069**	0.016	0.08	0.076**	0.019	0.088	0.047	0.026	0.055
PSC3 -> PCR5	1.228**	0.061	0.302	1.224**	0.077	0.287	1.225**	0.103	0.321
PSC3 indirect	-0.003	0.013	-0.001	0.002	0.015	0.001	-0.008	0.023	-0.004
PSC3 total	-0.291	1.031	-0.133	-2.441	7.642	-1.068	-0.206	1.831	-0.098

*p<0.05 **p<0.01

Table 43

Research question 11 pathway regression coefficients by model

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ11									
PSC5	0.117**	0.033	0.099	0.076*	0.036	0.066	0.28**	0.089	0.214
PAS5	0.288*	0.117	0.117	0.184	0.136	0.073	0.767**	0.28	0.315
BM3	-0.06**	0.015	-0.083	-0.048**	0.018	-0.067	-0.094**	0.028	-0.129
CBO5	0.078	0.062	0.039	0.043	0.074	0.021	0.184	0.136	0.097
BM5	0.094**	0.019	0.109	0.096**	0.024	0.112	0.085**	0.033	0.099
RQ11b									
PSC5	0.111**	0.031	0.096	0.074*	0.036	0.064	0.24**	0.075	0.196
PAS5	0.218**	0.078	0.091	0.142	0.095	0.057	0.54**	0.165	0.235
BM3	-0.06**	0.015	-0.083	-0.048**	0.018	-0.067	-0.094**	0.028	-0.129
BM5	0.094**	0.019	0.109	0.096**	0.024	0.112	0.085**	0.033	0.099

*p<0.05 **p<0.01

Table 44

Fit indices for research question 11 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ11	1063.94	0.045	0.044	0.891	97
RQ11b	574.302	0.052	0.045	0.846	40
Group model					
RQ11	1109.328	0.044	0.042	0.895	194
RQ11b	589.96	0.051	0.042	0.851	80

Question 11

RQ11. Will BM at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5?

H11: BM from year 3 will have a significant direct effect on CBO in addition to the effects at year 5.

To test if spanking from year 3 had an effect in addition to those of the year 5 CPB, BM3 was added to the best model from RQ1. This resulted in a fitting model (CFI=0.891, RMSEA= 0.045 SRMR=0.044, χ^2=1063.94, df=97). As the controlling effect from CBO5 was not significant, it was deleted in the re-specified RQ11b model. RQ11b resulted in fit indices with insufficient fit (CFI=0.846, RMSEA=0.052, SRMR=0.045, χ^2=574.302, df=40), but statistically significant pathways for the full sample and for the treatment exposure group. These pathways were of slightly greater magnitude for the treatment exposure group in comparison to the full sample with the exception of BM5. BM3 displayed a negative association and low loading with CBO9 (β=-0.083, z-value=-3.957, p<0.001) for the full sample and a slightly higher negative loading for the treatment exposure group (β=-0.129, z-value=-3.401, p=0.001).

Interestingly, BM5 displayed a positive loading for both the full sample (β=0.109, z-value=4.944, p<0.001) and the treatment exposure group (β=0.099, z-value=2.62, p=0.009). From these results, the null hypothesis for RQ11 was rejected.

Question 12

RQ12. Will the effect of BM at year 3 on CBO at year 9 be significantly mediated by PCR at year 5?

H12: PCR at year 5 will mediate the effect of BM at year 3 on CBO at year 9.

The results from this analysis displayed insufficient fit (CFI=0.829, RMSEA= 0.054 SRMR=0.051, χ^2=2170.258, df=143) and the regression coefficients for PCR5 and CBO5 were not significant. The model was adjusted with the removal of latent variable CBO5 as a control. The resulting model, RQ12a, displayed slightly decreased fit (CFI=0.821, RMSEA= 0.056 SRMR=0.05, χ^2=1143.752, df=71) and did not indicate a significant indirect effect (β=0, z-value=-0.26, p=0.794) or direct effect for PCR5 (β=-0.004, z-value=-0.26, p=0.795). The group comparison models displayed similar results (Table 46). Consequently, The analysis failed to reject null hypothesis for RQ12.

Table 45

Fit indices for research question 12 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ12	2170.258	0.054	0.051	0.829	143
RQ12a	1143.752	0.056	0.05	0.821	71
Group model					
RQ12	2237.392	0.053	0.05	0.834	286
RQ12a	1182.444	0.055	0.047	0.825	142

Table 46

Research question 12 pathway regression coefficients by model

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ12									
BM3 -> CBO9	-0.061**	0.015	-0.084	-0.049**	0.019	-0.068	-0.096**	0.028	-0.13
PCR5 -> CBO9	-0.002	0.009	-0.004	-0.004	0.011	-0.007	-0.003	0.015	-0.005
PAS5 -> CBO9	0.289*	0.117	0.118	0.185	0.136	0.073	0.771**	0.282	0.315
PSC5 -> CBO9	0.117**	0.033	0.099	0.076*	0.036	0.066	0.282**	0.089	0.214
CBO5 -> CBO9	0.079	0.063	0.039	0.043	0.074	0.021	0.184	0.136	0.097
BM5 -> CBO9	0.095**	0.019	0.111	0.098**	0.024	0.113	0.087**	0.033	0.1
BM3 -> PCR5	0.099**	0.016	0.078	0.104**	0.02	0.082	0.081**	0.029	0.063
BM3 indirect	0	0.001	0	0	0.001	-0.001	0	0.001	0
BM3 total	-0.061**	0.015	-0.085	-0.05**	0.019	-0.069	-0.096**	0.028	-0.131
RQ12a									
BM3 -> CBO9	-0.061**	0.015	-0.084	-0.049**	0.019	-0.068	-0.096**	0.028	-0.13
PCR5 -> CBO9	-0.002	0.009	-0.004	-0.004	0.011	-0.007	-0.003	0.015	-0.004
PAS5 -> CBO9	0.219**	0.078	0.091	0.142	0.096	0.057	0.543**	0.166	0.235
PSC5 -> CBO9	0.111**	0.032	0.096	0.074*	0.036	0.064	0.242**	0.075	0.196
BM5 -> CBO9	0.095**	0.019	0.111	0.098**	0.024	0.113	0.087**	0.033	0.1
BM3 -> PCR5	0.099**	0.016	0.078	0.104**	0.02	0.082	0.081**	0.029	0.063
BM3 indirect	0	0.001	0	0	0.001	-0.001	0	0.001	0
BM3 total	-0.061**	0.015	-0.085	-0.05**	0.019	-0.069	-0.096**	0.028	-0.13

*p<0.05 **p<0.01

Table 47

Fit indices for research question 13 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ13	472.402	0.038	0.035	0.919	59
Group model					
RQ13	512.965	0.037	0.034	0.922	118

Table 48

Research question 13 regression coefficients on child behavioral outcomes year 9

Variable	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
PSC5	0.11**	0.032	0.094	0.072*	0.036	0.061	0.246**	0.076	0.199
PAS5	0.245**	0.082	0.1	0.183	0.101	0.072	0.549**	0.169	0.236
BM5	0.069**	0.016	0.08	0.077**	0.02	0.088	0.047	0.026	0.054
PCR3	0.019*	0.008	0.042	0.029**	0.011	0.061	0	0.012	0

*p<0.05 **p<0.01

Question 13

RQ13. Will PCR at year 3 have a significant direct effect on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5?

H13: PCR from year 3 will have a significant direct effect on CBO in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

PCR at year 3 was included in model RQ13 along with the significant CPB at year 5. The model fit (CFI=0.919, RMSEA= 0.038 SRMR=0.035, χ^2=472.402, df=59) and PCR at year 3 displayed a statistically significant direct effect on CBO9 (β=0.042, z-value=2.436, p=0.015) in addition to the significant effects of CPB at year 5 (Table 48). The regression coefficient for PCR3 was very low in this model. PCR3 was not significant for the treatment exposure group (β=0, z-value=-0.014, p=0.989), but was for the non-treatment exposure group (β=0.061, z-value=2.804, p=0.005). The null hypothesis from RQ13 was rejected for the full sample indicating that PCR3 does have a significant direct effect on child behavioral outcome. Nonetheless, the direct effect of PCR3 was small. The group comparison did not display significant results.

Question 14

RQ14. Will the effect of PCR at year 3 on CBO at year 9 be significantly mediated by PSC at year 5?

H14: PCR at year 3 will be significantly mediated by PSC at year 5.

When the model was run with the mediation effect of PSC5 on PCR3, the model displayed insufficient fit (CFI=0.82, RMSEA= 0.056 SRMR=0.05, χ^2=983.423, df=60) for the full sample as for the group comparison. However, the mediation of PCR3 by PSC5 was significant for the full sample. The direct effects of PCR3 (β=0.047, z-value=2.228, p=0.026) and PSC5 (β=0.046, z-value=2.571, p=0.01) on CBO9 were significant, but very low. The same was true of the total effect (β=0.058, z-value=2.91, p=0.004) and the indirect effect (β=0.011, z-value=2.561, p=0.01). Group differences did not result in rejecting the null for either group. The total effect of PCR3 on CBO5 when taking into account the moderating effect of PSC5 was significant as well as slightly larger than the direct effect of PCR3. The indirect effect for PCR3 was not significant for the non-treatment exposure group and the total effect and direct effects were not significant for the treatment exposure groups. Given both that the model fit was insufficient and the loadings were very low, The analysis failed to reject null hypothesis for RQ14.

Table 49

Fit indices for research question 14 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ14	983.423	0.056	0.05	0.82	60
Group model					
RQ14	1014.702	0.055	0.047	0.824	120

Table 50

Research question 14 pathway regression coefficients

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
PSC5 -> CBO9	0.056*	0.022	0.046	0.03	0.025	0.025	0.111*	0.045	0.084
PAS5 -> CBO9	0.14*	0.057	0.065	0.117	0.072	0.053	0.312**	0.104	0.148
BM5 -> CBO9	0.07**	0.016	0.08	0.077**	0.02	0.088	0.047	0.026	0.054
PCR3 -> CBO9	0.023*	0.01	0.047	0.035*	0.014	0.068	0.005	0.015	0.012
PCR3 -> PSC5	0.097**	0.008	0.241	0.101**	0.01	0.237	0.08**	0.013	0.24
PCR3 indirect	0.005*	0.002	0.011	0.003	0.003	0.006	0.009*	0.004	0.02
PCR3 total	0.028**	0.01	0.058	0.038**	0.013	0.074	0.014	0.014	0.032

*p<0.05 **p<0.01

Question 15

RQ15. Will the effect of PCR at year 3 on CBO at year 9 be significantly mediated by PAS at year 5?

H15: PCR at year 3 will be significantly mediated by PAS at year 5.

When the model was run with the mediation effect of PAS5 on PCR3, the first model displayed insufficient fit (CFI=0.822, RMSEA= 0.055 SRMR=0.055, χ^2=2035.505, df=127). With PSC5 presenting non-significant effects (β=0.019, z-

Table 51

Fit indices for research question 15 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ15	2035.505	0.055	0.055	0.822	127
RQ15a	1681.969	0.062	0.058	0.795	85
RQ15b	281.671	0.04	0.035	0.917	32
Group model					
RQ15	2139.123	0.055	0.054	0.823	254
RQ15a	1734.055	0.061	0.056	0.798	170
RQ15b	309.931	0.04	0.033	0.918	64

Table 52

Research question 15 pathway regression coefficients by model

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ15									
PSC5 -> CBO9	0.022	0.036	0.019	-0.021	0.039	-0.018	0.191	0.1	0.145
PAS5 -> CBO9	1.712	0.897	0.695	1.996	1.222	0.794	1.223	0.991	0.502
PCR3 -> CBO9	0.789*	0.396	0.751	0.903	0.497	0.895	0.386	0.527	0.349
CBO5 -> CBO9	-0.147*	0.07	-0.074	-0.178*	0.077	-0.088	-0.039	0.169	-0.021
BM5 -> CBO9	0.07**	0.016	0.08	0.077**	0.02	0.088	0.047	0.026	0.055
PCR3 -> PAS5	-0.387**	0.022	-0.908	-0.365**	0.026	-0.909	-0.398**	0.04	-0.877
PCR3 indirect	-0.664	0.362	-0.631	-0.728	0.467	-0.722	-0.486	0.406	-0.44
PCR3 total	0.125	0.067	0.119	0.175*	0.069	0.173	-0.1	0.172	-0.091
RQ15a									
PAS5 -> CBO9	0.198**	0.074	0.088	0.165	0.086	0.073	0.896	0.59	0.385
PCR3 -> CBO9	0.05**	0.017	0.092	0.054**	0.018	0.101	0.305	0.285	0.313
CBO5 -> CBO9	-0.032	0.034	-0.016	-0.044	0.042	-0.021	-0.031	0.149	-0.016
BM5 -> CBO9	0.069**	0.015	0.08	0.077**	0.02	0.088	0.045	0.025	0.054
PCR3 -> PAS5	-0.12**	0.009	-0.49	-0.108**	0.01	-0.462	-0.349**	0.039	-0.831
PCR3 indirect	-0.024**	0.009	-0.044	-0.018	0.009	-0.034	-0.312	0.215	-0.32
PCR3 total	0.026*	0.011	0.048	0.036**	0.013	0.067	-0.007	0.102	-0.007
RQ15b									
PAS5 -> CBO9	0.11*	0.047	0.056	0.08	0.059	0.04	0.274**	0.091	0.143
PCR3 -> CBO9	0.022**	0.008	0.048	0.031**	0.011	0.064	0.007	0.011	0.018
BM5 -> CBO9	0.069**	0.015	0.08	0.077**	0.02	0.088	0.045	0.025	0.054
PCR3 -> PAS5	-0.053**	0.006	-0.224	-0.059**	0.007	-0.243	-0.038**	0.009	-0.176
PCR3 indirect	-0.006*	0.003	-0.013	-0.005	0.004	-0.01	-0.01*	0.004	-0.025
PCR3 total	0.016*	0.007	0.035	0.026**	0.009	0.054	-0.003	0.011	-0.007

*p<0.05 **p<0.01

value=0.613, p=0.54), it was removed and the model was run again. Model RQ15a had poor fit (CFI=0.795, RMSEA= 0.062, SRMR=0.058, χ^2=1681.969, df=85) and with the CBO5 control not significant (β=-0.016, z-value=-0.928, p=0.353), CBO5 was removed and the model was run again. Model RQ15b displayed good fit (CFI=0.917, RMSEA=0.04, SRMR=0.035, χ^2=281.671, df=32). Additionally, given that the indirect

effect (β=-0.013, z-value=-2.27, p=0.023), direct effect of PCR3 (β=0.048, z-value=2.769, p=0.006), direct effect of PAS5 (β=0.056, z-value=2.33, p=0.02) and total effect (β=0.035, z-value=2.289, p=0.022) were all significant, the mediation of PCR3 by PAS5 was significant. Consequently, the null hypothesis of RQ15 was rejected for the full sample analysis. The group comparison did not find any significant mediation. This mediation was also an inconsistent mediation given that the indirect effect was negative and the total and direct effects were positive for CBO9. PAS5 acted as a marginal suppressor variable on the effect of PCR3. The mediated and direct effects of PCR3 remained small.

Question 16

RQ16. Will the effect of PCR at year 3 on CBO at year 9 be significantly mediated by BM at year 5?

H16: PCR at year 3 will be significantly mediated by BM at year 5.

When the initial model, RQ16, was run to test this hypothesis, the fit was sufficient (CFI=0.936, RMSEA= 0.034, SRMR=0.034, χ^2=810.498, df=124) and the total and indirect effects of PCR3 were significant. As the control from CBO5 was not significant (β=0.037, z-value=1.189, p=0.234), it was removed and the model was run

Table 53

Fit indices for research question 16 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ16	810.498	0.034	0.034	0.936	124
RQ16a	403.872	0.035	0.032	0.933	58
Group model					
RQ16	916.443	0.033	0.034	0.937	248
RQ16a	440.887	0.034	0.031	0.936	116

Table 54

Research question 16 pathway regression coefficients by model

Pathway	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ16									
PSC5 -> CBO9	0.116**	0.033	0.097	0.074*	0.037	0.063	0.286**	0.091	0.218
BM5 -> CBO9	0.066**	0.016	0.077	0.071**	0.02	0.082	0.048	0.026	0.056
PAS5 -> CBO9	0.314**	0.121	0.127	0.232	0.143	0.092	0.765**	0.28	0.315
PCR3 -> CBO9	0.015	0.008	0.032	0.025*	0.011	0.052	-0.006	0.013	-0.015
CBO5 -> CBO9	0.074	0.062	0.037	0.043	0.073	0.021	0.182	0.135	0.096
PCR3 -> BM5	0.077**	0.008	0.146	0.088**	0.01	0.161	0.051**	0.012	0.105
PCR3 indirect	0.005**	0.001	0.011	0.006**	0.002	0.013	0.002	0.001	0.006
PCR3 total	0.02*	0.008	0.043	0.031**	0.011	0.065	-0.004	0.013	-0.009
RQ16a									
BM5 -> CBO9	0.067**	0.016	0.077	0.072**	0.02	0.083	0.047	0.026	0.055
PAS5 -> CBO9	0.249**	0.083	0.102	0.19	0.103	0.075	0.55**	0.17	0.236
PCR3 -> CBO9	0.017*	0.008	0.036	0.026*	0.011	0.054	-0.001	0.012	-0.002
PCR3 -> BM5	0.059**	0.008	0.111	0.072**	0.01	0.129	0.031**	0.012	0.065
PCR3 indirect	0.004**	0.001	0.009	0.005**	0.002	0.011	0.001	0.001	0.004
PCR3 total	0.021*	0.008	0.044	0.031**	0.011	0.064	0	0.012	0.001

*p<0.05 **p<0.01

again. This second model displayed good fit (CFI=0.933, RMSEA= 0.035, SRMR=0.032, χ^2=403.872, df=58) (Table 53). The direct (β=0.044, z-value=2.497, p=0.013) and indirect (β=0.009, z-value=3.746, p<0.001) effects were small yet significant indicating mediation of the effect of PCR3 through BM5. The group comparison displayed non-significant pathways.

The treatment exposure group did not display any significant mediation (Table 54). The null hypothesis of RQ16 was rejected for the full sample as PCR3 is significantly mediated by BM5 in its effect on CBO9.

Question 17

RQ17. Will PCR, BM, PAS, or PSC from year 1 have significant effects in addition to the significant effects of CBO from years 3 and 5?

H17.1$_0$: PCR at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

Table 55

Fit indices for research question 17 by model

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ17.1	555.736	0.041	0.038	0.892	59
RQ17.2	1231.79	0.064	0.056	0.842	59
RQ17.3	776.464	0.056	0.051	0.819	48
RQ17.4	486.065	0.048	0.042	0.868	40
Group model					
RQ17.1	586.833	0.04	0.036	0.897	118
RQ17.2	1268.299	0.063	0.053	0.843	118
RQ17.3	795.361	0.055	0.047	0.823	96
RQ17.4	502.961	0.046	0.039	0.873	80

The analysis of this question resulted in the null hypothesis being rejected. The model had sufficient fit (CFI=0.892, RMSEA= 0.041 SRMR=0.038, χ^2=555.736, df=59) and PCR1 showed a statistically significant though small effect on CBO at year 9 (β=0.047, z-value=2.202, p=0.028) indicating that some elements of the original parent-child relationship play a role in behavioral outcome even 8 years later.

H17.2$_0$: PAS at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

This model had insufficient fit (CFI=0.842, RMSEA= 0.064 SRMR=0.056, χ^2=1231.79, df=59), the effect of PAS1 was insignificant (β=0.179, z-value=1.329,

p=0.184), and the best adjustment would have been to remove PAS1. Therefore, the null was retained.

H17.3$_0$: PSC at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

This model had insufficient fit (CFI=0.819, RMSEA= 0.056 SRMR=0.051, χ^2=776.464, df=48) and were no significant effects for PSC1 (β=-0.148, z-value=-1.459, p=0.145). The analysis failed to reject the null hypothesis.

Table 56

Research question 17 regression coefficients onto child behavioral outcomes year 9

Variable	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ17.1									
PSC5	0.112**	0.032	0.094	0.077*	0.037	0.065	0.239**	0.077	0.191
PAS5	0.258**	0.085	0.104	0.212	0.112	0.08	0.52**	0.158	0.233
BM5	0.069**	0.016	0.08	0.077**	0.02	0.088	0.046	0.026	0.054
PCR1	0.04*	0.018	0.047	0.051*	0.025	0.057	0.015	0.027	0.019
RQ17.2									
PSC5	0.129**	0.043	0.107	0.082*	0.041	0.068	0.42	0.396	0.332
PAS5	0.79	0.488	0.242	0.395	0.452	0.121	3.569	4.542	1.065
BM5	0.069**	0.015	0.08	0.076**	0.019	0.088	0.047	0.026	0.055
PAS1	1.361	1.024	0.179	0.582	0.999	0.072	6.278	8.83	0.86
RQ17.3									
PSC5	0.111**	0.033	0.095	0.066	0.038	0.058	0.268**	0.082	0.214
PAS5	-0.035	0.215	-0.014	-0.134	0.252	-0.053	0.237	0.504	0.099
BM5	0.069**	0.015	0.08	0.076**	0.019	0.088	0.047	0.026	0.055
PSC1	-0.481	0.33	-0.148	-0.463	0.352	-0.152	-0.773	0.981	-0.202
RQ17.4									
PSC5	0.112**	0.032	0.096	0.074*	0.036	0.064	0.24**	0.075	0.196
PAS5	0.221**	0.079	0.091	0.143	0.096	0.057	0.539**	0.165	0.235
BM5	0.069**	0.016	0.08	0.078**	0.02	0.09	0.046	0.027	0.053
BM1	0.001	0.017	0.002	-0.009	0.02	-0.01	0.014	0.031	0.014

*p<0.05 **p<0.01

H17.4$_0$: BM at year 1 will have no significant effects on CBO at year 9 in addition to the significant effects of PAS, PSC, BM, and PCR at year 5.

This model fit the data sufficiently (CFI=0.868, RMSEA=0.048, SRMR=0.042, χ2=486.065, df=40), however, the effect from BM1 to CBO9 was not significant (β=0.002, z-value=0.086, *p*=0.932) and the best adjustment to this model would be to remove BM1 (Table 56). Thus, the analysis failed to reject the null hypothesis as was expected and there are no conclusion regarding any effects on Child Behavioral Outcome from BM at year 1.

Question 18

In the next three hypotheses, analyses were run on if moderating or interaction effects increased our ability to explain CBO at year 9. For the analysis of moderators and mediators, bootstrapping was conducted (Preacher & Hayes, 2008). These moderation effects were tested, as stated above, using orthogonal methods.

RQ18. Will the moderation of PSC on PCR at year five have a significant effect on CBO at year 9 beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5?

H18: The moderation of PSC on PCR at year five will have a significant effect on CBO at year 9 beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5.

The test analyzed if adding the moderation effect of PSC5 on PCR5 would be significant beyond the significant direct effects of CPB at year 5 from RQ1. The results demonstrated sufficient fit (CFI=0.922, RMSEA=0.031, SRMR=0.031, χ^2=550.106, df=94). However, the direct effect of PCR5 (β=0.004, z-value=0.161, *p*=0.872) and the

moderation effect were not significant (β=-0.095, z-value=-1.648, p=0.099) and the analysis failed to reject the null hypothesis.

Question 19

RQ19. Will the moderation of PAS on PCR at year five have a significant effect on CBO at year 9 beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5?

H19: The moderation of PAS on PCR at year five will have a significant effect on CBO at year 9 beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5.

The analysis from RQ19 revealed a model that had sufficient fit (CFI=0.922, RMSEA=0.031, SRMR=0.031, χ^2=544.723, df=94), however, the effects of both PCR5 (β=0.006, z-value=0.196, p=0.845) and of the moderation of this effect by PAS5 (β=0.069, z-value=0.982, p=0.326) were not significant. Therefore, the analysis failed to reject the null hypothesis of RQ19.

Question 20

RQ20. Will the moderation of PSC on PAS at year five have a significant effect on CBO at year 9 beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5?

H20: The moderation of PSC on PAS at year five will have a significant effect on CBO at year 9 beyond the significant direct effects of PSC, PCR, PAS, and BM at year 5.

When the moderation effect was run to analyze this hypothesis, the model displayed sufficient fit (CFI=0.893, RMSEA=0.035, SRMR=0.033, χ^2=415.943, df=59).

Nevertheless, the effect of the moderation on CBO at year 9 was not statistically significant (β=-0.012, z-value=-0.315, p=0.753). This model was also run to analyze

Table 57

Fit indices for moderation models

Model	χ^2	rmsea	srmr	cfi	df
Full sample					
RQ18	550.106	0.031	0.031	0.922	94
RQ19	544.723	0.031	0.031	0.922	94
RQ20	415.943	0.035	0.033	0.893	59
Group model					
RQ18	615.455	0.03	0.031	0.927	188
RQ19	627.409	0.031	0.032	0.924	188
RQ20	n/a	n/a	n/a	n/a	n/a

Table 58

Moderation model regression coefficients onto child behavioral outcomes year 9

Model	Full sample			Non-treatment exposure			Treatment exposure		
	b	SE	β	b	SE	β	b	SE	β
RQ18									
PSC5	0.108*	0.042	0.093	0.081	0.043	0.071	0.223*	0.106	0.181
PAS5	0.225*	0.112	0.086	0.165	0.139	0.061	0.563*	0.264	0.22
PCR5	0.002	0.015	0.004	0.005	0.018	0.009	0.001	0.035	0.002
BM5	0.069**	0.02	0.08	0.076**	0.024	0.088	0.047	0.033	0.055
Moderation	-0.119	0.072	-0.095	-0.092	0.089	-0.077	-0.046	0.113	-0.059
RQ19									
PSC5	0.117**	0.041	0.1	0.083	0.116	0.073	0.23	1.261	0.188
PAS5	0.245*	0.111	0.093	0.162	2.133	0.06	0.572	1.497	0.226
PCR5	0.003	0.016	0.006	0.006	0.144	0.011	0.016	0.597	0.028
BM5	0.069**	0.018	0.08	0.075**	0.021	0.088	0.047	0.032	0.055
Moderation	0.101	0.103	0.069	0.203	437.84	0.114	-0.34	231.8	-0.052
RQ20									
PSC5	0.111**	0.039	0.096	n/a	n/a	n/a	n/a	n/a	n/a
PAS5	0.22*	0.096	0.091	n/a	n/a	n/a	n/a	n/a	n/a
BM5	0.069**	0.019	0.08	n/a	n/a	n/a	n/a	n/a	n/a
Moderation	-0.076	0.242	-0.012	n/a	n/a	n/a	n/a	n/a	n/a

*p<0.05 **p<0.01

group differences, however, no solution was found. This model did not add meaningfully to the model from previous analyses. The analysis failed to reject the null hypothesis of this question and failed to discover any meaningful moderation effects. Adding interacting latent variables into the models did not improve fit or create statistically significant pathways. The results of testing for Hypotheses 18, 19, and 20 were non-significant and the analysis failed to reject the null hypotheses for these moderation analyses.

Summary of Significant Results

The null hypotheses 1.1, 1.2, 1.3, 2.1, 2.2, 3, 11, 13, 15, and 16 were rejected according to the theory and proposals of this study. The results from RQ1 indicated that Behavioral Management, Problem Solving and Communication, along with Parenting Stress at year 5 statistically significantly predicted levels of Child Behavioral Outcome at year 9. Model RQ1b, which had the best fit from RQ1, indicated that these have minimal positive effects on the quality of the child's behaviors. Thus, as stress goes down, positive attitude goes up, then positive behaviors increase as a result. When parents do better with problem solving and communication, then positive behaviors increase as a result. Finally, when spanking is reduced, positive behaviors increase as expected.

From RQ2, The significant findings for RQ2.1 and RQ2.2 for the treatment exposure group resulted in the RQ2c model being the best fitting model. This means that again as stress goes down, positive attitude goes up, and parents do better with problem solving and communication, then positive behaviors increase as a result.

RQ3b was the best fitting model from RQ3 and indicated that PAS5 and PAS3 had significant direct effects on CBO9 while controlling for CBO5. However, the impact

of PAS at year 5 had a different effect than at year 3. This model indicated that increased stress at year three goes up and positive attitude decreases, positive behavioral outcomes increase. At year 5, decreases in stress and increases in positive attitude predict increases in positive behavioral outcomes. PAS at years 3 and 5 displayed inverse relationships to child behavioral outcomes at 9 years and will be discussed later on.

The null was rejected for RQ11. The results indicate that BM3, the measure of spanking used, was statistically significantly negatively related to CBO9 in that as spanking increased, positive behavioral outcome increased. This was of small magnitude for the full sample (β=-0.083, p<0.001) and of moderate magnitude for the treatment exposure group (β=-0.129, p<0.001). At the same time, BM5 was statistically significantly positively related to CBO9 (β=0.109, p<0.001) indicating that as spanking decreased, positive outcomes increased as the literature suggests. This result indicates a difference in effect of spanking depending on the time of use. This result indicates that spanking at year 3 increases positive behavioral outcomes at year 9 for children while spanking at year 5 reduces positive outcomes, especially for those in the treatment exposure group.

The significant findings in RQ13 demonstrate that the parent-child relationship at year three positively impacted child behavioral outcome for the full sample and the non-treatment group. However, the regression coefficients for PCR3 were low in this model for both the full sample (β=0.042, p=0.015) and the non-treatment group (β=0.062, p=0.005). PCR3 did not have a significant effect for the treatment exposure group. This indicates that the positive relationship a parent has with the child will increase positive behavioral outcomes for the child.

The mediating effect of PAS5 on the effect of PCR3 on CBO5 was significant in the RQ15 analysis. This relation was only true for the full sample test as the group differences did not have significant results for this mediation model. The effect from PCR3 onto PAS5 was negative (β=-0.224, p<0.001) and the direct effect of PCR3 on CBO9 was positive (β=0.048, p=0.006) resulting in a total effect that was significant and positive, though small (β=0.035, p=0.022). This indicates that the relation of PAS5 to PCR3 is one that reduces the effect of PCR3. This signifies that a previous positive parent-child relationship reduces positive attitude and increases stress, which in turn reduce the total beneficial effect of the parent-child relationship though with very low loadings.

Having rejected the null, RQ16 demonstrates a mediation of the effect of PCR3 for the full sample. This indicates that not using spanking accounts for part of the observed relationship between the parent-child relationship at year 3 and the behavioral outcomes at year 9. The relationship at year 3 influences the use or not of spanking which in turn marginally increases the effect of PCR3 on later behavioral outcomes. The mediation is not significant for the treatment exposure group.

Contrary to expectation, the null hypothesis for RQ17.1 was rejected. However, the added direct effect from year 1 in RQ17.1 was small: the standardized coefficient for the direct effect of PCR1 when added to the model was 0.047 (p=0.028). Being the only CPB from year 1 with a direct effect, however, does demonstrate that PCR is of significant importance in the CPB at an early age.

Model Comparisons

A number of analyses resulted in models that fit the data available. The models from Questions 11, 13, and 17.1 were compared to the original model from Question 1. Since the RQ1b model is not nested in the other models, comparing RQ1b individually to each of the other models using the Akaike information criterion (AIC) would usually be possible. However, as a non-parametric estimator (DWLS) was used, the AIC is not available for non-nested comparisons. The comparison of models shows that other than the RQ11b model, the other models improve upon the fit of model RQ1b (Table 59). This

Table 59

Fit measures for significant models for the full sample

Model	χ^2	rmsea	srmr	cfi	df
RQ1b	412.864	0.049	0.042	0.887	32
RQ3b	623.724	0.045	0.04	0.925	56
RQ6	1394.524	0.043	0.045	0.912	141
RQ11b	622.114	0.055	0.047	0.837	40
RQ17.1	551.579	0.041	0.038	0.895	59
RQ13	485.402	0.038	0.035	0.918	59
RQ15b	281.671	0.04	0.035	0.917	32
RQ16	412.385	0.035	0.032	0.932	58

increase in fit shows that the majority of the distal and mediation effect models adds significant predictive information to RQ1b (Figure 24). However, the added parameters are of marginal loading values (<0.1) similar to those in RQ1b, except concerning RQ3b which are discussed below. Of the others, the only standardized coefficient loadings onto CBO9 greater than 0.1 are in RQ11b (BM5 [β=0.109, z-value=-4.945, p<0.001]) and RQ16 (PAS5 [β=0.102, z-value=2.99, p=0.003]). These are not greatly increased from RQ1b. Nevertheless, these additional models add meaningful interpretive value to

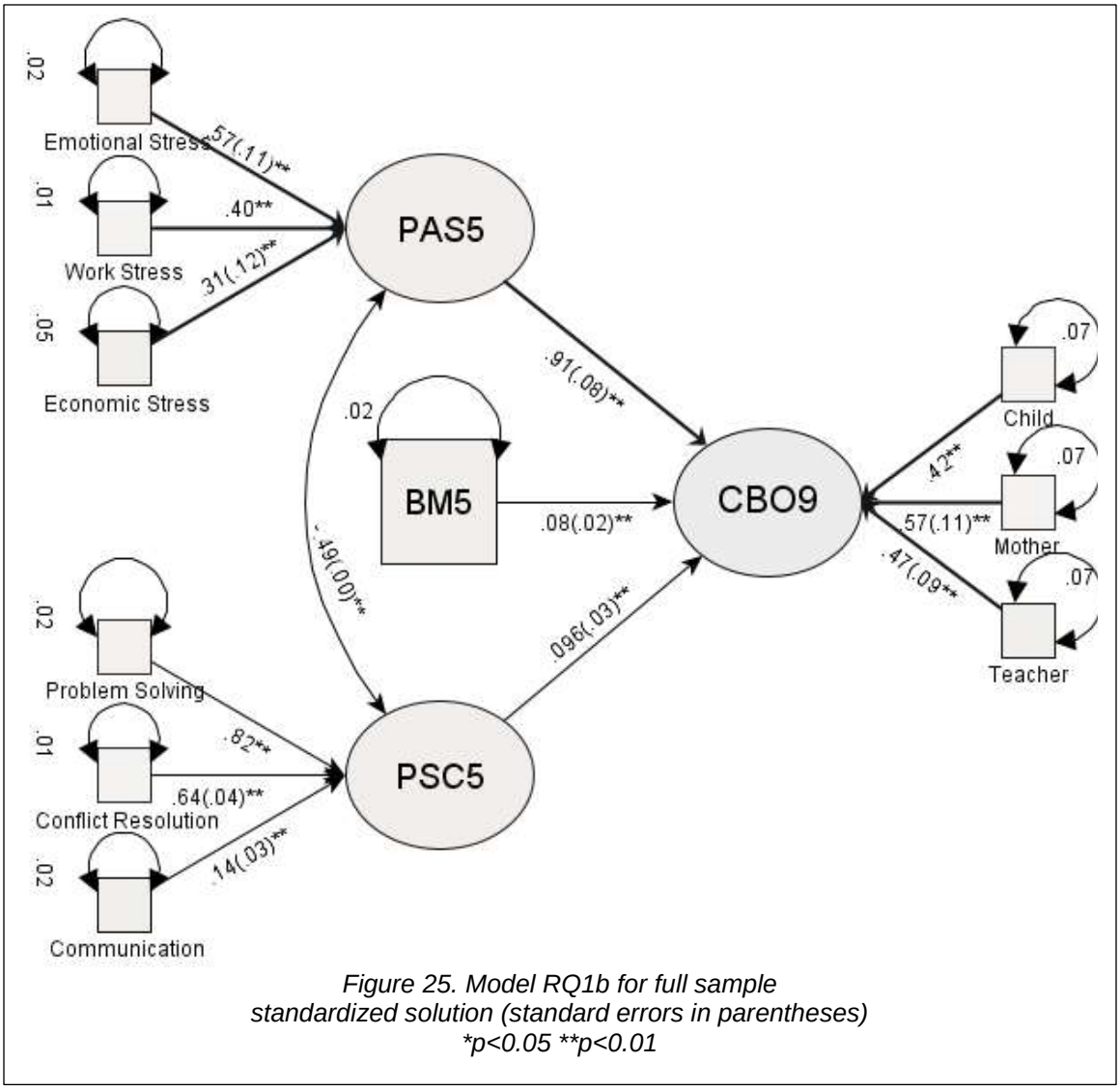

Figure 25. Model RQ1b for full sample
standardized solution (standard errors in parentheses)
**p<0.05 **p<0.01*

our knowledge of the distal effects on a child's behavioral outcome of a mother's parenting behaviors.

More importantly, the model from RQ3b was a statistically significant model with good fit (CFI=0.926, RMSEA=0.045, SRMR=0.04, χ^2=623.724, df=56) and revealed significant pathways for the full sample but no significant pathways for either group. When descriptively compared to RQ1b, RQ3b displayed improved fit as a model and loadings of a greater magnitude and displayed the greatest change in Chi-squared. Model

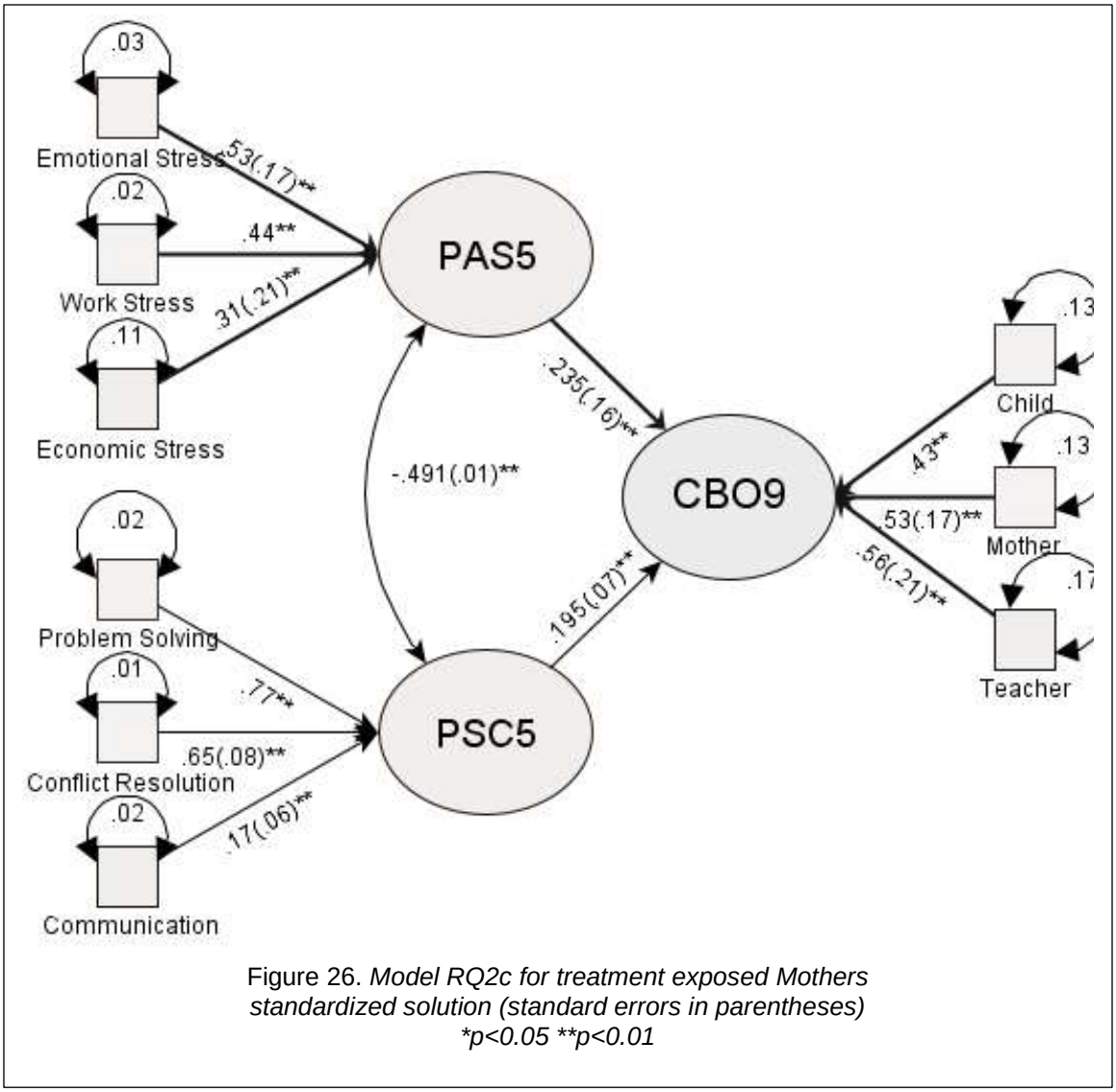

Figure 26. *Model RQ2c for treatment exposed Mothers standardized solution (standard errors in parentheses) *p<0.05 **p<0.01*

Table 60

Fit measures for significant models in treatment exposure group

Model	χ^2	rmsea	srmr	cfi	df
RQ2c	412.864	0.049	0.042	0.887	32
RQ11b	635.271	0.053	0.044	0.843	80

RQ1b displayed sufficient fit (CFI=0.887, RMSEA=0.049, SRMR=0.042, χ^2=412.864, df=32) and had significant pathways, yet the coefficients are low and demand cautioned interpretation as they are lower than 0.1. With our results, RQ3b offers better predictive value for the sample as a whole.

Concerning the models for the treatment exposure group, the model RQ2c (Figure 26) was also descriptively compared to the model RQ11b (Table 60) which were the two models that displayed significant results for the treatment exposure group. RQ11b displayed insufficient fit (CFI=0.843, RMSEA=0.053, SRMR=0.044, χ^2=635.271, df=80) although the addition of BM3 appears of significant magnitude and significance (β=-0.129, z-value=-3.399, p=0.001) to indicate that BM3 is important to understanding the origins of the child's behavioral outcomes for parents who have sought treatment in the past.

Model RQ2c (Figure 26) displayed excellent fit (CFI=0.959, RMSEA=0.033, SRMR=0.026) and meaningful loadings for the treatment exposure group. Model RQ3b remained a good model for the full sample and re-affirms the significance of Parenting Stress in the development of behavioral outcome both at year 3 and at year 5. It is essential to note that PAS5 had a positive effect on outcomes for the general sample in RQ1b and for non-treatment exposed mothers in RQ2c. This indicates that as positive attitude towards the child went up and stress decreased, positive behavioral outcomes increased. This was also the case in RQ2c with treatment-exposed mothers as was hypothesized and outlined at the beginning of the study. With RQ3b, however, PAS5 maintains this positive relationship with CBO9, yet PAS3 is negatively related to CBO9 indicating that as a positive parental attitude goes up and stress decreases at year three,

there is an increase in negative behavioral outcomes for children. This is contrary to intuition and past research that tends to demonstrate that increases in stress lead to reductions in positive outcomes.

Model RQ3b (Figure 27) showed that Parenting Stress are statistically and meaningfully significantly related to Child Behavioral Outcome at year 9. There are two significant times at which PAS is influencing CBO, indicating that when the child is between the ages of 3 to 8 is the time at which preventative intervention could have the

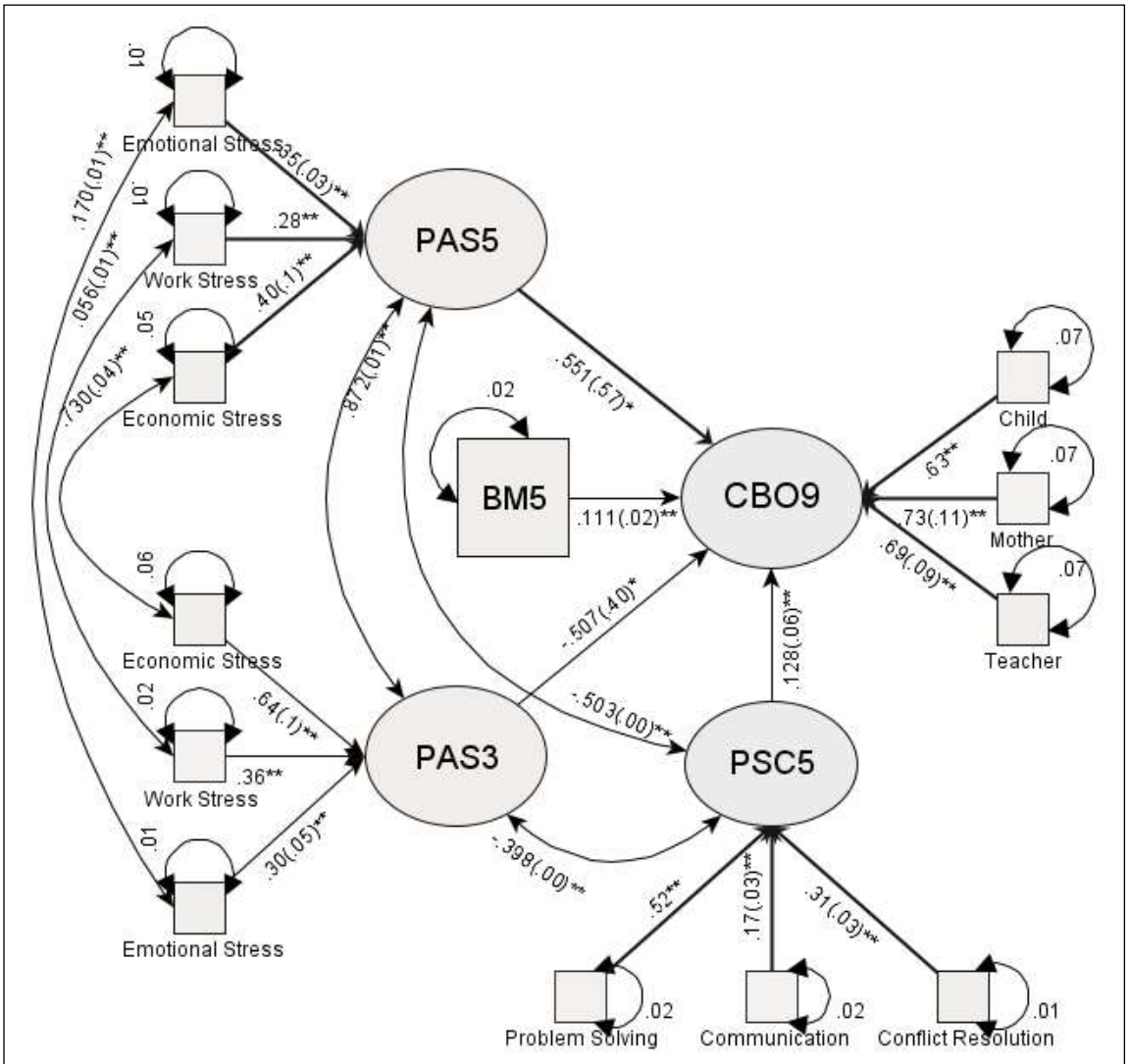

Figure 27. Model RQ3b: full sample
standardized solution (standard errors in parentheses)
**p<0.05 **p<0.01*

most positive impact. PAS5, as shown, maintains a slightly higher and positive standardized coefficient most likely due to proximity. As the mother experiences increases in stress and decreases in her positive attitude towards the child and childrearing at year three, the child displays increased positive behaviors across environments and reports later on. This indicates that if stress is reduced and positive attitude is increased at that time, then the child will display increased negative outcomes, contrary to what was outlined. Yet as time progresses, the positive benefits of the reduction of stress and increased positive attitude come into play with PAS5 predicting increased positive behavioral outcomes. Despite this contrary effect at different years, it indicates that preventative intervention would be most beneficial to CPB when the child is aged 3-5 years old, albeit using different techniques.

In summary, Model RQ2c (Figure 26) and Model RQ3b (Figure 27) provided sufficient fit and meaningful pathways for the data. In reviewing the best models, Model RQ2c performed very well for the treatment exposure group, but failed to produce significant pathways for both the full model and the non-treatment group. This indicates a significant departure in pathways for the treatment exposure group. At the same time, Model RQ2c displayed statistically significant and meaningful pathways for the treatment exposure group. For the overall sample, Model RQ3b performed the best and indicated significant pathways towards CBO9 from PAS at years 3 and 5, PSC5, and BM5. Consequently, for a population that has a history of seeking treatment Model RQ2c is superior. For a general population, Model RQ3b is the best at explaining pathways towards the development of positive child outcome.

Distal Effect Models

With research questions 11, 13, and 17 the study analyzed if more distal examples of the Core Parenting Skills had significant direct effects on a child's behavioral outcome at year 9. These questions resulted with significant effects and their null hypotheses were rejected. RQ11b (Figure 28) resulted in BM3 having a significant negative direct effect on outcome although low (β=-0.083, p<0.001) for the full model. This indicated that as spanking increases positive behavioral outcomes also increase. This relationship was strengthened when treatment exposure was accounted for. In the treatment exposure group, this direct effect from BM3 increased significantly (β= -0.129, p=0.001) as well as the other direct effects from year 5. Again, this indicates that as behavioral management skills decrease and spanking increase at year 3, there is a positive benefit as positive behaviors increase later on. This relationship was strengthened in the treatment exposure group (Figure 29). This is contrary to current assumptions about spanking and contrary to the effects of BM5 for both the full sample (β=0.109, p<0.001) and the treatment group (β=0.99, p=0.009) which displayed a very similar effect. Our results indicate that increases in the use of spanking around year 3 are associated with increased positive behavioral outcomes for children later on. At the same time, the increased use of spanking around year 5 is predictive of increased negative behavioral outcomes.

RQ13 (Figure 30) responded to whether the parent-child relationship at earlier years influenced development of positive behavioral outcomes at later years. For the full sample, a positive relationship at year 3 had a significant positive effect on behavioral outcomes. This was as was expected and in agreement with most literature. However,

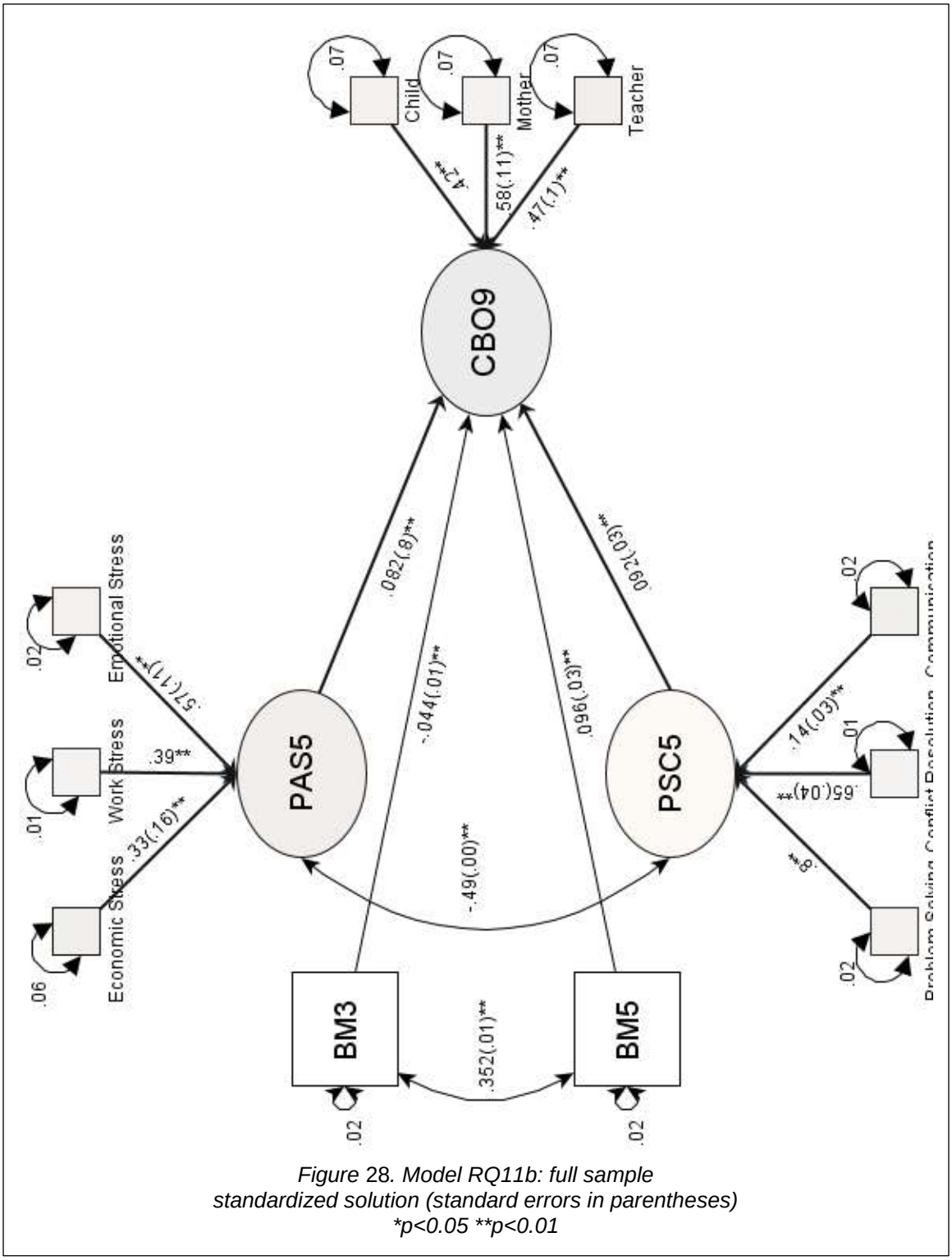

Figure 28. Model RQ11b: full sample
standardized solution (standard errors in parentheses)
**p<0.05 **p<0.01*

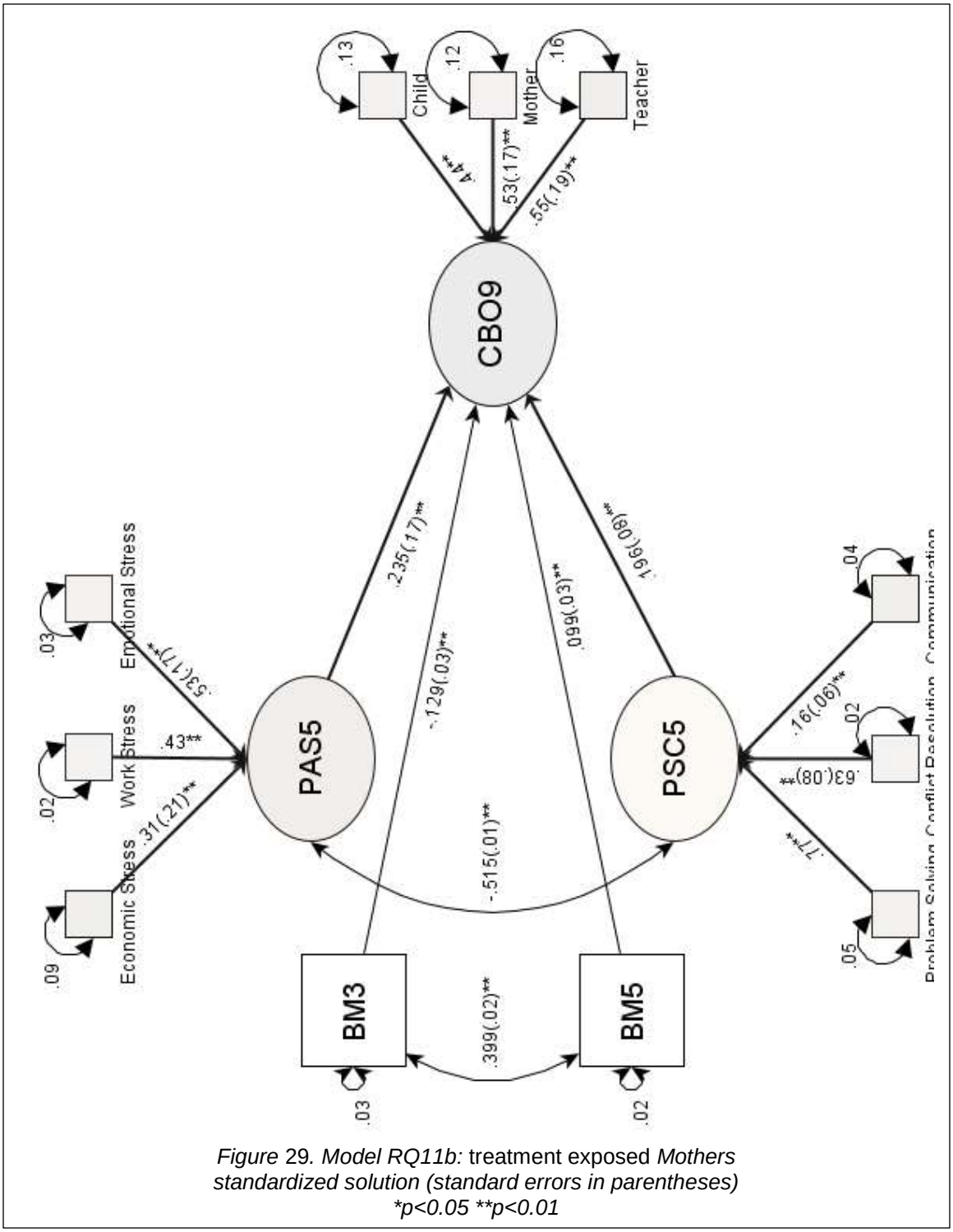

Figure 29. *Model RQ11b:* treatment exposed *Mothers standardized solution (standard errors in parentheses) *p<0.05 **p<0.01*

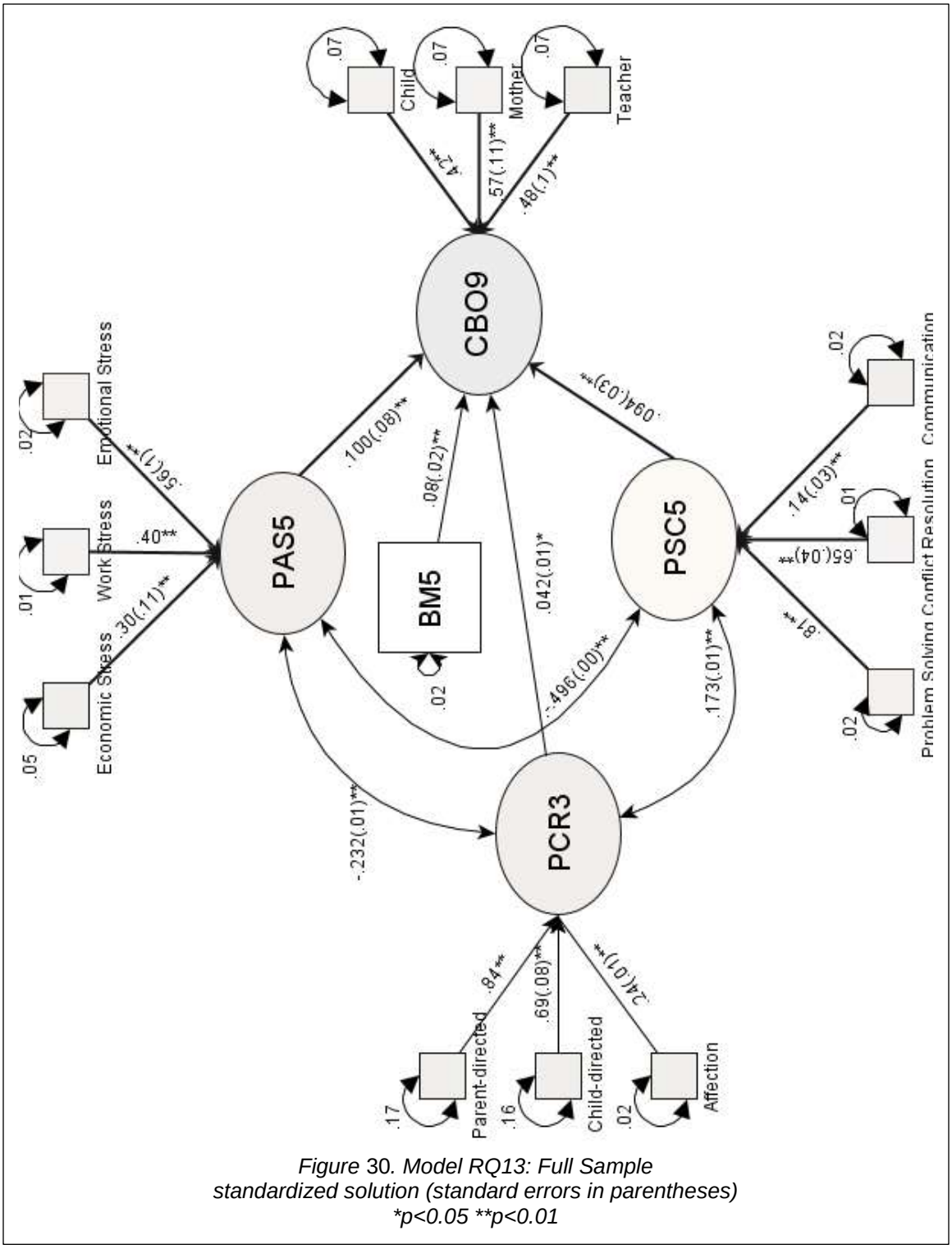

Figure 30*. Model RQ13: Full Sample*
standardized solution (standard errors in parentheses)
**p<0.05 **p<0.01*

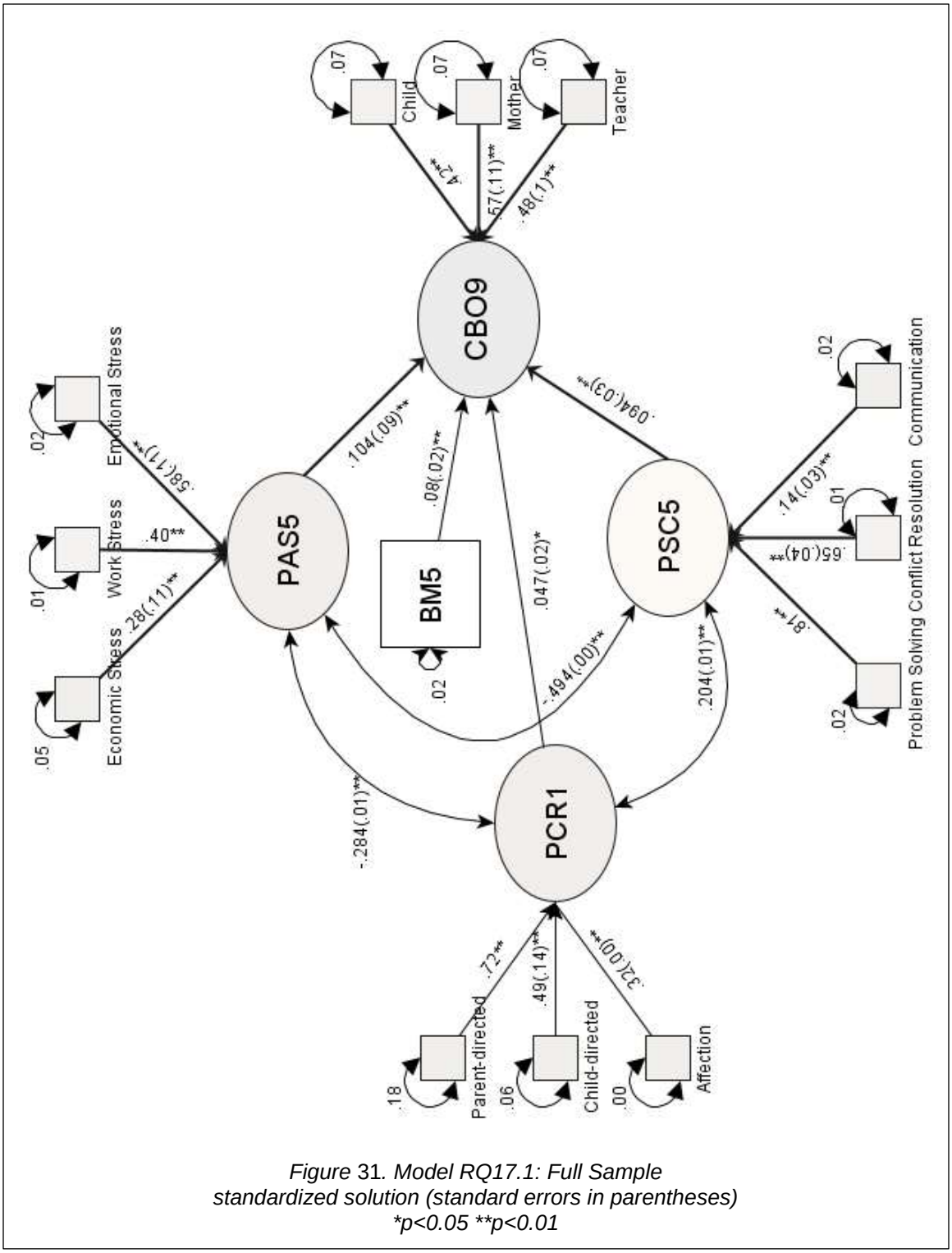

Figure 31*. Model RQ17.1: Full Sample*
standardized solution (standard errors in parentheses)
**p<0.05 **p<0.01*

the added effect from PCR3 is small. Of note, however, are the correlations of PAS5 with PCR3 and PSC5 that are negative. All three of these variables have positive correlations to CBO9, indicating that there is most likely another significant mediating or moderating variable that would explain such correlations. PCR3 at this time had no significant effect in the treatment exposure group.

The research questions in RQ17 were used to analyze direct effects from year 1. It was expected that the null would not be rejected for these analyses due to the more recent CPB absorbing most of the direct effect from past years of CPB, especially at such a distance. Only RQ17.1 (Figure 31) resulted in the null hypothesis being rejected: the parent-child relationship at year one was shown to have a significant direct effect on behavioral outcomes at year 9. Again, this effect was small both for the full sample (β=.05, p=0.024) and for those who did not seek treatment (β=.65, p=0.03), indicating that in general and more specifically for those who do not seek treatment, the parent-child relationship at early years will increase positive behavioral outcomes. This is consistent with the literature. This was not shown to be the case for the treatment exposure group.

Mediation Models

Our analysis also looked for mediations in these longitudinal effects. Research questions 15 and 16 found significant mediation effects. Both RQ15 and RQ16 outlined the effect of the parent-child relationship at year 3 being mediated by the CPB at year 5 for the general population. No other CPB from the year 3 variables were found to be mediated. This signifies that the parent-child relationship is closely bound to the other CPB in its effects.

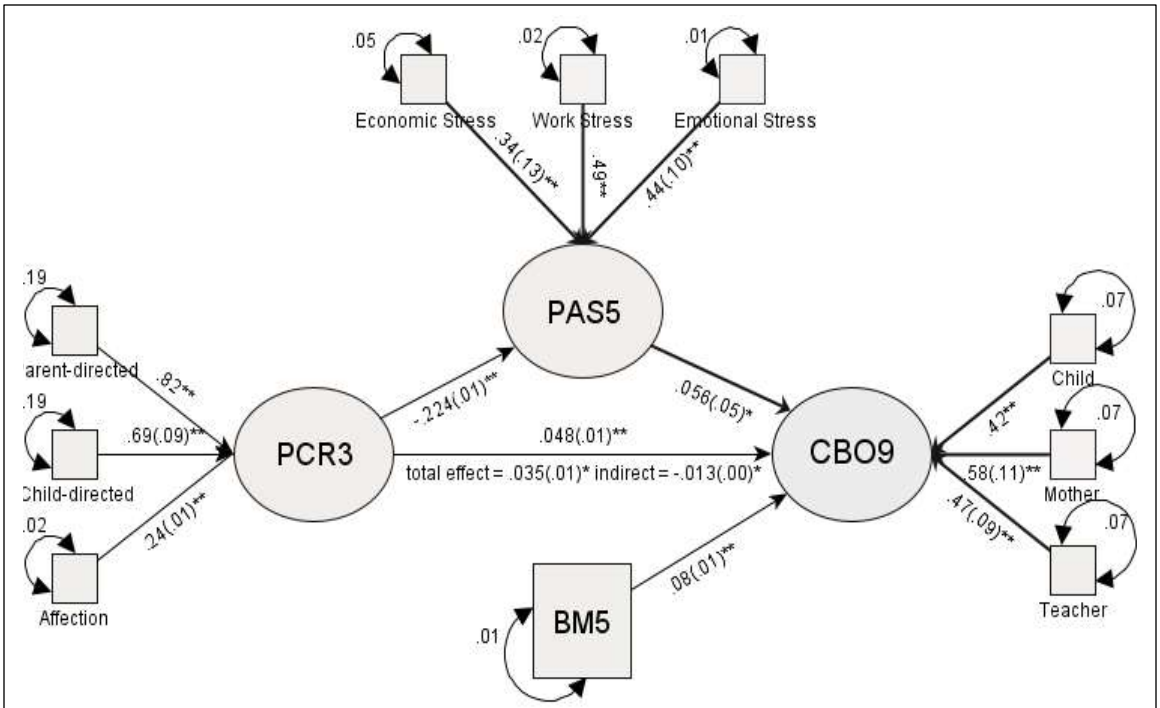

Figure 32. Model RQ15b: Full Sample
standardized solution (standard errors in parentheses)
**p<0.05 **p<0.01*

Specifically, model RQ15b (Figure 32) identified that when PSC5 and BM5 are not in the model, parenting stress mediates the effect of the relationship as an inconsistent mediator as the overall indirect effect is negative (β=-0.013, p=0.23) while the direct (β=0.048, p=0.006) and total effects (β=0.035, p=0.022) are positive. All of the effects on CBO9 were small (β<0.1). This indicates that an increase in positive attitude and decrease stress at year five that increases positive behavioral outcome, simultaneously slightly suppresses the beneficial effect from an earlier positive parent-child relationship.

RQ16 (Figure 33) demonstrated that behavioral management skills at year five also mediate the effects of PCR3 on behavioral outcomes for the full sample (β=.036, p=0.046) with a marginal indirect effect (β=.009, p<0.001) increasing the total effect only slightly and still small in magnitude (β=.044, p=0.013). This indicates that the reduction in the use of spanking at year 5 supports the beneficial effect of a previous positive

relationship at year three on positive behavioral outcomes at the end of childhood. These two models show that the reduction in stress and increase in positive attitude acts against the benefit of the reduction of spanking on the correlation between a positive parent-child relationship and later child behavioral outcome. These two appear to be at counter-purposes. Both of these mediate this relationship between PCR3 and CBO9 minimally.

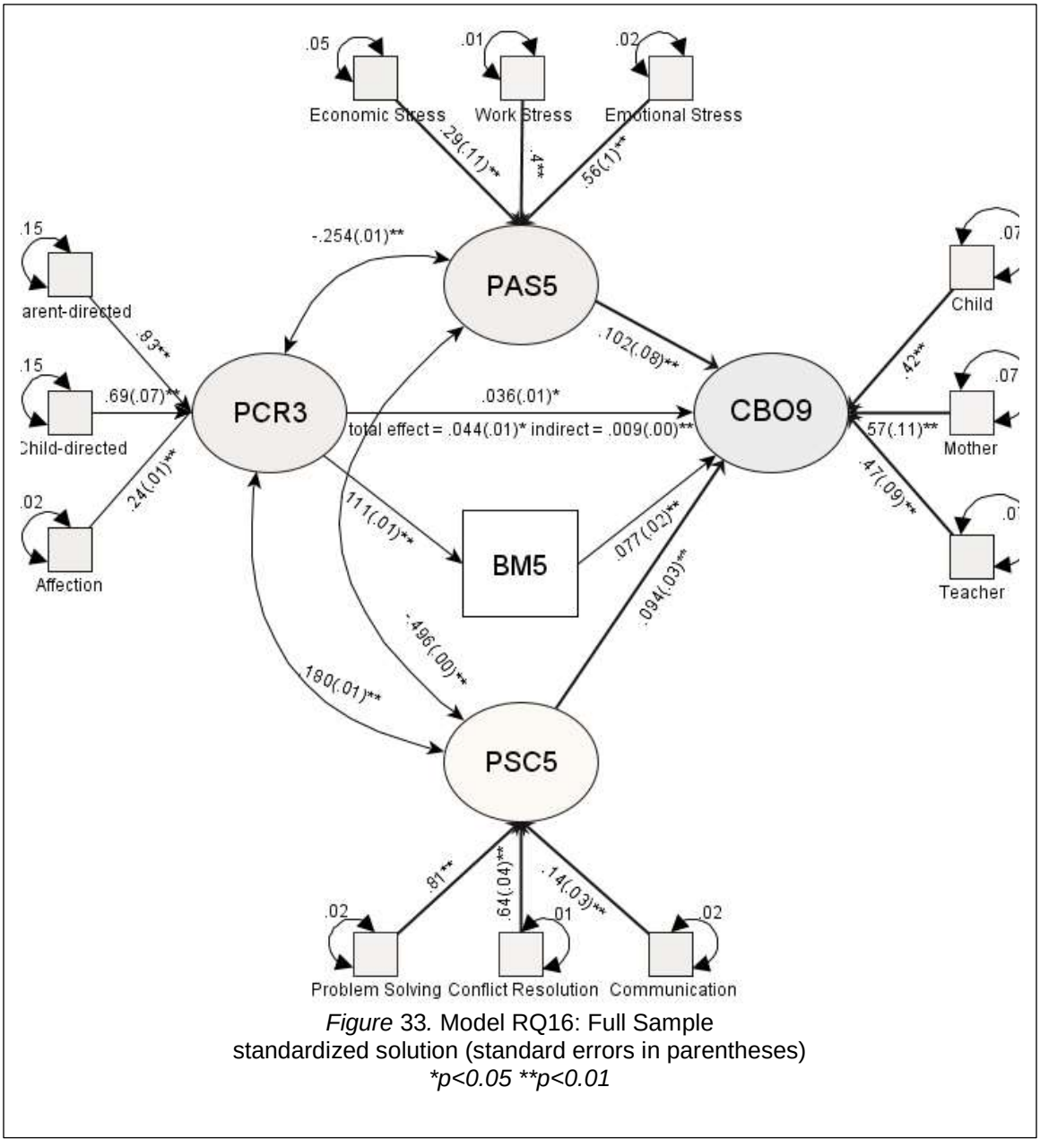

Figure 33. Model RQ16: Full Sample
standardized solution (standard errors in parentheses)
**p<0.05 **p<0.01*

Moderation Models

Research questions 18-20 investigated specific moderation effects between the CPB themselves. These analyses netted no significant moderation effects (Tables 57 and 58). The only significant moderation effect was that of treatment exposure as demonstrated in the comparison in the final models section of this chapter. Treatment exposure 1) rendered non-significant the significant mediating effects for the full sample, 2) strengthened the effects of CPB at year 5 (specifically PSC5), and—most importantly— 3) inverted the direction of the relationship of PAS on CBO9.

Chapter Five: Discussion

This study's goal was to find the central parenting skills that best predict pathways towards positive gains in Child Behavioral Outcomes (CBO) through early and middle childhood. To this end, a national sample was analyzed with the developmental framework of Baumrind to find both 1) the key parenting behaviors and 2) the key time for prevention of negative behavioral outcomes and for the increase of positive outcomes when the child is at the transition into adolescence. For this purpose, the theory was applied to a national non-clinical sample with more ethnic diversity than most studies. The analysis defined the developmental pathways as well as identified some risks, protective factors, and contextual elements at play. In addition to this, the study looked at groups within the sample that had previously received psychological treatment and those that had not. Chapter 4 reviewed the outcomes from the study This discussion offers an interpretation of the findings and implications for how to best prevent negative behaviors and increase positive behaviors. This chapter provides some considerations for future studies and interventions towards prevention of negative behavioral outcome in children and discusses the limitations of this study's findings.

Discussion and Interpretation

This study had a two-fold overarching purpose: to expand our knowledge of core parenting skills and their precise pathways within a more diverse population as well as to identify the times at which certain Core Parenting Behaviors (CPB) are more effective in preventing negative outcomes. More specifically, this study wished to identify that the Core Parenting Behaviors (CPB) are correlated to Child Behavioral Outcomes (CBO) in a non-clinical, less severely symptomatic, ethnically diverse sample. Secondly, it expected

to find several Core Parenting Behaviors (CPB) serving as moderators and mediators of the pathways of other Core Parenting Behaviors (CPB) on Child Behavioral Outcomes (CBO) and on their development through time. Finally, though the sample was not a clinical sample, the possible effects of past treatment cannot be negated *a priori*, as well as the treatment-exposed population most likely evidencing different behavioral systems and patterns. Therefore, the study took into account those parents who sought treatment in the past and compared them to those without any history of treatment. Those parent-child dyads that had treatment exposure were hypothesized to have stronger correlations of Core Parenting Behaviors (CPB) and Child Behavioral Outcomes (CBO) and present different mediating and moderating Core Parenting Behaviors (CPB) pathways than those who did not seek treatment.

Significant Findings

The major significant findings related to RQ1, RQ2, and RQ3. RQ1 demonstrated that three of the Core Parenting Behaviors had a significant effect on outcomes. The only Core Parenting Behavior at year 5 that was not significantly related to Child Behavioral Outcome was the Parent-Child Relationship. RQ3 represented a model for the full sample where Parenting Stress was significantly predictive of Child Behavioral Outcome although this relationship was negative for year three and positive for year five. RQ3 had significantly higher loadings than RQ1 and was better suited to meaningful interpretation. RQ2 demonstrated that for the treatment exposure group PAS, PSC, and BM5 had significant direct effects with moderate loadings greater than the loadings of the full sample or the non-treatment group. RQ11, RQ13, and RQ17 demonstrated that behavioral management at year three, the parent-child relationship at year three, and the

parent-child relationship at year 1 all had significant direct effects on Child Behavioral Outcome, respectively. Finally, RQ15 and RQ16 demonstrated that the effect of PCR3 was suppressed by PAS5 and mediated by BM5 respectively.

Research Question 1. The first research question hypothesized that as parenting behaviors at year 5 became more positive they would reduce negative behavioral outcomes and increase positive ones. The analysis showed that as stress levels at year five decreased so did positive behaviors as expected. It also showed that the relationship of problem solving and communication was as hypothesized: that as communication and problem solving increased so did positive behavioral outcomes. Reductions in spanking and improved behavioral management were predictive of increased positive outcomes as theorized. Problem Solving and Communication (PSC5) and Parenting Stress (PAS5) were also statistically significant with greater magnitude of loadings when tested with the treatment exposure group, which will be discussed later in this section when treating group differences.

The reduced magnitude in results may be due to the increasing influence both of peers and other outside influences at the end of early childhood (Dahlberg & Potter, 2001; Dishion, McCord, & Poulin, 1999). In this regard, other models in this study (e.g. RQ3) with larger coefficients could be considered as superior. It is important to remember that the ages of the children from year 5 to 9 are 8-12. Different types of behaviors are present in adolescence due to the growing number of environmental, biological, social, and familial influences. An example is how there is a shift away from parental influence to external influences (Johnson et al., 2017). This variation in age at such a time in development may also produce difficulty in interpretation as the effect of

parenting in adolescence is non-parallel to those in childhood as the association patterns change (Burt & Klump, 2014; Simons-Morton, Chen, Hand, & Haynie, 2008; e.g. Bradley & Corwyn, 2013; Sroufe, 2003).

Nevertheless, the index for PAS5 is a measure of an aspect of responsiveness while PSC and BM are measures of demandingness as identified above. As such, this analysis affirms that Baumrind's analysis of elements is theoretically sound across a non-clinical and ethnically diverse sample. These results also show that it is therapeutically and preventatively essential in the health development of children.

Research Question 2. The group-based hypotheses of research question 2 were based on the expectation that those who engaged in treatment in their past would demonstrate increased impact of Core Parenting Behaviors on Child Behavioral Outcome. The treatment exposure group included mothers who attended treatment, counseling, or therapy for any issues at any time during the sampling. This underlined the possible effects of treatment's longitudinal efficacy and its potential effect on correlations of behaviors. This was theorized due to an 1) increased intentionality in parenting behaviors or at least an intentional element to engagement in any behavior, 2) ability to engage in help seeking and 3) motivation towards self and family betterment, that this group would demonstrate a strengthening of relationships between parenting and behaviors. There is certainly the possibility that those who sought treatment have experienced worse effects of mental health issues. With the contrariety of these elements (increased self-help and increased severity) that go into treatment exposure while the positive correlations would strengthen, this group would also show different pathways.

The most meaningful findings for the treatment exposure group were with the model from research question 2. This model displayed significant differences to the full sample from RQ1 and from RQ3. In comparison to RQ1 and the non-treatment sample in RQ2b, the treatment exposure group displayed increased magnitude in the loadings of the year 5 parenting behaviors on the positive child outcomes.

Model RQ1c indicated very low coefficients for the full sample. However, when it was run for group difference and BM5 was removed, model RQ2c was of good fit and the parenting behaviors (PSC5 and PAS5) each explained around a 20% change in standard deviation for behavioral outcome at year 9. This model displayed non-significant pathways for the non-treatment exposure group indicating that treatment exposure was moderating the effects of parenting stress (PAS5) and problem solving and communication (PSC5). The insignificance of an effect from Behavioral Management (BM5) indicates that treatment exposure moderates this effect to render the increase or decrease in spanking non-consequential. This is an important effect, that those mothers who seek treatment increase the effects of other parenting skills and rule out the negative effects of spanking. It may also indicate that this group in general does not spank, making the variable non-significant due to lack of variation in reporting. In this regard, it is important also to remember that family intervention models include behavioral components. Behavioral management interventions in general have a great deal of research on their effects on outcomes especially regarding externalizing symptoms. This study includes only a measure of spanking as the operationalization of behavioral management.

Past treatment exposure appears to increase ability to reduce stress and increase positive attitude towards positive child behavioral outcome and to increase the transmission of problem solving and the availability of using useful coping systems, regardless of the behavioral management tactic used. For example, given that negative verbalizations are impacted by stress, then in the treatment exposure group, these negative verbal interactions are buffered by the ability of the parent to communicate effectively, perhaps being able to admit they made a mistake when they yelled. This type of interaction communicates to the child that a certain behavior is not the ideal and perhaps communicates an element of reality to the ability to fail and forgive. This intentionality also impacts the child's perception of the parents behaviors which—as demonstrated by Gershoff (2002)—is key to the impact of parenting behaviors especially physical discipline. This perception acts as a moderator (e.g. Lansford et al., 2005) and is at play within these pathways towards behavioral outcome. The ways the treatment exposure model compares to the model from RQ3 will be discussed in the next section.

In summary, treatment exposure represents a moderating effect. The elements that go into what make a mother seek treatment regardless of what the treatment is for or whether treatment is successful or not, effectively moderate the effects of Parenting Stress as well as problem solving and communication behaviors on CBO. It increases the strength of these associations without reference to the use or not of spanking. Additionally, the treatment exposure model includes only two of the four Core Parenting Behavior indices, yet includes one from demandingness and one from responsiveness, again underlining the viability of Baumrind's analysis of elements. In the analysis of the treatment exposure group, no significant mediation effect was found whereas they were

for the full sample. These behaviors, therefore, 1) render non-significant the otherwise significant mediating effects for the full sample. Treatment exposure also 2) strengthened the effects of CPB at year 5 (PAS5 and PSC5) and 3) made the impact of the use of spanking (BM5) non-significant.

Research Question 3.

In general, RQ3 presented significantly greater magnitudes in its regression coefficients than RQ1 which displayed minimal standardized coefficients (<0.1). From the results of the analysis, several Core Parenting Behaviors (CPB) at year 3 had direct effects on Child Behavioral Outcomes (CBO) at year 9. RQ3 presented the only direct effect at year three with a coefficient greater than 0.1. Contrary to the effect of Parenting Stress at year five (PAS5; β=0.551, p=0.027) in this model Parenting Stress at year 3 (PAS3; β=-0.507, p=0.028) indicated that as stress increased, positive behavioral outcomes increased by 50% of a standard deviation. This was in contrast to the direction of this relationship from RQ1 as reported above and for the treatment exposure model. The model from research question 3 created a sufficient model that included Parenting Stress at year 3 and 5 (PAS3, PAS5), Problem Solving and Communication (PSC5), and Behavioral Management (BM5). All of these demonstrated statistically significant pathways towards Child Behavioral Outcomes at year 9 (CBO9) again confirming the important role of the responsive and demanding behaviors that were theorized as important to positive behavioral outcomes.

There are two significant times at which PAS is influencing CBO, indicating that when the child is between the ages of 3 to 8 is the time at which preventative intervention could have the most positive impact. The results revealed close to the same regression

coefficient for Parenting Stress at year 5 (PAS5) and Parenting Stress at year 3 (PAS3) demonstrating that the effect is very similar in magnitude from the two time periods. It affirms that early intervention is a key to effective prevention and that implementation around the age of 2-8 is of the highest importance. PAS5, as shown, maintains a slightly higher and positive standardized coefficient most likely due to proximity. Nevertheless, the effects are contrary.

The inverted relationship at these two time periods is a critical result of the analysis. Earlier in development (around ages 2-4), increases in childrearing stress are predictive of increased positive social behaviors for children. This is contrary to the expected. Following this stage, at ages 5-7, mothers who experience increased stress have children who are at greater risk for negative behavioral outcomes. The results from year 5 Parenting Stress are consistent with the expectation of the study that stress affects behavioral outcomes detrimentally. Such stress develops when the parent feel trapped by the child which will increase negative verbalizations. In turn, the child who experiences sustained negative criticism experiences worse behavioral outcomes (Iwaniec et al., 2007; Morimoto & Sharma, 2004). It is possible that resulting stress serves as an impetus to improved parent-child interactions and increased demands for socialized and socially successful behaviors. Thus, generally for the population when not controlling for treatment exposure, reduced stress are beneficial to child behavioral outcomes, but only at year 5.

As the mother experiences increases in stress regarding childrearing and associated responsibilities at year three, the child displays increased positive behaviors across environments and reports later on. This indicates that if stress is reduced at that

time, then the child will display increased negative outcomes and decreased positive outcomes, contrary to what was theorized. This was similarly demonstrated by Anthony et al (2005) were increases in stress were related to fewer externalizing behavior problems in children ages 1-5. This is surprisingly consistent with the findings of this analysis.

This underscores that higher stress followed by better communication, reduced spanking, and reduced risk creates more compliance and better behavioral outcomes. This effect is one of a resiliency effect created from overcoming obstacles especially when followed by a time period of reduced stress. The increase in stress increases compliance and goal-oriented behaviors whereas the more immediate situation serves as an environment in which better parenting can happen. It is also, important to consider the other possible moderating effects and pathways through the parent's incorporation of stress and the child's awareness of stress. The mother may report stress and has more ability to cope when the child is 3 or younger without the child internalizing it as much. The stress the mother experiences later, the child internalizes more and thus stress and the recognition of a negative attitude have a detrimental effect of positive behavioral outcomes. In other words, between these two times there is a differential susceptibility founded on resiliency and internalization.

Yet as time progresses, the positive benefits of the reduction of stress comes into play with PAS5 predicting increased positive behavioral outcomes. For year 5, from the analysis, it is essential to intervene in ways that reduce and prevent financial difficulties and work difficulties related to raising children especially around 5 years old. Additionally, the attitude of the parent to perceive themselves as effective parents and to

view raising children as positive is an area for prevention based on the results from year 5 Parenting Stress (PAS). This inverted relationship may be evidencing the effects from acute stress and variations in stress responses that can increase coping and teach successful strategies whereas if the stress continues at the same level for a longer amount of time, it proves detrimental (Schneiderman, Ironson, & Siegel, 2005). In this model, the decrease of stress after certain levels of stress not only bolster effective coping, but also increase the resiliency of the individual such that negative behaviors are avoided. A continuation of stress into year five would indicate a situation of chronic stress which is related to later mental and physical health symptoms (Blackwell, Mendes De Leon, & Miller, 2006).

Finally, it is important to note that treatment exposure renders this negative effect of parenting stress non-significant, indicating that for the treatment exposed mother, her child responds to the more immediate parenting behaviors. Mojtabai (2007), identified that those who seek treatment do so by three main characteristics: willingness to get treatment for a serious problem, comfort talking about personal problems, and the perceived stigma. If this becomes modeled behaviors, the self-efficacy, appropriate emotional expression, and reduction in stigma to seek out help would become very beneficial to the development of socialized behaviors. This was also demonstrated by Burger and Samuel (2017) in that it increase life satisfaction and Dupéré, Leventhal, and Vitaro (2012) in that it buffers against the negative impacts of stress. The results from the study along with those of Dumka et al. (2010) provide results that indicate that parenting self-efficacy is an essential element to preventing conduct problems in children. This is the case with the present study revealing how increased problem solving and decreased

stress increases positive behavioral outcomes for the child whose mothers sought treatment for themselves regardless of previous behaviors and situations. In other words, treatment exposure may level the playing field between those children of parents who experience high stress and negative attitude and those children of parents who have reduced stress and positive attitude.

The analysis demonstrates that the impact of Parenting Stress is inverted over time. Reduced stress at year 3 decreases positive behavioral outcomes (β=-0.507, p=0.028) and at year 5 increases positive behavioral outcomes (β=0.551, p=0.027). Despite this contrary effect at different years, it indicates that preventative intervention would be most beneficial to CPB when the child is aged 3-5 years old, albeit using different techniques. The results add uniquely to the past research that negative attitude and how parents view the daily hassles uniquely predict development of behavioral difficulties (Lorber & Egeland, 2017; Waller et al., 2012) and increased symptom expression (Keown, 2012).

Physical discipline. The general effect of behavioral management was well lower than the expected, especially with the evidence-based family therapy models that focus on behavioral management. This is most likely due to the paucity of indicators for behavioral management and the index created from the FFWCS dataset reflecting simply the occurrence of spanking. What the analysis of this spanking indicator did show was interesting, however. RQ11 demonstrated that behavioral management at years three and five had significant direct effects on Child Behavioral Outcome. Spanking as a form of physical discipline did not demonstrate significant direct effects on Child Behavioral Outcomes (CBO) at year 1. The inverted relationship was surprising, based on the

literature to support the negative impact of spanking on child outcome. The research demonstrates that this is not always the case. The results indicate that an increase in spanking at year 3 positively benefits child behavioral outcome. Similar to PAS5 and PAS3, spanking at year 5 and spanking at year 3 have inverted effects. Thus, at year three, as reports of spanking increase so do socialized positive behaviors in the child six years later.

The literature review referenced evidence that many studies use an adult child's retrospective reporting along with a varying level of interpretation of spanking as correlated to negative behavioral outcome (e.g. Fréchette, Zoratti, & Romano, 2015). This is in addition to semantic and other inherent problems with this construct as well pointed out in a critique by Holden (2002). At year 9 about 50% of parents in the FFCWS indicate that they spank. In this light, the measure of spanking may be an overrepresentation of actual parent-child interactions. It receives such attention in discussions on discipline that it is reported differently whether over- or under-reported. Additionally, the measure of spanking available for this study plateaus at once a day. To distinguish the impact of spanking as a negative tactic it needs further specification both in kind and amount. The parents who must use it often during a day most likely demonstrate that they have no other disciplinary tactic available to them. Whereas, for example, once a day, softly, in an appropriate situation, with other techniques used when possible, gives us a very different interaction pattern. This inversion of effect may be similar to the chronic stress effect of Parenting Stress (Schneiderman et al., 2005), that if spanking goes along for long enough it becomes detrimental.

Another important element missing from this measure of physical discipline is the child's concurrent report of spanking along with other physically coercive and aggressive tactics that would increase the ability to identify the impact of spanking and the broader range of parental disciplinary techniques, particularly if they approach abuse. Not only would this provide a corroboration of the report and an increase in precision of construct, it would more importantly include the child's interpretation of the discipline used. How the child perceives of the proportionality or disproportionality of spanking is a major moderator of spanking's effect on outcomes (e.g. Gershoff, 2002).

The last important consideration in this analysis with ambiguous severity physical punishment is that—as mentioned earlier—emotional neglect (an absence of parental responsiveness) has been found to be even more significant than restrictive, coercive discipline in the etiology of externalizing behaviors (Baumrind, 1996). Based on the results of this study, neglect and emotional maltreatment are more closely linked to negative attitudes about the child (as for example measured in PAS) and the parent-child interaction than they are towards spanking, especially at lower levels of severity. The present study demonstrates that spanking does demonstrate a significant effect on behavioral outcomes for children. At year three, however, the reports of increased spanking actually produce beneficial results with increased positive behavioral outcomes.

The inverted relationship of BM3 on CBO9 with BM5 on CBO9, however, is consistent with theory that there are times and places for spanking. It also appears to support the long-standing tradition of using it for younger children despite what research has indicated for the majority of the last 30 years. The results indicate that for children at year 3, the use of spanking supports the development of positive behavioral outcomes.

They also indicate that the continued use of spanking up to when the child is aged 5 has a negative effect on positive behavioral outcomes. There are other possible modifiers of this relationship to be investigated, including race/ethnicity and education.

Additionally, rather than treatment exposure changing this relationship, the treatment exposure group experiences a significant increase in the magnitude of the positive effect of spanking at year 3 on behavioral outcomes, while the negative effect of spanking at year 5 remains very similar. Contrary to most research, the analysis supports the appropriate use of spanking for younger children. Spanking in this context should not be confused with things that are not spanking, but—though named the same—are abusive and physically harmful. In agreement to the long-standing tradition of research, the analysis confirms that spanking is inappropriate for older children.

Parent-Child Relationship.

These results from the analyses are informative in predicting Child Behavioral Outcomes (CBO) from year 5 CPB. They concur with the formulation of parenting skills to be targeted in treatment as discussed in the literature review. They underline the importance of stress, a positive attitude towards the child and childrearing, the ability of the parent to problem solve, good communication skills, and reducing the use of spanking. These are all show to be important in the development of socialized behaviors in children as they prepare for adolescence. Conversely, they show that the parent-child relationship quality does not have a significant direct effect at year 5. Nevertheless, PCR remains important as it does have a significant though small effect from earlier years.

The significant results from the analyses of the parent-child relationship in RQ13 and RQ17 demonstrate the importance of PCR at early years up through 5 years old. The

parent-child relationship is the only CPB to have direct effects from year 1, indicating the essential quality of a positive relationship between the parent and child. This is especially true with elements such as collaborative play between the parent and child and signs of affection towards the child. The results confirm that a warm, nurturing relationship is a necessary foundation for establishing effective limit setting and consistency in discipline and for lasting change in the behaviors of both parent and child.

Additionally, RQ15 and RQ16 demonstrated that the effect of PCR3 was significantly mediated by PAS5 and BM5 respectively. The parent-child relationship not only has importance through early development, but also that other parenting behaviors impact its positive effect on behavioral outcomes for children and its prevention of conduct problems. These two are at counter-purposes, however. These models show that the reduction in stress and increase in positive attitude acts against the correlation between a positive parent-child relationship and later child behavioral outcome. At the same time, the benefit of the reduction of spanking at year 5 on behavioral outcome bolsters the correlation between a positive parent-child relationship and later child behavioral outcome.

When the effect of problem solving and communication (PSC5) is taken out of the equation, the effect of this early positive relationship is mediated by the levels of stress and parental attitude towards the child. This mediation is inconsistent, however, indicated by the fact that though the direct effect has a positive correlation with improvements in behavioral outcome, the total effect is one of an inverse relationship. The instances of stress and the negative view of the child suppress the beneficial effects of the early relationship while these same increases promote positive behavioral outcome.

This result from this study indicates two things. First, that the more recent attitude and stressors a parent experiences can diminish the benefits derived from a positive early relationship. The opposite is true as well: reduced stress and positive attitude in the more recent past can mitigate effects of previous negative parent-child interactions. Secondly, that although increased stress and negative attitude reduce the beneficial effects of PCR on CBO it simultaneously increases positive behavioral outcome directly.

Finally, behavioral management was shown to mediate the effect of the parent-child relationship at year 3. The analysis demonstrates that not using spanking at year 5 slightly strengthens the beneficial effect of a previous positive parent-child relationship. The use of alternative strategies to spanking mediates the effect of the parent-child relationship on child behavioral outcome in addition to the effects of parent attitude and stress and problem solving and communication. It slightly strengthens the positive impact of the earlier relationship towards positive development of socialized behaviors and prevention of conduct problems.

The significant results indicated a number of enlightening conclusions. First, that generally the CPB are good indicators of behavioral outcome. The Core Parenting Behaviors showed significant effects on child behavioral outcome. These effects were strengthened if parent has sought any type of psychological treatment or counseling. The exception was PCR. At years that are more distal the parent-child relationship has an effect on outcomes consistent with attachment literature. This early importance is confirmed in practice and intervention (e.g. Lenze, Pautsch, & Luby, 2011) just as this analysis showed it to be significant in the later development of behavioral outcomes. The immediate and later parent-child relationship, however, was not shown to be significant,

indicating that its effect is no longer significant after year 3. Rather, this analysis indicates that its prime effect is only very early on, where it establishes a foundation. Its effect becomes diffused as the child ages.

Second, that Parenting Stress has large magnitude effects at years 3 and 5 for the general population that are reversed. This is due to an increase in resiliency and the child's limited awareness of the environment before age 5. Additionally, children of treatment-exposed mothers do not experience this type of contrary effect.

Third, spanking displays a similar contrary effect at different times. For treatment-exposed mothers there is no significant effect for spanking at year 5 until the contrary effect of earlier spanking is taken into account. The results indicate that increases in the use of spanking around year 3 are associated with increased positive behavioral outcomes for children later on. At the same time, the increased use of spanking around year 5 is predictive of increased negative behavioral outcomes.

Non-significant Hypotheses

Among the analyses that did not reject the null hypothesis were those regarding the majority of Core Parenting Behaviors from year 1 and year 3. This study also proposed several hypotheses regarding mediation and moderation that were unsubstantiated.

Core Behaviors from Year 1. Results indicated failure to reject the null hypothesis that factors from year 1 (other than the parent-child relationship: see above for RQ17.1) would not be associated with outcomes at year nine. This was hypothesized due to both the distance from the outcome measure and the assumption that, though the impact of early parenting has been shown (Landry et al., 2006), the effects of these early

behaviors change during the course of development. That is, both new behaviors develop that demand more discipline due to increase in social demands for compliance and the additional skills a parent needs to learn to deal with these. The results confirmed this expectation. An additional consideration supported by the analyses is that the data at year 1 intends to measure from birth to year one, while year three measures from year one to year 3 and is much more essential to the child's later development. This confirmed other previous research (e.g. Eisenberg et al., 2006). Still, more recent CPB have effects on behavioral outcomes that negate the distal effects of these early experiences of parent-child interactions.

Core Behaviors for Year 3. Out of the four CPB at year 3, PSC3 alone demonstrated non-significant findings. This result of the analysis is significant in that among the core parenting behaviors problem solving and communication skills displayed no significant effect at year three and no mediated effect. This is especially interesting as these types of behaviors are often the focus of empirically based interventions such as Parent Management Training (Kazdin, 2005b) and typically a focus for any intervention regarding parent-child interaction issues. The results indicate that focusing intervention and prevention in other areas (or on these behaviors later on at year 5) would be more beneficial to positive behavioral outcomes for children as they approach adolescence.

Mediators. The only mediators discovered in the analyses were those that influenced the effects of the parent-child relationship at year three (PCR3). Behavioral Management and Parenting Stress displayed mediating relationships with the effect of PCR3 on behavioral outcomes. Despite Behavioral Management and Parenting Stress at year 3 having direct effects on behavioral outcomes for children, none of the other CPB

mediates these effects. This lack of mediation is most likely due to the limited and minimal magnitude of direct effect from these measures onto behavioral outcomes for children at year 9. This again underlines the importance of the early parent-child relationship as a significant variable, the importance of more proximate parenting behaviors in prevention and intervention, and the importance of the moderation processes underlying treatment exposure, as none of these mediating effects were significant for that group of the sample.

Moderators. The major unsupported interests for this study were moderators. The analysis results concluded that no moderation effects were found among the CPB themselves. The only moderating effect discovered by the analyses was that of treatment exposure. This was directly contrary to the assumptions and theory of this study. As a result, the entire research process was re-run from beginning to end checking for errors and assessing for spurious elements or syntax errors. No errors were discovered. Following this process, all of the tests produced an identical result. Some of these effects are more difficult to evaluate using asymptotic estimation methods and due to the measures in the data being ordinal. However, as a bootstrap was performed, it does not come down to an estimation or statistical measure issue (Preacher & Hayes, 2008). Other possible moderators may be present that need to be investigated and better analyzed. Research questions 18-20 investigated specific moderation effects between the CPB themselves. These analyses netted no significant moderation effects and none of the null hypotheses could be rejected. The only significant moderation effect was that of treatment exposure as discussed previously. The qualities of the treatment exposure group should be further explored with parsing out of its elements as mentioned earlier (e.g. the

intentionality of the parent or developed resiliency). These would likely present more detailed moderation of Core Parenting Skills and their effects on Child Behavioral Outcome.

Theoretical Implications

The Core Parenting Behaviors (CPB) that this study investigated were developed based on an analysis of the behaviors essential to Baumrind's principle interaction types that lead to the development of her parenting typology. The elements that Baumrind used to determine her parenting typology are demandingness and responsiveness. The two Core Parenting Behaviors (CPB) involved in demandingness were Behavioral Management and Communication and Problem Solving. The two Core Parenting Behaviors (CPB) related to Responsiveness were Parenting Stress and Positive Parent-Child Relationship. These Core Parenting Behaviors (CPB) were further validated through a review of effective treatment and research.

The most interesting result from this study in regards to affirmation of these parenting typologies in dissecting parenting behaviors was that Problem Solving and Communication (PSC), Parenting Stress (PAS), and Behavioral Management (BM) enhanced Child Behavioral Outcomes at year 9 (CBO9). Additionally, outcome behaviors are significantly—though minimally—influenced by the original and early Parent-Child Relationship (PCR).These elements represent the two sides of Baumrind's typology: demandingness and responsiveness.

The importance of Parenting Stress (PAS) across all groups indicates the importance of responsivity in parenting. This does not indicate that a single parent cannot work and be a good parent, rather this builds upon the base of the beneficial effect of the

original Parent-Child Relationship as demonstrated. As another piece to responsiveness, the original Parent-Child Relationship is reduced in effect as time passes and by year 5 does not have a significant effect on behavioral outcomes. Responsivity demands that the parent places the child first and instead of imposing parent-targeted goals or objectives responds to the contingent needs of the child. Responsiveness is the element of parental affection and child-centered activity and interaction—a mix of play and affection. Responsivity occurs when the parent is able to respond positively with appropriate emotional regulation taking into account the child's emotional state and needs. This ability presupposes a functional and secure attachment or one with at least an organized structure for responding to stress. Contingent responsiveness and emotional support are described as having a particular importance for children's social development (e.g., cooperation, regulation of affect) because they alter children's openness to parental socialization practices and facilitate an understanding of how to make appropriate choices (Grusec & Goodnow, 1994; Maccoby & Martin, 1983).

The side of demandingness has also been confirmed in that Problem Solving and Communication plays a role across groups at year 5 in producing positive socialized behavioral outcomes. That the parent is able to communicate needs, understand needs, avoid argumentation, and resolve conflicts appropriately all model and teach the child both emotional and behavioral regulation. Additionally, the implementation of appropriate boundaries and consequences indicated by the significance of Behavioral Management as a measure of spanking as a specific disciplinary tactic displays contrary indications. At year 5, spanking has become prejudicial towards behavioral outcomes and is inappropriate for children at this age if our goal is to increase positive behaviors.

Previously at year 3, spanking appears to effectively incorporate and internalize the mechanisms that promote positive behaviors.

Accordingly, the application of this theory to an ethnically diverse sample produces a most interesting effect towards confirmation of the generalization of Baumrind's theory within a Social Learning framework. This analysis demonstrates that, in the main, Baumrind's elements create a framework that applies to ethnic groups beyond Americans of mainly Caucasian descent. In other words, correlations apply across the board regardless of race or ethnicity. Taking into consideration that Hunt et al. (2017) displayed that racial and education variables have a higher significance than gender, this is a considerable conclusion. This study shows that the system of Core Parenting Behaviors (CPB) does create a successful framework for understanding the development of CBO. The Core Parenting Behaviors do apply to the general population of this study and extends our knowledge of these connections among a large, low SES, ethnically diverse population. However, the departures in our results from the expected, especially with the year 3 variables of Behavioral Management and Parenting Stress, should be investigated in light of racial and ethnic differences.

Clearly, parenting behaviors do not fully accommodate for variance in CBO, the development of both negative and positive behaviors is not entirely from the parent. Nevertheless, the small effects and importance of behavioral management in these models are partly ascribed to the specificity of our behavioral management index as spanking. The many other elements at play include environmental factors, peers, and the individual factors of the child such as temperament. Certainly, there are complex ways stress impacts Child Behavioral Outcome (CBO) in that several of these above proposed

pathways work together. For example, with higher perceived stress, mothers are more likely to enter therapy or engage with a child in a way that increases positive outcomes, thus rendering the correlation from year 3 PAS to CBO9 insignificant while strengthening the correlations to more immediate behaviors. Another example of moderating effects especially pertinent to the sample population for this study is allostatic load.

Allostatic load, as a type of biological and psychological stress (Hankin, 2012), is particularly relevant for children in higher risk environments and those children of single parents in more urban populations are more likely to experience. This leaves them at risk for increased difficulties and health issues which may or may not be accompanied by behavior problems (Rogosch, Dackis, & Cicchetti, 2011). This type of event may be moderating the effect of stress on behavior such as how an increase in stress at year 3 increases positive behavioral outcomes. For example, when the parent displays more parenting skills, the child imitates these behaviors but experiences the same levels of stress. In this way, the child is paying for the stress in his or her body and mind but not externalizing it in the same way. Specifically related to this study sample is that African Americans in general experience more allostatic load than Caucasians. More importantly, African American women experience the highest values of allostatic load (Geronimus, Hicken, Keene, & Bound, 2006) more so than African American men or Caucasian women. This may be particularly at play in this study as it samples a higher percentage of ethnically diverse single women, a role particularly difficult and fraught with high stress and community risks due to reduced income. This difference calls for further study on the paths from stress to behavioral outcome with more focus on other specific mediators or

moderators making this pathway for the treatment exposure group the inverse of that for the sample as a whole. It also indicates that an analysis of ethnic differences between treatment exposure and non-treatment exposure groups is warranted. Ethnicity itself would be an important moderator to see if the pathways especially of behavioral management and parenting stress at year 3 changed.

Related to allostatic load is the transmission of Adverse Childhood Experiences (ACEs), since parents who experience ACEs in childhood will have increased parental stress and so more often will transmit them to their children (Steele et al., 2016). The Core Parenting Behaviors incorporated the elements central to the ACE studies (abuse, neglect, dysfunction, and affection) from the point of view of prevention. Increasing effective behavioral management, problem solving, and the parent-child relationship and affection increase positive behavioral outcomes and reduce the risk of transmission of ACEs. As confirmed in this study, parenting stress is strongly related to social competence, socialization of behaviors, and problem behaviors and is an important factor to consider in intervention research (Anthony et al., 2005; Maughan, 2001; Sroufe, 2003). In this regard, the ACEs continue to play a large role in the development of Child Behavioral Outcomes (CBO) especially in intergenerational transmission of effects. Prevention is effected through increasing problem solving skills that do not resort to physical discipline, parenting that allows communication without arguments, and a positive regard towards the child so that he or she feels accepted, valued, and understood. This is primarily the case at year 5 where prevention across parenting behaviors is the most significant. With regard to stress, there is need for addition analysis of mediating and moderating effects of the differing effects of Parenting Stress at year 3 and at year 5.

However, as expected, this study confirms that in general the prevention of ACEs (abuse, neglect, dysfunction, and lack of affection) is helpful for a non-clinical and ethnically diverse sample generalizable to the urban population of the United States.

Finally, as an undercurrent of this study, this study wished to assess whether item selection in research development plays an important role in confirmation of theory and model. Put another way, the study conducted a type of double-blind secondary analysis, where neither the items nor the researchers were oriented towards the theory being tested. For this purpose, this study took a third party national sample without preselection of items and applied a developmental and established theory. This found moderate success. Clearly, directed identification of items geared towards theoretical ends would enhance the model. Yet by avoiding this, the current study supports an increase in use of secondary analysis hand-in-hand with less theory driven data collection for the confirmation of theory and intervention effectiveness.

Implications for Policy

This study has demonstrated that parenting stress, problem solving and communication, and behavioral management are related to the socialization of behaviors and development of problem behaviors. The parent-child relationship was shown also to be significant, yet as the effect diminishes at year 3, intervention and prevention should focus on the other Core Parenting Behaviors. In addition to this, for those that display treatment exposure, Problem solving and communication, positive regard, reduced stress are important pathways (regardless of behavioral management tactics) towards development of socialized behaviors.

The result that for the whole sample an increase in Parenting Stress (PAS) at year three and year five respectively decrease and increase Child Behavioral Outcomes (CBO) at year nine by about 20% of a standard deviation is important to the development of interventions and prevention. The current findings agree with previous research documenting that parental stress is an important factor to consider in intervention research (Anthony et al., 2005; Maughan, 2001; Sroufe, 2003). Stress from financial difficulties, work difficulties, and the sense of dislike and lack of confidence in parenting all contribute to behavioral outcome (Evans & English, 2017). As well as the financial strain that comes hand-in-hand with social disadvantage may play a key role in intervention (Forgatch & Kjøbli, 2016). Contrary to most research, however, the direction of this effect is different depending on the age of the child. That these measures from two different times produce contrary effects in behavioral outcome signifies the importance of accounting for stress and parental attitude in prevention work, yet with differential measures depending on the time of preventative action or intervention.

As a result, prevention needs to begin with new mothers and helping them to establish a positive relationship with their child. Parents need to be equipped with knowing how to play with their infant child, balancing child-directed with parent-directed play. Programs that include these along with developing increased ways of displaying affection so that it will be translated as such to the child. Mothers would benefit from these things both before having their child and during the first years as the original parent-child relationship needs to be affirmed in its positive effect on behavioral outcome.

Additionally, from these results that previous to year three, rather than focusing on reduction of positive regard, prevention must outline the resiliency reactions to negative events and the extremes of poverty and economic hardship, along with the difficulty of raising children especially by single mothers. The difficulty in this endeavor in no way imparts impossibility. However busy they are, parents can learn appropriate use of physical discipline without need for carte blanche avoidance. The attempts over the last decades to eradicate any form of physical discipline have struggled to be effective on a broad scale. The insistent presence of physical discipline needs to be accounted for with a harm reduction type of prevention. The one type of discipline available to most parents cannot be removed without giving them something to use instead. The main instances of discipline before year 3 are mainly negative imperatives related to safety concerns: “don’t touch the stove”, “don’t run into the street”. In these instances, an appropriate spank will reinforce socialized behavior according to the results.

After year three and before year five, however, prevention should focus on the reduction of physical discipline and increasing the parents’ positive attitude as discipline changes from safety concerns to conformity and compliance. It must also increase communication and problem solving, develop parenting skills, and reduce the hardships of poverty and uncertain work. These programs would be more expansive. Consequently, these results establish an empirical foundation to the recent turn towards social determinants of heath in the application of policy for mental health (Coombe, 2007; Herrman, 2005) and the trend towards integrated health services. This appears to be effective in a general policy sense where public information and education may best be

employed. To this end, information and skills targeted for those who do not reach out to treatment or assistance may be beneficial.

Outside of treatment, the primary predictor of negative outcome remains increased parenting stress and negative attitude toward the child's demands on the parent's life at year five. This is essential information for both policy and public knowledge in so far as identifying those at most risk and those social elements that predispose family systems to render children unable to develop positively behaviors. Prevention as long-term remediation obviates the initiation of negative cascades towards negative outcomes (Bornstein et al., 2013).

This study's goal was to find the central parenting skills that best predict pathways towards positive gains in Child Behavioral Outcomes (CBO) through early and middle childhood. The four Core Parenting Behavior indices are significant predictors of later socialized behavioral outcomes for children. Consequently, the parent-child relationship should be a focus of prevention early on, the establishment of resiliency and self-efficacy the following goal, and then increases in the three Core Parenting Behaviors, Behavioral Management, Problem Solving and Communication, and Parenting Stress.

Implications for the Practice of Counseling

As far as development in treatment is concerned, however, those who engage in treatment display differences in developmental pathways as expected. According to the results, specific interventions for treatment and prevention of behavioral disturbances should target Problem Solving and Communication and Parenting Stress. There is additional evidence from the analysis that Behavioral Management is also important in

the development of positive behaviors for those children whose mothers attend treatment just as for those of mothers who do not.

Initially focusing on increasing Problem Solving and Communication (PSC) skills along with learning to increase Positive Attitude and (reduce) Stress (PAS) will enable mothers to engage better with and model appropriate behaviors to their children. An increase in their positive attitude towards parenting is especially important in the face of structural discrimination, institutionalized poverty, and other forms of social determinants of health that cannot be objectively decreased. The results indicate that the best interventions will attempt to increase to the mother's ability to solve problems rather than taking the problems away, especially when taking them away is a practical impossibility. It calls to mind the old adage from Maimonides via Anne Isabella Thackeray Ritchie: "Teach a man to fish, and you feed him for a lifetime." By increasing self-efficacy in the mothers, they can model this to their children who can better gain self-efficacy and as a result reduce the intergenerational transmission of the effects of adverse childhood experiences. Targeting parental skills and factors as a means of prevention is less threatening, more likely to correctly assess needs, and a more effective mode of treatment (Chartier et al., 2010).

In this perspective, for treatment purposes, problem solving and communication along with behavioral management is of primary concern. Our knowledge of parenting stress shows us those families that need to be the focus of outreach, while the actual work of prevention from the results should be focused on Problem Solving and Communication (PSC) type skills as the largest single indicator for those that access treatment. This is

certainly brought to bear effective results in the work of Kazdin and others with such interventions as the above mentioned Parent Management Training (Kazdin, 2005a).

Thus, concerning implications for treatment and intervention, this study proposes several preventative steps in regards to this population of single mothers. In regard to the general population, the general efforts of the counseling community should aim to let parents know that they are doing what they need to for their children in the sense of a general health campaign as endorsed by Steinberg (2001). This study implies that general parental knowledge of ways to reduce stress while increasing resiliency, access financial help, teach appropriate discipline, and increase the positive outlook on childrearing would greatly benefit such an effort. Access to financial help is more readily available than ever, however, there are still many hurdles and obstacles for those that most need this assistance experience. In the recent years, there has been a push for increasing self-care as a public health concern primarily with adults (Lommi, Matarese, Alvaro, Piredda, & De Marinis, 2014) but also in general with examples such as the impact of mindfulness and its implementations in schools and outreach (Tan & Martin, 2013). This can always be improved. The outlook on childrearing is a harder element to manipulate and improve and as such is often left to focus on the previous two. However, if inventive ways to affect this could be discovered they would also be greatly beneficial.

About specific treatment options, this study highlights two challenges. First, interventions should include health and integration of care to account for other negative effects of risks. This is the current tendency of the field as a whole and this study adds additional motivation to engage in approaching mental health holistically. This proposal stems from the many environmental and biological elements at play since Core Parenting

Behaviors cannot account for all the variation in behavior or health of the child. A part of this would include education that parent's responsibilities are not only to make sure that their children display socialized behaviors, but also that they are mentally and physically healthy. One may even argue that their primary role may not be behavioral compliance, but rather general health and well-being.

This goes hand-in-hand with the last proposal. It seems that interventions should continue to focus on communication and problem solving skills more so than positive relationships or discipline directly. As neither spanking (BM) nor Parent-Child Relationship (PCR) displayed relationships of moderate magnitude at year 5 to Child Behavioral Outcome (CBO), it seems that our interventions should not primarily focus on these. This is especially true as most treatment does not interact with children under 4 years old and the effects substantiated as significant with behavioral management and the parent-child relationship would be before such treatment.

Taking these facts and results into account, the majority of treatment focus must be on communication, problem solving, reducing stress from work and finances, increasing resiliency in the face of these stressors, and conflict resolution. These have long been both the dynamics through which Minuchin worked with families (especially from his communication theory background; Minuchin, 1974), and also the targets in a more behavioral fashion of Kazdin's Parent Management Training (Kazdin, 2005b).

Future Research

Firstly, the uncertainty of the elements and variables underlying the treatment exposure group demands further investigation. A question might be does the treatment exposure group actually have higher severity in reports of behavioral problems for

children and/or higher reports of stress? And as well, what the ethnic make-up of the treatment exposure group compared to the non-treatment exposure group looks like and does this impact the significant models? Additionally, the interplay of the ability of someone to seek help along with the recognition of when a problem is serious to warrant attention is of import to the conclusions of this study.

Secondly, as part of the earlier discussion, moderators are rarely investigated in parenting outcome studies. Although, Kaminski identified the core elements of interventions, there is a need to shift from which elements work to how they moderate each other. This requires a shift from focus on the strength of the association of Core Parenting Behaviors (CPB) and Child Behavioral Outcomes (CBO) to how Core Parenting Behaviors (CPB) correlate with one another (Rothbaum, Weisz, 1994). The identification of moderators to this effectiveness will also shed light on some of the behavioral and family work currently being performed with hopes to outline a path to betterment for the client and more effective practice. Although this study failed to substantiate any mediation or moderation effect beyond the group effect, it is all the more an impetus to investigate these types of effects. Though no moderation was found beyond group differences, Core Parenting Behaviors that moderate each other's effects through time should be investigated. More advanced moderated mediation models would also be informative.

This underlines the need for research on moderators of these pathways especially in regard to reduced severity (D. R. Powell, 2013) and their "spreading effect" (Bornstein et al., 2013). In regard to the moderation of pathways by elements of treatment exposure not fully accounted for in this study, it seems that there may be additional pathways of

moderated mediation (e.g. Langfred, 2004) which need to be more fully investigated. Such a study could further investigate whether ethnicity would strengthen the mediations found in this study or if specific times of treatment exposure when taken into account would create new mediated pathways. These possibilities leave plenty of substance for future research interested in prevention and reduction of negative behavioral outcomes for children. Further research within treatment exposure should analyze whether effects are due to resiliency, that these treatment-exposed individuals are finding effective treatment, or because they are (subjectively or objectively) more in need of treatment.

Additionally, one of the strengths of this sample is the increased ethnic diversity. As a resulting conclusion, the application of a parenting style typology to a more generalized sample is acceptable and beneficial. It would be of great interest, however, if in addition to a treatment exposure groups, specific ethnic groups were also tested for group differences. This would enable us to understand better the roles of different parenting behaviors among different groups in the United States. In the analysis of RQ1, only small regression coefficients were found. Though the analysis expected greater magnitude in effects, the small effects may demonstrate a reduced importance of parenting behaviors. Contrary to most research, this may be due to differences across ethnicities that become more salient in a sample that is only 21% Caucasian (Table 2). It leaves us with an interesting place of departure for future research.

An important factor in this study and mentioned above is how age influences these variables. The items from FFCWS from each wave are collected over a time as is understandable with such a large sample. This results that although the fourth wave is "year 9", the children are at different ages at the time of the survey. This will

undoubtedly affect the constructs and their pathways. Future study should analyze the constructs with a more detailed approach to the ages of the children. This would both allow a common unit between time points and perhaps elucidate pathways that are more specific. Along with this, a full analysis of core parenting behaviors predicting year 5 CBO would be beneficial to test whether the parenting typology may hold true for that age in a different way than at year 9. In the same vein, the study should be expanded to the year 15 data as made available to chart adolescent changes to the pathways.

Importantly, the effects demonstrated for behavioral management as a measure of spanking easily demand further study. This is due both to the contrary effects it had on behavioral outcomes and the positive effect spanking demonstrated in the results at year 3. The difficulties around semantics, reporting, and severity all need to be better defined as this study shows that in some instances spanking is not significant and may even be beneficial. This requires additional research especially as it is so central to many behavioral management programs and interventions.

Finally, it would be of interest to apply these four Core Parenting Behaviors to other samples with more targeted items to establish further whether a developmentally inspired social learning theory is a viable model for explaining child behavioral outcome. Additionally, with many low to moderate pathway coefficients in the results, further study is required to consolidate the findings of this study. Replication in other samples is highly recommended.

Limitations

This study offers several specific results that affect intervention, prevention, and future research towards the reduction in the prevalence of children and adolescents who

experience problem behaviors. With the study, however, there were a number of limitations.

Survey Data

A number of limitations are embedded in the use of the FFCWS data set. Primarily these relate to the difficulty in finding specific items to tackle the questions at hand for the theory employed by this dissertation. There were many benefits of using national sample with low longitudinal attrition and specifically targeting single mothers of diverse ethnicities outside of a clinical context and demonstrating reduced severity. These outweighed the difficulty of conducting a theory-based analysis on such a dataset. In fact, the reduced specificity of the items used in this study is beneficial to informing prevention and intervention generally across the field, especially in practice.

Latent Variables

A derivative limitation from the above issue is that items changed over the course of the survey making a latent growth model and other change over time models unfeasible. It is also an important limitation in interpretation of the pathways towards behavioral outcomes in that Parenting Stress (PAS) is not identical in the items it contains at years 3 and 5.

It also indicates the possible need for superior variables and indices, such as indices that contain more specifically targeted items to measure these elements. The variables and indices used in this study are taken from a survey with a sociological approach and as such lack some measuring precision. Items that were developed with measuring the Core Parenting Skills in mind would be of great benefit in disentangling the possible reasons for the opposition in how the Parenting Stress (PAS5) index affects

Child Behavioral Outcome (CBO) between the treatment exposure group and the rest of the sample. Additionally, if there is a mediation effect between Parenting Stress (PAS5) and Problem Solving and Communication (PSC5) present, SEM is not able to distinguish the direction of effect (Schumacker & Lomax, 2016) without an *a priori* theoretical explanation.

Physical Discipline

Physical Discipline was a variable that was uncharacteristically under-represented in the analysis due to only one item at each wave referencing the type of discipline that was used in the home in the main survey. Other elements ideally would have been included in this construct; however, the FFCWS only provided the single item. As a result the rather than a latent variable measuring a range of physical discipline, how often a parent reported spanking the child was modelled as an observed variable interacting with the other latent variables. This insufficiency in construct implies difficulty in concluding the importance or not of spanking.

Severity

Low levels of severity of symptoms have, in a sense, a platykurtic property in that they are less able to demonstrate differences as the differences are more subtle or similar to a uniform distribution. As such, lower regression coefficients were expected. The resulting low to moderate effects require caution in interpretation and generalization. This is of consideration in the relatively low rates of stress reported in the sample. Such low severity reports may create a washout effect in regard to the impact of the CPB on outcome, especially in regard to behavioral management which has a great deal of research attached to its effects on outcome.

Metric Issues

Some models display low regression coefficients and low loadings in some of the indices. These present a limitation in interpretation where they appear and demand that their results and implications are generalized with caution. The low loading of the communication variable onto problem solving and communication is an example of this. It was retained due to theoretical considerations; however, the low loading requires restraint in interpretation of the models especially concerning problem solving and communication index's effects and meaning.

Maternal Data

This study reported Core Parenting Behaviors (CPB) solely from maternal reports, due to the low percentage of fathers in the data sample, and the sampling procedure of the FFCWS that primarily selected the mother of the child and then attempted to collect father data. This procedure is understandable as the FFCWS over sampled single parents. It is important to keep in mind that the present analysis only deals with maternal Core Parenting Behaviors (CPB) and cannot apply maternal parenting behaviors to paternal parenting behaviors (Hoskins, 2014). The present analysis only applies to maternal parenting behaviors.

Controls

It is impossible to control the plethora of factors that affect child behavioral outcome completely. In this present study, as a contextual control variable, the Child Behavioral Outcomes (CBO) at year five was included in the analysis. Its minimal regression coefficient displayed that it accounted for very little of the variation in Child Behavioral Outcomes at year 9 (CBO9), most due to the lack of item continuity and

identity for year 5 and year 9 constructs. This study does not pretend to ignore the many other environmental, genetic, and contextual elements that may have shaped the results of the data analysis. Future research should investigate these for substantial and significant changes.

Conclusion

This study looked at target skill sets for parent-child interaction and analyzed how the Core Parenting Behaviors (CPB) influenced child behavioral outcome before the child transitioned to full adolescence (Mclaughlin, 2016). Children at the end of the study period in this present analysis were at the edge of drastic change. This study identified what processes are most useful for parents before their children enter a more individually focused phase of their lives. This is especially of concern since any deficits or dysfunctions at this time would prejudice healthy development through adolescence as they become crystalized patterns (Fontaine et al., 2009). This illustrates the need for expanding our understanding of time-sensitive pathways to a more diverse population, both economically and ethnically.

The current study, therefore, described and identified the effects of specific parenting behaviors on behavioral outcomes. From a developmental perspective this helps define the developmental pathways as well as identify risks, protective factors, and contextual elements at play (Achenbach & Rescorla, 2006). The Core Parenting Behaviors (CPB) originally demonstrated several areas of exploration in order to continue to advance research on child outcomes. This interest included both the expansion of specific parenting behaviors towards a more diverse sample, and also the identification of which moments the impact of parenting behaviors have the most effect.

To this end, the Core Parenting Skills are central to the development of outcome behaviors. Parenting Stress (PAS) marked out those that were at most risk of developing problem behaviors. Problem Solving and Communication (PSC) was identified as the essential point for preventative intervention when families engage in treatment. Parenting Stress (PAS) and Problem Solving and Communication (PSC) showed pathways towards positive behavioral outcome in such a way that it enhanced our knowledge on parenting behaviors and on the impact of ACE. Parent-Child Relationship was demonstrated to be the most important early factor for positive behavioral outcome. In general, the model predicted that the proposed Core Parenting Behaviors following the developments of Baumrind and incorporating elements of Social Learning Theory influence outcomes significantly. At the same time, it outlines perhaps the most important traits and these are consistent across groups albeit in different manners.

In the general population, stressful experiences, financial difficulties, and feeling trapped by children and child rearing increase the chances of negative behavioral outcome in children at year 9. Changes in the way a parent uses spanking are also important as they can be beneficial with younger children, but become detrimental as the child grows. Additionally, earlier stressful experiences of the parent, however, can actually increase positive behavioral outcome. For those that seek any type of treatment regardless of treatment completion or duration or reason for attending treatment correlations from year 5 parenting behaviors are increased and display that these are primary targets for treatment interventions.

Future research needs to continue to consider the perspective of not only the adolescent or one parent, but also examine paternal and maternal reports. Additionally, as

the field moves towards a more preventative model in medicine and mental health, the supports and the effects of non-clinical psychotherapy and non-clinical samples is important. This trend calls for an investigation into protective factors for positive growth and promising development of the child. This current study outlined the importance of parenting behaviors and identified that they should be targeted as the first line of intervention and prevention. Counselors and other mental health professionals should *prevent* risk factors from occurring at the outset to reduce treatment need and adverse outcomes. An early focus on prevention by strengthening the parent-child relationship, parenting skills, and behavioral management especially in families with prejudiced social determinants of health, will have the biggest impact on reducing adverse outcomes. This offers future lines of research and development of preventative intervention in problem behaviors as the most effective treatment available.

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Appendix A

Table A1

List of questions and items by factor index

Factor Index	Item	Question
CBO9 Child report		
Task completion	k5g1a	G1A. I stay with a task until I solve it
	k5g1b	G1B. Even when a task is difficult, I want to solve it anyway
Rule breaking	k5f1b	F1B. Taken or stolen something
	k5f1c	F1C. Taken money at home
	k5f1d	F1D. Cheated on a school test
	k5f1g	F1G. Gone into somebody's garden/yard/house/garage when not supposed to
	k5f1m	F1M. Been suspended or expelled from school
	k5f1p	F1P. Avoided paying for things such as movies, bus or subway, or food
Truancy	k5f1h	F1H. Ran away from home
	k5f1i	F1I. Skipped school without an excuse
	k5f1j	F1J. Secretly taken a sip of wine, beer, or liquor
	k5f1k	F1K. Smoked marijuana, grass, pot, weed
	k5f1l	F1L. Smoked a cigarette or used tobacco
Vandalism	k5f1q	F1Q. Thrown rocks or bottles at people or cars
	k5f1n	F1N. Written things or sprayed paint on walls or sidewalks or cars
	k5f1o	F1O. Purposely set fire to building, car, or other or tried to do so
	k5f1a	F1A. Purposely damaged or destroyed property
Violence	k5f1e	F1E. Had a fist fight with another person
	k5f1f	F1F. Hurt an animal on purpose
CBO9 Mother report		
Truancy	p5q3cr	Q3CR. Child smokes, chews, or sniffs tobacco
	p5q3cx	Q3CX. Child uses alcohol or drugs for nonmedical purposes
	p5q3ct	Q3CT. Child is truant, skips school
	p5q3bm	Q3BM. Child runs away from home
Opposition	p5q3ap	Q3AP. Child lies or cheats
	p5q3v	Q3V. Child is disobedient at school
	p5q3u	Q3U. Child is disobedient at home
Violence	p5q3cy	Q3CY. Child vandalizes
	p5q3o	Q3O. Child is cruel, bullies, or shows meanness to others
	p5q3bc	Q3BC. Child physically attacks people
	p5q3br	Q3BR. Child sets fires
	p5q3t	Q3T. Child destroys things belonging to family or others
	p5q3aj	Q3AJ. Child gets in many fights
	p5q3cq	Q3CQ. Child threatens people
	p5q3ca	Q3CA. Child steals outside the home

Causes Harm	p5q3n	Q3N. Child is cruel to animals
	p5q3q	Q3Q. Child deliberately harms self or attempts suicide
Rule breaking	p5q3b	Q3B. Child drinks alcohol without parents' approval
	p5q3aa	Q3AA. Child breaks rules at home, school, or elsewhere
Respects others	p5q3s	Q3S. Child destroys his or her own things
	p5q3bz	Q3BZ. Child steals at home
	p5q3cj	Q3CJ. Child swears or uses obscene language
	p5q3bk	Q3BK. Child refuses to talk
Anger	p5q3bn	Q3BN. Child screams a lot
	p5q3c	Q3C. Child argues a lot
	p5q3cn	Q3CN. Child teases a lot
	p5q3co	Q3CO. Child has temper tantrums or a hot temper
Social Behaviors	p5q3dm	Q3DM. Child accepts friends' ideas for playing
	p5q3dn	Q3DN. Child invites others to your home
	p5q3do	Q3DO. Child reports accidents to appropriate persons
	p5q3dg	Q3DG. Child makes friends easily
	p5q3dh	Q3DH. Child is self-confident in social situations
	p5q3dl	Q3DL. Child is liked by others
Empathy	p5q3dc	Q3DC. Child understands others' feelings, when happy, sad, mad
	p5q3dd	Q3DD. Child is sympathetic toward other children's distress
	p5q3de	Q3DE. Child is open and direct about what he or she wants
CBO9 Teacher Report		
Respect	t5b1c	B1C. Child responds appropriately to peer pressure
	t5b1k	B1K. Child receives criticism well
	t5b1t	B1T. Child responds appropriately when pushed or hit by children
	t5b1z	B1Z. Child expresses own feelings/opinions/ideas without putting down others
	t5b1i	B1I. Child responds appropriately to teasing by peers
	t5b1j	B1J. Child controls temper in conflict with adults
	t5b1ab	B1AB. Child respects the property rights of others
	t5b2a	B2A. Child pays attention well
	t5b1p	B1P. Child follows your directions
Empathy	t5b1d	B1D. Child says nice things about self/others when appropriate
	t5b1n	B1N. Child accepts peers' ideas for group activities
	t5b1o	B1O. Child gives compliments to peers
	t5b1ad	B1AD. Child comforts or helps other children
	t5b1ac	B1AC. Child is sensitive to the feelings of others
	t5b1aa	B1AA. Child forms and maintains friendships
	t5b1h	B1H. Child makes friends easily

Oppositional	t5b3i	B3I. Child gets angry easily
	t5b3j	B3J. Child has temper tantrums
	t5b3h	B3H. Child talks back to adults when corrected
	t5b4b	B4B. Child is defiant
	t5b4f	B4F. Child actively defies/refuses to comply with adults' requests
	t5b1b	B1B. Child compromises in conflict by changing own ideas
	t5b3a	B3A. Child fights with others
	t5b3c	B3C. Child threatens or bullies others
	t5b3g	B3G. Child argues with others
CBO5		
Over-dependent	m4b4b3	True/not true: child clings to adults or is too dependent?
	m4b29a3	True/not true: child clings to adults or is too dependent?
Social Difficulties	m4b29a6	True/not true: child doesn't get along with other children?
	m4b4b6	True/not true: child doesn't get along with other children?
Tantrums	m4b4b13	True/not true: child has temper tantrums or hot temper?
	m4b29a13	True/not true: child has temper tantrums or a hot temper?
Irritability	m4b4b11	True/not true: child is stubborn, sullen or irritable?
	m4b29a11	True/not true: child is stubborn, sullen, or irritable?
Apathy	m4b4b7	True/not true: child doesn't seem to feel guilty after misbehaving?
	m4b29a7	True/not true: child doesn't seem to feel guilty after misbehaving?
BM5	m4b5a_b30a	How often did you spank child?
PSC5		
Problem Solving	m4j25a1	Agree/disagree: I often say and do things without considering the consequences
	m4j25a2	Agree/disagree: I often get into trouble because I don't think before I act
Conflict Resolution	m4j25b2	True/not true: I lie or cheat
	m4j25b3	True/not true: I frequently get into fights
Communication	m4d1e	True/not true: You and father talk about problems that come up with raising child
PCR5		
Affection	m4b4a5_b26e	Days/week: tell child that you appreciated something child did?
Parent-directed Play	m4b4a2_b26b	Days/week: read stories to child?
	m4b4a3_b26c	Days/week: tell stories to child?
	m4b4a1_b26a	Days/week: sing songs or nursery rhymes with child?
Child-directed Play	m4b4a6_b26f	Days/week: play outside in the yard, park, or a playground with child?
	m4b4a4_b26d	Days/week: play inside with toys such as blocks or legos with child?

PAS5		
Work Stress	m4k16a	True/not true: My shift & work schedule cause extra stress for me & child
	m4k16b	True/not true: Where I work is difficult to deal w/child care probs during work
	m4k16c	True/not true: In my work sched I have enough flexibility to handle family needs
Emotional Stress	m4b6a_b31a	Agree/disagree: Being a parent is harder than I thought it would be
	m4b6b_b31b	Agree/disagree: I feel trapped by my responsibilites as a parent
	m4b6d_b31d	Agree/disagree: I often feel tired/worn out/exhausted from raising a family
	m4b6c_b31c	Agree/disagree: Taking care of my child(ren) is much more work than pleasure
Economic Stress	m4i23b	In past 12 months, child ever hungry, but you just couldn't afford more food?
	m4i23c	In past 12 months, you ever hungry, but didn't eat b/c couldn't afford enough fo
	m4i23d	In past 12 months, did not pay full amt rent/mortgage payments b/c wasn't enough
	m4i23e	In past 12 months, evicted from home or apt for not paying the rent or mortgage?
	m4i23f	In past 12 months, not pay full amt gas/oil/electric bill b/c wasn't enough mone
	m4i23g	In past 12 months, electricity turned off by utility co b/c wasn't enough money?
	m4i23i	In past 12 months, you move in w/others (even a little) b/c of financial problem
	m4i23j	In past 12 months, stay at shelter/abandoned bldg/car/etc b/c wasn't enough mone
	m4i23k	In past 12 months, anyone in househld needed dr/hospital but couldn't b/c of cos
	m4i23n	In past 12 months, phone service disconnected b/c wasn't enough money?
BM3	m3b5a_b33a	How often do you spank the child?
PSC3		
Problem Solving	m3j44a	Agree/disagree: I often say what comes into my head without thinking
	m3j44b	Agree/disagree: Often, I don't think enough before I act
	m3j44c	Agree/disagree: I often say/do things without considering consequences
	m3j44d	Agree/disagree: I often get in trouble because I don't think before I act
	m3j44e	Agree/disagree: Plans don't work out because I don't go over them carefully
	m3j44f	Agree/disagree: Make up mind without considering situation from all angles
Conflict Resolution	m3d5	How often do you and father argue?
Communication	m3d1e	Always/sometimes/rarely true: talk about problems raising child?
PCR3		
Parent-directed Play	m3b32g_b4g	Days/week: tell stories to child?
	m3b4d_b32d	Days/week: let child help you with simple chores?
	m3b4f_b32f	Days/week: read stories to child?
	m3b4a_b32a	Days/week: sing songs or nursery rhymes with child?
Child-directed Play	m3b4h_b32h	Days/week: play inside with toys with child?
	m3b4e_b32e	Days/week: play imaginary games with him/her?
Affection	m3b4b_b32b	Days/week: hug or show physical affection to child?
	m3b4c_b32c	Days/week: tell child that you love him/her?
	m3b4i_b32i	Days/week: tell child you appreciate something he/she did?

PAS3		
Work Stress	m3k16c	How often true: My schedule is flexible to handle family problems?
	m3k16a	How often true: My shift/schedule causes extra stress for me/child?
	m3k16b	How often true: Child care problems are difficult to deal with at job?
Emotional Stress	m3b6a_b34a	Agree/disagree: being a parent is harder than I thought it would be
	m3b6b_b34b	Agree/disagree: I feel trapped by my responsibilities as a parent
	m3b6c_b34c	Agree/disagree: taking care of my child(ren) is more work than pleasure
	m3b6d	Agree/disagree: I often feel tired/worn out from raising a family
Economic Stress	m3i6a	In past year, was telephone service ever disconnected?
	m3i6c	In past year, was your electricity ever turned off?
	m3i6f	In past year, was service ever turned off by the gas/oil company?
	m3i6h	In past year, has your home been uncomfortably cold for 48 hrs/more?
	m3i6j	In past year, did you ever have no running water for 48 hrs/more?
	m3i23b	In past year, did you not pay full rent or mortgage?
	m3i23c	In past year, were you evicted from home?
	m3i23d	In past year, did you not pay full gas/oil/electricity bill?
	m3i23e	In past year, did you borrow money from friends/family?
	m3i23f	In past year, did you move in with other people because of fin. problems?
	m3i23g	In past year, did you stay in shelter/car/abandoned building?
	m3i23h	In past year, did someone not see doctor/hospital?
	m3i23i	In past year, did you cut back on buying yourself clothes?
	m3i23j	In past year, did you work overtime or take second job?
Confidence	m3b26_b1	How do you feel about yourself as a mother to child?
BM1	m2b19a	How often did you spank the child in past month?
	m2b42i1	How often have you spanked child in the past month?
PSC1		
Problem Solving	m2d4a	How often do you & child's father argue about things that are important to you?
Communication	m2e7e	How often-Do you and partner discuss problems that come up raising child?
	m2d2e	How often-You & father talk about probs that come up raising child?
PCR1		
Child-directed Play	m2b18a	# Days/week mom play games like peek-a-boo or gotcha w/child?
	m2b42a	# Days/week mom play games like peek-a-boo or gotcha w/child?
	m2b18e	# Days/week mom play inside w/toys such as blocks or legos w/child?
	m2b42e	# Days/week mom play inside w/toys such as blocks or legos w/child?
Parent-directed Play	m2b18b	# Days/week mom sing songs or nursery rhymes to child?
	m2b42b	# Days/week mom sing songs or nursery rhymes to child?
	m2b18c	# Days/week mom read stories to child?
	m2b42c	# Days/week mom read stories to child?
	m2b18d	# Days/week mom tell stories to child?
	m2b42d	# Days/week mom tell stories to child?

Affection	m2b18g	# Days/week mom hug or show physical affection to child?
	m2b42g	# Days/week mom hug or show physical affection to child?
PAS1		
Emotional Stress	m2b20a	How much do you agree/disagree-Being a parent is harder than I thought
	m2b44a	How much do you agree/disagree-Being a parent is harder than I thought
	m2b20c	How much do you agree/disagree-Taking care of children more work than pleasure
	m2b44c	How much do you agree/disagree-Taking care of children more work than pleasure
	m2b20b	How much do you agree/disagree-Feel trapped by parental responsibilities
	m2b44b	How much do you agree/disagree-Feel trapped by personal responsibilities
	m2b20d	How much do you agree/disagree-Often feel tired and worn out from raising family
	m2b44d	How much do you agree/disagree-Often feel tired and worn out from raising family
Economic Stress	m2h19b	In past 12 months, did your-Children go hungry?
	m2h19c	In past 12 months, did you-Go hungry?
	m2h19d	In past 12 months, did you-Not pay full amount of rent/mortgage?
	m2h19e	In past 12 months, did you-Get evicted for not paying rent/mortgage?
	m2h19f	In past 12 months, did you-Not pay full gas/oil/electric bill?
	m2h19g	In past 12 months, did your-Gas/electric/oil get shut-off or withheld?
	m2h19h	In past 12 months, did your-Telephone service get disconnected for nonpayment?
	m2h19i	In past 12 months, did you-Borrow money from family/friends to pay bills?
	m2h19j	In past 12 months, did you-Move in w/people because of financial problems?
	m2h19k	In past 12 mons did you stay in place not meant for regular housing?
	m2h19l	In past 12 mths, did-Anyone in house need med but couldn't go because of cost?
Work Stress	m2k13a	Always/sometimes/never-my work schedule causes extra stress
	m2k13b	Always/sometimes/never-It's diffcult to deal w/childcare probs during wrkg hours
	m2k13c	Always/sometimes/never-My schedule allows me to handle family needs

Appendix B

Correlation Tables

Table B1

Correlation table for indicator variables

	CBO5 Over-dependent	CBO5 tantrums	CBO5 Apathic	CBO5 Irritability	CBO5 Social difficulties	BM5 Spanking	PSC5 Problem Solving	PSC5 Conflict Resolution	PSC5 Communication	PCR5 Parent-directed Play	PCR5 Displays of Affection	PCR5 Child-directed Play	PAS5 Work Stress	PAS5 Emotional Stress	PAS5 Economic Stress	BM3 Spanking	PSC3 Problem Solving	PSC3 Conflict Resolution
CBO5 Over-dependent	1	.237**	.219**	.219**	.254**	.054**	.119**	.104**	.077**	.095**	.052**	.078**	-.132**	-.166**	-.086**	.047**	.147**	.017
CBO5 tantrums	.237**	1	.270**	.496**	.305**	.116**	.154**	.116**	.106**	.099**	.071**	.085**	-.149**	-.210**	-.119**	.056**	.155**	.064**
CBO5 Apathic	.219**	.270**	1	.260**	.275**	.113**	.137**	.124**	.092**	.067**	.047**	.107**	-.076**	-.156**	-.083**	.027	.128**	.062**
CBO5 Irritability	.219**	.496**	.260**	1	.319**	.125**	.168**	.086**	.079**	.114**	.087**	.082**	-.148**	-.238**	-.119**	.094**	.134**	.081**
CBO5 Social difficulties	.254**	.305**	.275**	.319**	1	.114**	.129**	.098**	.092**	.106**	.091**	.130**	-.147**	-.170**	-.058**	.035*	.113**	.052**
BM5 Spanking	.054**	.116**	.113**	.125**	.114**	1	.092**	.024	.051**	.058**	.041**	.067**	-.105**	-.175**	-.061**	.352**	.070**	.102**
PSC5 Problem Solving	.119**	.154**	.137**	.168**	.129**	.092**	1	.530**	.074**	.072**	.069**	.093**	-.132**	-.250**	-.108**	.060**	.360**	.085**
PSC5 Conflict Resolution	.104**	.116**	.124**	.086**	.098**	.024	.530**	1	.072**	.054**	.062**	.057**	-.113**	-.176**	-.062**	.013	.231**	.062**
PSC5 Communication	.077**	.106**	.092**	.079**	.092**	.051**	.074**	.072**	1	.079**	-.015	.062**	-.073**	-.081**	-.140**	.126**	.095**	.213**
PCR5 Parent-directed Play	.095**	.099**	.067**	.114**	.106**	.058**	.072**	.054**	.079**	1	.276**	.529**	-.068**	-.143**	-.105**	.048**	.072**	.044**
PCR5 Displays of Affection	.052**	.071**	.047**	.087**	.091**	.041**	.069**	.062**	-.015	.276**	1	.310**	-.047**	-.114**	-.018	-.004	.055**	-.014
PCR5 Child-directed Play	.078**	.085**	.107**	.082**	.130**	.067**	.093**	.057**	.062**	.529**	.310**	1	-.043**	-.141**	-.036*	.051**	.056**	.001
PAS5 Work Stress	-.132**	-.149**	-.076**	-.148**	-.147**	-.105**	-.132**	-.113**	-.073**	-.068**	-.047**	-.043**	1	.206**	.204**	-.076**	-.107**	-.065**
PAS5 Emotional Stress	-.166**	-.210**	-.156**	-.238**	-.170**	-.175**	-.250**	-.176**	-.081**	-.143**	-.114**	-.141**	.206**	1	.138**	-.084**	-.253**	-.122**
PAS5 Economic Stress	-.086**	-.119**	-.083**	-.119**	-.058**	-.061**	-.108**	-.062**	-.140**	-.105**	-.018	-.036*	.204**	.138**	1	-.087**	-.104**	-.109**
BM3 Spanking	.047**	.056**	.027	.094**	.035*	.352**	.060**	.013	.126**	.048**	-.004	.051**	-.076**	-.084**	-.087**	1	.064**	.107**
PSC3 Problem Solving	.147**	.155**	.128**	.134**	.113**	.070**	.360**	.231**	.095**	.072**	.055**	.056**	-.107**	-.253**	-.104**	.064**	1	.137**
PSC3 Conflict Resolution	.017	.064**	.062**	.081**	.052**	.102**	.085**	.062**	.213**	.044**	-.014	.001	-.065**	-.122**	-.109**	.107**	.137**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table B2

Correlation table for indicator variables (continued)

	CBO5 Over-dependent	CBO5 tantrums	CBO5 Apathic	CBO5 Irritability	CBO5 Social difficulties	BM5 Spanking	PSC5 Problem Solving	PSC5 Conflict Resolution	PSC5 Communication	PCR5 Parent-directed Play	PCR5 Displays of Affection	PCR5 Child-directed Play	PAS5 Work Stress	PAS5 Emotional Stress	PAS5 Economic Stress	BM3 Spanking	PSC3 Problem Solving	PSC3 Conflict Resolution
PSC3 Communication	.065**	.059**	.072**	.069**	.035*	.066**	.061**	.081**	.397**	.069**	.012	.028*	-.055**	-.087**	-.093**	.035*	.089**	.309**
PCR3 Parent-directed Play	.097**	.081**	.061**	.092**	.129**	.064**	.114**	.102**	.044**	.416**	.248**	.455**	-.080**	-.116**	-.032*	.113**	.121**	.074**
PCR3 Child-directed Play	.064**	.017	.043**	.068**	.080**	.050**	.091**	.069**	.053**	.360**	.198**	.337**	-.060**	-.095**	-.048**	.098**	.083**	.096**
PCR3 Displays of Affection	.003	.039**	.032*	.026	.056**	.006	.037*	.011	-.024	.092**	.099**	.110**	-.028*	-.040**	-.001	.024	.033*	-.010
PAS3 Work Stress	-.085**	-.070**	-.069**	-.083**	-.091**	-.047**	-.122**	-.108**	-.076**	-.074**	-.019	-.021	.301**	.210**	.189**	-.060**	-.166**	-.052**
PAS3 Economic Stress	-.087**	-.123**	-.067**	-.105**	-.075**	-.082**	-.099**	-.079**	-.153**	-.106**	-.026	-.038**	.183**	.165**	.499**	-.126**	-.152**	-.160**
PAS3 Emotional Stress	-.130**	-.130**	-.117**	-.153**	-.108**	-.063**	-.189**	-.127**	-.068**	-.126**	-.098**	-.139**	.169**	.576**	.095**	-.120**	-.309**	-.117**
PCR1 Child-directed Play	.081**	.041**	.075**	.065**	.083**	.066**	.087**	.088**	.023	.258**	.199**	.305**	-.074**	-.106**	-.014	.040**	.088**	.057**
PCR1 Parent-directed Play	.066**	.062**	.061**	.092**	.071**	.076**	.093**	.069**	.054**	.331**	.159**	.326**	-.044**	-.140**	-.010	.079**	.099**	.058**
PCR1 Displays of Affection	.027	.052**	.047**	.026	.075**	.000	.059**	.090**	.030*	.021	.057**	.057**	-.081**	-.079**	-.004	.023	.071**	.016
PAS1 Economic Stress	.057**	.086**	.091**	.119**	.061**	.074**	.074**	.065**	.119**	.084**	-.003	.019	-.142**	-.107**	-.373**	.098**	.118**	.115**
PAS1 Emotional Stress	.077**	.124**	.094**	.149**	.096**	.108**	.146**	.114**	.090**	.105**	.050**	.095**	-.126**	-.429**	-.113**	.106**	.195**	.114**
PAS1 Work Stress	.118**	.118**	.131**	.106**	.095**	.070**	.155**	.160**	.084**	.063**	.042**	.083**	-.103**	-.428**	-.055**	.080**	.192**	.094**
PSC1 Problem Solving	.063**	.027	.020	.023	.025	.023	.072**	.059**	.267**	.031*	-.021	-.007	-.045**	-.071**	-.069**	.013	.079**	.194**
PSC1 Conflict Resolution	.060**	.116**	.102**	.103**	.068**	.137**	.085**	.030*	.131**	.079**	.009	.047**	-.088**	-.132**	-.126**	.157**	.124**	.255**
BM1 Spanking	.064**	.040**	.041**	.055**	-.004	.149**	.053**	.025	.066**	.067**	-.004	.047**	-.023	-.065**	-.076**	.235**	.105**	.070**
CBO9 Child Report	.020	-.006	.026	.006	.017	.066**	.035*	.028	-.008	-.001	-.027	-.034*	.033*	.006	-.028	-.010	.014	-.011
CBO9 Mother Report	-.003	.000	-.013	-.022	.004	.047**	.000	.020	.016	.012	-.006	.011	.002	.016	-.019	-.037**	.027	-.014
CBO9 Teacher Report	.004	.018	-.004	-.011	-.007	.011	.008	.028*	.030*	-.008	-.023	.022	.035*	.006	.021	-.013	-.017	-.039**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table B3

Correlation table for indicator variables (continued)

	PSC3 Communication	PCR3 Parent-directed Play	PCR3 Child-directed Play	PCR3 Displays of Affection	PAS3 Work Stress	PAS3 Economic Stress	PAS3 Emotional Stress	PCR1 Child-directed Play	PCR1 Parent-directed Play	PCR1 Displays of Affection	PAS1 Economic Stress	PAS1 Emotional Stress	PAS1 Work Stress	PSC1 Problem Solving	PSC1 Conflict Resolution	BM1 Spanking	CBO9 Child Report	CBO9 Mother Report	CBO9 Teacher Report
PSC3 Communication	1	.067**	.064**	-.005	-.089**	-.167**	-.084**	.036*	.047**	.015	.130**	.098**	.094**	.357**	.149**	.120**	-.024	-.002	.014
PCR3 Parent-directed Play	.067**	1	.578**	.201**	-.072**	-.067**	-.161**	.360**	.427**	.067**	.049**	.099**	.081**	.044**	.056**	.071**	.005	.006	.014
PCR3 Child-directed Play	.064**	.578**	1	.167**	-.062**	-.080**	-.142**	.314**	.307**	.020	.042**	.084**	.052**	.063**	.060**	.067**	.018	.018	-.004
PCR3 Displays of Affection	-.005	.201**	.167**	1	-.069**	.012	-.063**	.078**	.067**	.044**	-.014	.064**	.013	-.025	.007	-.006	.061**	.011	.027
PAS3 Work Stress	-.089**	-.072**	-.062**	-.069**	1	.224**	.211**	-.083**	-.049**	-.105**	-.153**	-.167**	-.121**	-.087**	-.085**	-.024	-.053**	-.041**	.016
PAS3 Economic Stress	-.167**	-.067**	-.080**	.012	.224**	1	.178**	-.061**	-.082**	-.011	-.459**	-.172**	-.103**	-.112**	-.130**	-.093**	-.035*	-.014	.008
PAS3 Emotional Stress	-.084**	-.161**	-.142**	-.063**	.211**	.178**	1	-.125**	-.157**	-.046**	-.110**	-.454**	-.452**	-.052**	-.132**	-.079**	-.009	.008	-.047**
PCR1 Child-directed Play	.036*	.360**	.314**	.078**	-.083**	-.061**	-.125**	1	.371**	.287**	.053**	.113**	.121**	.066**	.013	.101**	.003	-.002	.035*
PCR1 Parent-directed Play	.047**	.427**	.307**	.067**	-.049**	-.082**	-.157**	.371**	1	.100**	.061**	.139**	.120**	.036*	.062**	.078**	.018	-.003	.010
PCR1 Displays of Affection	.015	.067**	.020	.044**	-.105**	-.011	-.046**	.287**	.100**	1	.008	.058**	.099**	.049**	.011	-.001	.012	-.015	.040**
PAS1 Economic Stress	.130**	.049**	.042**	-.014	-.153**	-.459**	-.110**	.053**	.061**	.008	1	.137**	.085**	.141**	.165**	.116**	.019	.003	-.021
PAS1 Emotional Stress	.098**	.099**	.084**	.064**	-.167**	-.172**	-.454**	.113**	.139**	.058**	.137**	1	.459**	.079**	.184**	.063**	.000	-.019	.049**
PAS1 Work Stress	.094**	.081**	.052**	.013	-.121**	-.103**	-.452**	.121**	.120**	.099**	.085**	.459**	1	.093**	.134**	.091**	.001	-.015	-.004
PSC1 Problem Solving	.357**	.044**	.063**	-.025	-.087**	-.112**	-.052**	.066**	.036*	.049**	.141**	.079**	.093**	1	.085**	.048**	-.009	-.015	.001
PSC1 Conflict Resolution	.149**	.056**	.060**	.007	-.085**	-.130**	-.132**	.013	.062**	.011	.165**	.184**	.134**	.085**	1	.135**	-.009	-.048**	.004
BM1 Spanking	.120**	.071**	.067**	-.006	-.024	-.093**	-.079**	.101**	.078**	-.001	.116**	.063**	.091**	.048**	.135**	1	.023	.004	-.005
CBO9 Child Report	-.024	.005	.018	.061**	-.053**	-.035*	-.009	.003	.018	.012	.019	.000	.001	-.009	-.009	.023	1	.238**	.194**
CBO9 Mother Report	-.002	.006	.018	.011	-.041**	-.014	.008	-.002	-.003	-.015	.003	-.019	-.015	-.015	-.048**	.004	.238**	1	.273**
CBO9 Teacher Report	.014	.014	-.004	.027	.016	.008	-.047**	.035*	.010	.040**	-.021	.049**	-.004	.001	.004	-.005	.194**	.273**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix C

Descriptive Mean Tables

Table C1

Mean differences by descriptives for year 9 indices

Descriptive	Total Percentage	CBO9 Child Report	CBO9 Mother Report	CBO9 Teacher Report
Treatment exposure				
No Treatment	71.3%	9.1309	14.6930	8.8864
Treatment	28.7%	9.0481	14.4545	8.7217
Total	-	9.1072	14.6246	8.8391
f-test p-value	-	.076	.000	.000
Sex				
male	52.4%	9.0713	14.6101	8.7920
female	47.6%	9.1466	14.6402	8.8915
Total	-	9.1071	14.6244	8.8393
f-test p-value	-	.075	.409	.019
% below poverty line				
0-49%	19.0%	9.1154	14.6151	8.8877
50-99%	17.2%	9.0460	14.5788	8.7995
100-199%	25.8%	9.0953	14.5897	8.8419
200-299%	15.5%	9.0735	14.6728	8.8519
300%+	22.6%	9.1835	14.6732	8.8174
Total	-	9.1071	14.6244	8.8393
f-test p-value	-	.297	.312	.754
Race				
White, non-Hispanic	21.1%	9.0469	14.6522	8.8865
Black, non-Hispanic	47.6%	9.1176	14.6265	8.8237
Hispanic	27.3%	9.1099	14.5841	8.8002
Other	4.0%	9.2571	14.7191	9.0429
Total	-	9.1061	14.6240	8.8392
f-test p-value	-	.280	.408	.116
Education				
< high school	39.7%	9.0990	14.6057	8.8556
high school	25.3%	9.0817	14.6055	8.7689
some college	24.3%	9.0989	14.6406	8.8790
college or more	10.7%	9.2208	14.7069	8.8516
Total	-	9.1076	14.6250	8.8389
f-test p-value	-	.311	.381	.270
Age				
<18	2.9%	9.2107	14.4248	8.7822
18-21	31.2%	9.1237	14.6308	8.8225
22-34	56.6%	9.0957	14.6322	8.8397
>35	9.4%	9.0918	14.6126	8.9076
Total	-	9.1074	14.6240	8.8391
f-test sig	-	.778	.307	.710
Range	-	8.40	7.54	8.53
Minimum	-	2.40	8.94	3.11
Maximum	-	10.80	16.48	11.65

Table C2

Mean differences by descriptives for year 5 indices

Descriptive	CBO5 Over-dependent	CBO5 Tantrums	CBO5 Apathy	CBO5 Irritability	CBO5 Social difficulties
Treatment exposure					
No Treatment	4.4286	4.4492	4.5417	4.4180	1.5677
Treatment	4.3851	4.3139	4.5238	4.3132	1.5575
Total	4.4161	4.4104	4.5365	4.3879	1.5648
f-test p-value	.061	.000	.387	.000	.089
Sex					
male	4.4210	4.3902	4.5389	4.3851	1.5587
female	4.4105	4.4332	4.5337	4.3916	1.5717
Total	4.4160	4.4107	4.5365	4.3882	1.5649
f-test p-value	.618	.032	.779	.741	.018
% below poverty line					
0-49%	4.3179	4.3427	4.4881	4.3707	1.5479
50-99%	4.3167	4.3784	4.5006	4.3310	1.5442
100-199%	4.3819	4.3930	4.4945	4.3867	1.5671
200-299%	4.4717	4.4414	4.5547	4.4282	1.5699
300%+	4.5747	4.4914	4.6398	4.4208	1.5891
Total	4.4160	4.4107	4.5365	4.3882	1.5649
f-test p-value	.000	.000	.000	.020	.000
Race					
White, non-Hispanic	4.5262	4.3728	4.5835	4.3214	1.5759
Black, non-Hispanic	4.4071	4.4226	4.5181	4.3960	1.5656
Hispanic	4.3421	4.4102	4.5240	4.4266	1.5551
Other	4.4278	4.4691	4.5825	4.4021	1.5635
Total	4.4153	4.4106	4.5360	4.3889	1.5648
f-test p-value	.000	.169	.034	.002	.073
Education					
< high school	4.2976	4.3440	4.4681	4.3527	1.5426
high school	4.4147	4.4357	4.5247	4.4042	1.5665
some college	4.5206	4.4441	4.5938	4.4146	1.5923
college or more	4.6279	4.5229	4.6908	4.4198	1.5813
Total	4.4168	4.4107	4.5368	4.3880	1.5649
f-test p-value	.000	.000	.000	.032	.000
Age					
<18	4.2643	4.4286	4.4571	4.4357	1.5550
18-21	4.3729	4.3781	4.5151	4.3702	1.5671
22-34	4.4379	4.4100	4.5470	4.3920	1.5627
>35	4.4717	4.5152	4.5652	4.4087	1.5731
Total	4.4158	4.4105	4.5362	4.3880	1.5648
f-test sig	.001	.003	.149	.527	.619
Range	3.00	3.00	3.00	3.00	.67
Minimum	2.00	2.00	2.00	2.00	1.00
Maximum	5.00	5.00	5.00	5.00	1.67

Table C3

Mean differences by descriptives for year 5 indices (continued)

Descriptive	BM5 Spanking	PSC5 Problem Solving	PSC5 Conflict Resolution	PSC5 Communication	PCR5 Parent-directed Play
Treatment exposure					
No Treatment	3.5706	3.3420	3.5591	3.3828	4.4408
Treatment	3.5181	3.2616	3.5532	3.2641	4.3056
Total	3.5555	3.3189	3.5574	3.3487	4.4020
f-test p-value	.022	.000	.701	.000	.008
Sex					
male	3.5537	3.3109	3.5592	3.3481	4.3976
female	3.5578	3.3276	3.5554	3.3499	4.4063
Total	3.5556	3.3189	3.5574	3.3490	4.4017
f-test p-value	.847	.378	.786	.951	.849
% below poverty line					
0-49%	3.5216	3.1886	3.4523	3.2317	4.3969
50-99%	3.5563	3.2728	3.4825	3.2289	4.3234
100-199%	3.5388	3.2932	3.5378	3.3336	4.3621
200-299%	3.5626	3.3762	3.5988	3.3109	4.3496
300%+	3.5982	3.4534	3.6966	3.5828	4.5466
Total	3.5556	3.3189	3.5574	3.3490	4.4017
f-test p-value	.158	.000	.000	.000	.014
Race					
White, non-Hispanic	3.5291	3.4117	3.6973	3.4709	4.7382
Black, non-Hispanic	3.5533	3.2951	3.5263	3.2588	4.3435
Hispanic	3.5749	3.2747	3.4936	3.4004	4.2380
Other	3.5825	3.3892	3.6160	3.4227	4.4794
Total	3.5553	3.3178	3.5570	3.3488	4.4033
f-test p-value	.457	.000	.000	.000	.000
Education					
< high school	3.5221	3.2235	3.4661	3.2703	4.3268
high school	3.5384	3.3157	3.5542	3.3032	4.4295
some college	3.5980	3.3953	3.6299	3.3818	4.3886
college or more	3.6240	3.5115	3.7362	3.6698	4.6520
Total	3.5556	3.3194	3.5571	3.3485	4.4026
f-test p-value	.004	.000	.000	.000	.001
Age					
<18	3.4786	3.3000	3.4804	3.1571	4.7024
18-21	3.5151	3.2815	3.5356	3.2163	4.5092
22-34	3.5813	3.3271	3.5632	3.4014	4.3545
>35	3.5609	3.3978	3.6196	3.5283	4.2449
Total	3.5558	3.3188	3.5575	3.3486	4.4024
f-test sig	.020	.007	.002	.000	.000
Range	3.00	3.00	3.00	3.00	7.00
Minimum	1.00	1.00	1.00	1.00	0.00
Maximum	4.00	4.00	4.00	4.00	7.00

Table C4

Mean differences by descriptives for year 5 indices (continued)

Descriptive	PCR5 Displays of Affection	PCR5 Child-directed Play	PAS5 Work Stress	PAS5 Emotional Stress	PAS5 Economic Stress
Treatment exposure					
No Treatment	.4403	4.3693	1.6482	2.1586	.8927
Treatment	.4354	4.2964	1.6970	2.2575	1.1100
Total	.4389	4.3484	1.6622	2.1870	.9550
f-test p-value	.188	.243	.016	.000	.000
Sex					
male	.4386	4.2321	1.6512	2.1961	.9495
female	.4391	4.4760	1.6746	2.1767	.9615
Total	.4389	4.3481	1.6623	2.1868	.9552
f-test p-value	.872	.000	.201	.321	.734
% below poverty line					
0-49%	.4414	4.2721	1.7379	2.2511	1.0764
50-99%	.4378	4.3049	1.7209	2.2491	1.0884
100-199%	.4332	4.2880	1.6646	2.1920	1.0578
200-299%	.4422	4.3603	1.6542	2.1130	.9828
300%+	.4417	4.5050	1.5572	2.1303	.6155
Total	.4389	4.3481	1.6623	2.1868	.9552
f-test p-value	.330	.041	.000	.000	.000
Race					
White, non-Hispanic	.4438	4.5689	1.6106	2.1544	.8625
Black, non-Hispanic	.4409	4.2794	1.6647	2.2065	1.0645
Hispanic	.4320	4.2762	1.6935	2.1722	.8360
Other	.4354	4.5464	1.6921	2.2358	.9550
Total	.4389	4.3502	1.6623	2.1873	.9551
f-test p-value	.067	.000	.016	.118	.000
Education					
< high school	.4317	4.2129	1.7166	2.2778	1.0730
high school	.4443	4.3577	1.6418	2.1564	.9254
some college	.4477	4.4992	1.6215	2.0879	.9971
college or more	.4326	4.4838	1.6027	2.1427	.4797
Total	.4389	4.3481	1.6624	2.1865	.9537
f-test p-value	.000	.000	.000	.000	.000
Age					
<18	.4456	4.5750	1.6419	2.2804	.8597
18-21	.4409	4.3614	1.6865	2.1927	1.0390
22-34	.4391	4.3542	1.6587	2.1765	.9448
>35	.4287	4.2054	1.6126	2.2043	.7741
Total	.4389	4.3488	1.6626	2.1871	.9557
f-test sig	.225	.227	.158	.299	.000
Range	.39	7.00	2.61	3.00	6.17
Minimum	.11	0.00	1.00	1.00	.15
Maximum	.50	7.00	3.61	4.00	6.32

Table C5

Mean differences by descriptives for year 3 indices

Descriptive	BM3 Spanking	PSC3 Problem Solving	PSC3 Conflict Resolution	PSC3 Communication	PCR3 Parent-directed Play
Treatment exposure					
No Treatment	3.3624	2.9875	2.9307	3.3647	5.0010
Treatment	3.3011	2.9077	2.8356	3.2641	4.9849
Total	3.3448	2.9646	2.9034	3.3359	4.9964
f-test p-value	.025	.000	.002	.002	.755
Sex					
male	3.3232	2.9502	2.9237	3.3586	4.9320
female	3.3688	2.9808	2.8819	3.3117	5.0667
Total	3.3449	2.9648	2.9038	3.3363	4.9960
f-test p-value	.065	.082	.132	.106	.004
% below poverty line					
0-49%	3.3427	2.8621	2.7931	3.1832	4.8807
50-99%	3.3594	2.9079	2.8505	3.2218	4.7494
100-199%	3.3360	2.9399	2.8669	3.3312	4.9542
200-299%	3.3004	3.0013	2.9275	3.3887	5.1005
300%+	3.3765	3.0977	3.0633	3.5222	5.2570
Total	3.3449	2.9648	2.9038	3.3363	4.9960
f-test p-value	.424	.000	.000	.000	.000
Race					
White, non-Hispanic	3.3184	3.0034	2.9903	3.4612	5.4245
Black, non-Hispanic	3.3113	2.9505	2.8465	3.2485	4.9663
Hispanic	3.4251	2.9499	2.9439	3.3705	4.6926
Other	3.3351	3.0258	2.8505	3.4794	5.1443
Total	3.3449	2.9645	2.9036	3.3359	4.9951
f-test p-value	.001	.046	.000	.000	.000
Education					
< high school	3.3450	2.8366	2.8522	3.2760	4.7597
high school	3.3298	2.9892	2.8844	3.2749	4.9974
some college	3.3516	3.0500	2.9092	3.3608	5.1968
college or more	3.3683	3.1931	3.1355	3.6489	5.4151
Total	3.3453	2.9652	2.9045	3.3363	4.9962
f-test p-value	.842	.000	.000	.000	.000
Age					
<18	3.2714	2.8190	2.8857	3.1786	4.9911
18-21	3.2877	2.9140	2.7955	3.2248	4.9769
22-34	3.3757	2.9783	2.9541	3.3916	4.9845
>35	3.3674	3.0931	2.9674	3.4196	5.1326
Total	3.3445	2.9645	2.9040	3.3361	4.9962
f-test sig	.009	.000	.000	.000	.314
Range	3.00	3.00	4.00	3.00	7.00
Minimum	1.00	1.00	1.00	1.00	0.00
Maximum	4.00	4.00	5.00	4.00	7.00

Table C6

Mean differences by descriptives for year 3 indices (continued)

Descriptive	PCR3 Child-directed Play	PCR3 Displays of Affection	PAS3 Work Stress	PAS3 Economic Stress	PAS3 Emotional Stress
Treatment exposure					
No Treatment	5.0130	3.1420	1.6715	4.5105	2.2343
Treatment	4.9313	3.1187	1.7423	4.8009	2.3212
Total	4.9896	3.1353	1.6918	4.5938	2.2592
f-test p-value	.171	.376	.002	.000	.000
Sex					
male	5.0352	3.1255	1.6870	4.5589	2.2678
female	4.9386	3.1460	1.6969	4.6322	2.2495
Total	4.9893	3.1352	1.6917	4.5938	2.2591
f-test p-value	.074	.392	.643	.098	.335
% below poverty line					
0-49%	4.8944	3.1467	1.7680	4.8429	2.3187
50-99%	4.8387	3.1506	1.7457	4.7468	2.3120
100-199%	4.9374	3.1390	1.7110	4.6929	2.2389
200-299%	5.0415	3.2232	1.6614	4.6910	2.2263
300%+	5.2072	3.0491	1.5852	4.0878	2.2143
Total	4.9893	3.1352	1.6917	4.5938	2.2591
f-test p-value	.000	.000	.000	.000	.000
Race					
White, non-Hispanic	5.4325	3.0588	1.6579	4.4166	2.2170
Black, non-Hispanic	4.9063	3.1642	1.6733	4.7417	2.2693
Hispanic	4.8080	3.1490	1.7490	4.4864	2.2646
Other	4.8634	3.1104	1.7045	4.5106	2.3325
Total	4.9886	3.1357	1.6920	4.5942	2.2595
f-test p-value	.000	.008	.009	.000	.067
Education					
< high school	4.8278	3.1374	1.7812	4.7419	2.3301
high school	4.9749	3.1938	1.6448	4.5778	2.2253
some college	5.1531	3.1415	1.6336	4.6737	2.1688
college or more	5.2548	2.9817	1.5999	3.8858	2.2781
Total	4.9898	3.1360	1.6914	4.5921	2.2588
f-test p-value	.000	.000	.000	.000	.000
Age					
<18	5.1536	3.0583	1.7548	4.5639	2.2554
18-21	5.0246	3.2121	1.6962	4.7623	2.2588
22-34	4.9711	3.1242	1.6909	4.5550	2.2596
>35	4.9261	2.9672	1.6638	4.2745	2.2609
Total	4.9888	3.1350	1.6918	4.5935	2.2593
f-test sig	.501	.000	.630	.000	1.000
Range	7.00	2.53	3.00	7.19	3.00
Minimum	0.00	1.00	1.00	3.00	1.00
Maximum	7.00	3.54	4.00	10.19	4.00

Table C7

Mean differences by descriptives for year 1 indices

Descriptive	PCR1 Child-directed Play	PCR1 Parent-directed Play	PCR1 Displays of Affection	PAS1 Economic Stress
Treatment exposure				
No Treatment	5.6807	3.8347	1.8739	1.2856
Treatment	5.6840	3.8886	1.8743	1.3372
Total	5.6817	3.8501	1.8740	1.3004
f-test p-value	.920	.464	.932	.000
Sex				
male	5.6689	3.8242	1.8713	1.2971
female	5.6953	3.8796	1.8770	1.3042
Total	5.6815	3.8505	1.8740	1.3005
f-test p-value	.365	.407	.100	.452
% below poverty line				
0-49%	5.5666	3.7243	1.8561	1.3420
50-99%	5.5637	3.6062	1.8643	1.3470
100-199%	5.6651	3.7490	1.8757	1.3257
200-299%	5.6715	3.8328	1.8819	1.3216
300%+	5.8933	4.2710	1.8892	1.1868
Total	5.6815	3.8505	1.8740	1.3005
f-test p-value	.000	.000	.000	.000
Race				
White, non-Hispanic	5.9673	4.3300	1.8917	1.2720
Black, non-Hispanic	5.5966	3.8732	1.8691	1.3258
Hispanic	5.6091	3.4265	1.8695	1.2853
Other	5.6813	3.9349	1.8684	1.2408
Total	5.6815	3.8498	1.8740	1.3000
f-test p-value	.000	.000	.000	.000
Education				
< high school	5.5755	3.5593	1.8609	1.3279
high school	5.6177	3.8374	1.8762	1.3080
some college	5.7969	4.0630	1.8849	1.3170
college or more	5.9699	4.4859	1.8924	1.1406
Total	5.6822	3.8513	1.8740	1.3002
f-test p-value	.000	.000	.000	.000
Age				
<18	5.6534	3.8491	1.8523	1.2171
18-21	5.6638	3.8715	1.8702	1.3356
22-34	5.6838	3.8441	1.8764	1.2956
>35	5.7307	3.8125	1.8803	1.2377
Total	5.6811	3.8498	1.8741	1.3004
f-test sig	.645	.966	.037	.000
Range	5.21	13.00	.90	.92
Minimum	1.44	-6.00	1.00	1.00
Maximum	6.65	7.00	1.90	1.92

Table C8

Mean differences by descriptives for year 1 indices (continued)

Descriptive	PAS1 Emotional Stress	PAS1 Work Stress	PSC1 Problem Solving	PSC1 Conflict Resolution	BM1 Spanking
Treatment exposure					
No Treatment	5.9155	5.4566	2.5471	3.1975	4.4902
Treatment	5.7117	5.3801	2.5203	3.0890	4.4522
Total	5.8571	5.4347	2.5394	3.1664	4.4793
f-test p-value	.000	.133	.281	.001	.065
Sex					
male	5.8228	5.4287	2.5514	3.1671	4.4538
female	5.8952	5.4410	2.5260	3.1657	4.5072
Total	5.8573	5.4346	2.5393	3.1664	4.4792
f-test p-value	.097	.791	.259	.963	.004
% below poverty line					
0-49%	5.8297	5.1627	2.4267	3.1433	4.4652
50-99%	5.7687	5.2527	2.4828	3.1423	4.4556
100-199%	5.8724	5.4287	2.5285	3.1070	4.4780
200-299%	5.9381	5.5165	2.5323	3.1924	4.4211
300%+	5.8751	5.7520	2.6941	3.2543	4.5504
Total	5.8573	5.4346	2.5393	3.1664	4.4792
f-test p-value	.236	.000	.000	.005	.000
Race					
White, non-Hispanic	5.7874	5.7816	2.6311	3.2233	4.5886
Black, non-Hispanic	5.8491	5.2700	2.4858	3.1105	4.3533
Hispanic	5.9349	5.4431	2.5651	3.2006	4.6030
Other	5.7938	5.5258	2.5309	3.2990	4.5461
Total	5.8573	5.4353	2.5399	3.1664	4.4789
f-test p-value	.111	.000	.000	.001	.000
Education					
< high school	5.7678	5.2013	2.4712	3.1102	4.4722
high school	5.9604	5.4640	2.5053	3.1827	4.4222
some college	5.9394	5.6198	2.5988	3.1573	4.5003
college or more	5.7557	5.8053	2.7328	3.3664	4.5979
Total	5.8569	5.4342	2.5388	3.1674	4.4798
f-test p-value	.000	.000	.000	.000	.000
Age					
<18	5.9214	5.1857	2.3929	3.2929	4.3801
18-21	5.8591	5.2903	2.4653	3.0662	4.3854
22-34	5.8699	5.4888	2.5802	3.2034	4.5187
>35	5.7522	5.6587	2.5804	3.2370	4.5811
Total	5.8570	5.4342	2.5390	3.1663	4.4790
f-test sig	.454	.000	.000	.000	.000
Range	6.00	6.00	3.00	4.00	2.51
Minimum	2.00	2.00	0.00	1.00	2.34
Maximum	8.00	8.00	3.00	5.00	4.85

Appendix D

Tables and Figures for Treatment Exposure Group

Table D1

Results for between group treatment exposure differences

Between Groups ANOVA	*df*	*F*	η^2_p	*p*
Child Gender	1	.154	.000	.694
Poverty Rates	4	3.745	0.003	.005
Race	3	8.563	0.005	.000
Mother's Age	3	5.325	0.003	.001
Level of Education	3	8.563	0.005	.000

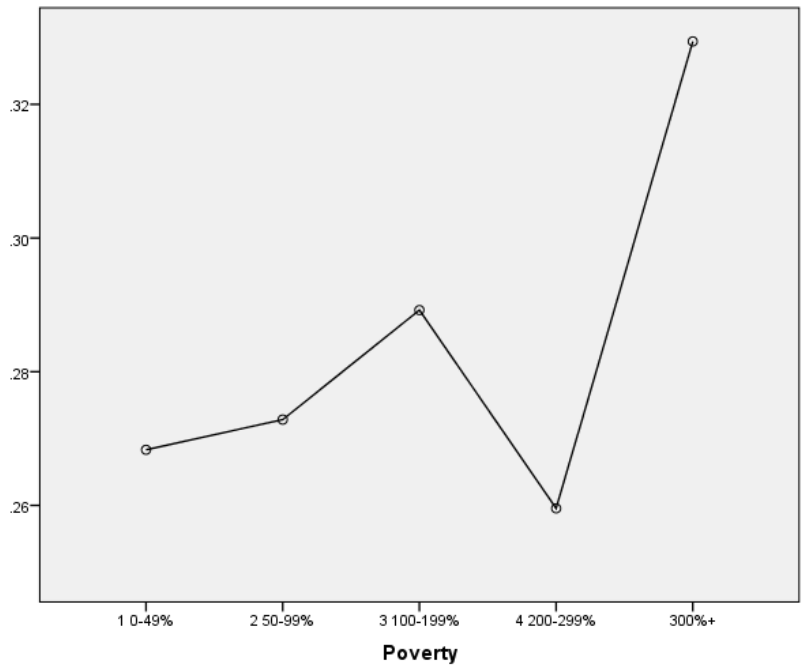

Figure D1. Mean differences in treatment exposure rates by poverty levels

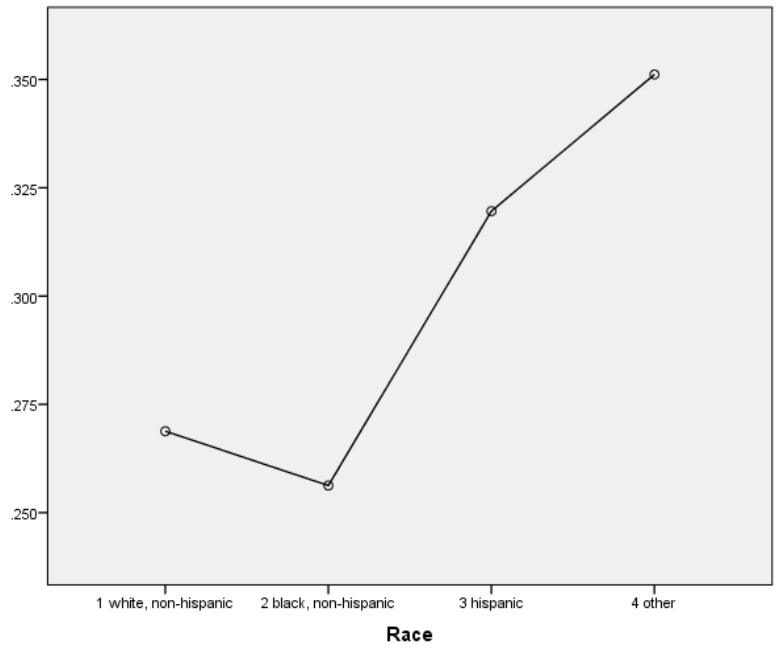

Figure D2. Mean differences in treatment exposure rates by race

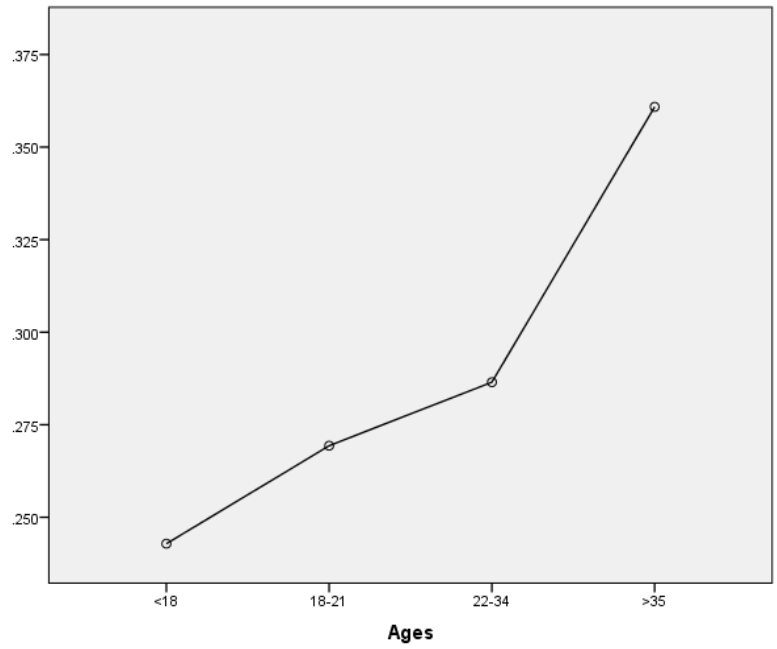

Figure D3. Mean differences in treatment exposure rates by mother's age

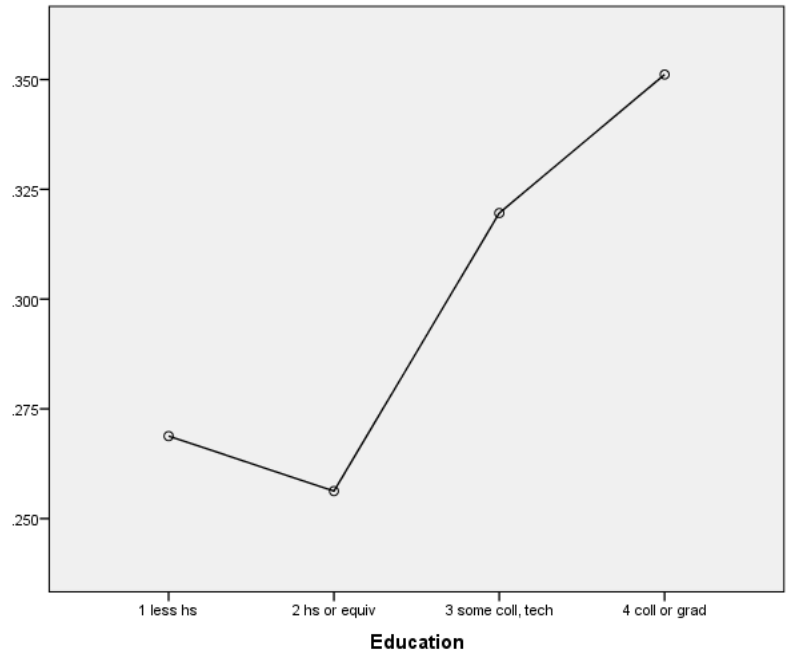

Figure D4. Mean differences in treatment exposure rates by level of education

Table D2

Games-Howell comparisons for poverty level and treatment exposure

Comparison	Mean Difference (I-J)	Std. Error	*p*	95% Confidence Interval	
				Lower Bound	Upper Bound
0-49%					
50-99%	-.00452	.02115	1.000	-.0623	.0532
100-199%	-.02090	.01936	.817	-.0738	.0320
200-299%	.00877	.02157	.994	-.0501	.0677
300%+	-.06109*	.02029	.022	-.1165	-.0057
50-99%					
100-199%	-.01639	.01997	.924	-.0709	.0381
200-299%	.01328	.02212	.975	-.0471	.0737
300%+	-.05658	.02087	.053	-.1136	.0004
100-199%					
200-299%	.02967	.02041	.593	-.0261	.0854
300%+	-.04019	.01906	.216	-.0922	.0118
200-299%					
300%+	-.06986*	.02130	.009	-.1280	-.0117

Table D3

Games-Howell comparisons for race and treatment exposure

Comparison	Mean Difference (I-J)	Std. Error	*p*	95% Confidence Interval	
				Lower Bound	Upper Bound
Black, non-Hispanic					
Hispanic	-.06333*	.01836	.003	-.1105	-.0161
Other	-.09488*	.02429	.001	-.1574	-.0324
White, non-Hispanic					
Black, non-Hispanic	.01253	.01598	.862	-.0286	.0536
Hispanic	-.05080*	.01686	.014	-.0941	-.0075
Other	-.08235*	.02317	.002	-.1420	-.0227
Hispanic					
Other	-.03155	.02487	.583	-.0956	.0325

Table D4

Games-Howell comparisons for mothers' age and treatment exposure

Comparison	Mean Difference (I-J)	Std. Error	*p*	95% Confidence Interval	
				Lower Bound	Upper Bound
<18					
18-21	-.02647	.03810	.899	-.1254	.0724
22-34	-.04363	.03737	.648	-.1407	.0534
>35	-.11801*	.04272	.031	-.2285	-.0075
18-21					
22-34	-.01716	.01424	.624	-.0538	.0195
>35	-.09154*	.02513	.002	-.1563	-.0268
22-34					
>35	-.07438*	.02401	.011	-.1362	-.0125

Table D5

Games-Howell comparisons for education levels and treatment exposure

Comparison	Mean Difference (I-J)	Std. Error	*p*	95% Confidence Interval	
				Lower Bound	Upper Bound
less than high school					
High school/equivalent	.01253	.01598	.862	-.0286	.0536
some college/ tech	-.05080*	.01686	.014	-.0941	-.0075
college or graduate	-.08235*	.02317	.002	-.1420	-.0227
High school/equivalent					
some college/ tech	-.06333*	.01836	.003	-.1105	-.0161
college or graduate	-.09488*	.02429	.001	-.1574	-.0324
some college/ tech					
college or graduate	-.03155	.02487	.583	-.0956	.0325