Identifying Risk And Protective Factors Associated With The Relationship Between Developmental Delays And Behavior Problems In An Urban Sample Of Preschool Children

Jaclyn Weber Babcock

Graduate Center, City University of New York
IDENTIFYING RISK AND PROTECTIVE FACTORS ASSOCIATED WITH THE
RELATIONSHIP BETWEEN DEVELOPMENTAL DELAYS AND BEHAVIOR PROBLEMS
IN AN URBAN SAMPLE OF PRESCHOOL CHILDREN

by

JACLYN W. BABCOCK

A dissertation submitted to the Graduate Faculty in Educational Psychology in partial fulfillment
of the requirements for the degree of Doctor of Philosophy, The City University of New York

2015
This manuscript has been read and accepted for the Graduate Faculty in Educational Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

Marian C. Fish, Ph.D.

________________________
Date Chair of Examining Committee

Alpana Bhattacharya, Ph.D.

________________________
Date Executive Officer

Marian C. Fish, Ph.D.
Helen Johnson, Ph.D.
David Rindskopf, Ph.D.

Supervisory Committee

Outside Readers:
Meltem Paker, Ph.D. & Sarah Jabbour, Psy.D.

THE CITY UNIVERSITY OF NEW YORK
Abstract
IDENTIFYING RISK AND PROTECTIVE FACTORS ASSOCIATED WITH THE
RELATIONSHIP BETWEEN DEVELOPMENTAL DELAYS AND BEHAVIOR PROBLEMS
IN AN URBAN SAMPLE OF PRESCHOOL CHILDREN
by
Jaclyn W. Babcock
Advisor: Professor Marian C. Fish

The purpose of this study was to examine how child-specific variables, such as the type
and/or level of developmental delay, and family variables, such as family functioning, parenting
stress, and parenting self-esteem, relate to the behavior problems in an urban sample of minority
preschool children with developmental delays. Participants were 72 parents of preschool children
between the ages of 3 – 5 years currently living in Brooklyn, NY, Queens, NY or Jersey City,
NJ. Parents in the sample were classified into two groups, parents of “Typically Developing”
preschoolers (n = 20) and parents of preschoolers who were considered to have “Developmental
Delays” (n = 52) in the cognitive, speech/language, adaptive, and/or motor areas of development
and were receiving special education services as mandated by an Individualized Education Plan
(IEP). Parent participants completed four questionnaires comprised of: 1) Child Behavior
Checklist for Ages 1 ½ - 5, 2) The Family Adaptability and Cohesion Scale, 3) the Parenting
Stress Index – Short Form, and 4) the Parent Sense of Competency Scale. Parent participants
were compensated $20 for completing the measures. Additionally, the teachers of 69 preschool
students volunteered to participate by completing the Caregiver-Teacher Report Form and were
compensated $5 for their participation.
The results from this study reveal that preschool children with developmental delays are reported by both parents and teachers to have significantly more internalizing, externalizing, and total behaviors than their typically developing peers. Additionally, it was discovered that the mere presence of one developmental delay, regardless of the type or severity of the delay, is associated with higher reported levels of internalizing, externalizing, and total problem behaviors in preschool children. Although the family-specific variables of family functioning, family communication and parenting self-esteem were not related to the behavioral problems of preschool children with developmental delays in this sample, increased levels of parenting stress was found to be associated with increased reports of preschool children’s behavior problems. Furthermore, several of the socio-demographic characteristics found within this non-traditional sample, including parents’ education level, household income, ethnic background and child gender, appear to increase preschool children’s vulnerability to developing severe and persistent behavior problems.
Acknowledgments

The successful completion of my dissertation would not have been possible without the support, guidance and patience of my professors, family and friends. I’d like to extend a special note of thanks to my advisor, Dr. Marian Fish, for her encouragement and counsel throughout my career at The Graduate Center. Thank you also to Dr. Helen Johnson and Dr. David Rindskopf for their time, energy, and commitment to the completion of my degree. I’d like to thank Dr. Meltem Paker for being a mentor and inspiring both my professional and personal growth. I’d also like to thank Dr. Sarah Jabbour, my “work BFF,” for a friendship that has truly enriched my life in so many ways.

I want to thank my parents, Dale and Cindy Weber, and sister, Julie Weber Willey. I would not have reached this milestone without your unconditional love and support. You instilled in me the confidence necessary to explore the world and achieve to my fullest potential. I’d also like to recognize and thank the Babcock family for their encouragement and support.

Joey and James, thank you for your patience when Mommy needed to “work.” You are too young to fully understand the love I feel for you or to know how your very presence in the world inspires me to be a better person. My hope for you both is that you will love with your whole-heart, be kind and empathetic towards others, find and pursue your passions, work hard and persevere when times get tough, and always find time to laugh and play.

I owe my deepest gratitude to my husband, Joe Babcock. I know that our partnership through this journey was often one-sided and I never would have succeeded if you had not carried me at times. You are my best friend and the love and admiration I feel for you is so far beyond what I can put into words. I’m excited for the next step in our journey together.
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title Page</td>
<td>i</td>
</tr>
<tr>
<td>Abstract</td>
<td>iv</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>vi</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>vii</td>
</tr>
<tr>
<td>Chapter I: Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Chapter II: Literature Review</td>
<td>7</td>
</tr>
<tr>
<td>Problem Behaviors in Preschool Children</td>
<td>7</td>
</tr>
<tr>
<td>Preschool Children with Developmental Delays</td>
<td>9</td>
</tr>
<tr>
<td>Behavior Problems in Preschool Children with Developmental Delays</td>
<td>12</td>
</tr>
<tr>
<td>Child Factors Associated with the Prevalence of Behavior Problems in Preschool Children with Developmental Delays</td>
<td>16</td>
</tr>
<tr>
<td>Theoretical Foundation for Identifying Family Factors Associated with the Prevalence of Behavior Problems in Preschool Children with Developmental Delays</td>
<td>20</td>
</tr>
<tr>
<td>Family Functioning Associated with the Prevalence of Behavior Problems in Preschool Children with Developmental Delays</td>
<td>27</td>
</tr>
<tr>
<td>Parent Factors Associated with the Prevalence of Behavior Problems in Preschool Children with Developmental Delays</td>
<td>30</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>30</td>
</tr>
<tr>
<td>Parenting Self-Esteem</td>
<td>34</td>
</tr>
<tr>
<td>Parenting Self-Efficacy</td>
<td>35</td>
</tr>
<tr>
<td>Parenting Satisfaction</td>
<td>38</td>
</tr>
<tr>
<td>Rationale for the Study</td>
<td>39</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Research Questions</td>
<td>41</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>42</td>
</tr>
<tr>
<td>Chapter III: Methodology</td>
<td>45</td>
</tr>
<tr>
<td>Participants</td>
<td>45</td>
</tr>
<tr>
<td>Measures</td>
<td>52</td>
</tr>
<tr>
<td>Family Demographic Information</td>
<td>52</td>
</tr>
<tr>
<td>Educational Record Review Form</td>
<td>53</td>
</tr>
<tr>
<td>Child Behavior Checklist For Ages 1½ - 5</td>
<td>54</td>
</tr>
<tr>
<td>Caregiver – Teacher Report Form</td>
<td>55</td>
</tr>
<tr>
<td>Family Adaptability and Cohesion Evaluation Scales</td>
<td>56</td>
</tr>
<tr>
<td>Parenting Stress Index – Short Form</td>
<td>58</td>
</tr>
<tr>
<td>Parent Sense of Competence Scale</td>
<td>59</td>
</tr>
<tr>
<td>Procedure</td>
<td>60</td>
</tr>
<tr>
<td>Chapter IV: Results</td>
<td>65</td>
</tr>
<tr>
<td>Preliminary Analysis</td>
<td>65</td>
</tr>
<tr>
<td>Developmental Delay Status</td>
<td>65</td>
</tr>
<tr>
<td>Relationship between Socio-Demographic Factors and the Main Study Variables</td>
<td>68</td>
</tr>
<tr>
<td>Research Questions</td>
<td>84</td>
</tr>
<tr>
<td>The Relationship of Developmental Delays to the Prevalence of Behavior Problems in Preschool Children</td>
<td>84</td>
</tr>
<tr>
<td>The Relationship of Child-Specific Variables to the Prevalence of Behavior Problems in Preschool Children with Developmental Delays</td>
<td>87</td>
</tr>
</tbody>
</table>
Speech and Language Delay 93
Adaptive Skills Delay 95
Motor Skills Delay 96
Multiple Delays 98

The Relationship of Family Functioning to the Prevalence of Behavior Problems in Preschool Children with Developmental Delays 101
Family Functioning 101
Family Communication 104

The Relationship of Parent Variables to the Prevalence of Behavior Problems in Preschool Children with Developmental Delays 105
Parenting Stress 105
Parenting Self-Esteem 108

Chapter V: Discussion 114
Relationships between Socio-demographic Characteristics and Main Study Variables 114
Report of Children’s Behavior Problems 114
Family Functioning and Communication 117
Parenting Stress 118
Parenting Self-Esteem 119

Research Questions 119
The Relationship of Developmental Delays to the Prevalence of Behavior Problems in Preschool Children 119
The Relationship of Child-Specific Variables to the Prevalence of Behavior Problems in Preschool Children with Developmental Delays

Cognitive Delay

Speech/Language Delays, Adaptive Skills Delays, Motor Skills Delays, Multiple Delays

The Relationship of Family Functioning to the Prevalence of Behavior Problems in Preschool Children with Developmental Delays

Family Functioning and Communication


Parenting Stress

Parenting Self-Esteem

Educational Implications

Limitations of the Study

Directions for Future Research

Conclusion

Appendix A: Educational Record Review Form

Appendix B: Informational Mailing to Preschools

Appendix C: Telephone Script for Initial Preschool Contact

Appendix D: Preschool Director’s Consent to Recruit Participants

Appendix E: Parent Letter

Appendix F: Participant Consent Form

Appendix G: Record Release Consent Form
Appendix H: Parent Instructions 152
Appendix I: Participant Instructions 154
Appendix J: Teacher Consent and Instructions 156
References 160
List of Tables

Table 1: Socio-Demographic Characteristics of the Sample 47

Table 2: Independent Samples T-Test of the Effects of Participant’s Relation to Child on the Main Study Variables 69

Table 3: One-Way ANOVA Tests of the Effects of Participants’ Level of Education on the Main Variables of the Study 71

Table 4: One-Way ANOVA Tests of the Effects of Household Income on the Main Variables of the Study 72

Table 5: One-Way ANOVA Tests of the Effects of Participants’ Ethnic Background on the Main Variables of the Study 75

Table 6: Independent Samples T-Test of the Effect of Child’s Family Structure on Main Study Variables 77

Table 7: One-Way ANOVA Tests of the Effects of Participants’ Current Relationship Status on the Main Variables of the Study 79

Table 8: Independent Samples T-Test of the Effects of Child Gender on the Main Variables of the Study 81

Table 9: Pearson Correlations for Child’s Age to Study Variables 83

Table 10: Independent Samples T-Test of the Effects of Children’s Developmental Delay Status on Parent and Teacher Reports of Children’s Behavioral Problems 85

Table 11: One-Way ANOVA Tests of the Effects of Severity of Cognitive Delay on Children’s Behavior Problems 88

Table 12: Paired Samples T-Test of the Internalizing and Externalizing Problem behaviors of children with Moderate and Severe Cognitive Delays 92
Table 13: One-Way ANOVA Tests of the Effects of Severity of Speech Delay on Children’s Behavior Problems

Table 14: One-Way ANOVA Tests of the Effects of Severity of Adaptive Skills Delay on Children’s Behavior Problems

Table 15: One-Way ANOVA Tests of the Effects of Severity of Motor Skills Delay on Children’s Behavior Problems

Table 16: One-Way ANOVA Tests of the Effects of Multiple Developmental Delays Present on Children’s Behavior Problems

Table 17: Pearson Correlations for Family Functioning to Child Behavior Problems

Table 18: Pearson Correlations for Family Communication to Child Behavior Problems

Table 19: Pearson Correlations for Parenting Stress to Child Behavior Problems

Table 20: Pearson Correlations for Parenting Self-Esteem to Child Behavior Problems

Table 21: Summary of Research Hypotheses and Findings of the Present Study
Chapter I

Introduction

The preschool years, ages 3 – 5, are a period of significant growth and development as children’s maturing physical, cognitive, and social skills give way to an increasing understanding of themselves and the world around them (McDevitt & Ormrod, 2010). Yet, this stage of development is also characterized by problem behavior, as parents and teachers across cultures typically report relatively high rates of disobedience, defiance, overactivity, poor concentration, and negative mood among preschool children (Campbell, 1995; Kerig & Wenar, 2006). Additionally, parents’ and teachers’ reports of problem behaviors tend to increase from age 2 – 3, as children shift from the dependency of infancy into the more autonomous toddler and preschool years, but decrease by age 5 as children are becoming more socially and cognitively competent (Campbell, 1995). Thus, preschool children’s problem behaviors appear to emerge and decline in ways that are predictable and consistent with their developmental level (Campbell, 1995).

Unfortunately, not all children out-grow problem behaviors and some children demonstrate difficult and persistent behaviors well beyond the preschool years. Significant behavior problems that persist beyond the preschool years have been associated with a range of negative outcomes, including behavioral and academic difficulties (Campbell, 1995). An emerging body of research suggests that preschool children with developmental delays may be particularly susceptible to developing persistent and severe behavior problems associated with such negative outcomes later in life (Mitchell & Hauser-Cram, 2009). “Developmental delay” refers to a situation in which the development of a child progresses at a pace significantly slower than expected (Kerig & Wenar, 2006). Although the terms and criterion used to define
developmental delays vary widely within the research literature, preschool children are typically identified as presenting with developmental delays when they do not achieve the expected developmental milestones in cognitive, adaptive, speech, fine motor, or gross motor development (Sices et al., 2003).

Emerging evidence within the research literature suggests that children with developmental delays have a higher incidence of behavior problems than their typically developing peers (Emerson, 2003). Specifically, the prevalence of externalizing behavior problems in children with a developmental delay have been found to range from 40 – 60%, suggesting that these behavior problems are a relatively common co-morbid condition in children with developmental delays (Roberts et al., 2003). Research utilizing samples of preschool-age children has resulted in similar results, as preschool children with developmental delays were 3-4 times more likely to fall within a clinical range of behavior problems than their typically developing peers of the same age (Baker et al., 2002).

Despite the relatively common assumption that children with developmental delays are at increased risk for developing persistent behavior problems, much less is known about the early onset of these problems (Feldman et al., 2000). Research has found that children with developmental delay may start to show increased risk for behavior problems compared to typically developing peers by age 2, but have yet to reach the levels of psychopathology seen in 4- or 5-year old children with developmental delay (Feldman et al., 2000). Thus, it is necessary to identify and examine the risk and protective factors related to emerging behavior problems in young children with developmental delay during these preschool years.

Some research has found a relationship between child-specific variables, such as the type and severity of the developmental delay, and the prevalence of behavior problems in children
with developmental delays. Specifically, the emergence and continuity of syndrome-specific behavioral problems in preschoolers have been found when children were grouped and studied according to their type of developmental delay (Eisenhower et al., 2005). Additionally, researchers have examined the psychopathology or behavior problems of children with varying levels or severity of developmental delay and found that children with mild levels of delay present with both externalizing and internalizing behavior problems, while children with more moderate to severe levels of developmental delay typically demonstrate more externalizing behavior problems (Heiman, 2001; Ruiter et al., 2008).

Although research evidence supports the association between these child-specific factors and the prevalence of behavior problems in preschool children with developmental delays, a number of family-specific factors have also been associated with the demonstrated comorbidity (Feldman et al., 2000). Thus, the behavioral outcomes found within this population are most likely the result of a complex interaction between these child-specific factors and family-specific variables. Bronfenbrenner’s (1979) Bioecological Theory of Human Development, as well as the Circumplex Model of Marital and Family Systems (Olson, 2000) provide a complementing framework for examining the influence of child-specific and family-specific variables on the prevalence of behavior problems in preschool children with developmental delays. Each of these models emphasizes the powerful influence of “proximal processes,” or reciprocal interactions, within the family system on the developmental and behavioral outcomes of children. Additionally, these models outline relational processes, such as cohesion, flexibility and communication, within the family system and provide support for examining family functioning and parenting variables as having an influence on the behavioral outcomes of preschool children with developmental delays.
The research literature has consistently demonstrated that family functioning has a significant influence on children’s developmental and behavioral outcomes. For example, families with higher levels of cohesion, communication, shared values, and clear organization were found to have children who demonstrated higher levels of social competence (Smith et al., 2001). Similar results have been found with samples of preschool children with developmental delays. Specifically, variables associated with family climate, such as cohesiveness, expressiveness, and conflict, were found to predict both externalizing and internalizing problems of children with developmental delays at age 5 (Mitchell & Hauser-Cram, 2009).

As a unique and influential subsystem within the family, parents and parent-specific variables are also likely to exert a strong influence over children’s developmental outcomes. Specifically, parenting stress and parenting self-esteem are two parent-specific variables that are often assumed to impact the problem behaviors of children with developmental delays (Crnic et al., 2005; Johnston & Mash, 1989). The research literature has consistently linked elevated levels of parenting stress and low levels of parenting self-esteem to dysfunctional parent-child relationships and adverse child outcomes.

Overall, the research literature suggests that children with developmental delays have a higher incidence of behavior problems than their typically developing peers. The research has identified some functional and parental characteristics of families that are typically associated with the increased rates of behavior problems in young children with developmental delays. Yet, relatively little is known about the early onset of these problem behaviors and the factors believed to impact the outcomes. The limited research that has attempted to address such questions typically includes samples of Caucasian children from middle socio-economic status (SES) populations. Thus, there is a need to identify risk and protective factors that may be
associated with the emergence of behavior problems in an urban sample of minority preschool children with developmental delays.

The purpose of the proposed research is to examine how child-specific variables, such as the type and/or level of developmental delay, and family variables, such as family functioning, parenting stress, and parenting self-esteem, relate to the behavior difficulties in an urban sample of minority children with developmental delays. Specifically, the investigator is interested in exploring if the independent variables of interest (child-specific and family variables) act as risk or protective factors associated with the relationship between developmental delays and behavior problems in an urban sample of preschool children. Findings from this study will contribute to the understanding of children with developmental delays and may help guide assessment and intervention efforts within such a population.

**Research Questions**

In order to examine the relationship of child-specific and family variables on the behavioral problems of children with developmental delays, the following research questions will be explored:

1. Do preschool children who are classified and receiving services for a developmental delay present with significantly more behavior problems than what is found within a typically developing sample of preschool children?

2. To what extent are child-specific variables, such as type and/or severity of developmental delay, related to the prevalence of behavior problems of preschool children with developmental delays?
3. To what extent is family functioning, such as family cohesion, flexibility, and communication, related to the prevalence of behavior problems of preschool children with developmental delays?

4. To what extent are parent variables, such as parenting stress and parenting self-esteem, related to the prevalence of behavior problems of preschool children with developmental delays?
Chapter II

Literature Review

This chapter will provide a review of the literature pertaining to the prevalence of behavior problems in preschool-age children with developmental delays. The discussion will initially focus on defining relevant terms such as “behavior problems” and “developmental delay,” before providing an overview of the prevalence of behavior problems in preschool-age children with developmental delays. After describing the child-specific factors commonly associated with prevalence of behavior problems in children with developmental delay, the Bioecological Theory of Human Development and supporting Circumplex Model of Marital and Family Systems will be introduced as the framework for exploring the influential variables of family functioning, parenting stress and parenting self-esteem in relation to this topic. Finally, the chapter concludes with a rationale for exploring these variables in an urban sample of preschool children and families who have been underrepresented within the research literature.

Problem Behaviors in Preschool Children

The preschool years, ages 3 – 5, are a developmentally critical time for children’s maturing physical, cognitive, and social skills. Preschoolers’ high energy level, rapidly expanding language skills, and emerging symbolic thought gives way to an increasing understanding of the world, themselves, and their interactions with others (McDevitt & Ormrod, 2010). Yet, the developmental pathway of all children, “normal” or otherwise, also includes problem behavior (Kerig & Wenar, 2006). In a review of the research regarding behavior in preschool-age children, Campbell (1995) concluded that parents and teachers across cultures report relatively high rates of disobedience, defiance, overactivity, poor concentration, and negative mood within the “normal” population of typically-developing preschool children.
Additionally, this body of literature suggests that parents’ and teachers’ reports of problem behaviors increase from age 2 to age 3, as children shift from the dependency of infancy into the more autonomous toddler and preschool years, but decrease by age 5 as children are becoming more socially and cognitively competent (Campbell, 1995). Overall, this research suggests that preschool children’s problem behaviors emerge and decline in ways that are predictable and consistent with their developmental level (Campbell, 1995).

Not all children, however, out-grow problem behaviors and some preschool children demonstrate difficult and persistent behaviors into the middle childhood years and beyond. Yet, the distinction between typically developing children and those children who present with behaviors meeting diagnostic criteria for psychological disorders is complicated by the developmentally-appropriate manifestation and common occurrence of some behaviors, such as noncompliance, inattention, and fear of separation from caregiver (Campbell, 1995). Thus, Campbell (2002) suggests that when the problem behaviors of young children present as a pattern of symptoms that remain relatively stable across settings and interfere with a child’s functioning or ability to manage age-related developmental transitions, the behaviors are indicative of a clinically significant problem or disorder.

These patterns of behavior are most often assessed by adult informant checklists or rating scales that use empirically derived cut-off scores to classify children’s behavior according to factor-analytically derived behavioral dimensions. The two dimensions of externalizing behaviors and internalizing behaviors are consistently identified in the literature as representing the primary patterns of problematic behavior most commonly identified in preschool children (Beg et al., 2007). Externalizing patterns of behavior found among young children tend to include problems with attention, self-regulation, aggression and noncompliance, while
internalizing patterns of behavior are more likely to include symptoms of depression, withdrawal, and anxiety (Achenbach et al., 1987). Although evidence suggests that these severe and persistent patterns of behavior problems are not common in “typically” developing preschool children (Keenan & Wakschlag, 2004), approximately 10 – 15% of preschool children demonstrate significant behavioral problems that are associated with a range of negative outcomes throughout childhood and into adolescence, including behavioral and academic difficulties (Campbell, 1995). Unfortunately, an emerging body of research also suggests that preschool children with developmental delays may be particularly susceptible to developing persistent and severe behavior problems associated with negative outcomes later in life (Mitchell & Hauser-Cram, 2009).

**Preschool Children with Developmental Delays**

In general, “developmental delay” is a vague term that refers to a situation in which the development of a child progress at a pace significantly slower than expected (Kerig & Wenar, 2006). Within the research literature, the term developmental delay is often used interchangeably with terms such as developmental disability (Dyson, 1997) or intellectual disability (Einfeld & Tonge, 1996). The criterion used to define developmental delay also varies widely. While some studies within the literature have based the identification and classification of developmental delay or disability solely on cognitive functioning, other studies have included deficits in other areas of development, such as adaptive or physical functioning (Crnic, Hoffman, Gaze, & Edelbrock, 2004).

Young children are typically identified as presenting with developmental delays when they do not achieve the expected developmental milestones in cognitive, adaptive, speech, fine motor, or gross motor development (Sices et al., 2003). Most relevant to the population of
children receiving support and/or services from public schools, the Individuals with Disabilities Education Improvement Act 2004 (IDEIA 2004) applies the classification of “Developmental Delay,” which is defined and measured by each state, to any child between the ages of 3 and 9 years experiencing delays in one or more domains of development including physical, cognitive, communication, social, emotional or adaptive. In the State of New York, for example, children qualify for special education and/or related services under the category of “Developmental Delay” when they demonstrate either: a 12-month delay in one or more functional area(s); or a 33 percent delay in one functional area or a 25 percent delay in each of two functional areas; or if appropriate standardized instruments are individually administered in the evaluation process and a score of 2.0 standard deviations below the mean in one functional area, or a score of 1.5 standard deviations below the mean in each of two functional areas is evident (Part 200 of the Regulations of the Commissioner, section 200.4(b) and 200.16(c), NYS Department of Education).

Due to the wide variability in terms and criterion used to define developmental delay, accurate prevalence rates of individuals with developmental delays or disabilities in the population are difficult to attain from the research literature. Some estimates suggest that as many as 17% of children in the United States are affected by a developmental disability or delay in at least one area of functioning (Sices et al., 2003). Data from the National Center for Education Statistics (2011) report that during the 2008 – 2009 school year, 0.7% of all children enrolled in public schools from prekindergarten – 12th grade were provided services due to a developmental delay. For other conditions typically associated with delays in the primary areas of development, this enrollment data also reports that 2.9% of all students enrolled received services for speech/language impairment, 1.0% of students received services for intellectual
disability, 0.9% of students received services for emotional disturbance, 0.1% of students received services for orthopedic impairments, and 0.7% of students received services for autism.

Preliminary data from the Pre-Elementary Education Longitudinal Study (PEELS; Markowitz et al., 2006), which followed a nationally representative sample of children ages 3 - 5 already identified with disabilities through 2009, indicates that 28% of participating preschool children were classified as having a developmental delay as their primary disability. However, a child’s primary disability only represents one aspect of the child’s functioning, as many children receiving special education services are diagnosed with multiple disabilities. When secondary disabilities were included, 37% of children in the PEELS sample were identified as having a developmental delay as their primary or secondary disability. A speech or language impairment was the most common primary or secondary disability identified, representing 75% of children in the PEELS sample.

Data from the PEELS study (Markowitz et al., 2006) also provide a picture of the types of services children identified as having a developmental delay, whether cognitive, adaptive, physical or communication, are receiving. According to parental report, 93% of children in the sample received speech or language therapy, representing the most commonly provided service for preschool-age children. School-based special education services were provided to 42% of children in the sample, while 19% of children in the sample received tutoring for learning problems. Additionally, 34% of children received occupational therapy and 21% received physical therapy. Only 5% of preschool-age children in the sample were reported to have received other services, such as behavior therapy or respite care, through the public school system.
Behavior Problems in Preschool Children with Developmental Delays

Although provisions within IDEIA 2004 have improved access to special education and services for children with developmental delays and their families, evidence suggests that early intervention and preschool programs are under-identifying and insufficiently addressing behavioral problems in this population of children (Powell, Fixsen, Dunlap, Smith, & Fox, 2007). This is unfortunate as the research literature suggests that children with developmental delays have a higher incidence of behavior problems than their typically developing peers (Baker, Blancher, Crnic, & Edelbrock, 2002). More specifically, a review of research suggests that the prevalence of behavior problems in children with developmental delays ranges from 40 – 60%, suggesting that these behavior problems are a relatively common co-morbid condition in children with developmental delays (Roberts et al., 2003).

The high prevalence of behavior problems in children with developmental delays is documented throughout the research literature. The vast majority of these studies have included community samples with a broad age-range of children. For example, Rutter, Tizard, Yule, Graham & Whitmore’s (1976; as cited by Roberts et al., 2003) often cited Isle of Wight study, which laid the foundation for the exploration of co-morbid conditions in children with developmental delays, employed a community sample of children ranging in age from 5 – 15 years. Although the primary intention of the study was to examine psychiatric disorders among children, the collected data revealed that mild and severe behavior problems were 3 – 4 times more common in children with developmental disabilities than in the typically developing population.

Similarly, Emerson (2003) used data from the 1999 survey of the Mental Health of Children and Adolescents in Great Britain (Meltzer et al., 2000; as cited by Emerson, 2003) to
examine the prevalence of psychiatric disorders in children with and without developmental delays in cognitive functioning, identified as intellectual disabilities. The survey primarily used parental report to collect data from a community sample of 10,438 children, ages 5 – 15, across England, Scotland, and Wales. Results from Emerson’s analysis revealed that the prevalence of problem behaviors and/or psychopathology was significantly greater among children with intellectual disabilities than their typically developing counterparts. More specifically, the data revealed that rates of conduct disorder, anxiety disorders, and attention-deficit/hyperactivity disorder were significantly higher in children with intellectual disabilities than those without.

Other studies contributing to the understanding of children with developmental delays have employed clinical samples of children with developmental disabilities of mixed etiologies. For example, Quine (1986) used data from parent rating scales to examine the prevalence of behavior problems in a sample of 200 children, ages 0 – 16 years, with severe developmental disabilities. Results from this study revealed that 45% of children in the total sample presented with mild to severe behavior problems, including aggressive, destructive and overactive behaviors. Quine also found that 64% of the 0- to 5-year-olds included in the sample were reported to have severe behavior problems. Similarly, Saxby and Morgan (1993) also used parent rating scales to assess the prevalence of behavior problems in a clinical sample of 68 children, ages 1 – 8 years, with moderate to severe intellectual disabilities in Britain. Parents in this study reported an average of 7.4 behavior problems per child, with overactivity, throwing things, and self-harm being the most commonly reported behaviors, occurring in 30% of the children in the sample.

Einfield and Tonge (1996) explored the prevalence of behavioral problems in an Australian sample of 454 children, ages 4 – 18 years, with developmental disabilities of mixed
etiologies. Using parental report on the Developmental Behaviour Checklist (DBC; Einfeld & Tonge, 1991; as cited by Einfeld & Tonge, 1996), the study revealed that 40.7% of children in the sample were reported to have severe behavioral or emotional problems above an empirically derived cut-off score. Additionally, Einfeld and Tonge found that prevalence of disruptive behaviors increased with increasing IQ, from 2.9% in children with profound intellectual disabilities to 13.6% in children with mild intellectual disabilities. Unfortunately, most of the prevalence studies found within the research literature include a wide range of ages within their samples and do not typically provide data according to age (Roberts et al., 2003).

The interest in exploring the prevalence of behavior problems specifically in the population of preschool-age children with developmental delays has just emerged more recently in the research literature. In one such study, Baker et al., (2002) also found that children with developmental delays were 3 - 4 times more likely to fall within a clinical range of behavior problems at age three than children without developmental delays. Specifically, this study used parental report on a norm-referenced child behavior checklist to assess child behavior problems at age 3 in a sample of 225, primarily Caucasian, middle socio-economic status, families. The sample included children that were classified as either developmentally delayed or non-delayed based upon scores on a standardized, norm-referenced assessment of cognitive functioning for young children. Results from this study revealed that 26% of the children with developmental delays were reported to have clinically significant externalizing behavior problems. However, only 8% of the typically developing children in the sample had behaviors rated as clinically significant by their parents.

Baker, McIntrye, Blacher, Crnic, Edelbrock, & Low (2003) revisited their sample one year later to assess the continued prevalence of behavior problems among these children. In this
sample of 205 children, Baker and colleagues found that parental report of child behavior problems remained stable from age 3 to age 4 for both delayed and non-delayed children. Yet, the children with developmental delays continued to be rated as having more behavioral problems by both mothers and fathers than their non-delayed counterparts. These group differences were found across the broadband internalizing, externalizing and total problems scores, as well as across several narrowband scores, with the most significant between-group differences found in attention problems and social withdrawal.

Research sampling populations comprised of children with specific syndromes associated with developmental disabilities also supports the high prevalence of co-morbid behavioral problems in preschool-age children. Eisenhower, Baker, and Blacher (2005) assessed problem behavior in a sample of 215 preschoolers at age 3, 4, and 5. Following a standardized, norm-referenced assessment of cognitive functioning for young children, the children in the sample were classified according to the five categories of typically developing (TD), undifferentiated developmental delays (UDD), Down syndrome (DS), autism, and cerebral palsy (CP). Overall, the authors found that children within all intellectual disabilities groups (UDD, DS, autism, CP) demonstrated higher rates of problem behaviors than children not identified with a disability at age 3. Based upon parent report, 38.2% of children in the intellectual disabilities groups scored in the borderline or clinical range on the CBCL total behavior problems, as compared to only 10.3% of children in the typically developing group. Overall, the authors found that typically developing children were significantly less likely to present with behavior problems in the clinical or borderline range on the CBCL than children with developmental delays. The higher prevalence of these problem behaviors among children with intellectual disabilities remained stable when assessed again at age 4 and age 5.
Despite the relatively common assumption that children with developmental delays are at increased risk for developing persistent behavior problems, much less is known about the early onset of these problems. In a sample of 76 children of primarily Caucasian descent, Feldman et al. (2000) found that 2-year-old children with or at risk for developmental delay exhibited similar rates of broadband externalizing, internalizing and total problems on the CBCL 2-3 as 2-year-old children without developmental delay. However, an analysis of children’s narrowband scores on the CBCL revealed significantly higher rates of syndrome specific behaviors in the sample of children with/at-risk for developmental delay than the non-delayed children.

Feldman et al. (2000) then compared the behavioral outcomes of the sample of 2-year-olds with or at-risk for developmental delay to a sample of older children (≥ 4 years old) with developmental delay. In this second analysis, the sample of younger children exhibited fewer behavior problems than their older counterparts. Put together, these findings suggest that children with developmental delay may start to show increased risk for behavior problems compared to typically developing peers by age 2, but have yet to reach the levels of psychopathology seen in older children with developmental delay. Thus, it is necessary for researchers and practitioners alike to identify and examine the factors related to emerging behavior problems in young children with developmental delay during these early childhood and preschool years.

Child Factors Associated with the Prevalence of Behavior Problems in Preschool Children with Developmental Delays

Consistent with a medical model, some research has sought to examine the relationship between developmental delay and behavior problems in children by focusing on child-specific variables, such as the type or severity of developmental delay or disability. Problem behaviors in children and adolescents with developmental delays or disabilities have been found to be
associated with certain syndromes and conditions, suggesting a neurological basis that influences unique patterns of behavior (Eisenhower, Baker, & Blacher, 2005). In a literature review of psychopathology in children and adolescents with intellectual disabilities, Dykens (2000) summarized the within- and between-group maladaptive behaviors associated with the genetic syndromes of Fragile X, Williams, Prader-Willi, Smith-Magenis, Down, and 5p- in children and young adults ranging in age from 6 to 21 years. Dykens suggests that the documented vulnerability toward specific maladaptive behaviors for different syndromes found within the research literature represents behavioral phenotypes that may help researchers better understand and study the psychopathology among children with developmental disabilities.

Although these syndrome-specific behavioral phenotypes have been examined more thoroughly in school-age children and adolescents, little research has studied the syndrome-specific relationship between developmental disabilities and behavior problems in preschool-age children. The longitudinal study of Eisenhower, Baker, and Blacher (2005) provides one preliminary examination of the emergence and continuity of syndrome-specific behavior problems in preschool-age children. Specifically, the authors utilized standardized assessment tools and parent report measures to assess the cognitive functioning and problem behaviors of 215 preschool children at age 3, and again at ages 4 and 5. Children in the sample were classified among the 5 groups of typically developing (TD), undifferentiated developmental delays (UDD), Down syndrome (DS), autism, and cerebral palsy (CP). Following the initial assessment at age 3, the authors found that children within the autism and cerebral palsy groups were reported to have the highest levels of behavioral problems, as these two groups ranked either first or second in the externalizing, internalizing and total problems scales on the CBCL. Additionally, these two groups also ranked highest among the narrowband syndrome scales of aggressive behavior,
anxious/depressed, attention problems, emotionally reactive, sleep problems, somatic complaints, and withdrawn behavior. Children in the Down syndrome and typically developing groups were reported to have the lowest scores on the total, broadband and narrowband syndrome scales on the CBCL, while children within the undifferentiated developmental delays group had scores that consistently fell within the middle of the two extremes.

Further analysis of preschoolers’ behavior problems in Eisenhower et al.’s (2005) study revealed that children with autism demonstrated significantly more total problems and externalizing problem behavior than typically developing children. Children in the undifferentiated developmental delays group, on the other hand, presented with significantly more total problems and internalizing problem behavior than typically developing children in the sample. Assessing the children in the sample at age 4 and again at age 5, the authors also concluded that the syndrome-specific patterns of behavior remained generally consistent across the three years of the study. The one exception to the stability of these behaviors was found within the Down syndrome group, as the externalizing behaviors for children in this group were reported to significantly increase from age 3 to age 5 during the study. Overall, the work of Eisenhower et al. demonstrates that syndrome-specific behavioral patterns in children with developmental delays may emerge by age 3 and remain relatively stable or increase throughout the preschool years.

In the search to examine child-related factors associated with the increased prevalence of problem behaviors in children with developmental delays, researchers have also studied the behavioral patterns associated with more general types of delays, such as speech and motor delays, found within this population of preschoolers. For example, children with language delays have also demonstrated elevated levels of problem behaviors, including more physical
aggression, disruptive behavior, negative responses, and fewer initiations of engagement than did children with typically developing language (Green et al., 2005; Qi & Kaiser, 2004). Additionally, children with motor delays have been found to present with increased risk for problem behaviors, such as anxiety and attention difficulties (Caniato et al., 2011).

The severity of developmental delay has also been examined as a child-factor associated with the increased risk of problem behavior among children with developmental delays and disabilities. For example, the level or severity of cognitive functioning has been identified as a child vulnerability factor for problem behavior within this population, as children with cognitive delays often lack the self-awareness and self-regulation skills necessary to maintain appropriate behavior (Guralnick, 1999; Wilson, 1999). Specifically, researchers have examined the psychopathology demonstrated by children with mild to borderline, moderate, and severe intellectual disabilities. This research suggests that children with mild cognitive impairment may have greater awareness of their deficits and be more likely to present with internalizing behavior problems such as depression, anxiety, and social interaction, as well as externalizing behavior problems including aggression and delinquency (Heiman, 2001). Children with moderate to more severe cognitive impairment may not be as self-aware of their deficits and have greater difficulty expressing feelings of anxiety or discomfort, thus making them more likely to display externalizing behaviors such as aggression, inattention, and communication problems (Ruiter et al., 2008). Additionally, this research suggests that the psychopathology in children at all levels or severity of cognitive impairment remains relatively stable and persistence over time (Ruiter et al., 2008).
Theoretical Foundation for Identifying Family Factors Associated with the Prevalence of Behavior Problems in Preschool Children with Developmental Delays

Despite the identified child factors that have been associated with the prevalence of behavior problems in preschool children with developmental delays, behavioral outcomes found in this population of children is most likely the result of a complex interaction between biological, child-specific factors and environmental, family-specific factors, as numerous child, family, and parent factors have been associated with the demonstrated comorbidity (Feldman et al., 2000). Bronfenbrenner’s (2001) Bioecological Theory of Human Development provides a conceptual basis for research exploring the multifaceted interaction of child, parent, and environmental factors influencing the behavioral outcomes of children with developmental delays.

Having evolved from the originally proposed Ecological Theory of Human Development (Bronfenbrenner, 1979), the Bioecological Theory continues to emphasize interdependent ecological levels as the context for human development (Lerner, 2005). Proposed as “nested systems” progressing from the most proximal to the most distal in relation to the developing human, the ecological levels identified by Bronfenbrenner (1979) include the microsystem, mesosystem, exosystem, macrosystem, and chronosystem. The “microsystem” was defined as “a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given face-to-face setting with particular physical and material features and containing other persons with distinctive characteristics of temperament, personality, and systems of beliefs” (Bronfenbrenner, 1992, p. 148). In relation to the developing child, structures within the microsystem are typically thought to include the family, school, neighborhood, and/or other childcare environments (Bronfenbrenner, 1979). The mesosystem “comprises the linkage and
processes taking place between two or more settings containing the developing person” (Bronfenbrenner, 1992, p. 148), such as the interaction between a child’s home and school. The exosystem “encompasses the linkage and processes taking place between two or more settings, at least one of which does not ordinarily contain the developing person, but in which events occur that influence processes within the immediate setting that does contain the person” (Bronfenbrenner, 1992, p. 148), such as the relation between the child’s home and the parent’s workplace. The macrosystem “consists of the overarching pattern of micro-, meso-, and exosystems characteristics of a given culture, subculture, or other broader social context, with particular reference to the developmentally instigative belief systems, resources, hazards, lifestyles, opportunity structures, life course options, and patterns of social interchange that are embedded in each of these systems” (Bronfenbrenner, 1992, pp. 148 – 149). The chronosystem addresses the dimension of time and can include both short-term, “life transition” periods of time and long-term, “life course” periods of time experienced by the developing person (Bronfenbrenner, 1992, p 120).

Of Bronfenbrenner’s proposed systems, microsystem variables are the most widely studied within the research literature pertaining to behavior problems in young children (Stacks, 2005). Microsystem variables that have consistently been associated with externalizing behaviors in young children include child temperament, child-parent attachment in infancy, quality of home and/or childcare environment, parenting behaviors, and parental psychopathology (Stacks, 2005). Longitudinal research conducted by Campbell and Ewing (1990) revealed the significant impact of microsystem variables on the development and maintenance of problem behaviors in preschool-age children. Specifically, a sample of children who had been identified as exhibiting difficult behaviors in preschool were followed from age 3 to age 9 by Campbell and colleagues
in order to examine the nature of problem behaviors and to identify predictors of behavioral outcomes as the children reached middle childhood. In the final follow-up study conducted when the children reached age 9, Campbell and Ewing found that a combination of microsystem variables, including child temperament factors, parent-child relationship factors, and family environment factors, were not only associated with the persistence of behavior problems from age 3 to age 9, but also predicted poor behavioral outcomes as the children reached middle childhood. The more distal meso-, exo-, and macrosystems proposed by Bronfenbrenner have not been examined in the research literature with the same zeal, but also include variables that have been associated with children’s problem behaviors. Specifically, the home-school relationship (mesosystemic), parents’ marital satisfaction and support network (exosystemic), and poverty (macrosystemic) have all been studied and linked to the occurrence of problem behavior in children (Stacks, 2005).

Although the importance of interrelated ecological systems has remained consistent through years of revision, the addition of the label “bioecological” to the theory reflects the greater integration of an individual's structure and function, including one’s biology, psychology and behavior, into the defined ecological systems (Bronfenbrenner & Ceci, 1993). More specifically, the modified theory identifies the interaction between biological and environmental factors in the development of behavior as occurring through “proximal processes” (Bronfenbrenner & Ceci, 1993). Defined as the “progressively more complex reciprocal interaction between an active, evolving biopsychological human organism and the persons, objects, and symbols in its immediate external environment” (Bronfenbrenner, 2001, p. 6), proximal processes purportedly serve as the “mechanisms” by which biologically influenced predispositions are expressed (Bronfenbrenner & Ceci, 1994). Interactions between the child and
“one or more persons with whom the child develops a strong, mutual emotional attachment, and who are committed to the child’s well-being and development” (Bronfenbrenner, 2001, p. 9), typically the parent, are identified as the most prominent proximal processes influencing the developmental outcomes of a young child (Bronfenbrenner & Evans, 2000).

Bronfenbrenner (2001) clarifies that the proximal processes between child and parent are reciprocal in nature as the “psychological development of parents is powerfully influenced by the behavior and development of their children” (p. 12). The hypothesized reciprocal relationship between child and parent as it relates to the occurrence of problem behaviors in children has been examined and supported within the research literature (Riggins-Caspers et al., 2003). In their 2-year longitudinal study, which included a sample of 235 typically-developing children, Combs-Ronto and colleagues (Combs-Ronto et al., 2009) used observational and multi-informant ratings of children’s disruptive behavior at age 3 and 5½ - 6 to investigate the association between parenting and children’s early disruptive behavior. Their findings revealed a bidirectional association between mothers’ negative parenting and children’s externalizing behavior. Specifically, Combs-Ronto et al., found that a change in children’s externalizing behavior from age 3 to age 5½ - 6 was predicted by mothers’ early negative parenting, while a change in negative maternal parenting was also predicted by children’s early externalizing behavior.

Yet, to fully understand the child-parent relationship as a pathway to children’s developmental outcomes, the proximal process must also be examined with regard to the interconnected systems put forth by the broader bioecological theory. This includes investigating the family unit, which Bronfenbrenner (2001) addresses with a proposition that identifies the impact of a “third party.” Specifically, a third party is described as one who “assists, encourages, spells off, gives status to, and expresses admiration and affection for the person caring for and
engaging in joint activity with the child (Bronfenbrenner, 2001, p. 10). Although this proposition directly addresses the positive and supportive role of a third party, Bronfenbrenner (1979) also acknowledges the converse relationship as the “developmental potential of the dyad is impaired to the extent that each of the external dyads involves mutual antagonism or the third parties discourage or interfere with the developmental activities carried on in the original dyad” (p. 77). Thus, in the microsystem of a multi-member family, each member can simultaneously influence, positively or negatively, the child’s development through both their relationship to the child and their relationship with the other family members.

Complementing the bioecological theory, the Circumplex Model of Marital and Family Systems (Olson, 2000) provides a direct means of exploring proximal processes within the family system. The Circumplex Model and associated assessment tools (Family Adaptability and Cohesion Scales (FACES IV); Olson, Gorall, & Tiesel 2006), which are grounded in systems theory, were designed for family research, clinical assessment, treatment planning, and outcome effectiveness of marital and family therapy (Olson, 2000). Adhering to this purpose, the Circumplex Model focuses on the relational processes within the family system by blending the dimensions of family cohesion, flexibility, and communication (Olson & Gorall, 2003). Surfacing from over fifty concepts generally used by theorists and therapists to describe family dynamics, the dimensions of cohesion, flexibility and communication have continually been acknowledged as critical to understanding and treating family systems and have thus become the foundation for the Circumplex Model (Olson, 2000).

Within the Circumplex Model, the dimension of family cohesion has been defined as “the emotional bonding that couple and family members have toward one another” (Olson & Gorall, 2006, p. 516). Specifically, family cohesion focuses on “how systems balance
separateness versus togetherness” (Olson & Gorall, 2003, p. 516). The concepts or variables employed by the model and FACES IV to measure family cohesion have been identified as including emotional bonding, boundaries, coalitions, time, space, friends, decision making, interests, and recreation (Olson, 2000).

In the most recent conceptualization of the Circumplex Model and FACES IV, cohesion is classified among five levels ranging from disengaged/disconnected (extremely low) to somewhat connected (low to moderate), to connected (moderate), to very connected (moderate to high), to enmeshed/overly connected (extremely high) (Olson, Gorall, & Tiesel, 2006). Within this five-level model, a distinction is made between the three balanced levels (somewhat connected, connected, very connected) and two unbalanced levels (disengaged/disconnected, enmeshed/overly connected). Specifically, the model now hypothesizes that the three balanced levels of cohesion represent optimal family functioning (Olson & Gorall, 2003). Therefore, families functioning within the central or balanced levels of cohesion are able to find and maintain equilibrium of both independence and connectedness (Olson, 2000). Characteristics often attributed to families within these balanced levels of cohesion include slightly varying degrees of time spent together and apart, joint and independent decision making, shared and individual interests/activities, and joint and individual friends (Olson & Gorall, 2003).

In contrast, the two extreme or unbalanced levels are viewed as problematic for relationships across time (Olson & Gorall, 2003). The extremely low level of disengaged/disconnected is comprised of families who are believed to demonstrate “extreme emotional separateness” in that “there is little involvement among family members and a great deal of personal separateness and independence” (Olson & Gorall, 2003, p. 518.). At the other extreme, the extremely high level of enmeshed/overly connected is comprised of families who
are “very dependent on and reactive to one another…there is a lack of personal separateness, and little private space is permitted” (Olson & Gorall, 2003, p. 518).

Recently updated, the dimension of family flexibility has been defined as “the quality and expression of leadership and organization, role relationships, and relationship rules and negotiations” (Olson & Gorall, 2006, p. 3). More specifically, family flexibility calls attention to “how systems balance stability with change” (Olson & Gorall, 2003, p. 519.) within the concepts identified in the definition. Like the dimension of cohesion, family flexibility is classified among five levels ranging from rigid/inflexible (extremely low) to somewhat flexible (low to moderate), to flexible (moderate), to very flexible (moderate to high), to chaotic/overly flexible (extremely high) (Olson, Gorall, & Tiesel, 2006). The same distinction is made between the three balanced levels (somewhat flexible, flexible, very flexible) and two unbalanced levels (rigid/inflexible, chaotic/overly flexible), with the model hypothesizing that optimal family functioning occurs within the central or balanced levels of flexibility (Olson, 2000). As “the ability to change, when appropriate, is one of the characteristics that distinguishes functional couples and families from dysfunctional one” (Olson & Gorall, p. 519), families within the balanced levels of flexibility tend to demonstrate more democratic approaches toward leadership roles, negotiations, and family rules.

Thus, the two extreme or unbalanced levels are believed to be indicative of more family dysfunction and future problems (Olson, 2000). Families operating within the extremely low level of rigid/inflexible are believed to be characterized by controlling leadership, firmly defined family roles, limited negotiations, and unbending family rules (Olson & Gorall, 2003). At the other extreme, the chaotic family is believed to be one in which there is inadequate leadership, ill-defined roles, and inconsistent family rules (Olson & Gorall, 2003).
The third dimension included within the Circumplex model is family communication, which has been defined as the “act of making information, ideas, thoughts, and feelings known among members of a family unit” (Olson & Barnes, 2006, p. 1). Identified as a “facilitating dimension,” family communication is recognized as being “critical for facilitating couples and families to alter their levels of cohesion and flexibility” (Olson & Gorall, 2003, p. 520). More specifically, this dimension was included within the model to examine a family system’s listening skills, speaking skills, self-disclosure, clarity, continuity tracking, and respect and regard (Olson & Gorall, 2003). Within the model, it is hypothesized that “Balanced family systems will have significantly better family communication than Unbalanced family systems” (Olson & Barnes, 2006, p. 2). Following this premise, families falling within unbalanced levels of cohesion and flexibility are more likely to have poor communication skills and will have greater difficulty improving their functioning towards more optimal, balanced levels (Olson & Gorall, 2003). Overall, the research literature provides support for examining family functioning according to the dimensions proposed by the Circumplex Model, as validation studies provide evidence of the psychometric properties of the FACES IV (Kouneski, 2000).

**Family Functioning Associated with the Prevalence of Behavior Problems in Preschool Children with Developmental Delays**

The research literature has consistently demonstrated that family functioning, such as the family processes proposed within the Circumplex Model, have a significant influence upon children’s developmental and behavioral outcomes (Crawford et al., 2011; Smith et al., 2001). In one such study, Smith et al. (2001) employed a sample of 718 African American families to explore how dimensions of family functioning related to young, kindergarten children’s social competence, academic competence, and problem behavior. Parents’ perceptions of Family
Cohesion (closeness, communication, support, and organization), Family Beliefs (shared values concerning family purpose, child development, and deviancy), and Family Structure (family emotional support, organization, and deviant beliefs), were assessed using the Revised Family Process Measure (Tolan et al., 1997; as cited by Smith et al., 2001), while kindergarteners’ social and academic competence and problem behaviors were assessed using parent and teacher reports on rating scales. With regard to children’s social competence, the authors’ analysis revealed that all three family process dimensions of Cohesion, Beliefs, and Structure were related to parents’ report of children’s social competence. This relationship suggested that families with higher levels of cohesion and communication, shared values on children’s development, and clear organization had children who were seen as exhibiting higher levels of social competence.

The analysis pertaining to children’s academic competence and problem behavior revealed similar results. With regard to children’s academic competence, Smith et al. (2001) found that the family process dimensions of Family Beliefs and Family Structure were most highly related. As these factors were related to both parent and teacher reports of academic competence, the authors proposed that families with well-established organization and values regarding children’s roles within the family are more likely to promote a greater interest and ability for learning in their children. Additionally, the negative relationship between the family process dimension of Family Structure and parents’ report of problem behaviors suggests that families who demonstrate strong emotional support, family organization, and clear roles and responsibilities are more likely to provide a family structure and environment that promotes more positive behaviors (Smith et al., 2001).

Although the relationship between family functioning and behavioral outcomes in children with developmental delays has not been studied with the same frequency, the available
research evidence supports similar conclusions. The early intervention collaborative study (EICS) has produced a number of significant findings that pertain to the relationship between family functioning and the developmental outcomes of children with developmental disabilities (Hauser-Cram et al., 2001). For example, Hauser-Cram et al. (1999) reported that levels of family cohesiveness and mother-child interactions predicted changes in the communication, social, and adaptive skills of children with Down syndrome from birth to five years of age. Specifically, the families of children with Down syndrome who had higher levels of cohesion also had children who demonstrated increased levels in their ability to socialize with others and perform more independent, self-care tasks. In another analysis of the EICS data, Hauser-Cram et al. (2001) found that families’ levels of relatedness were related to children’s social skills. Families who measured high on family relatedness when the child was 3 years of age had children who exhibited greater social skill development by age 10 than those families who demonstrated lower levels of family relatedness.

Mitchell and Hauser-Cram (2009) also determined that the family functioning of children with developmental delays at age 3 predicted children’s behavioral outcomes at age 5. Specifically, in a sample of 125 predominately middle-class, two parent families, Mitchell & Hauser-Cram (2009) employed a longitudinal design to examine the extent to which a child’s cognitive and adaptive functioning, as well as the family environment, at age 3 predicted the behavioral outcomes demonstrated by children with developmental delays at age 5. Within the study, variables associated with family environment included marital status, poverty status, stressful life events and family climate (cohesiveness, expressiveness, conflict). Overall, the study revealed that the family climate at age 3 added a significant unique variance to the statistical analysis used in predicting both externalizing and internalizing behavior problems of a
child with developmental delays at age 5. The collective findings from this research documents the significant influence of family functioning on the behavioral outcomes of children and highlights the importance of examining the family environment as it relates to the emergence of behavior problems in preschool children with developmental delays.

Consistent with the hypotheses regarding family functioning presented within the Circumplex Model, as well as the Bioecological Theory of Human Development, a connection between the functional impairment in the family system and a child’s behavioral and social-emotional outcomes is often assumed (Yahav, 2002). Research has identified several functional and parental characteristics of families that are typically associated with increased behavior problems in young children with and without developmental delays including: family functioning, parenting stress, and parenting self-esteem (Campbell, 1995; Mitchell et al., 2009).

**Parent Factors Associated with the Prevalence of Behavior Problems in Preschool Children with Developmental Delays**

An investigation of the effects of the family on the development of a child does not seem complete without also exploring the impact of the parents, or primary caretakers, as an important and unique subsystem within the family. Parents are typically the most central figures in the life of a young child and are seen as being responsible for protecting, nurturing, and guiding them as they grow and develop. Through their parenting practices and their relationship with their child, parents influence many aspects of children’s cognitive, social-emotional, and physical development (Deater-Deckard, 2005). Thus, it seems imperative to explore specific parental factors that may positively or negatively influence children’s developmental outcomes.

**Parenting Stress.** Investigators have long been interested in exploring parenting stress as a variable related to all children’s developmental and behavioral outcomes (Crnic, Gaze, &
Hoffman, 2005). Within the research literature, parenting stress has been defined as “the aversive psychological reaction to the demands of being a parent,” (Deater-Deckard, 1998, p. 315), including demands placed on parents’ personal, physical, and financial resources.

Recognized as being “role specific,” in that parenting stress is different from other general stressful life events (Deater-Deckard, 1998), parenting stress was further conceptualized by Abidin’s (1990) model of parenting stress as a complex interaction between child-related and parent-related stress. Following Abidin’s model, child-related stress is proposed as “qualities of the child that make it difficult for the parent to fulfill parenting roles” (Kamphaus & Frick, 2002, p. 283), including child characteristics such as adaptability, acceptability, demandingness, and mood. Parent-related stress is proposed as “sources of stress and disability related to parental functioning” (Kamphaus & Frick, 2002, p. 283), such as parent health, relationship with spouse, social isolation, sense of competence, restriction of role, and attachment to child.

Although parenting stress has been found to be relatively “normal,” in that all parents experience some degree of stress directly related to parenting (Crnic & Greenberg, 1990), parents of children with a developmental delay or disability appear to report increased levels of parenting stress (Hassall, Rose, & McDonald, 2005; Innocenti, Huh, & Boyce, 1992). For example, Dyson (1997) utilized a matched-group sample of 30 pairs of mothers and fathers with a school-aged child identified as having a disability and 32 pairs of mothers and fathers with a school-aged child who did not have a disability to assess parents’ perceptions of social support, parenting stress, and family functioning. Dyson’s analysis revealed that both mothers and fathers of children with various disabilities, including mental retardation, physical and sensory impairments, speech disorder, learning disability, and developmental delay, reported greater levels of stress relating to their children than mothers and fathers of children without disabilities.
Similar results have been found when examining levels of parenting stress in matched-group samples of families of preschool-age children. In their study of preschool children with and without developmental delay and behavior problems, Baker et al., (2002) assessed parents’ perception of their child’s impact on their family, as compared to the impact of same-age peers on their families, using the Family Impact Questionnaire (FIQ; Donenberg & Baker, 1993 as cited by Baker et al., 2002) when the children in the sample were approximately 36-months of age. The FIQ utilizes 5 scales to assess a child’s “negative impact” on parents’ feelings regarding parenting, social relationships, finances, siblings and marriage, as well as one scale to measure a child’s “positive impact” on parents’ feelings regarding parenting. In this sample, which included 82 families of children identified with developmental delays and 123 families of non-delayed children, parents’ negative impact, or parenting “stress”, scores were significantly higher for the parents of children with developmental delays.

Baker et al. (2003) revisited their sample 12 months later, when children in the sample were approximately 48-months of age, to reassess parents’ perceptions of children’s impact on the family and parenting stress. The results from this second assessment revealed that negative impact, or stress scores, remained relatively stable from the 36- to 48-month assessment and continued to be significantly higher for parents of children with developmental delay than for parents with typically developing children. Yet, the data also revealed an important relationship between parenting stress and children’s behavioral outcomes. Specifically, the data collected by Baker et al. demonstrated a correlation between child behavioral outcomes and parenting stress, such that changes in children’s problem behaviors between the 36- and 48-month assessments were found to be associated with increases in parenting stress. However, a reciprocal relationship was also found, such that changes in parenting stress between the two assessments
were also associated with increases in children’s behavior problems. Consistent with the reciprocal nature of proximal processes proposed by the Bioecological Theory of Human Development, Baker et al. (2003) suggests that “maladaptive child behavior and parenting stress have a mutually escalating effect on each other” (p. 227).

Overall, the research literature has consistently linked elevated levels of parenting stress to dysfunctional parent-child relationships and adverse child outcomes, including increased child behavior problems such as aggression and anxiety (Crnic et al., 2005; Deater-Deckard, 2005). The most prevalent hypothesis found within the literature regarding this relationship suggests that high levels of parental stress causes poor parenting behavior, which in turn, leads to problems in children’s cognitive, social-emotional, and physical development (Deater-Deckard, 1998). Thus, a popular assumption within much of the research examining the relationship between parenting stress and child adjustment is that parenting behavior mediates the relationship between parenting stress and child adjustment (Deater-Deckard, 1998, Hastings, 2002).

Despite this common assumption, current research has provided only modest evidence supporting the mediating role of parenting behavior between parenting stress and the development of children’s behavioral outcomes among community and clinical samples of young children (Deater-Deckard, 1998, Hastings, 2002). For example, Anthony et al., (2005) used a sample of preschoolers, including 229 children from Head Start programs and 78 children from three private day care centers in Baltimore City, MD, their parents and teachers to examine the direct relationship between parenting stress and children’s behavior in preschool classrooms. Measuring parenting behavior using the Parenting Behavior Checklist (PBC; Fox, 1994; as cited by Anthony et al., 2005), parenting stress using the Parenting Stress Index – Short Form (PSI-
SF: Abidin, 1990), and child behavior by having preschool teachers complete a questionnaire regarding children’s social competence and behavioral/emotional adjustment (SCBE), the authors found a strong, direct relationship of parenting stress with children’s social competence and internalizing behaviors in the classroom. However, this relationship was not found to be mediated by the effects of parenting behaviors.

Yet, in a sample of school-age children, ages 6-18, identified with mild to moderate developmental disabilities, Floyd and Phillippe (1993; as cited by Hastings, 2002) found evidence of a relationship between parenting behavior and children’s behavioral problems in families of children with developmental disabilities. Specifically, an analysis of data collected via observations of family interactions and parent and teacher ratings of child behavior revealed an association between parents’ behavior management techniques and children’s behavior problems, independent of parents’ attitudes and mental health status.

Although the research literature consistently links higher levels of parenting stress with higher levels of children’s behavioral problems, the commonly held assumption that parenting behavior mediates the relationship between parenting stress and children’s behavioral outcomes has not been corroborated with the same constancy (Deater-Deckard, 2005). In fact, the existence of parental stress in families of children with developmental delays does not inevitably result in family psychopathology and/or children’s maladaptive adjustment (Margalit & Kleitman, 2006). These inconsistencies in the literature regarding this relationship highlight the need to explore other parental cognitive processes that may be affecting the relationship between parental stress and children’s behavioral outcomes (Hassall et al., 2005; Hastings, 2002).

**Parenting Self-Esteem.** Parenting self-esteem is one cognitive process that has emerged as a significant factor to be assessed (Johnston & Mash, 1989) when examining the relationship
between parent functioning and children’s developmental outcomes. Described as encompassing “both perceived self-efficacy as a parent and satisfaction derived from parenting” (Johnston & Mash, 1989, p. 167), parenting self-esteem is often measured within the research literature using the Parenting Sense of Competence Scale (PSOC, Johnston & Mash, 1989). This scale, which includes two subscales measuring parenting self-efficacy and parenting satisfaction, results in a composite score of parenting self-esteem. Thus, parenting self-esteem and the dimensions of parenting self-efficacy and parenting satisfaction should be examined in relation to the emergence of behavior problems in young children with developmental disabilities.

**Parenting Self-Efficacy.** Broadly, the construct of self-efficacy was explained by Bandura (1986) as “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (p. 391). Bandura (1982) further proposed that self-efficacy “mediates the relationship between knowledge and action” (p. 122). In other words, self-efficacy beliefs are a self-assessment of, not only one’s skills, but also one’s ability to translate those skills into the actions necessary to accomplish a goal or task (Schunk, 2004).

Self-efficacy is also recognized as being more specific and situational than a general sense of competence and is believed to include the cognitive, social, and behavioral skills necessary for effective performance within a given situation or task (Bandura, 1986, 1982). Following this conceptualization, self-efficacy beliefs are theorized to be highly related to motivation, task choice and task persistence (Schunk, Pintrich, & Meece, 2008). Judgments of self-efficacy influence the decisions individuals make regarding what tasks to pursue and what degree to pursue them in the face of adversity (Bandura, 1986, 1982). With high perceptions of self-efficacy within a given domain, individuals are more likely to select and persist with tasks
that will further develop their skills and capabilities (Schunk et al., 2008). Yet, the reverse is also true, and when self-efficacy is low, individuals are likely to avoid new tasks that might improve their skills and capabilities.

Recognized as a domain-specific case of the general construct of self-efficacy, parenting self-efficacy refers to “parental perceptions of the capability to be effective in the domain of parenting and confident in the ability to perform parenting tasks” (p. 296, Guimond et al., 2008). Consistent with the general construct of self-efficacy, parenting self-efficacy requires a knowledge of appropriate parenting practices, as well as a confidence in one’s ability to execute these behaviors in an efficient and effective manner (Jones & Prinz, 2005). More specifically, parenting self-efficacy “involves a parent’s belief in their ability to influence their child and the environment in ways that would foster the child’s development and success” (p. 342, Jones & Prinz, 2005).

Based upon Bandura’s construct of self-efficacy and consistent with Bronfenbrenner’s Bioecological Theory of Human Development, Ardelt and Eccles (2001) presented a conceptual model that identifies a reciprocal relationship between the variables of parenting self-efficacy, parenting strategies and children’s developmental outcomes. Within the model, the authors propose that parents’ self-efficacy beliefs influence the parenting strategies they employ, which in turn impact children’s academic and psychological outcomes (Ardelt & Eccles, 2001). For example, Ardelt and Eccles (2001) suggest that parents with high self-efficacy beliefs are most likely to engage in the “promotive” parenting practices that are generally believed to increase children’s academic and psychological success. The authors also recognize the potential for a direct relationship between parenting self-efficacy beliefs and children’s outcomes, such that
parents with high self-efficacy model favorable attitudes and beliefs that are adopted by their children and promote their future success.

As the proposed relationships are reciprocal, Ardelt & Eccles (2001) also identify the potential for reverse effects within the model. For example, effective parenting strategies are likely to boost parenting self-efficacy. Similarly, children’s developmental triumphs are likely to bolster parents’ beliefs about their efficacy and abilities to engage in efficient parenting behaviors for the future. In contrast, this conceptualization also suggests that parents with weak parenting self-efficacy beliefs may not have the confidence necessary to engage in effective parenting strategies and/or may give-up easily when they encounter challenges, further hindering their parenting self-efficacy beliefs. Additionally, parents of children with problem behaviors may find it difficult to build or maintain strong parenting self-efficacy beliefs.

Swick and Hassall (1990) sought to explore the impact of parents’ self-efficacy on children’s social competence and behavioral outcomes. In this study, the parents of 62 preschoolers between the ages of 2 and 5 were asked to complete parent self-report measures pertaining to parenting self-efficacy and children’s developmental status and level of social competence. The children’s teachers were also asked to complete measures pertaining to their level of functioning in the classroom. An analysis of the collected data revealed that children’s level of social competence and developmental functioning, as reported by both parents and teachers, was significantly related to and powerfully influenced by parenting self-efficacy.

Jackson (2000) also found significant relationships between parenting self-efficacy and preschool children’s behavioral outcomes. Utilizing a sample of 188 African-American preschool children and their mothers, Jackson used parent self-report measures to assess parenting self-efficacy, social support, parenting stress, and child behavior problems.
Additionally, the Home Observation for Measurement of the Environment (HOME) scale was used by the researcher in order to assess parenting behavior. Overall, low levels of parenting self-efficacy were shown to predict the positive relationship between child behavior problems and parenting stress. Jackson also concluded that a significant positive interaction between parenting self-efficacy and child behavior problems provided evidence suggesting that parenting self-efficacy mediated the effects of behavior problems on maternal parenting behavior.

**Parenting Satisfaction.** Also contributing to Johnston and Mash’s (1989) conceptualization of parenting self-esteem is the dimension of parenting satisfaction. This dimension is identified as the “quality of affect associated with parenting or the degree of satisfaction derived from the role” (Johnston & Mash, 1989; p 167). More specifically, parenting satisfaction is often thought to include the satisfaction one attains from carrying out parenting tasks and from meeting self-expectations regarding one’s role as a parent (Ohan et al., 2000). In conjunction with parenting self-efficacy, parenting satisfaction is thought to directly and indirectly influence the behavioral outcomes of children (Hassall et al., 2005).

Studies examining the indirect relationship between parenting satisfaction and children’s behavioral outcomes are more common within the literature. For example, parenting satisfaction has often been studied as a mediator of parenting stress (Hassall et al., 2005). In their study of parenting stress in mothers of children with an intellectual disability, Hassall et al. (2005) explored the relationship between parental cognitions, including parenting satisfaction, and child characteristics, family support and parenting stress. Specifically, data pertaining to parental cognitions, family support, and parenting stress was collected from a sample of 46 mothers of children with intellectual disabilities. Child characteristics were assessed using the Vineland Adaptive Behavior Scales and Maladaptive Behaviors Domain. Analysis of the data revealed that
child behavior problems had a direct association with parenting stress. Yet, parental satisfaction was found to significantly influence mother’s reported levels of parenting stress. The authors contend that such results highlight the important influence of parental cognitions over parents’ feelings of stress and ability to cope with children’s difficult behaviors.

Although less frequently, the direct influence of parenting satisfaction on children’s behavioral outcomes has also been examined. In one such study, Ohan et al., (2000) employed the PSOC with 110 mothers and 110 fathers of school-age children to assess the relationship between parenting satisfaction and children’s behavior problems. The authors found a significant, negative relationship between parenting satisfaction and children’s internalizing and externalizing behavior problems. These results indicate that higher levels of parenting satisfaction are typically related to lower rates in children’s reported behavior problems.

**Rationale for the Study**

Overall, the research literature suggests that children with developmental delays have a higher incidence of behavior problems than their typically developing peers. Although research has identified some functional and parental characteristics of families that are typically associated with the increased rates of behavior problems in young children with developmental delays, there remain gaps in the literature pertaining to the early onset of these problems and factors believed to impact the outcomes. The limited research that has attempted to address such questions typically includes samples of Caucasian children from middle socio-economic status SES populations.

Thus, there is a need to identify risk/protective factors that may impact the emergence of behavior problems in an urban sample of minority children with developmental delays. Examining these questions within a population of minority children with developmental delays is
particularly relevant as data from the PEELS study have revealed that preschool-age children’s primary disability and services received appear to vary by race/ethnicity (Markowitz et al., 2006). Specifically, 42% of Black children in the sample had a primary disability of developmental delay, while only 27% of White children and 22% of Hispanic children in the sample had the same primary diagnosis. Additionally, data from PEELS revealed that Black children (59%) were more likely than both White (3%) and Hispanic (47%) children to receive special education services in school. These children (35%) were also more likely than White (16%) and Hispanic (22%) children to receive tutoring for learning problems. Yet, Black children were less likely than both White (5%) and Hispanic (4%) children to receive other related services, such as behavior therapy or respite care.

Additionally, the research literature consistently identifies minority children from low socio-economic status (SES) backgrounds as being at an increased risk for developing clinical levels of disordered behavior as compared to their higher SES, non-minority peers (Rafferty & Griffin, 2010). Although a wide range of prevalence rates are reported due to sampling and methodological variations, some prevalence studies indicate that as many as 30% of young, minority children from low SES environments are rated by their parents or teachers as having clinical levels of problem behavior (Qi & Kaiser, 2003). With regards to preschool children, Qi and Kaiser (2003) report a growing body of evidence revealing higher than expected levels of externalizing and internalizing behavioral problems among low-income children attending Head Start sites across the country.

Although the relationship between socioeconomic status (SES) or family income and behavioral outcomes in preschool children with developmental delays or disabilities has not received the same level of attention within the research literature, there is a small body of
evidence that supports the findings within the general population of young children. Specifically, in their examination of the impact of family functioning on the behavioral outcomes of preschool children with developmental delays, Mitchell and Hauser-Cram (2009) found that family SES added a significant unique variance to the statistical analysis used in predicting both externalizing and internalizing behavior problems. When coupled with the added risk of developmental delay, children from low SES, minority populations may be particularly vulnerable to developing severe and persistent behavior problems.

The purpose of the proposed research is to examine how child-specific variables, such as the type and/or level of developmental delay, and family variables, such as family functioning, parenting stress, and parenting self-esteem, relate to the behavior difficulties in an urban sample of minority children with developmental delays. As direct observation of these child, parent, and family behaviors is currently outside of the scope of this research study, the investigator will employ standardized report measures to serve as proxy measures of family functioning, parenting stress, parenting self-esteem, and child behavior problems. Findings from this study will contribute to the understanding of children with developmental delays and may help guide assessment and intervention efforts within such a population.

**Research Questions**

In order to inform assessment and intervention efforts, it seems relevant to examine the child and family variables associated with the prevalence of behavior problems in a representative sample of urban, minority preschool children with and without developmental delays. Thus, the following research questions were proposed for this study.
1. Do preschool children who are classified and receiving services for a developmental delay present with significantly more behavior problems than what is found within a typically developing sample of preschool children?

2. To what extent are child-specific variables, such as type and/or severity of developmental delay, related to the prevalence of behavior problems of preschool children with developmental delays?

3. To what extent is family functioning, such as family cohesion, flexibility, and communication, related to the prevalence of behavior problems of preschool children with developmental delays?

4. To what extent are parent variables, such as parenting stress and parenting self-esteem, including parenting-efficacy and satisfaction, related to the prevalence of behavior problems of preschool children with developmental delays?

Based upon the reviewed literature, the following hypothesis will be tested:

**Hypothesis 1.** The literature suggests that children with developmental delays are at an increased risk compared to their typically developing peers for developing persistent behavior problems. Thus, it is hypothesized that preschool children who have been identified as having a developmental delay will be reported to have more borderline- and/or clinical-levels of externalizing, internalizing, and total problem behaviors as measured by the CBCL/1 ½ - 5 and C-TRF.

**Hypothesis 2.** The research literature suggests that children with mild cognitive impairments or delays may present with a greater risk for both externalizing and internalizing behavior problems. As a result, it is hypothesized that preschool children with milder levels of
cognitive delays will be reported to have more borderline- and/or clinical-levels of externalizing, internalizing, and total problem behaviors as measured by the CBCL/ 1½ - 5 and C-TRF.

**Hypothesis 3.** The research literature also suggests that children with moderate to more severe cognitive impairment or delays may present with a greater risk for displaying externalizing behaviors. Thus, it is hypothesized that preschool children with more severe levels of cognitive delays will be reported to have more borderline- and/or clinical-levels of externalizing behavior problems and fewer internalizing behavior problems as measured by the CBCL/ 1½ - 5 and C-TRF.

**Hypothesis 4.** The research literature has demonstrated a connection between functional impairment in the family system and a child’s behavioral and social-emotional outcomes. As a result, it is hypothesized that levels of family functioning, including family cohesion and flexibility, and the overall family functioning, as measured by the FACES IV, will be associated with the prevalence of behavioral problems in preschool children with developmental delay.

**Hypothesis 5.** Related to the previous hypothesis, the research literature also suggests that family communication can influence the behavioral outcomes of young children. Thus, it is hypothesized that family communication, as measured by the FACES IV, will be associated with the prevalence of behavior problems in preschool children with developmental delay.

**Hypothesis 6.** The research literature has linked elevated levels of parenting stress to dysfunctional parent-child relationships and adverse child outcomes. As a result, it is hypothesized that parenting stress, as measured by the PSI-SF, will be associated with the prevalence of behavior problems in preschool children with developmental delays.

**Hypothesis 7.** Within the research literature, parenting self-esteem, including the dimensions of parenting self-efficacy and parenting satisfaction, has emerged as a significant
factor in the relationship between parent functioning and children’s behavioral outcomes. Thus, it is hypothesized that parenting self-esteem, including parenting self-efficacy and satisfaction, as measured by the PSOC, will be associated with the prevalence of behavior problems in preschool children with developmental delays.
Chapter III

Methodology

This chapter presents the methodology of the study that sought to identify risk and protective factors associated with the relationship between developmental delays and behavior problems in an urban sample of preschool children. The chapter begins with a description of the participants, including the demographic characteristics of the sample. This is followed by a description of the assessment measures used for data collection. The chapter concludes with a discussion of the procedures used for conducting the study.

Participants

Participants were 72 parents of preschool children between the ages of 3 – 5 years currently living in Brooklyn, NY, Queens, NY or Jersey City, NJ. Parents in the sample were classified into two groups, parents of “Typically Developing” preschoolers (TD) and parents of preschoolers who were considered to have “Developmental Delays” (DD). Twenty of the parent participants (27.78%) were classified as TD, as his/her child did not currently present with a developmental delay in the cognitive, speech/language, adaptive, and/or motor areas of development and was not receiving any special education services as mandated by an Individualized Education Plan (IEP). Specifically, parent participants placed in the TD group met all the following criteria:

1. The parent has a preschool-age child between the ages of 3 – 5 who is currently enrolled in a full-time preschool classroom in an urban preschool.

2. The child does not have an Individualized Education Plan (IEP) and is not currently receiving special education and/or any related services.
3. The parent’s selection of family income range on the “Background Information” section of the *Family Adaptability and Cohesion Evaluation Scales* (FACES IV; Olson, Gorall, & Tiesel, 2006) does not exceed the choice “$50 - $60,000,” which includes the 2006 - 2010 New York State median household income of $55,603 (U.S. Census Bureau, 2012).

Fifty-two of the parent participants (72.22%) were classified as DD, as his/her child presented with a developmental delay in one or more areas of development and was receiving special education services as mandated by their IEP. Specifically, parent participants placed in the DD group met the following criteria:

1. The parent has a preschool-age child between the ages of 3 – 5 who is currently receiving special education and/or related services in an urban preschool.

2. The child has already undergone the evaluation process to meet eligibility for the classification of disability and has educational records that document an obtained standardized score on an age-appropriate, norm-referenced assessment tool.

3. Evaluation records document that the child was evaluated in his/her native language and any delays present were not due to the child being an English Language Learner (ELL).

4. The child currently has an Individualized Education Plan (IEP) mandating special education and/or related services.

5. The parent’s selection of family income range on the “Background Information” section of the *Family Adaptability and Cohesion Evaluation Scales* (FACES IV; Olson, Gorall, & Tiesel, 2006) does not exceed the choice “$50 - $60,000,” which includes the 2006 - 2010 New York State median household income of $55,603 (U.S. Census Bureau, 2012).
The demographic characteristics of this sample were determined by participants’ responses on the “Background Information” section of the *Family Adaptability and Cohesion Evaluation Scales* (FACES IV; Olson, Gorall, & Tiesel, 2006), and are presented in Table 1. Overall, mothers served as the primary parent participant for both groups (95% in the typically developing group, 94.2% in the developmental delay group). Three fathers (5.8%) served as the parent participant in the DD group and 1 custodial grandmother (5%) served as the parent participant in the TD group.

**Table 1**

**Socio-Demographic Characteristics of the Sample**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Typically Developing</th>
<th>Developmental Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td><strong>Family Member</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>19</td>
<td>95</td>
</tr>
<tr>
<td>Other Legal Guardian-Grandparent</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No High School</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td>Some High School</td>
<td>7</td>
<td>35.0</td>
</tr>
<tr>
<td>Completed High School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td>3</td>
<td>15.0</td>
</tr>
<tr>
<td>Completed College</td>
<td>7</td>
<td>35.0</td>
</tr>
<tr>
<td>Advanced Degree</td>
<td>3</td>
<td>15.0</td>
</tr>
<tr>
<td>Income</td>
<td>Typically Developing</td>
<td>Developmental Delay</td>
</tr>
<tr>
<td>----------------------------</td>
<td>----------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Less than $10,000</td>
<td>3</td>
<td>15.0</td>
</tr>
<tr>
<td>$10 – 20,000</td>
<td>5</td>
<td>25.0</td>
</tr>
<tr>
<td>$20 – 30,000</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>$30 – 40,000</td>
<td>5</td>
<td>25.0</td>
</tr>
<tr>
<td>$40 – 50,000</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>$50 – 60,000</td>
<td>5</td>
<td>25.0</td>
</tr>
<tr>
<td><strong>Ethnic Background</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black/African American</td>
<td>8</td>
<td>40.0</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>7</td>
<td>35.0</td>
</tr>
<tr>
<td>Mixed Race</td>
<td>3</td>
<td>15.0</td>
</tr>
<tr>
<td>Native American</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Family Structure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two Parents (biological)</td>
<td>14</td>
<td>70.0</td>
</tr>
<tr>
<td>Two Parents (step family)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two Parents (adoptive)</td>
<td>1</td>
<td>5.0</td>
</tr>
<tr>
<td>One Parent</td>
<td>5</td>
<td>25.0</td>
</tr>
<tr>
<td><strong>Current Relationship Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td>Single, divorced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, widowed</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>Married, first marriage</td>
<td>6</td>
<td>30.0</td>
</tr>
<tr>
<td>Married, not first marriage</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>Life-partnership</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>Living together</td>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td>Separated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Parent participants within the two groups differed with regard to their reported levels of education. Specifically, 65% of parents in the TD group reported having attained some level of a college education (some college, completed college, advanced degree), whereas only 34.6% of parents in the DD group reported the same. The majority of participants (63.5%) in the DD group reported having attained some level of a high school education (some high school, completed high school), while this level of education accounted for just 35% of participants in the TD group. One parent (1.9%) in the DD group reported an education level below high school (No high school).

Descriptive data also suggests that the two groups differ with regard to some family characteristics. Specifically, half (50%) the families in the TD group reported their household income to fall somewhere between $30 - $60,000, with the other half (50%) reporting family income levels somewhere in the range of <$10 – $30,000. In comparison, slightly more than half...
(51.9%) of the families in the DD group reported their income level to fall somewhere below $10,000, with the other half (48%) reporting family income levels somewhere in the range of $10 - $60,000.

Yet, similarities were also found between the two groups. The majority of participants in both groups reported the ethnic background of their family as “Black/African American” (40% in the TD group, 67.3% in the DD group). Additionally, “Hispanic/Latino” was the second most reported ethnicity for both groups (35% in the TD group, 25% in the DD group). Other family ethnicities reported within the sample included “Mixed Race” (15% in the TD group, 3.8% in the DD group), “Native American” (1.9% in the DD group), and “White/Caucasian” (10% in the TD group, 1.9% in the DD group).

With regard to the family structure of the participants in the sample, “Two Parents (biological)” was the most reported category for both groups (70% in the TD group, 57.7% in the DD group), while “One Parent” was the second most reported category (25% in the TD group, 32.7% in the DD group). Other family structures reported in the sample included “Two Parents (step)” (9.6% in the DD group) and “Two Parents (adoptive)” (5% in the TD group). When participants were asked to report the current relationship status with their child’s other parent, 70% of participants in the TD group and 49.9% of participants in the DD group indicated that they were currently married or living with their child’s other parent (“Married, first marriage,” “Married, not first marriage,” “Life-partnership,” “Living together”). Thus, 30% of participants in the TD group and 50% of participants in the DD group reported they were currently not living with their child’s other parent (“Single, never married,” “Single, divorced,” “Single, widowed,” or “Separated).
The sample of children reported by participants in the TD group consisted of 12 males (60%) and 8 females (40%). With a mean age of 3.66 years (SD=0.593), the children reported by participants in this sample ranged in age from 3 years to 5 years, one month old.

The sample of children reported by participants in the DD group consisted of 37 males (71.2%) and 15 females (28.8%). With a mean age of 3.78 years (SD=0.682), the children reported by participants in this sample ranged in age from 3 years, one month to 5 years, 4 months.

For the purpose of the statistical analysis, the participants in the sample were grouped into smaller categories than what was originally reported on the “Background Information” section of the family demographics questionnaire. Specifically, some of the options selected by participants for the demographic information categories were grouped together in order to achieve groups large enough for statistical analysis. For statistical analysis that included the variable of participant’s relation to child, the categories used included 1) Fathers and 2) Mothers (originally “Mother” and “Custodial Grandmother”).

For statistical analysis that included the variable of participant’s level of education, the categories used for statistical analysis included 1) No or Some High School (originally the choices “No High School” or “Some High School”), 2) Completed High School, 3) Some College, and 4) Completed College or an Advanced Degree (originally the choices “Completed College” or “Advanced Degree”).

For statistical analysis that included the variable of participant’s reported household income, the categories used included 1) Less than $10,000, 2) $10 - $30,000 (originally the choices “$10 – 20,000” or “$20 – 30,000”), 3) $30 – 50,000 (originally the choices “$30 – 40,000” or “$40 – 50,000) and 4) $50 – 60,000.
For statistical analysis that included the variable of participant’s reported ethnic background, the categories used included 1) Black/African American, 2) Hispanic/Latino, and 3) Other (originally the choices “Asian American,” “Hawaiian or Pac. Islander,” “Mixed Race,” “Native American,” or “White/Caucasian”).

For statistical analysis that included the variable of participant’s family structure, the categories used included 1) Two Parent (originally the choices “Two parents (biological),” “Two parents (step family),” “Two parents (adoptive),” or “Two parents (same sex”), 2) One Parent and 3) Other (“foster parent”).

For statistical analysis that included the variable of participant’s current family status, the categories included 1) Single (originally the choices “Single, never married,” “Single, divorced,” “Single, widowed,” or “Separated”), 2) Married (originally the choices “Married, first marriage,” or “Married, not first marriage”) and 3) Living Together (originally the choices “Life-partnership” or “Living together”).

**Measures**

Several measures and assessment tools were used in order to collect data pertaining to the participants and the variables of interest, including 1) family demographic information, 2) developmental delay status, 3) child behavior problems, 4) family functioning and communication, 5) parenting stress, and 6) parenting self-esteem.

**Family Demographics.** Demographic information was obtained from the parent’s self-report on the “Background Information” section of the *Family Adaptability and Cohesion Evaluation Scales* (FACES IV; Olson, Gorall, & Tiesel, 2006). This section of the FACES IV asks parents to select the most appropriate choice from a list of options pertaining to the parent’s education level, income, ethnic background, current relationship status, current living
arrangement, family structure, and number of children in the family. A thorough description of FACES IV is provided within the discussion of family functioning and communication.

**Developmental Delay Status.** Developmental delay status was obtained during an archival review of the child’s educational records and Individualized Education Plan (IEP) at his/her school using the Educational Records Review form (Appendix A) created by the primary investigator for the purpose of this study. The Educational Records Review form was created to allow the investigator to review the child’s education records, including his/her evaluation reports, standardized test scores, and IEP to determine if the child had been identified as having a developmental delay or related diagnosis and, if so, the type and severity of the delay. Specifically, the form allowed the investigator to document if the child had previously been evaluated due to concerns regarding the child’s cognitive, communication/speech, adaptive, and/or motor development, if the child obtained a standardized score on an age-appropriate, norm-referenced assessment tools in any of these areas, and if the child had an IEP. The form also allowed the study investigator to document if the child was evaluated in his/her primary language and to determine that the child’s developmental disability was not a result of being an English Language Learner (ELL).

For children who had obtained a standardized score on an age-appropriate, norm-referenced assessment tool, the form allowed the investigator to document the severity of the delay by recording the number of standard deviations below the mean the obtained standardized score fell. Additionally, for children with an IEP, the form allowed the investigator to document the type, frequency, and length of time a child identified with a developmental delay had received special education and/or related services.
Child Behavior Problems. The Child Behavior Checklist For Ages 1 ½ - 5 (CBCL/ 1 ½ - 5; Achenbach & Rescorla, 2000) parent version was used as a proxy measure of parents’ perceptions of their children’s behavior problems. The CBCL/ 1 ½ -5 is a well validated and widely used standardized measure of children’s behavioral, emotional, and social functioning as seen by parents. The CBCL includes 99 “problem” items asking parents to rate the child's behavior along a scale of not true (0); somewhat or sometimes true (1); or very true or often true (2). The 100th item allows the parent to list up to three additional behavior problems not previously referenced. Parents are instructed to rate each item according to the response that best represents their child’s behavior within the past two months. The form requires a 5th grade reading level to complete and can be completed in approximately 10 to 15 minutes.

The CBCL includes two broad-band scores. The first score focuses on "Internalizing" problems (n = 36 items) and groups four syndrome scales (Emotionally Reactive, Anxious/Depressed, Somatic Complaints, and Withdrawn). The second score represents "Externalizing" problems (n = 24 items) and consists of two syndrome subscales (Attention Problems and Aggressive Behavior). All the items on the CBCL are summed to yield a Total Problems score. For Internalizing, Externalizing, and Total Problems, standardized T-scores are used to estimate a child's level of impairment relative to the population. Raw CBCL scores can range from 0 to 72 for the Internalizing Scale and 0 to 48 for the Externalizing Scale. The clinical range is defined as T-scores > 63 (approximately the 90th percentile), the borderline range consists of T-scores from 60 to 63 (83rd to 90th percentiles), and the normal range consists of T-scores below 60 (83rd percentile) (Achenbach & Rescorla, 2000).

Constructed with a large, ethnically diverse sample, the CBCL has been shown to be internally consistent and valid in a general pediatric population. The Internalizing Scale,
Externalizing Scale, and Total Problems $T$-scores have test-retest reliabilities of $r = .90$, $r = .87$, and $r = .90$ respectively (Achenbach & Rescorla, 2000). Content and criterion-related validity of the CBCL problem scales were supported by the significant discrimination between referred and non-referred children during instrument construction studies. Additionally, construct validity of the problem scales was supported by the significant correlation between CBCL scores, *DSM-IV* clinical diagnosis, and other standardized rating scales (Achenbach & Rescorla, 2000). For the purpose of this study, the Internalizing Scale $T$-score, Externalizing Scale $T$-score, and Total Problems $T$-score were used in the statistical analysis of the data.

**Caregiver-Teacher Report Form.** In addition to the CBCL, the Caregiver-Teacher Report Form (C-TRF; Achenbach & Rescorla, 2000) was used as a proxy measure to assess teachers’ perceptions of children’s behavior problems in the classroom. Also part of the Achenbach System of Empirically Based Assessment (Achenbach & Rescorla, 2000) and similar to the CBCL/1½-5, the C-TRF is a well validated and widely used standardized measure of children’s behavioral, emotional, and social functioning as seen by the caregivers or teachers of children from ages 1½-5 years of age. The C-TRF version of the CBCL also includes 99 “problem” items that are rated by the informant according to a scale of *not true* (0); *somewhat or sometimes true* (1); or *very true or often true* (2), as well as an open-ended section that allows caretakers or teachers to identify additional problems or areas of concern. This form also requires a 5th grade reading level to complete and can be completed in approximately 10 to 15 minutes.

The C-TRF also includes the six syndrome scales, two broad-band scores of Internalizing and Externalizing problems, and Total Problems score found on the CBCL. The Internalizing, Externalizing, and Total Problems standardized $T$-scores are used to estimate a child's level of impairment relative to the population. The clinical range is defined as $T$-scores > 63
(approximately the 90th percentile), the borderline range consists of T-scores from 60 to 63 (83rd to 90th percentiles), and the normal range consists of T-scores below 60 (83rd percentile) (Achenbach & Rescorla, 2000).

As the complete Achenbach System of Empirically Based Assessment has been constructed with a large, ethnically diverse sample, the C-TRF has been shown to be internally consistent and valid in a general pediatric population. The Internalizing Scale, Externalizing Scale, and Total Problems T-scores have test-retest reliabilities of $r = .77$, $r = .89$, and $r = .88$ respectively (Achenbach & Rescorla, 2000). Data have supported the content validity of the C-TRF Problem scales, as most items were found to discriminate between referred and non-referred children during instrument construction studies (Achenbach & Rescorla, 2000). Additionally, significant discrimination was established for referred and non-referred children supporting the criterion-related validity ($p \leq .01$) of the Problems scales. For the purpose of this study, the Internalizing Scale T-score, Externalizing Scale T-score, and Total Problems T-score of the C-TRF were used for the statistical analysis of the data.

**Family Functioning and Communication.** As directly measuring family functioning was outside of the scope of this research study, the *Family Adaptability and Cohesion Evaluation Scales* (FACES IV; Olson, Gorall, & Tiesel, 2006) was utilized as a proxy measure to assess family functioning and communication. Grounded in the theoretical foundation of the Circumplex Model, this standardized family self-assessment package was designed to measure family cohesion and flexibility, as well as family communication. Written as statements regarding the family’s functioning (i.e., “Our family tries new ways of dealing with problems”) and rated using a 5-point Likert scale ranging from 1 for strongly disagree to 5 for strongly agree, the first 42 items of the FACES IV assess family cohesion and family flexibility using
two balanced and four unbalanced scales. The ratings on items within the two balanced scales (balanced cohesion and balanced flexibility) result in linear scores, with higher scores indicating more positive family functioning. The ratings on items within the four unbalanced scales are used to evaluate the low and high extremes of cohesion (disengaged and enmeshed) and flexibility (rigid and chaotic). The scores obtained within the four unbalanced scales are nonlinear, with lower scores indicating more positive family functioning. Raw scores from each family scale can be converted to percentiles based on norms and a single ratio score can be obtained for family cohesion and family flexibility to assess perceived function versus dysfunction within the family system.

Additionally, the FACES IV package includes 10 items designed to assess family communication. Also rated using a 5-point Likert scale, ratings on these items are summed and result in a linear score such that higher scores indicate high levels of family communication. Raw scores from the Family Communication Scale can be converted to percentiles based on norms.

Validation studies of the FACES IV have showed the internal consistency reliability of these scales to be between .77 and .89, which was deemed appropriate for research purposes (Olson et al., 2007). The authors also validated their results to three other scales designed to measure similar aspects of family functioning, including the Self-Report Family Inventory, Family Assessment Device, and the Family Satisfaction Scale, and found the FACES IV had large positive correlations (.89 - .99) with these assessments (Olson et al., 2007). For the purpose of this study, the Cohesion Ratio score, Flexibility Ratio score, Total Circumplex Ratio score, and Family Communication Scale score was used for the statistical analysis of the data. However, due to extreme skew the Cohesion Ratio, Flexibility Ratio, and Total Circumplex Ratio scores were transformed using natural logarithms.
**Parenting Stress.** As directly measuring parenting stress was outside of the scope of this research study, the Parenting Stress Index – Short Form (PSI-SF; Abidin, 1995) was utilized as a proxy measure in order to assess parenting stress. The PSI-SF, derived from the original 101-item Parenting Stress Index (Abidin, 1990), is a well validated and widely used measure of parenting stress within the research literature. Similar to the structure of the longer PSI, the PSI-SF examines parenting stress according to three subscales of parental distress (PD), parent-child dysfunction interaction (P-CDI), and difficult child (DC). The parental distress subscale assesses a parent’s sense of distress arising from personal factors such as depression and includes items such as “I often have the feeling that I cannot handle things very well.” The parent-child dysfunction interaction subscale assesses parental dissatisfaction with the parent-child dyad and includes items such as “My child rarely does things for me that make me feel good.” Finally, the difficult child subscale assesses a parent’s perception of his/her child’s behavior and ability to self-regulate and includes items such as “My child gets upset easily over the smallest thing.” Additionally, the PSI-SF contains a defensive responding scale (DES) in order to assess the extent to which a parent may attempt to minimize problems. On this self-report measure, parents are asked to respond to 36 statements according to a 5-point Likert scale ranging from 5 for *strongly agree* to 1 for *strongly disagree*. Items within each subscale are summed, with high subscale scores (e.g., 30 – 60) indicating higher levels of stress. The subscale scores are then added and contribute to a total stress score. High total stress scores (e.g., 85 – 180) indicate high levels of parenting stress while low total stress scores (e.g., 36 – 55) indicate low levels of parenting stress.

Validation studies of the PSI-SF have reported overall reliability to range from .81 to .91 (Abidin, 1995; Haskett et al., 2006). Abidin reported internal consistency for the three subscales
as PD = .87, P-CDI = .80, and DC = .85. Additionally, the PSI-SF has demonstrated strong validity, with a concurrent validity to the Parenting Stress Index – Long Form reported as .94. For the purpose of this study, the total stress score was used for the statistical analysis of the data.

**Parenting Self-Esteem.** As directly measuring parenting self-esteem was outside the scope of this research study, the Parent Sense of Competence Scale (PSOC) was utilized as a proxy measure in order to assess parents’ self-esteem. The PSOC, originally developed by Gibaud-Wallston and Wandersman (1978) for the parents of infants and later adapted by Johnston and Mash (1989) for parents of older children, was designed to assess parents’ overall sense of parenting self-esteem, as well as two dimensions of their self-reported feelings of competence, including their feelings of efficacy and satisfaction in the parenting role. Specifically, the parenting self-efficacy dimension examines the degree to which parents feel competent and capable of solving problems in their role as a parent, while the parenting satisfaction dimension examines the degree to which parents feel anxiety, frustration, and poor motivation in their role as a parent. On this measure, parents are asked to respond to 16 statements pertaining to their sense of parenting self-efficacy and satisfaction (i.e., “My mother/father was better prepared to be a good mother/father than I am”) according to a 6-point Likert scale ranging from 1 for *strongly agree* to 6 for *strongly disagree*. Reversed scoring is applied to some items, so that, for all items, higher scores indicate greater levels of parenting self-efficacy, parenting satisfaction, and general parenting self-esteem. Overall, this measure results in parenting-efficacy and parenting satisfaction dimension scores, which both contribute to the parenting self-esteem domain score.
As one of the most commonly used tools for measuring parenting self-esteem within the research literature (Jones & Prinz, 2005), validation studies of the PSOC have provided evidence for its use with parents of infants and children under 18 years of age. Specifically, studies of reliability have reported satisfactory internal consistency, ranging between .72 to .82 (Gibaund-Wallston & Wandersman, 1978; Gilmore & Cuskelly, 2008; Johnston & Mash, 1989), and Test-Retest reliability of .82 (Gibaund-Wallston & Wandersman, 1978). Additionally, confirmatory factor analyses within the research literature have continued to validate the two constructs of parenting self-efficacy and parenting satisfaction within the PSOC, while criterion validity has been demonstrated by the reported significant inverse relationship between the PSOC and child behavior problems as measured by the CBCL (Johnston & Mash, 1989). For the purpose of this study, the parenting-efficacy subdomain, parenting satisfaction subdomain, and parenting self-esteem domain scores were used for statistical analysis of the data.

**Procedure**

The sample of parent participants was recruited from “full time” general education preschool and special education preschool programs serving the urban area of Brooklyn, New York. For the purpose of this investigation, preschool programs were considered “full-time” if children attended the preschool for a minimum of a half-day, five days per week. Twelve preschool programs from neighborhoods in Brooklyn, New York representing similar socio-economic backgrounds were targeted for participant recruitment, including four general education preschool programs enrolling children without disabilities, six Head Start preschool programs enrolling both children with and without disabilities, and two special education preschool programs only enrolling students with disabilities. Additionally, the family and child
of a Brooklyn preschool employee, who lives in Jersey City, NJ and met study criteria, was included in the sample.

Initial contact with each targeted preschool program included a mailed informational flyer (Appendix B) and an introductory telephone call (Appendix C) to the directors of the preschool programs. Meetings were scheduled with program directors who expressed interest in the research, allowing the principal investigator to visit the school, describe the research in more detail and answer any further questions the director had regarding the study. Following this initial contact meeting, eight preschool programs granted permission for the recruitment of parent participants, including four general education preschool programs, two Head Start inclusion preschool programs, and two special education preschool programs. Each participating preschool program enrolled between 40 – 140 students.

When permission for recruitment of parent participants was granted (Appendix D), research packets were sent home to all parents containing an informational letter (Appendix E), participant consent form (Appendix F), Educational Records Release Form (Appendix G), family demographic questionnaire, and parent instructions (Appendix H). Upon volunteering to participate and signing all consent forms, one parent from each participating household was asked to read the participant instructions (Appendix I) and complete all remaining study self-report measures, including the CBCL, FACES, PSOC, and PSI. Specifically, one parent from each family was instructed to complete all forms and return the documents to the study investigator in the self-addressed envelope provided. Participants were asked to return the completed study measures to the principal investigator within approximately one week. It was estimated that the entire study research packet took between 30 – 60 minutes for parents to
complete. When the principal investigator had received the parent’s completed study measures, the parent was sent $20.00 as compensation for participation.

Upon receiving the completed parent packet, the principal investigator then provided the teacher of the participating parent’s child with the teacher instructions and consent form (Appendix J) and C-TRF. The teachers were asked to complete the teacher report of children’s behavior and return it to the study investigator in the pre-addressed envelope provided within approximately one week. It was estimated that the C-TRF took between 10 – 20 minutes for teachers to complete. When the principal investigator had received the completed C-TRF, the teacher was sent $5.00 as compensation for complying with the parent’s participation in the study and returning the completed form.

In addition to the self-report data collected from participating parents and teachers, the principal investigator completed the review of the child’s educational records. This review of the children’s educational records allowed the investigator to check the child’s eligibility for study inclusion, as well as to identify and classify children’s developmental delay status. Specifically, the study investigator used the child’s educational records, including copies of the child’s evaluation reports and results when applicable, copies of the IEP when applicable, and teacher/therapist progress reports from the child’s preschool, to determine if the child has been identified as having a developmental delay in their primary language, the type of delay, and the severity of the delay. The principal investigator also collected data pertaining to the type of services the child was receiving, as mandated by their IEP, due to the presence of their developmental delay.

If the child’s educational records indicated that the child did not have a developmental delay and did not have an IEP, the child was included in the study and classified as “Typically
Developing” (TD). If the child’s educational records indicated that the child has been evaluated for developmental delays in their primary language (i.e., developmental delays are not a result of the child being an ELL), a standardized score on an age-appropriate, norm-referenced assessment tool was obtained, and the child had an IEP, the child was included in the study and classified as “Developmental Delay” (DD).

For those children in the DD group, the educational records were also be used to determine the type and severity of the child’s delays. Specifically, children with a standardized score (SS) that fell in the range of \(-1.5 < SS \leq -2\) standard deviations below the mean was categorized as having a “Mild Developmental Delay” in that area of development. Children with a standardized score that fell in the range of \(-2 < SS \leq -2.5\) standard deviations below the mean was categorized as having a “Moderate Developmental Delay” in that area of development. Children with a standardized score that fell in the range of \(-2.5 < SS\) standard deviations below the mean was categorized as having a “Severe Developmental Delay” in that area of development. Data obtained during the educational records review was documented on the Educational Records Review Form, developed by the principal investigator for the purpose of this research study.

The recruitment and data collection phase of the study was done over a 12-month period beginning in May 2013. However, no recruitment activities or data collection took place from September 2013 – October 2013, allowing children and families to transition into a new school year. Overall, approximately 400 research packets were sent to the parents of students enrolled in the eight participating preschool programs. In total, eighty-three research packets were returned. Four packets were returned incomplete. The parents were contacted and asked if they would like to participate by completing the study materials, but all declined. Four families returned the
family demographics questionnaire indicating that their household income exceeded the inclusion criteria and their data were not included in the data analysis. Additionally, the educational record reviews of three children revealed that the child was not eligible for study inclusion because either standardized scores could not be obtained during the evaluation process or the child was evaluated in a language other than his/her primary or home language and the results of the evaluation may have been compromised due to the child being an ELL. The data from these three families were not included in the data analysis. Thus, a total of 72 families (18% response rate) were included in the sample for data analysis.

The teachers of the children for all 72 families were also invited to participate. As there were often children of multiple parent participants in the same preschool classroom, a total of 25 teachers were invited to participate. Overall, 22 teachers (88%) agreed to participate and the C-TRFs were completed and returned for a total of 69 children (96% response rate) in the sample.
Chapter IV

Results

This chapter describes the statistical results obtained from the study that sought to identify risk and protective factors associated with the relationship between developmental delays and behavior problems in an urban sample of preschool children. Descriptive statistics, correlational analysis, independent and paired samples t-tests, and multiple one-way between subject analysis of variance were calculated in order to answer the research questions and hypotheses proposed in this study. An alpha level of .05 was used to determine significance for all statistical tests conducted.

The chapter begins with the results of a preliminary analysis to explore and describe children’s developmental delay status within the study sample of preschool children. Additional preliminary analyses are also presented to examine the relationship of socio-demographic factors (i.e., participant’s relation to child, level of education, household income, ethnicity, family structure, current relationship status, child’s gender and child’s age) to the main study variables of children’s behavior problems, family functioning, family communication, parenting stress and parenting self-esteem. Finally, the results for the proposed research questions and hypotheses are presented.

Preliminary Analysis

Developmental Delay Status. Descriptive statistical analysis was conducted to describe children’s developmental delay status within the study sample of preschool children. Specifically, the principal investigator used children’s educational records to determine if children were receiving special education services as mandated by an IEP due to a developmental delay and, if so, the age at which children were evaluated, the types and severity
of their developmental delays and the services children in the sample were currently receiving. According to the educational record review, 27.78% (n=20) of the children in the sample did not have an IEP and were not currently receiving any form of special education services due to the presence of a developmental delay. The participating parents of these children were classified as TD for the present sample. The educational records of 72.22% (n=52) of children in the sample revealed the student currently received special education services as mandated by an IEP due to the presence of a developmental delay in at least one area of development. The participating parents of these children were classified as DD for the present sample.

All children in the DD group had previously received a CPSE evaluation in order to qualify for special education services as mandated by an IEP due to the presence of a developmental delay. The review of the children’s educational records revealed that 2.27 years (SD = 0.43) was the average age of children in the sample at the time of their CPSE evaluation. The age range of children in this sample at the time of CPSE evaluation was 2.03 years to 4.03 years.

Within the DD group, 76.9% (n=40) of the children were found to have a cognitive delay, leaving 23.1% (n=12) of the children in the DD sample with no identified cognitive delay. Of the children with an identified cognitive delay, 30.8% (n=16) were assessed to have a “Mild” cognitive delay, 28.8% (n=15) were assessed to have a “Moderate” cognitive delay, and 15.4% (n=8) were assessed to have a “Severe” cognitive delay. Additionally, the educational record review revealed that 17.3% (n=9) were receiving specialized instruction in an “Integrated” classroom setting, meaning that the class is comprised of both students with and without an IEP. Thus, 82.7% (n = 43) children identified with a developmental delay were receiving special education instruction in a special education classroom, only serving children with an IEP.
Within the DD group, 94.2% (n=49) of the children were found to have a speech/language delay, while only 5.8% (n=3) did not demonstrate the same delay in this area during their CPSE evaluation. Of the children with an identified speech/language delay, 15.4% (n=8) were assessed to have a “Mild” speech/language delay, 34.6% (n=18) were assessed to have a “Moderate” speech/language delay, and 44.2% (n=23) were assessed to have a “Severe” speech/language delay. Additionally, 98.1% (n = 48) of the children assessed to have a speech/language delay were mandated by an IEP to receive speech and language therapy, while only 1.9% (n=1) of the children in this group did not receive the same therapeutic services.

Within the DD group, 65.4% (n=34) of children were found to have a delay in the area of their adaptive or daily living skills. Thus, 34.6% (n=18) of the children did not present with adaptive/daily living skills delay. Of those children who were assessed to have adaptive skills delays, 34.6% (n=18) were found to have “Mild” delays, 23.1% (n=12) were found to have “Moderate” delays, and 7.7% (n=4) were found to have “Severe” delays.

Within the DD group, 82.7% (n=43) of the children were found to have motor skills delays, while only 17.3% (n=9) did not present with the same delays. Of the children identified with motor skills delays, 46.2% (n=24) were assessed to have “Mild” delays, 13.5% (n=7) were assessed to have “Moderate” delays, and 23.1% (n=12) were assessed to have “Severe” delays. Additionally, 59.6% (n=31) of the children assessed to have motor skills delays were mandated by their IEP to receive Physical Therapy services, while 80.8% (n=42) were mandated to receive Occupational Therapy services. In contrast, 40.4% (n=21) of children in this group did not receive Physical therapy and 19.2% (n=10) did not receive any form of occupational therapy.

Overall, the majority (46.2%, n=24) of preschool children in the DD group presented with developmental delays in all four of the areas of development. For the remainder of the DD
sample, 32.7% (n=17) of the children presented with developmental delays in three areas, 15.4% (n=8) of the children presented with developmental delays in two areas, and just 5.8% (n=3) of children presented with developmental delays in one area of development.

**Relationship between Socio-Demographic Factors and the Main Study Variables**

Pearson’s correlations, independent samples t-tests, and multiple one-way between subjects analysis of variance (ANOVA) tests were calculated to explore the relationship between the sample’s socio-demographic characteristics and the main variables of the study, including parents’ report of children’s behavior, teachers’ report of children’s behavior, family functioning and communication, parenting stress, and parents’ self-esteem.

**Relation to Child.** An independent samples t-test was conducted to examine the variables of child behavior, family functioning, family communication, parenting stress, and parents’ self-esteem between the mother and father participants in this sample. The results of the t-test are presented in Table 2.

There was a significant difference in the scores of parents’ self-esteem between mothers (M = 70.46, SD = 11.19) and fathers (M = 77.33, SD = 1.53); t(19.17) = 4.27, p = 0.00. Specifically, mothers in this sample reported lower levels of parenting self-esteem than the fathers in this sample.

The results of the analysis also revealed that there was no significant difference between mothers’ and fathers’ reports of the remaining study variables in this sample.
## Table 2

Independent Samples T-Test of the Effects of Participant’s Relation to Child on the Main Study Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Relation to Child</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fathers</td>
<td>Mothers</td>
<td>( T )</td>
<td>Df</td>
<td>Sig (2-tailed)</td>
</tr>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>49.33 (7.77)</td>
<td>53.96 (10.85)</td>
<td>-.73</td>
<td>69</td>
<td>.469</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>50.67 (3.51)</td>
<td>52.31 (10.63)</td>
<td>-.27</td>
<td>69</td>
<td>.792</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>48.67 (6.43)</td>
<td>53.88 (11.49)</td>
<td>-.78</td>
<td>69</td>
<td>.440</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>56.00 (8.89)</td>
<td>56.80 (12.74)</td>
<td>-.11</td>
<td>67</td>
<td>.915</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>52.67 (5.51)</td>
<td>57.05 (10.68)</td>
<td>-.70</td>
<td>67</td>
<td>.485</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>55.67 (1.53)</td>
<td>57.98 (12.08)</td>
<td>-1.3</td>
<td>23.06</td>
<td>.193</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>.859 (.298)</td>
<td>.555 (.411)</td>
<td>1.24</td>
<td>68</td>
<td>.218</td>
</tr>
<tr>
<td>Family Flexibility</td>
<td>.711 (.460)</td>
<td>.503 (.340)</td>
<td>1.02</td>
<td>68</td>
<td>.309</td>
</tr>
<tr>
<td>Family Total Functioning</td>
<td>.532 (.383)</td>
<td>.401 (.267)</td>
<td>.823</td>
<td>68</td>
<td>.413</td>
</tr>
<tr>
<td>Family Communication</td>
<td>.753 (.273)</td>
<td>.571 (.273)</td>
<td>1.13</td>
<td>67</td>
<td>.261</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>.373 (.076)</td>
<td>.545 (.255)</td>
<td>-1.2</td>
<td>70</td>
<td>.251</td>
</tr>
<tr>
<td>Parenting Satisfaction</td>
<td>42.00 (3.00)</td>
<td>38.78 (7.51)</td>
<td>.735</td>
<td>70</td>
<td>.465</td>
</tr>
<tr>
<td>Parenting Efficacy</td>
<td>35.33 (1.53)</td>
<td>31.68 (5.13)</td>
<td>1.22</td>
<td>70</td>
<td>.225</td>
</tr>
<tr>
<td>Parenting Total Self-Esteem</td>
<td>77.33 (1.53)</td>
<td>70.46 (11.19)</td>
<td>4.27</td>
<td>19.17</td>
<td>.000*</td>
</tr>
</tbody>
</table>

*Note: Standard Deviations appear in parentheses below means. \( * = p \leq .05. \)
**Level of Education.** Multiple one-way between subjects ANOVAs were calculated to compare the relationship between participant’s level of education and the study variables of child behavior, family functioning, family communication, parenting stress, and parents’ self-esteem. The results of the ANOVA test are presented in Table 3.

There was a significant effect of participant’s level of education on the variable of children’s total problem behaviors at the p < .05 level [F (3, 67) = 4.28, p = 0.01]. Post hoc comparisons using the Tukey HSD test indicated that parents who completed college or an advanced degree reported a lower average CBCL Total Problems score (M = 45.82, SD = 10.64) than parents with no or some high school education (M = 54.88, SD = 11.29), parents who completed some college (M = 56.62, SD = 11.13), and parents who completed high school (M = 57.53, SD = 9.12). In this analysis, the education levels of no or some high school education, completed high school, and completed some college did not significantly differ from each other.

This result was also consistent for children’s reported internalizing behavior problems at the p < .05 level [F(3, 67) = 4.13, p = 0.01], as well as children’s externalizing behavior problems at the p < .05 level [F(3, 67) = 3.13, p = 0.03]. Post hoc comparisons using the Tukey HSD test revealed that parents who completed college or an advanced degree reported a lower average CBCL Internalizing Problems score (M = 46.29, SD = 11.17) than parents who had completed some college (M = 55.77, SD = 10.24), parents with no or some high school education (M = 55.79, SD = 10.22), and parents who completed high school (M = 56.82, SD = 8.47). In this analysis, the education levels of no or some high school education, completed high school, and completed some college did not significantly differ from each other.
Table 3

One-Way ANOVA Tests of the Effects of Participants’ Level of Education on the Main Variables of the Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>1258.66</td>
<td>3</td>
<td>419.56</td>
<td>4.13</td>
<td>.010*</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>933.50</td>
<td>3</td>
<td>311.17</td>
<td>3.13</td>
<td>.031*</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>1447.48</td>
<td>3</td>
<td>482.49</td>
<td>4.28</td>
<td>.008**</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>819.09</td>
<td>3</td>
<td>273.03</td>
<td>1.79</td>
<td>.157</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>651.45</td>
<td>3</td>
<td>217.15</td>
<td>2.05</td>
<td>.115</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>902.95</td>
<td>3</td>
<td>300.98</td>
<td>2.27</td>
<td>.088</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>1.08</td>
<td>3</td>
<td>.360</td>
<td>2.19</td>
<td>.098</td>
</tr>
<tr>
<td>Family Flexibility</td>
<td>.173</td>
<td>3</td>
<td>.058</td>
<td>.780</td>
<td>.509</td>
</tr>
<tr>
<td>Family Total Functioning</td>
<td>.413</td>
<td>3</td>
<td>.138</td>
<td>1.17</td>
<td>.326</td>
</tr>
<tr>
<td>Family Communication</td>
<td>.481</td>
<td>3</td>
<td>.160</td>
<td>2.27</td>
<td>.089</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>.355</td>
<td>3</td>
<td>.118</td>
<td>1.94</td>
<td>.132</td>
</tr>
<tr>
<td>Parenting Satisfaction</td>
<td>149.60</td>
<td>3</td>
<td>49.87</td>
<td>.907</td>
<td>.442</td>
</tr>
<tr>
<td>Parenting Efficacy</td>
<td>33.84</td>
<td>3</td>
<td>11.28</td>
<td>.427</td>
<td>.734</td>
</tr>
<tr>
<td>Parenting Total Self-Esteem</td>
<td>324.81</td>
<td>3</td>
<td>108.27</td>
<td>.883</td>
<td>.454</td>
</tr>
</tbody>
</table>

Note: Between-Subjects Variables Reported. *p < .05; **p < .01.

With regard to children’s reported externalizing behaviors, parents who completed college or an advanced degree reported a lower average CBCL Externalizing Problems score (M = 46.18, SD = 10.48) than parents with no or some high school education (M = 52.54, SD = 9.27), parents who completed some college (M = 55.31, SD = 10.45), and parents who completed high school (M = 55.53, SD = 10.08). In this analysis, the education levels of no or some high school education, completed high school, and completed some college did not significantly differ from each other. Overall, the results from the analysis indicated that children’s reported behavior problems vary significantly by parents’ level of education. Specifically, parents who had completed college or an advanced degree reported, on average, fewer behavior problems in their children than those parents who had not obtained the same level of education.
The results of this analysis also revealed there was no effect of parents’ level of education on the remaining study variables of family functioning, family communication, parenting stress, and parenting self-esteem.

**Household Income.** Multiple one-way between subject analysis of variance tests were calculated to examine the relations between the participant’s reported household income and the study variables of child behavior, family functioning, family communication, parenting stress, and parents’ self-esteem. The results of the ANOVA test are presented in Table 4.

Table 4

One-Way ANOVA Tests of the Effects of Household Income on the Main Variables of the Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>1525.44</td>
<td>3</td>
<td>508.48</td>
<td>5.21</td>
<td>.003**</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>1133.09</td>
<td>3</td>
<td>377.70</td>
<td>3.91</td>
<td>.012*</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>1534.54</td>
<td>3</td>
<td>511.51</td>
<td>4.59</td>
<td>.006**</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>538.04</td>
<td>3</td>
<td>179.35</td>
<td>1.15</td>
<td>.338</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>980.23</td>
<td>3</td>
<td>326.74</td>
<td>3.24</td>
<td>.028*</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>895.57</td>
<td>3</td>
<td>298.52</td>
<td>2.25</td>
<td>.090</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>1.34</td>
<td>3</td>
<td>.445</td>
<td>2.77</td>
<td>.049*</td>
</tr>
<tr>
<td>Family Flexibility</td>
<td>.198</td>
<td>3</td>
<td>.066</td>
<td>.900</td>
<td>.446</td>
</tr>
<tr>
<td>Family Total Functioning</td>
<td>.958</td>
<td>3</td>
<td>.319</td>
<td>2.93</td>
<td>.040*</td>
</tr>
<tr>
<td>Family Communication</td>
<td>.657</td>
<td>3</td>
<td>.219</td>
<td>3.21</td>
<td>.029</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>.808</td>
<td>3</td>
<td>.269</td>
<td>4.96</td>
<td>.004**</td>
</tr>
<tr>
<td>Parenting Satisfaction</td>
<td>357.15</td>
<td>3</td>
<td>119.05</td>
<td>2.29</td>
<td>.086</td>
</tr>
<tr>
<td>Parenting Efficacy</td>
<td>65.30</td>
<td>3</td>
<td>21.77</td>
<td>.839</td>
<td>.477</td>
</tr>
<tr>
<td>Parenting Total Self-Esteem</td>
<td>721.21</td>
<td>3</td>
<td>240.40</td>
<td>2.06</td>
<td>.114</td>
</tr>
</tbody>
</table>

Note: Between-Subjects Variables Reported. *p < .05; **p < .01.

Results from the analysis indicated that the study variables of children’s reported behavior problems, family functioning, and parenting stress vary by participants’ household income. There was a significant effect of household income on children’s reported internalizing
problem behaviors $[F(3, 67) = 5.21, p = 0.00]$, externalizing problem behaviors $[F(3, 67) = 3.91, p = 0.01]$ and total problem behaviors $[F(3, 67) = 4.59, p = 0.01]$ at the $p < .05$ level. Specifically, Post hoc comparisons using the Tukey HSD test revealed that participants who reported a household income of less than $10,000$ reported a higher average CBCL Internalizing Problems Score ($M = 58.57$, $SD = 9.95$) than participants who reported a household income of $10 - 30,000$ ($M = 50.06$, $SD = 8.50$), and participants who reported a household income of $50,000+$ ($M = 44.71$, $SD = 11.93$). However, there was no significant difference in the CBCL Internalizing Problems score for participants who reported a household income of less than $10,000$ and participants who reported a household income of $30 – 50,000$ ($M = 52.88$, $SD = 10.29$).

Additionally, parents who reported a household income of less than $10,000$ reported a significantly higher average CBCL Externalizing Problems score ($M = 55.20$, $SD = 10.97$) than parents who reported a household income of $50,000+$ ($M = 41.71$, $SD = 9.59$). However, there was no significant difference in the CBCL Externalizing Problems score for these groups and for participants in the remaining groups consisting of participants who reported a household income of $10 – 30,000$ ($M = 50.28$, $SD = 9.82$) or who reported a household income of $30 – 50,000$ ($M = 53.50$, $SD = 7.28$). This trend continued with children’s total behavior problems, as participants with a reported household income of less than $10,000$ reported a higher average CBCL Total Problems score ($M = 58.23$, $SD = 9.95$) than participants who reported a household income of $50,000+$ ($M = 45.33$, $SD = 11.59$). Again, there was no significant difference in the CBCL Total Problems scores for these groups and for participants in the remaining groups consisting of participants who reported a household income of $10 – 30,000$ ($M = 50.22$, $SD = 9.97$) or who reported a household income of $30 – 50,000$ ($M = 53.31$, $SD = 8.30$).
A significant effect of household income was found with teachers’ report of children’s externalizing behavior at the p < .05 level [F(3, 65) = 3.24, p = 0.03]. Specifically, Post hoc comparisons using the Tukey HSD test indicated that the average teacher report of a child’s externalizing behavior on the C-TRF was higher for children of participants who reported a household income of less than $10,000 (M = 59.30, SD = 8.78) than it was for children of participants who reported a household income of $50,000+ (M = 45.33, SD = 12.06). There was no significant difference in the C-TRF Externalizing Behavior Problems score for participants in the remaining groups consisting of participants who reported a household income of $10–30,000 (M = 57.06, SD = 12.17) or who reported a household income of $30–50,000 (M = 56.38, SD = 9.02).

There was a significant effect of household income on the variable of family functioning, as measured by the natural logarithm (ln) of the FACES Total Ratio at the p < .05 level [F(3, 66) = 2.93, p = 0.04]. Post hoc comparisons using the Tukey HSD test revealed that participants with a reported household income of less than $10,000 also reported lower levels of family functioning (M = 0.40, SD = 0.34) than was reported by those participants with a reported household income of $50,000+ (M = 0.76, SD = 0.43). There was no significant difference in the reported family functioning for participants in the remaining groups consisting of participants who reported a household income of $10–30,000 (M = 0.51, SD = 0.24) or who reported a household income of $30–50,000 (M = 0.60, SD = 0.35).

There was also a significant effect of household income on the variable of parenting stress at the p < .05 level [F(3, 68) = 4.96, p = 0.00]. Post hoc comparisons using the Tukey HSD test indicated that participants with a reported household income of less than $10,000 reported higher average scores of parenting stress on the PSI-4 (M = 0.63, M = 0.20) than participants
who reported a household income of $50,000+ (M = 0.26, SD = 0.32). There was no significant
difference in the reported parenting stress for participants in the remaining groups consisting of
participants who reported a household income of $10 – 30,000 (M = 0.52, SD = 0.25) or who
reported a household income of $30 – 50,000 (M = 0.51, SD = 0.22).

No effect of participants’ reported household income was found on the remaining study
variables of family communication and parenting self-esteem.

Ethnicity. Multiple one-way between subject analysis of variance tests were calculated to
examine the relations between the participant’s reported ethnic background and the study
variables of child behavior, family functioning, family communication, parenting stress, and
parents’ self-esteem. The results of the ANOVA test are presented in Table 5.

Table 5
One-Way ANOVA Tests of the Effects of Participants’ Ethnic Background on the Main
Variables of the Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>22.61</td>
<td>2</td>
<td>11.31</td>
<td>.096</td>
<td>.909</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>214.15</td>
<td>2</td>
<td>107.08</td>
<td>.985</td>
<td>.379</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>78.66</td>
<td>2</td>
<td>39.33</td>
<td>.300</td>
<td>.742</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>1776.55</td>
<td>2</td>
<td>888.28</td>
<td>6.56</td>
<td>.003**</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>737.80</td>
<td>2</td>
<td>368.90</td>
<td>3.58</td>
<td>.033</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>1400.12</td>
<td>2</td>
<td>700.06</td>
<td>5.70</td>
<td>.005**</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>.848</td>
<td>2</td>
<td>.424</td>
<td>2.56</td>
<td>.085</td>
</tr>
<tr>
<td>Family Flexibility</td>
<td>.106</td>
<td>2</td>
<td>.053</td>
<td>.715</td>
<td>.493</td>
</tr>
<tr>
<td>Family Total Functioning</td>
<td>.391</td>
<td>2</td>
<td>.196</td>
<td>1.69</td>
<td>.193</td>
</tr>
<tr>
<td>Family Communication</td>
<td>.442</td>
<td>2</td>
<td>.221</td>
<td>3.14</td>
<td>.050</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>.237</td>
<td>2</td>
<td>.118</td>
<td>1.91</td>
<td>.155</td>
</tr>
<tr>
<td>Parenting Satisfaction</td>
<td>204.11</td>
<td>2</td>
<td>102.06</td>
<td>1.91</td>
<td>.156</td>
</tr>
<tr>
<td>Parenting Efficacy</td>
<td>7.54</td>
<td>2</td>
<td>3.77</td>
<td>.143</td>
<td>.867</td>
</tr>
<tr>
<td>Parenting Total Self-Esteem</td>
<td>178.78</td>
<td>2</td>
<td>89.39</td>
<td>.727</td>
<td>.487</td>
</tr>
</tbody>
</table>

Note: Between-Subjects Variables Reported. **p < .01.
There was a significant effect of ethnicity on children’s internalizing problems behaviors \[F(2, 66) = 6.56, p = 0.00\] and total problem behaviors \[f(2, 66) = 5.70, p = 0.01\], as reported by their teachers on the C-TRF, at the \( p < .05 \) level. Post hoc comparisons using the Tukey HSD test revealed that teachers reported a higher average Internalizing Problems score on the C-TRF for children of participants who reported a Black/African American ethnic background \((M = 60.28, SD = 10.82)\) than for the children of participants who reported other – non Hispanic/Latino ethnic backgrounds \((M = 45.78, SD = 11.69)\). Similarly, teachers reported a higher average Total Problems score on the C-TRF for children of participants who reported a Black/African American ethnic background \((M = 61.14, SD = 10.05)\) than for the children of participants who reported other- non Hispanic/Latino ethnic backgrounds \((M = 48.78, SD = 11.30)\). Overall, teachers reported, on average, more behavior problems for children of participants from a Black/African American Ethnic background than in children from participants who reported other ethnic backgrounds (“Mixed Race,” “Caucasian,” “Native American,” “Asian American,” and “Hawaiian/Pacific Islander”).

The results of this analysis did not reveal an effect of participant’s ethnic background on the study variables of parents’ report of children’s behavior problems, family functioning, family communication, parenting stress, or parenting self-esteem.

**Family Structure.** An independent samples t-test was conducted to compare the study variables of child behavior, family functioning, family communication, parenting stress and parents’ self-esteem according to participants’ family structure. The results of the t-test are presented in Table 6.
Table 6

Independent Samples T-Test of the Effect of Child’s Family Structure on Main Study Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Family Structure</th>
<th></th>
<th>t</th>
<th>Df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Two Parents</td>
<td>One Parent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>53.20 (10.49)</td>
<td>55.00 (11.42)</td>
<td>-.65</td>
<td>69</td>
<td>.518</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>51.47 (10.33)</td>
<td>53.95 (10.65)</td>
<td>-.93</td>
<td>69</td>
<td>.357</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>52.82 (11.13)</td>
<td>55.55 (11.84)</td>
<td>-.94</td>
<td>69</td>
<td>.352</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>55.73 (12.82)</td>
<td>59.14 (11.88)</td>
<td>-1.0</td>
<td>67</td>
<td>.302</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>56.46 (11.23)</td>
<td>57.76 (8.91)</td>
<td>-.47</td>
<td>67</td>
<td>.639</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>57.38 (12.45)</td>
<td>59.05 (10.44)</td>
<td>-.54</td>
<td>67</td>
<td>.592</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>.700 (.403)</td>
<td>.259 (.253)</td>
<td>5.52</td>
<td>58.49</td>
<td>.000*</td>
</tr>
<tr>
<td>Family Flexibility</td>
<td>.608 (.335)</td>
<td>.289 (.252)</td>
<td>3.90</td>
<td>68</td>
<td>.000*</td>
</tr>
<tr>
<td>Family Total Functioning</td>
<td>.450 (.252)</td>
<td>.305 (.290)</td>
<td>2.11</td>
<td>68</td>
<td>.000*</td>
</tr>
<tr>
<td>Family Communication</td>
<td>.607 (.281)</td>
<td>.513 (.249)</td>
<td>1.33</td>
<td>67</td>
<td>.189</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>.490 (.260)</td>
<td>.647 (.195)</td>
<td>-2.8</td>
<td>52.82</td>
<td>.006*</td>
</tr>
<tr>
<td>Parenting Satisfaction</td>
<td>39.78 (7.58)</td>
<td>36.95 (6.72)</td>
<td>1.51</td>
<td>70</td>
<td>.137</td>
</tr>
<tr>
<td>Parenting Efficacy</td>
<td>32.04 (5.54)</td>
<td>31.36 (3.89)</td>
<td>.518</td>
<td>70</td>
<td>.606</td>
</tr>
<tr>
<td>Parenting Total Self-Esteem</td>
<td>71.82 (11.88)</td>
<td>68.32 (8.60)</td>
<td>1.24</td>
<td>70</td>
<td>.218</td>
</tr>
</tbody>
</table>

Note: Standard Deviations appear in parentheses below means. * = p ≤ .05.
Data analysis revealed that family functioning appears to vary significantly by family structure. The natural logarithm (ln) of the FACES Cohesion Ratio scores resulted in a significant difference in the family cohesion scores between families with two parents (M = 0.70, SD = 0.40) and families with one parent (M = 0.26, SD = 0.25); t(58.49) = 5.52, p = 0.00. Additionally, the natural logarithm (ln) of the FACES Flexibility Ratio scores resulted in a significant difference in the family flexibility scores between families with two parents (M = 0.45, SD = 0.25) and families with one parent (M = 0.30, SD = 0.29); t(68) = 2.11, p = 0.04. There was also a significant difference in the total family functioning scores between families with two parents (M = 0.61, SD = 0.34) than for families with one parent (M = 0.29, SD = 0.25); t(68) = 3.9, p = 0.00. Taken together, these results suggest that families with two parents report significantly higher family functioning, including family cohesion and flexibility, than those families with one parent in this sample.

There was also a significant difference in the parenting stress for families with two parents (M = 0.49, SD = 0.26) as compared to families with one parent (M = 0.20, SD = 0.04); t(52.82) = -2.84, p = 0.01. These results suggest that families with two parents experience less parenting stress than those families with one parent in this sample.

The results of this analysis did not reveal a significant effect of family structure on the study variables of children’s behavior problems, family communication, or parenting self-esteem.

**Current Family Status.** Multiple one-way between subject ANOVAs were calculated to examine the relations between the participant’s current family status on the study variables of child behavior, family functioning, family communication, parenting stress, and parents’ self-esteem. The results of the ANOVAs are presented in Table 7.
Table 7

One-Way ANOVA Tests of the Effects of Participants’ Current Relationship Status on the Main Variables of the Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>352.36</td>
<td>2</td>
<td>176.18</td>
<td>1.55</td>
<td>.219</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>202.90</td>
<td>2</td>
<td>101.45</td>
<td>.932</td>
<td>.399</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>334.82</td>
<td>2</td>
<td>167.41</td>
<td>1.31</td>
<td>.276</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>429.18</td>
<td>2</td>
<td>214.59</td>
<td>1.38</td>
<td>.260</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>323.75</td>
<td>2</td>
<td>161.87</td>
<td>1.48</td>
<td>.235</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>455.32</td>
<td>2</td>
<td>227.66</td>
<td>1.66</td>
<td>.198</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>3.15</td>
<td>2</td>
<td>1.57</td>
<td>11.96</td>
<td>.000***</td>
</tr>
<tr>
<td>Family Flexibility</td>
<td>.488</td>
<td>2</td>
<td>.244</td>
<td>3.59</td>
<td>.033*</td>
</tr>
<tr>
<td>Family Total Functioning</td>
<td>.1.84</td>
<td>2</td>
<td>.922</td>
<td>19.78</td>
<td>.000***</td>
</tr>
<tr>
<td>Family Communication</td>
<td>.303</td>
<td>2</td>
<td>.151</td>
<td>2.09</td>
<td>.132</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>.358</td>
<td>2</td>
<td>.179</td>
<td>2.98</td>
<td>.058</td>
</tr>
<tr>
<td>Parenting Satisfaction</td>
<td>286.92</td>
<td>2</td>
<td>143.46</td>
<td>2.75</td>
<td>.071</td>
</tr>
<tr>
<td>Parenting Efficacy</td>
<td>4.04</td>
<td>2</td>
<td>2.02</td>
<td>.076</td>
<td>.927</td>
</tr>
<tr>
<td>Parenting Total Self-Esteem</td>
<td>302.29</td>
<td>2</td>
<td>151.15</td>
<td>1.25</td>
<td>.294</td>
</tr>
</tbody>
</table>

Note: Between-Subjects Variables Reported. *p < .05; ***p < .001.

There appears to be a relationship between participants’ current relationship status and their family functioning, including family cohesion, family flexibility and total family functioning. Since the assumption of homogeneity of variance was not met for this data, the obtained Welch’s F(2, 32.35) = 13.04, p = 0.00, indicated a significant effect for the participant’s current relationship status on the scores of family cohesion, as measured by the ln FACES Cohesion score, at the p< .05 level for the single (never married, separated, divorced, widowed), married (first, not first), and life partnership/living together conditions. Post hoc comparison using the Tukey HSD test indicated that the mean family cohesion score for participants who reported they are currently single (M = 0.33, SD = 0.28) was significantly lower than the mean family cohesion scores of participants who reported they were currently married (M = 0.76, SD =
0.39) and participants who reported to be in a life partnership/ living together (M = 0.75, SD = 0.46). However, the conditions of life partnership/ living together and married did not differ significantly from each other.

Similarly, results of the analysis indicated a significant effect for participants’ current relationship status on the scores of total family functioning, as measured by the In FACES Total score at the p< .05 level, F(2, 67) = 9.78, p = .00, for the single (never married, separated, divorced, widowed), married (first, not first), and life partnership/ living together conditions. Post hoc comparison using the Tukey HSD test indicated that the mean total family functioning scores of participants who reported they are currently single (M = 0.33, SD = 0.25) was significantly lower than the mean total family functioning scores of participants who reported they were currently in a life partnership/ living together (M = 0.65, SD = 0.36) and participants who reported being married (M = 0.66, SD = 0.53). However, the conditions of life partnership/ living together and married did not differ significantly from each other. Taken together, these results indicate that participants who are currently living with a partner, whether they are married or living together, report higher levels of family cohesion and overall family functioning than those participants who are currently single parents in the household.

The results of this analysis did not reveal an effect of the family’s current relationship status on any of the study variables of children’s reported behavior problems, family communication, parenting stress or parenting self-esteem.

**Child Gender.** An independent samples t-test was conducted to compare the study variables of child behavior, family functioning, family communication, parenting stress and parents’ self-esteem according to the participants’ children’s gender. The results of the t-test are presented in Table 8.
Table 8

Independent Samples T-Test of the Effects of Child Gender on the Main Variables of the Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Child Gender</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>T</td>
<td>df</td>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>54.83 (10.76)</td>
<td>51.52 (10.57)</td>
<td>1.22</td>
<td>69</td>
<td>.226</td>
</tr>
<tr>
<td></td>
<td>Parent Report of Externalizing Problems</td>
<td>52.46 (10.02)</td>
<td>51.78 (11.44)</td>
<td>.254</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Parent Report of Total Problem Behavior</td>
<td>54.38 (11.24)</td>
<td>52.17 (11.66)</td>
<td>.763</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Teacher Report of Internalizing Problems</td>
<td>58.30 (12.18)</td>
<td>53.50 (12.99)</td>
<td>1.49</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Teacher Report of Externalizing Problems</td>
<td>57.98 (10.10)</td>
<td>54.45 (11.25)</td>
<td>1.30</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Teacher Report of Total Problems</td>
<td>59.81 (11.05)</td>
<td>53.77 (12.62)</td>
<td>2.02</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Family Cohesion</td>
<td>.595 (0.437)</td>
<td>.511 (0.374)</td>
<td>.792</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Family Flexibility</td>
<td>.551 (0.364)</td>
<td>.434 (0.290)</td>
<td>1.86</td>
<td>56.61</td>
</tr>
<tr>
<td></td>
<td>Family Total Functioning</td>
<td>.444 (0.288)</td>
<td>.330 (0.216)</td>
<td>1.34</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Family Communication</td>
<td>.588 (0.280)</td>
<td>.559 (0.264)</td>
<td>.402</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Parenting Stress</td>
<td>.534 (0.257)</td>
<td>.545 (0.245)</td>
<td>-.17</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Parenting Satisfaction</td>
<td>39.96 (6.92)</td>
<td>36.70 (8.05)</td>
<td>1.77</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Parenting Efficacy</td>
<td>32.18 (5.36)</td>
<td>31.09 (4.43)</td>
<td>.853</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Parenting Total Self-Esteem</td>
<td>72.14 (10.72)</td>
<td>67.78 (11.38)</td>
<td>1.58</td>
<td>70</td>
</tr>
</tbody>
</table>

Note: Standard Deviations appear in parentheses below means. * = p ≤ .05.

Results of the analysis reveal a significant difference in teachers’ reports of boys’ and girls’ Total Behavior Problems on the C-TRF. Specifically, teachers reported significantly higher Total Behavior Problems scores for the boys of participants (M = 59.81, SD = 11.05) than for the
girls of participants (M = 53.77, SD = 12.62); t(67) = 2.02, p = 0.047. These results suggest that teachers’ report higher levels of behavior problems in boys than they tend to report for girls.

The results of this analysis did not reveal a significant difference between boys and girls on the remaining study variables of parents’ report of children’s behavior, family functioning, family communication, parenting stress, or parenting self-esteem.

**Child Age.** A Pearson product-moment correlation coefficient was computed to examine the relations between child age and the variables of child’s behavior problems, family functioning, family communication, parenting stress, and parenting self-esteem. The correlations are presented in Table 9.

The results of this analysis revealed no correlation between child’s age and the study variables of interest. Thus, child’s age does not appear to influence participants’ reports of children’s behavior problems, family functioning, family communication, parenting stress, and/or parents’ self-esteem.

**Additional Analysis for Socio-Demographic Factors.** A Pearson chi-square test was performed and no relationship was found between the socio-demographic factors of household income and participants’ ethnic background $x^2 (6, n = 72) = 10.91, p = .019$. This result indicates the relationship found between participants’ household income and report of children’s behavior problems is separate and unique from the relationship found between participants’ ethnic background and report of children’s behavior problems.
Table 9

Pearson Correlations for Child’s Age to Study Variables

<table>
<thead>
<tr>
<th></th>
<th>Child’s Current Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>.102</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>.054</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>.117</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>.196</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>.126</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>.165</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>-.087</td>
</tr>
<tr>
<td>Family Flexibility</td>
<td>-.029</td>
</tr>
<tr>
<td>Family Total Functioning</td>
<td>-.010</td>
</tr>
<tr>
<td>Family Communication</td>
<td>.185</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>-.095</td>
</tr>
<tr>
<td>Parenting Satisfaction</td>
<td>-.013</td>
</tr>
<tr>
<td>Parenting Efficacy</td>
<td>-.026</td>
</tr>
<tr>
<td>Parenting Total Self-Esteem</td>
<td>-.021</td>
</tr>
</tbody>
</table>
Research Questions

The Relationship of Developmental Delay to the prevalence of Behavior Problems in Preschool Children.

The first research question sought to explore if preschool children who are classified and receiving services for a developmental delay present with significantly more behavior problems than what is found within a typically developing sample of preschool children. As the research literature suggests that children with developmental delays are at an increased risk compared to their typically developing peers for developing persistent behavior problems, the following hypothesis was tested:

**Hypothesis 1.** Preschool children who have been identified as having a developmental delay would be reported to have more borderline- and/or clinical-levels of externalizing, internalizing, and total problem behaviors as measured by the CBCL/1½ - 5 and C-TRF.

**Statistical Analysis.** An independent samples t-test was conducted to compare parents’ and teachers’ report of children’s behavioral problems in preschool children identified with developmental delays and in preschool children who were not identified to have developmental delays. The results of the t-test are presented in Table 10.

There was a significant difference in the scores of parent participants’ report of children’s internalizing behavior problems for children with developmental delays (M = 57.73, normal range; SD = 9.12) and children identified as typically developing (M = 43.65, normal range; SD = 7.47); t(69) = -6.13, p = 0.00. This significant difference was also found in the scores of teacher participants’ report of children’s internalizing behavior problems for children with developmental delays (M = 60.58, borderline range; SD = 10.52) and children identified as typically developing (M = 45.12, normal range; SD = 11.21); t(67) = -5.18, p = 0.00). These
results suggests that preschool children with developmental delays and children who are considered typically developing are reported by both their parents and teachers to have varying levels of internalizing behaviors. Specifically, preschool children with developmental delays are reported to have higher levels of internalizing behavior problems than their typically developing peers.

Table 10
Independent Samples T-Test of the Effects of Children’s Developmental Delay Status on Parent and Teacher Reports of Children’s Behavioral Problems

<table>
<thead>
<tr>
<th>Variable</th>
<th>Developmental Delay Status</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Typically Developing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>43.65</td>
<td>57.73</td>
<td></td>
<td>6.13</td>
</tr>
<tr>
<td></td>
<td>(7.47)</td>
<td>(9.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>45.95</td>
<td>54.71</td>
<td></td>
<td>3.42</td>
</tr>
<tr>
<td></td>
<td>(9.01)</td>
<td>(9.96)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>43.90</td>
<td>57.49</td>
<td></td>
<td>5.37</td>
</tr>
<tr>
<td></td>
<td>(7.53)</td>
<td>(10.28)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>45.12</td>
<td>60.58</td>
<td></td>
<td>5.18</td>
</tr>
<tr>
<td></td>
<td>(11.21)</td>
<td>(10.52)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>50.00</td>
<td>59.10</td>
<td></td>
<td>3.31</td>
</tr>
<tr>
<td></td>
<td>(11.73)</td>
<td>(9.15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>47.59</td>
<td>61.25</td>
<td></td>
<td>4.75</td>
</tr>
<tr>
<td></td>
<td>(11.58)</td>
<td>(9.87)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Standard Deviations appear in parentheses below means. * = p ≤ .05.

There was also a significant difference in the scores of parent participants’ report of children’s externalizing behavior problems for children with developmental delays (M = 54.71, normal range; SD = 9.96) and children identified as typically developing (M = 45.95, normal range; SD = 9.01); t(69) = -3.42, p = 0.00. This significant difference was also found in the scores of teacher participants’ report of children’s externalizing behavior problems for children
with developmental delays (M = 59.10, normal range; SD = 9.15) and children identified as
typically developing (M = 50.00, normal range; SD = 11.73); t(67) = -3.31, p = 0.00. These
results suggest that preschool children with developmental delays and children who are
considered typically developing are reported by both their parents and teachers to have varying
levels of externalizing behaviors. Specifically, preschool children with developmental delays are
reported to have higher levels of externalizing behavior problems than their typically developing peers.

Finally, a significant difference was found in the scores of parent participants’ report of
children’s total problem behaviors for children with developmental delays (M = 57.49, normal
range; SD = 10.28) as compared to their typically developing peers (M = 43.90, normal range;
SD = 7.53); t(69) = -5.37, p = 0.00. This significant difference was also found in the scores of
teacher participants’ report of children’s total problem behaviors for children with developmental
delays (M = 61.25, borderline range; SD = 9.87) as compared to their typically developing peers
(M = 47.59, normal range; SD = 11.58); t(67) = -4.75, p = 0.00. These results suggest that
preschool children with developmental delays and children who are considered typically
developing are reported by both their parents and teachers to have varying levels of total
behavior problems. Specifically, preschool children with developmental delays are reported to
have higher levels of total problem behaviors than their typically developing peers.

A Pearson product-moment correlation coefficient was also computed to assess the
relationship between parents’ and teachers’ reports of children’s behavior problems. There was a
positive correlation between parents’ and teachers’ reports of children’s internalizing (r = .374, n
= 68, p = .002), externalizing (r = .320, n = 68, p = .008), and total problem behaviors (r = .350,
n = 68, p = .003) at the p ≤ 0.01 level. These results indicate that increases in parents’ report of
children’s behavior problems were correlated with increases in teachers’ report of children’s behavior problems. Thus, parents and teachers appear to have similar perceptions of the behavior problems of children in the sample.

Although parents’ and teachers’ mean scores for the internalizing, externalizing, and total problem behaviors of preschool children with developmental delays were reported to be in the normal to borderline ranges, all standard deviations of the mean scores included the borderline and clinical ranges. However, the same was not found for parents’ and teachers’ reports of behavior problems for typically developing preschool children in the sample, as these mean scores and standard deviations generally remained in the normal range. Thus, the results of the analysis reveal that preschool children with developmental delays were reported by their parents and teachers on the CBCL and C-TRF, respectively, to have higher levels of internalizing, externalizing, and total problem behaviors than their typically developing peers. Hypothesis 1 was supported in this sample.


The second research question examined the extent to which child-specific variables, such as type and/or severity of developmental delay, are related to the prevalence of behavior problems of preschool children with developmental delays. As the research literature suggests that children with mild cognitive impairments or delays may present with a greater risk for both externalizing and internalizing behavior problems, the following hypothesis was tested:

Hypothesis 2. Preschool children with lower levels of cognitive delay will be reported to have more borderline- and/or clinical-levels of externalizing, internalizing, and total problem behaviors as measured by the CBCL/1½ - 5 and C-TRF.
**Statistical Analysis.** Multiple one-way between subjects ANOVAs were conducted to compare the effect of severity of cognitive delay on parents’ and teachers’ report of children’s behavioral problems in preschool children identified with developmental delays and in preschool children who were not identified to have developmental delays. The results of the ANOVAs are presented in Table 11.

There was a significant effect of severity of cognitive delay (no cognitive delay, mild cognitive delay, moderate cognitive delay and severe cognitive delay) on the scores of parent participants’ report of children’s internalizing behavior problems at the p< .05 level, [F(3, 67) = 7.80, p = 0.00]. Post hoc comparisons using the Tukey HSD test indicated that the mean CBCL internalizing problem behavior score for children identified with a mild cognitive delay (M = 62.56, SD = 8.47) was significantly different than for children who were not identified as having a cognitive delay (M = 48.59, SD = 9.61). However, the CBCL internalizing problem behavior scores of children identified with moderate cognitive delays (M = 55.20, SD = 9.81) or severe cognitive delays (M = 54.13, SD = 9.66) did not significantly differ from the other conditions.

Table 11

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>2125.99</td>
<td>3</td>
<td>708.67</td>
<td>7.99</td>
<td>.000***</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>1033.80</td>
<td>3</td>
<td>344.60</td>
<td>3.52</td>
<td>.020*</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>2202.66</td>
<td>3</td>
<td>734.22</td>
<td>7.23</td>
<td>.000***</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>3127.37</td>
<td>3</td>
<td>1042.50</td>
<td>8.93</td>
<td>.000***</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>853.03</td>
<td>3</td>
<td>284.34</td>
<td>2.77</td>
<td>.049*</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>1867.34</td>
<td>3</td>
<td>622.45</td>
<td>5.30</td>
<td>.002**</td>
</tr>
</tbody>
</table>

Note: Between-Subjects Variables Reported. *p < .05; ***p < .001.
There was also a significant effect of severity of cognitive delay on the scores of teacher participants’ report of children’s internalizing behavior problems at the p < .05 level for the no cognitive delay, mild cognitive delay, moderate cognitive delay, and severe cognitive delay conditions [F(3, 65) = 8.93, p = 0.00]. Post hoc comparisons using the Tukey HSD test indicated that the mean C-TRF internalizing problem behavior score for children identified with a mild cognitive delay (M = 60.38, SD = 8.64), moderate cognitive delay (M = 65.00, SD = 7.10) or severe cognitive delay (M = 62.13, SD = 9.83) were significantly different than for children with no identified cognitive delay (M = 49.30, SD = 13.24). However, the C-TRF internalizing problem behavior scores for children within the three conditions of cognitive delay (mild, moderate, severe) did not differ significantly from each other. Taken along with the parent participants’ reports of children’s internalizing behavior problems, these results suggest that the very presence of a cognitive delay does effect the reported levels of children’s internalizing behavior problems. Yet, the severity of the cognitive delay does not appear to significantly increase a parents’ or teachers’ report of children’s levels of internalizing behavior problems.

There was a significant effect of severity of cognitive delay (no cognitive delay, mild cognitive delay, moderate cognitive delay and severe cognitive delay) on the scores of parent participants’ report of children’s externalizing behavior problems at the p < .05 level, [F(3, 67) = 3.52, p = 0.02]. Post hoc comparisons using the Tukey HSD test indicated that the mean CBCL externalizing problem behavior score for children identified with a mild cognitive delay (M = 57.69, SD = 12.02) was significantly different than for children who were not identified as having a cognitive delay (M = 48.34, SD = 10.15). However, the CBCL externalizing problem behavior scores of children identified with moderate cognitive delays (M = 54.40, SD = 8.30) or
severe cognitive delays (M = 52.88, SD = 5.94) did not significantly differ from the other conditions.

Similarly, there was an effect of severity of cognitive delay (no cognitive delay, mild cognitive delay, moderate cognitive delay and severe cognitive delay) on the scores of teacher participants’ report of children’s externalizing behavior problems at the p< .05 level, [F (3, 65) = 2.77, p = 0.05]. Post hoc comparisons using the Tukey HSD test indicated that the mean C-TRF externalizing problem behavior score for children identified with a moderate cognitive delay (M = 61.27, SD = 8.20) was different than for children with no identified cognitive delay (M = 52.97, SD = 11.92). However, the C-TRF externalizing problem behavior scores for children within the three conditions of cognitive delay (mild, moderate, severe) did not differ significantly from each other. Again, both the parent and teacher participants’ reports of children’s externalizing behavior problems suggest that the presence of a cognitive delay effects the reported levels of children’s externalizing behavior problems. Yet, the severity of the cognitive delay does not appear to significantly increase a parents’ or teachers’ report of children’s levels of externalizing behavior problems.

Finally, there was a significant effect of severity of cognitive delay (no cognitive delay, mild cognitive delay, moderate cognitive delay and severe cognitive delay) on the scores of parent participants’ report of children’s total problem behaviors at the p< .05 level, [F(3, 67) = 7.23, p = 0.00]. Post hoc comparisons using the Tukey HSD test indicated that the mean CBCL total problem behavior score for children identified with a mild cognitive delay (M = 61.63, SD = 11.64) and moderate cognitive delay (M = 56.40, SD = 9.28) was significantly different than for children who were not identified as having a cognitive delay (M = 47.94, SD = 10.04).
However, the CBCL total problem behavior scores of children identified with severe cognitive delays (M = 55.50, SD = 7.98) did not significantly differ from the other conditions.

These results were repeated among teachers, as there was an effect of severity of cognitive delay (no cognitive delay, mild cognitive delay, moderate cognitive delay and severe cognitive delay) on the scores of teacher participants’ report of children’s total problem behaviors at the p< .05 level, [F (3, 65) = 5.30, p = 0.002]. Post hoc comparisons using the Tukey HSD test indicated that the mean C-TRF total problem behavior score for children identified with a mild cognitive delay (M = 61.31, SD = 8.70) and moderate cognitive delay (M = 64.07, SD = 7.01) was different than for children with no identified cognitive delay (M = 52.07, SD = 13.54). However, the C-TRF total problem behavior scores for children identified with severe cognitive delays (M = 61.25, SD = 8.46) did not differ significantly from the other conditions.

Overall, the results consistently revealed that the presence of a cognitive delay affected both parents’ and teachers’ reports of children’s behavior problems. Specifically, the presence of a cognitive delay appears to be associated with higher reported levels of children’s internalizing, externalizing and total problem behaviors. Yet, the level or severity of the cognitive delay does not appear to be related to parents’ or teachers’ report of children’s levels of behavior problems, including internalizing, externalizing and total problem behaviors. Thus, Hypothesis 2 was not supported in this sample.

**Hypothesis Three.** Preschool children with more severe levels of cognitive delays will be reported to have more borderline- and/or clinical-levels of externalizing behavior problems and fewer internalizing behavior problems as measured by the CBCL/ 1½ - 5 and C-TRF.
**Statistical Analysis.** Paired-samples t-tests were conducted to examine the levels of internalizing and externalizing behavior problems in preschool children with moderate and severe cognitive delays. The results of the paired samples t-tests are presented in Table 12.

Table 12

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type of Behavior Problems</th>
<th>Internalizing Behavior Problems</th>
<th>Externalizing Behavior Problems</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher Report of Behavior for Children with Moderate Cognitive Delay</td>
<td>Internalizing Behavior Problems</td>
<td>65.00 (7.10)</td>
<td>61.27 (8.20)</td>
<td>1.54</td>
<td>14</td>
<td>.136</td>
</tr>
<tr>
<td>Parent Report of Behavior for Children with Severe Cognitive Delay</td>
<td>Internalizing Behavior Problems</td>
<td>54.13 (9.66)</td>
<td>52.88 (5.94)</td>
<td>.541</td>
<td>7</td>
<td>.606</td>
</tr>
<tr>
<td>Teacher Report of Behavior for Children with Severe Cognitive Delay</td>
<td>Internalizing Behavior Problems</td>
<td>62.13 (9.83)</td>
<td>58.63 (7.05)</td>
<td>1.09</td>
<td>7</td>
<td>.311</td>
</tr>
</tbody>
</table>

Note: Standard Deviations appear in parentheses below means.

Results of the paired-samples t-test in the sample of children identified as having a moderate cognitive delay (n = 15) revealed no significant difference between their internalizing behaviors (M = 55.2, SD = 9.81) and externalizing behaviors (M = 54.4, SD = 8.30) as measured by their parents’ report on the CBCL, t (14) = 0.33, p = 0.75. Similarly, no significant difference was found between the internalizing behaviors (M = 65.0, SD = 7.10) and externalizing behaviors (M = 61.3, SD = 8.20) of children with moderate cognitive delays as reported by their
teachers on the C-TRF, \( t (14) = 1.58, p = 0.14 \). These results suggest that there is no difference between the reported levels of internalizing and externalizing behaviors in children with moderate cognitive delays.

Similarly, the results of the paired-samples t-test in the sample of children identified as having a severe cognitive delay (\( n = 8 \)) revealed no significant difference between their internalizing behaviors (\( M = 54.1, \text{SD} = 9.66 \)) and externalizing behaviors (\( M = 52.9, \text{SD} = 5.93 \)) as measured by their parents’ report on the CBCL, \( t (7) = 0.54, p = 0.61 \). Similarly, no significant difference was found between the internalizing behaviors (\( M = 62.1, \text{SD} = 9.83 \)) and externalizing behaviors (\( M = 58.6, \text{SD} = 7.05 \)) of children with severe cognitive delays as reported by their teachers on the C-TRF, \( t (7) = 1.09, p = 0.31 \). These results suggest that there is no difference between the reported levels of internalizing and externalizing behaviors in children with severe cognitive delays. Thus, Hypothesis 3 was not supported in this sample.

Also related to the second research question, additional multiple one-way between subjects ANOVAs were conducted to examine the extent to which additional child-specific variables, such as type and/or severity of developmental delays in the areas of speech/language skills, adaptive skills and/or motor skills, are related to the prevalence of behavior problems of preschool children with developmental delays.

**Speech/Language Delay.** Consistent with the results obtained in the examination of the severity of cognitive delays on reports of children’s behavior problems, the presence of a speech/language delay appears to be associated with an increase in the reported levels of children’s total problem behaviors. The results of the ANOVA are presented in Table 13.
Table 13

One-Way ANOVA Tests of the Effects of Severity of Speech Delay on Children’s Behavior Problems

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>2346.74</td>
<td>3</td>
<td>782.25</td>
<td>9.17</td>
<td>.000***</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>747.91</td>
<td>3</td>
<td>249.30</td>
<td>2.44</td>
<td>.072</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>2072.81</td>
<td>3</td>
<td>690.94</td>
<td>6.6868</td>
<td>.001**</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>4342.79</td>
<td>3</td>
<td>1447.60</td>
<td>14.76</td>
<td>.000***</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>1664.30</td>
<td>3</td>
<td>554.77</td>
<td>6.15</td>
<td>.001**</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>3182.34</td>
<td>3</td>
<td>1060.78</td>
<td>10.90</td>
<td>.000***</td>
</tr>
</tbody>
</table>

Note: Between-Subjects Variables Reported. **p < .01; ***p < .001.

Since the assumption of homogeneity of variance was not met for this data, the obtained Welch’s $F(3, 24.54) = 6.46, p = .002$, indicated a significant effect for severity of speech delay on the scores of parent participants’ report of children’s total problem behaviors at the $p < .05$ level for the no speech delay, mild speech delay, moderate speech delay and severe speech delay conditions. Post hoc comparison using the Tukey HSD test indicated that the mean CBCL total problem behavior score for children identified with a mild speech delay ($M = 61.13$, $SD = 15.83$), moderate speech delay ($M = 56.39$, $SD = 10.04$), and severe speech delay ($M = 56.59$, $SD = 8.60$) was significantly different than for children with no speech delay ($M = 46.13$, $SD = 9.33$). Again, the CBCL total problem behavior scores for children within the three conditions of speech delay (mild, moderate, severe) did not differ significantly from each other. This same result was repeated in the comparison of severity of children’s speech delay to teachers’ report of children’s total problem behavior on the C-TRF [$F(3, 65) = 10.90, p = 0.00$], such that the conditions of mild speech delay ($M = 65.25$, $SD = 6.52$), moderate speech delay ($M = 57.00$, $SD$
= 10.23), and severe speech delay (M = 64.26, SD = 9.54) was significantly different than children with no identified speech delay (M = 48.40, SD = 10.87), although the three conditions did not differ significantly from each other. Overall, the presence of a speech/language skills delay appears related to the reported levels of children’s behavior problems, such that children with speech/language delays are reported to have higher levels of behavior problems. However, the level or severity of the speech/language delay does not appear related to parents’ and teachers’ reports of children’s total behavior problems.

**Adaptive Skills Delay.** Similarly, there was a significant effect of severity of adaptive skills delay (no adaptive skills delay, mild adaptive skills delay, moderate adaptive skills delay, severe adaptive skills delay) on the scores of parent participants’ report of children’s total problem behaviors at the p< .05 level, [F(3, 67) = 6.23, p = 0.00]. The results of the ANOVA are presented in Table 14.

**Table 14**
One-Way ANOVA Tests of the Effects of Severity of Adaptive Skills Delay on Children’s Behavior Problems

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>809.19</td>
<td>3</td>
<td>269.73</td>
<td>2.66</td>
<td>.055</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>1965.45</td>
<td>3</td>
<td>655.15</td>
<td>6.23</td>
<td>.001**</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>2554.96</td>
<td>3</td>
<td>851.65</td>
<td>6.78</td>
<td>.000***</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>1174.47</td>
<td>3</td>
<td>391.49</td>
<td>4.00</td>
<td>.011*</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>2074.51</td>
<td>3</td>
<td>691.50</td>
<td>6.05</td>
<td>.001**</td>
</tr>
</tbody>
</table>

*Note: Between-Subjects Variables Reported. *p < .05; **p < .01; ***p < .001.

Post hoc comparisons using the Tukey HSD test indicated that the mean CBCL total problem behavior score for children identified with a mild adaptive skills delay (M = 59.06, SD
= 11.01) and moderate adaptive skills delay (M = 60.27, SD = 10.27) was significantly different than for children who were not identified as having an adaptive skills delay (M = 48.79, SD = 10.25). However, the CBCL total problem behavior scores of children identified with severe adaptive skills delays (M = 57.50, SD = 3.70) did not significantly differ from the other conditions. This same result was repeated in the comparison of severity of children’s adaptive skills delay to teachers’ report of children’s total problem behavior on the C-TRF [F(3, 65) = 6.05, p = 0.00], such that the conditions of mild adaptive skills delay (M = 62.50, SD = 9.40), and moderate adaptive skills delay (M = 65.42, SD = 11.74) was significantly different than children with no identified adaptive skills delay (M = 52.60, SD = 11.26). However, the C-TRF total problem behavior scores of children identified with severe adaptive skills delays (M = 60.75, SD = 5.90) did not significantly differ from the other conditions and the two conditions (mild and moderate) did not differ significantly from each other. Again, the presence of an adaptive skills delay appears to be related to the reported levels of children’s behavior problems, such that children with adaptive skills delays are reported to have higher levels of behavior problems. However, the level or severity of the adaptive skills delay does not appear to be related to parents’ and teachers’ reports of children’s total behavior problems.

**Motor Skills Delay.** The assumption of homogeneity of variance was not met for the data examining the severity of motor skills delay to children’s behavior problems. The results of the ANOVA are presented in Table 15.
Table 15

One-Way ANOVA Tests of the Effects of Severity of Motor Skills Delay on Children’s Behavior Problems

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>1723.18</td>
<td>3</td>
<td>574.39</td>
<td>6.07</td>
<td>.001***</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>648.23</td>
<td>3</td>
<td>216.08</td>
<td>2.08</td>
<td>.111</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>1352.74</td>
<td>3</td>
<td>450.91</td>
<td>3.95</td>
<td>.012*</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>3904.65</td>
<td>3</td>
<td>1301.55</td>
<td>12.42</td>
<td>.000***</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>1611.63</td>
<td>3</td>
<td>537.21</td>
<td>5.90</td>
<td>.001**</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>3174.67</td>
<td>3</td>
<td>1058.22</td>
<td>10.86</td>
<td>.000***</td>
</tr>
</tbody>
</table>

Note: Between-Subjects Variables Reported. *p < .05; **p < .01; ***p < .001.

The obtained Welch’s $F(3, 24.69) = 3.40$, p = 0.03, indicated a significant effect for severity of motor skills delay (no motor skills delay, mild motor skills delay, moderate motor skills delay and severe motor skills delay) on the scores of parent participants’ report of children’s total problem behaviors at the p< .05 level. Post hoc comparison using the Tukey HSD test indicated that the mean CBCL total problem behavior score for children identified with a mild motor skills delay (M = 58.91, SD = 12.85) was significantly different than for children with no motor skills delay (M = 48.90, SD = 10.68). The CBCL total problem behavior scores for children with moderate motor skills delay (M = 56.57, SD = 7.19) and severe motor skills delay (M = 53.42, SD = 6.90) did not differ significantly from the other conditions. A similar result was repeated in the comparison of severity of children’s motor skills delay (no motor skills delay, mild motor skills delay, moderate motor skills delay and severe motor skills delay) to teachers’ report of children’s total problem behavior on the C-TRF [$F(3, 65) = 10.86$, p = 0.00], such that the conditions of mild motor skills delay (M = 61.54, SD = 11.40), moderate motor
skills delay (M = 62.29, SD = 5.62), and severe motor skills delay (M = 66.33, SD = 7.34) were significantly different than children with no identified motor skills delay (M = 49.42, SD = 10.12), although the three conditions did not differ significantly from each other. Once again, the presence of a motor skills delay appears to be related to the reported levels of children’s behavior problems, such that children with motor skills delays are reported to have higher levels of behavior problems. However, the level or severity of the motor skills delay does not appear to be related to parents’ and teachers’ reports of children’s total behavior problems.

Multiple Delays. Multiple one-way between subjects ANOVAs were also conducted to examine the relationship between the number of developmental delays present on parents’ and teachers’ report of children’s behavioral problems in preschool children identified with developmental delays and in preschool children who were not identified to have developmental delays. The results of the ANOVAs are presented in Table 16.

Table 16
One-Way ANOVA Tests of the Effects of Multiple Developmental Delays Present on Children’s Behavior Problems

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>3258.63</td>
<td>4</td>
<td>814.66</td>
<td>11.19</td>
<td>.000***</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>1614.81</td>
<td>4</td>
<td>403.70</td>
<td>4.45</td>
<td>.003**</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>3266.32</td>
<td>4</td>
<td>816.58</td>
<td>9.39</td>
<td>.000***</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>4786.14</td>
<td>4</td>
<td>1196.54</td>
<td>12.91</td>
<td>.000***</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>1897.19</td>
<td>4</td>
<td>474.30</td>
<td>5.39</td>
<td>.001**</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>3592.16</td>
<td>4</td>
<td>898.04</td>
<td>9.72</td>
<td>.000***</td>
</tr>
</tbody>
</table>

Note: Between-Subjects Variables Reported. **p < .01; ***p < .001
There was a significant effect of the number of developmental delays present on the scores of parent participants’ report of children’s total problem behaviors at the p < .05 level for the one delay present, two delays present, three delays present, four delays present, and no delays present conditions [F(4, 66) = 9.39, p = 0.00]. Post hoc comparisons using the Tukey HSD test indicated that the mean CBCL total problem behavior score for children identified with one developmental delay (M = 63.00, SD = 4.00), two developmental delays (M = 55.50, SD = 12.48), three developmental delays (M = 53.19, SD = 8.03), and four developmental delays (M = 60.33, SD = 10.59) was significantly different than for children who were identified as no developmental delays present (M = 43.90, SD = 7.53). However, the CBCL total problem behavior scores of children identified within the developmental delay conditions (one, two, three, four delays present) did not significantly differ from each other.

A similar result was reported in the comparison of the number of developmental delays present to teachers’ report of children’s total problem behavior on the C-TRF. Specifically, there was a significant effect of the number of developmental delays (no developmental delays, one developmental delay, two developmental delays, three developmental delays and four developmental delays) present on the scores of teacher participants’ report of children’s total problem behaviors at the p < .05 level, [F(4, 64) = 9.72, p = 0.00]. Post hoc comparisons using the Tukey HSD test indicated that the mean C-TRF total problems behavior score for children with three developmental delays present (M = 63.00, SD = 10.63) and four developmental delays present (M = 64.13, SD = 8.13) was significantly different than children with no identified developmental delays present (M = 47.59, SD = 11.58). However, the C-TRF total problem behavior scores of children identified with one developmental delay present (M = 48.33, SD = 5.03) and two developmental delays present (M = 53.75, SD = 7.46) did not significantly differ.
from the other conditions and the two conditions (three and four delays present) did not differ significantly from each other. Taken together, these results indicate that the presence of at least one developmental delay appears to be related to the reported levels of children’s behavior problems. However, the specific number of developmental delays present does not appear related to parents’ and teachers’ reports of children’s total behavior problems.

The only variation from this finding occurred in the analysis of the number of developmental delays present to teachers’ report of children’s internalizing problem behaviors. Specifically, there was a significant effect of the number of developmental delays present on the scores of teacher participants’ report of children’s internalizing problem behaviors at the $p < .05$ level for one developmental delay present, two developmental delays present, three developmental delays present, four developmental delays present, and no developmental delays present [$F(4, 64) = 12.91, p = 0.00$]. Post hoc comparisons using the Tukey HSD test indicated that the mean C-TRF internalizing problems behavior score for children with four developmental delay present ($M = 64.75, SD = 7.30$) was significantly different than for children with one developmental delay present ($M = 48.00, SD = 12.12$) and children with two developmental delays present ($M = 50.50, SD = 9.97$), although the conditions of one developmental delay and two developmental delays present did not differ significantly from each other. Additionally, both children with three developmental delays present ($M = 61.65, SD = 10.31$) and four developmental delays present displayed significantly different mean C-TRF internalizing problems behavior scores than children with no developmental delays present ($M = 45.12, SD = 11.21$). These results indicate that the presence of multiple developmental delays appears related to teachers’ reported levels of children’s internalizing behaviors. Particularly, children with three
or more developmental delays are reported by teachers to have higher levels of internalizing behavior problems.

**The Relationship of Family Functioning to the prevalence of Behavior Problems in Preschool Children with Developmental Delays.**

**Family Functioning.** The third research question sought to examine the extent to which family functioning, such as family cohesion, flexibility, and communication is related to the prevalence of behavior problems in preschool children with developmental delays. As the research literature has demonstrated a connection between functional impairment in the family system and a child’s behavioral and social-emotional outcomes, the following hypothesis was tested:

**Hypothesis 4.** Levels of family functioning, including family cohesion and flexibility, and the overall family functioning, as measured by the FACES IV, will be associated with the prevalence of behavioral problems in preschool children with developmental delay.

**Statistical Analysis.** A Pearson product-moment correlation coefficient was computed to assess the relationship between family functioning, including family cohesion, flexibility, and the overall family system, and parents’ and teachers’ report of children’s behavioral problems in preschool children identified with developmental delays. The correlations are presented in Table 17.

There was no correlation between the two variables of family cohesion and children’s internalizing problem behaviors as reported by parents on the CBCL ($r = -0.123$, $n = 49$, $p = 0.40$) or teachers on the C-TRF ($r = -0.09$, $n = 50$, $p = 0.95$). There was also no correlation between the two variables of family cohesion and children’s externalizing behaviors as reported by parents on the CBCL ($r = -0.078$, $n = 49$, $p = 0.59$) or teachers on the C-TRF ($r = -0.043$, $n = 50$, $p = 0.77$).
Additionally, there was no correlation between the two variables of family cohesion and children’s total problem behaviors as reported by parents on the CBCL ($r = -0.144$, $n = 49$, $p = 0.32$) or teachers on the C-TRF ($r = -0.020$, $n = 50$, $p = 0.90$). These results suggest that there is not a relationship between family cohesion and children’s internalizing, externalizing, or total problem behaviors as reported by parents and teachers in the sample.

Table 17

Pearson Correlations for Family Functioning to Child Behavior Problems

<table>
<thead>
<tr>
<th>Family Functioning</th>
<th>Cohesion</th>
<th>Flexibility</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>-0.123</td>
<td>-0.124</td>
<td>-0.134</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>-0.078</td>
<td>-0.058</td>
<td>-0.085</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>-0.144</td>
<td>-0.113</td>
<td>-0.137</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>-0.009</td>
<td>-0.037</td>
<td>0.026</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>-0.043</td>
<td>-0.023</td>
<td>-0.066</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>-0.018</td>
<td>0.019</td>
<td>0.005</td>
</tr>
</tbody>
</table>
There was no correlation between the two variables of family flexibility and children’s internalizing problem behaviors as reported by parents on the CBCL ($r = -0.124, n = 49, p = 0.40$) or teachers on the C-TRF ($r = -0.037, n = 50, p = 0.80$). There was also no correlation between the two variables of family flexibility and children’s externalizing behaviors as reported by parents on the CBCL ($r = -0.058, n = 49, p = 0.69$) or teachers on the C-TRF ($r = -0.023, n = 50, p = 0.87$). Additionally, there was no correlation between the two variables of family flexibility and children’s total problem behaviors as reported by parents on the CBCL ($r = -0.113, n = 49, p = 0.44$) or teachers on the C-TRF ($r = 0.019, n = 50, p = 0.89$). These results suggest that there is not a relationship between family flexibility and children’s internalizing, externalizing, or total problem behaviors as reported by parents and teachers in the sample.

There was no correlation between the two variables of family total functioning and children’s internalizing problem behaviors as reported by parents on the CBCL ($r = -0.134, n = 49, p = 0.36$) or teachers on the C-TRF ($r = 0.026, n = 50, p = 0.80$). There was also no correlation between the two variables of family total functioning and children’s externalizing behaviors as reported by parents on the CBCL ($r = -0.085, n = 49, p = 0.56$) or teachers on the C-TRF ($r = -0.066, n = 50, p = 0.65$). Additionally, there was no correlation between the two variables of family total functioning and children’s total problem behaviors as reported by parents on the CBCL ($r = -0.137, n = 49, p = 0.35$) or teachers on the C-TRF ($r = 0.005, n = 50, p = 0.98$). These results suggest that there is not a relationship between family total functioning and children’s internalizing, externalizing, or total problem behaviors as reported by parents and teachers in the sample.

Overall, these results suggest that there was not a relationship between family functioning, including family cohesion, flexibility and total functioning, as reported by
participants’ on the FACES IV and parents’ and teachers’ report of children’s behavior problems in preschool children identified with developmental delays. Thus, Hypothesis 4 was not supported in this sample.

**Family Communication.** Also related to the third research question and previously stated hypothesis, the research literature suggests that family communication can influence the behavioral outcomes of young children. Thus, the following hypothesis was tested:

**Hypothesis 5.** Family Communication, as measured by the FACES IV, will be associated with the prevalence of behavioral problems in preschool children with developmental delay.

**Statistical Analysis.** A Pearson product-moment correlation coefficient was computed to assess the relationship between family communication and parents’ and teachers’ report of children’s behavioral problems in preschool children identified with developmental delays. The correlations are presented in Table 18.

There was no correlation between the two variables of family communication and children’s internalizing problem behaviors as reported by parents on the CBCL ($r = -.130$, $n = 48$, $p = 0.38$) or teachers on the C-TRF ($r = -.007$, $n = 49$, $p = 0.96$). There was also no correlation between the two variables of family communication and children’s externalizing behaviors as reported by parents on the CBCL ($r = -.119$, $n = 48$, $p = 0.42$) or teachers on the C-TRF ($r = -.084$, $n = 49$, $p = 0.57$). Additionally, there was no correlation between the two variables of family communication and children’s total problem behaviors as reported by parents on the CBCL ($r = -.151$, $n = 48$, $p = 0.31$) or teachers on the C-TRF ($r = -.041$, $n = 49$, $p = 0.78$).
Table 18

Pearson Correlations for Family Communication to Child Behavior Problems

<table>
<thead>
<tr>
<th></th>
<th>Family Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>-.130</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>-.119</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>-.151</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>-.007</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>-.084</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>-.041</td>
</tr>
</tbody>
</table>

Again, these results suggest that there was not a relationship between family communication as reported by participants on the FACES IV and parents’ and teachers’ report of children’s behavior problems in a preschool sample of children identified with developmental delays. Thus, Hypothesis 5 was not supported in this sample.

The Relationship of Parent Variables to the prevalence of Behavior Problems of Preschool Children with Developmental Delays.

Parenting Stress. The fourth research question was presented to explore the extent to which parent variables, such as parenting stress and parenting self-esteem, including parenting-efficacy and satisfaction, are related to the prevalence of behavior problems of preschool
children with developmental delays. As the research literature has linked elevated levels of parenting stress to dysfunctional parent-child relationships and adverse child outcomes, the following hypothesis was tested:

**Hypothesis 6.** Parenting Stress, as measured by the PSI-SF, will be associated with the prevalence of behavior problems in preschool children with developmental delays.

**Statistical Analysis.** A Pearson product-moment correlation coefficient was computed to assess the relationship between parenting stress and parents’ and teachers’ report of children’s behavioral problems in preschool children identified with developmental delays. The correlations are presented in Table 19.

Table 19

**Pearson Correlations for Parenting Stress to Child Behavior Problems**

<table>
<thead>
<tr>
<th></th>
<th>Parenting Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>.375**</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>.451**</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>.465**</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>.031</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>.119</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>.089</td>
</tr>
</tbody>
</table>

Note: ** p < .01 level (2 tailed).
There was a moderate positive correlation between the two variables of parenting stress and children’s internalizing problem behaviors as reported by parents on the CBCL ($r = .375$, $n = 51$, $p = 0.01$). There was also a strong positive correlation between the two variables of parenting stress and children’s externalizing problem behaviors as reported by parents on the CBCL ($r = .451$, $n = 51$, $p = 0.00$). Additionally, a strong positive correlation was found between the two variables of parenting stress and children’s total problem behaviors as reported by parents on the CBCL ($r = .465$, $n = 51$, $p = 0.00$). There was no correlation between the variables of parenting stress and teacher’s report of children’s internalizing behavior ($r = .031$, $n = 52$, $p = .827$), externalizing behavior ($r = .119$, $n = 52$, $p = .400$), or total problem behavior ($r = .089$, $n = 52$, $p = .532$) on the C-TRF. Overall, there was a moderate to strong positive relationship between parenting stress and children’s behavior problems. In other words, increases in parenting stress were correlated with an increase in parents’ report of their children’s internalizing, externalizing, and total problem behaviors. Thus, Hypothesis 6 was supported within this sample.

As Hypothesis 6 was supported and a significant relationship was found between parenting stress and the behavior problems of children identified with a developmental delay, an one factor ANOVA using GLM-univariate analysis was conducted to examine the effect of child’s developmental delay status and parenting stress on children’s reported behavior problems. There was not a significant interaction between the effects of a child’s developmental delay status and parenting stress on parents’ report of children’s internalizing problem behavior ($F [1, 67] = 1.146$, $p = .288$), externalizing problem behavior ($F [1, 67] = .134$, $p = .715$), or total problem behavior ($F [1, 67] = .230$, $p = .633$) on the CBCL. Additionally, there was not a significant interaction between the effects of a child’s developmental delay status and parenting stress on teachers’ report of children’s internalizing problem behavior ($F [1, 65] = .602$, $p = .
.440), externalizing problem behavior (F [1, 65] = 1.157, p = .286), or total problem behavior (F [1, 65] = .736, p = .394) on the C-TRF. Taken together, these results suggest that a child’s developmental delay status does not modify the relationship found between parenting stress and parents’ or teachers’ reports of children’s behavior problems. Thus, parenting stress does appear to be a risk-factor for children’s behavior problems, regardless of whether the child does or does not have a developmental delay.

**Parenting Self-Esteem.** Also related to the fourth research question and previously stated hypothesis, the research literature suggests that parenting self-esteem, including the dimensions of parenting self-efficacy and parenting satisfaction, has emerged as a significant factor in the relationship between parent functioning and children’s behavioral outcomes. Thus, the following hypothesis was tested:

**Hypothesis 7.** Parenting self-esteem, including parenting self-efficacy and satisfaction, as measured by the PSOC, will be associated with the prevalence of behavior problems in preschool children with developmental delays.

**Statistical Analysis.** A Pearson product-moment correlation coefficient was computed to assess the relationship between parenting self-esteem, including parenting efficacy and parenting satisfaction, and parents’ and teachers’ report of children’s behavioral problems in preschool children identified with developmental delays. The correlations are presented in Table 20.
Table 20

Pearson Correlations for Parenting Self-Esteem to Child Behavior Problems

<table>
<thead>
<tr>
<th>Parenting Self-Esteem</th>
<th>Parenting Satisfaction</th>
<th>Parenting Efficacy</th>
<th>Total Self-Esteem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Report of Internalizing Problems</td>
<td>-.106</td>
<td>-.153</td>
<td>-.137</td>
</tr>
<tr>
<td>Parent Report of Externalizing Problems</td>
<td>-.181</td>
<td>-.097</td>
<td>-.161</td>
</tr>
<tr>
<td>Parent Report of Total Problem Behavior</td>
<td>-.196</td>
<td>-.172</td>
<td>-.205</td>
</tr>
<tr>
<td>Teacher Report of Internalizing Problems</td>
<td>.059</td>
<td>-.128</td>
<td>-.018</td>
</tr>
<tr>
<td>Teacher Report of Externalizing Problems</td>
<td>.046</td>
<td>.051</td>
<td>.053</td>
</tr>
<tr>
<td>Teacher Report of Total Problems</td>
<td>.084</td>
<td>-.039</td>
<td>.039</td>
</tr>
</tbody>
</table>

There was no correlation between the two variables of parenting efficacy and children’s internalizing problem behaviors as reported by parents on the CBCL ($r = -.153, n = 51, p = 0.28$) or teachers on the C-TRF ($r = -.128, n = 52, p = 0.37$). There was also no correlation between the two variables of parenting efficacy and children’s externalizing behaviors as reported by parents on the CBCL ($r = -.097, n = 51, p = 0.50$) or teachers on the C-TRF ($r = .051, n = 52, p = 0.72$). Additionally, there was no correlation between the two variables of parenting efficacy and
children’s total problem behaviors as reported by parents on the CBCL \( (r = -0.172, n = 51, p = 0.23) \) or teachers on the C-TRF \( (r = -0.039, n = 52, p = 0.79) \). These results suggest that there is not a relationship between parenting efficacy and children’s internalizing, externalizing, or total problem behaviors as reported by parents and teachers in the sample.

There was no correlation between the two variables of parenting satisfaction and children’s internalizing problem behaviors as reported by parents on the CBCL \( (r = -0.106, n = 51, p = 0.46) \) or teachers on the C-TRF \( (r = 0.059, n = 52, p = 0.68) \). There was also no correlation between the two variables of parenting satisfaction and children’s externalizing behaviors as reported by parents on the CBCL \( (r = -0.181, n = 51, p = 0.20) \) or teachers on the C-TRF \( (r = 0.046, n = 52, p = 0.75) \). Additionally, there was no correlation between the two variables of parenting satisfaction and children’s total problem behaviors as reported by parents on the CBCL \( (r = -0.196, n = 51, p = 0.17) \) or teachers on the C-TRF \( (r = 0.084, n = 52, p = 0.55) \). These results suggest that there is not a relationship between parenting satisfaction and children’s internalizing, externalizing, or total problem behaviors as reported by parents and teachers in the sample.

There was no correlation between the two variables of parenting self-esteem and children’s internalizing problem behaviors as reported by parents on the CBCL \( (r = -0.137, n = 51, p = 0.34) \) or teachers on the C-TRF \( (r = -0.018, n = 52, p = 0.90) \). There was also no correlation between the two variables of parenting self-esteem and children’s externalizing behaviors as reported by parents on the CBCL \( (r = -0.161, n = 51, p = 0.26) \) or teachers on the C-TRF \( (r = 0.053, n = 52, p = 0.71) \). Additionally, there was no correlation between the two variables of parenting self-esteem and children’s total problem behaviors as reported by parents on the CBCL \( (r = -0.205, n = 51, p = 0.15) \) or teachers on the C-TRF \( (r = 0.039, n = 52, p = 0.78) \).
These results suggest that there is not a relationship between parenting self-esteem and children’s internalizing, externalizing, or total problem behaviors as reported by parents and teachers in the sample.

Overall, these results suggest that there was not a relationship between parenting self-esteem, including parenting efficacy and parenting satisfaction, as reported by participants’ on the PSOC and parents’ and teachers’ report of children’s behavior problems in preschool children identified with developmental delays. Thus, Hypothesis 7 was not supported in this sample.
### Table 21

Summary of Research Hypotheses and Findings of the Present Study

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesis 1</strong>&lt;br&gt;Preschool children who have been identified as having a developmental delay will be reported to have more borderline- and/or clinical-levels of externalizing, internalizing, and total problem behaviors as measured by the CBCL/ 1½ - 5 and C-TRF.</td>
<td>Hypothesis 1 was supported in this sample. Preschool children with developmental delays were reported by their parents and teachers on the CBCL and C-TRF respectively to have higher levels of internalizing, externalizing, and total problem behaviors than their typically developing peers.</td>
</tr>
<tr>
<td><strong>Hypothesis 2</strong>&lt;br&gt;Preschool children with lower levels of cognitive delays will be reported to have more borderline- and/or clinical-levels of externalizing, internalizing, and total problem behaviors as measured by the CBCL/ 1½ - 5 and C-TRF.</td>
<td>Hypothesis 2 was not supported in this sample. The level of cognitive delay does not appear to impact parents’ or teachers’ report of children’s level of behavior problems, including internalizing, externalizing and total problem behaviors.</td>
</tr>
<tr>
<td><strong>Hypothesis 3</strong>&lt;br&gt;Preschool children with more severe levels of cognitive delays will be reported to have more borderline- and/or clinical-levels of externalizing behavior problems and fewer internalizing behavior problems as measured by the CBCL/ 1½ - 5 and C-TRF.</td>
<td>Hypothesis 3 was not supported in this sample. There is no difference between the reported levels of internalizing and externalizing behaviors in preschool children with more severe levels of cognitive delay.</td>
</tr>
<tr>
<td><strong>Hypothesis 4</strong>&lt;br&gt;Levels of family functioning, including family cohesion and flexibility, and the overall family functioning, as measured by the FACES IV, will be associated with the prevalence of behavioral problems in preschool children with developmental delay.</td>
<td>Hypothesis 4 was not supported in this sample. There was not a relationship between family functioning, including family cohesion, flexibility and total functioning, as reported by participants’ on the FACES IV and parents’ and teachers’ report of children’s behavior problems in preschool children identified with developmental delays.</td>
</tr>
<tr>
<td><strong>Hypothesis 5</strong>&lt;br&gt;Family communication, as measured by the FACES IV, will be associated with the prevalence of behavior problems in preschool children with developmental delay.</td>
<td>Hypothesis 5 was not supported in this sample. There was not a relationship between family communication as reported by participants on the FACES IV and parents’ and teachers’ report of children’s behavior problems in a preschool sample of children identified with developmental delays.</td>
</tr>
<tr>
<td><strong>Hypothesis 6</strong>&lt;br&gt;Parenting stress, as measured by the PSI-SF, will be associated with the prevalence of behavior problems in preschool children with developmental delays.</td>
<td>Hypothesis 6 was supported within this sample. Increases in parenting stress, as reported on the PSI-SF, were positively correlated with increases in parents’ report of their children’s internalizing, externalizing, and total problem behaviors.</td>
</tr>
</tbody>
</table>
Table 21 (Continued)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Findings</th>
</tr>
</thead>
</table>
| **Hypothesis 7**  
Parenting self-esteem, including parenting self-efficacy and satisfaction, as measured by the PSOC, will be associated with the prevalence of behavior problems in preschool children with developmental delays. | Hypothesis 7 was not supported in this sample. There was not a relationship between parenting self-esteem, including parenting efficacy and parenting satisfaction, as reported by participants’ on the PSOC and parents’ and teachers’ report of children’s behavior problems in preschool children identified with developmental delays. |
Chapter V

Discussion

This chapter describes the key findings obtained from the statistical analyses of the present study. Specifically, the research questions and hypotheses proposed for this study are discussed in greater depth. Additionally, educational implications from the key findings, limitations of the study, and directions for future research are also presented.

Relationships between Socio-demographic Characteristics and Main Study Variables

This study sought to explore the relationship between behavior problems and developmental delays in preschool-age children. This study also sought to expand the current literature by examining this relationship in an urban sample of preschool children that has traditionally been underrepresented in research pertaining to this topic. Thus, an exploration of the socio-demographic characteristics and the study’s main variables was important to understanding the dynamic relationship between a child’s developmental delay status and his/her behavior problems within this sample. This investigation revealed a unique pattern of relationships between the sample’s socio-demographic characteristics and the main variables of the study, including parents’ and teachers’ report of children’s behavior, family functioning and communication, parenting stress, and parents’ self-esteem.

Report of Children’s Behavior Problems. The socio-demographic characteristics pertaining to parents’ education level, household income, ethnic background, and child gender all appear to have a relationship with the behavioral problems of children within this sample. First, parents who had no or some high school education, as well as parents who completed high school reported, on average, significantly more internalizing, externalizing and total problem behaviors than parents who had obtained a college degree or advanced degree. Additionally,
there was a significant effect of household income on children’s reported internalizing problem behaviors, externalizing problem behaviors and total problem behaviors. Specifically, participants who reported a household income of less than $10,000 tended to report a higher average CBCL Internalizing Problems Score, CBCL Externalizing Problems Score, and CBCL Total Problems score than the other participants in the study. This trend continued with teachers’ report of children’s externalizing behavior, as teachers tended to report higher externalizing behavior on the C-TRF for children of participants who reported a household income of less than $10,000 than for children of participants who reported a household income of $50,000+.

These findings pertaining to education level and household income appear related in a predictable manner. Namely, parents who have obtained a lower level of education are likely to report a lower household income. These findings are also consistent with the research literature, as Qi and Kaiser (2003) report evidence revealing higher than expected levels of externalizing and internalizing behavioral problems among low-income children attending Head Start sites across the country. Mitchell and Hauser-Cram (2009) also found that family SES added a significant unique variance to the statistical analysis used in predicting both externalizing and internalizing behavior problems in preschool children with developmental delays.

Although identifying the true nature of the relationship between education level and household income to reports of behavior problems was beyond the scope of the current study, several hypotheses can be made. It is possible that parents who have obtained a lower level of education and/or those parents with a lower household income have not been exposed to or developed the coping strategies to effectively manage their child’s behaviors. Additionally, they may not have access to resources for managing and/or treating a child’s difficult behaviors, which may be available to parents of a higher SES. Most likely, the stresses associated with
living in a lower SES household, including an increased difficulty securing the basic needs of home, food and shelter, contribute to a parent’s perception of their child’s behavior.

Data collected from the current research study also revealed a relationship between the socio-demographic characteristics of participants’ reported ethnic background and the gender of the child. Specifically, teachers reported, on average, more behavior problems for children of participants from a Black/African American Ethnic background than in children from participants who reported other ethnic backgrounds (“Mixed Race,” “Caucasian,” “Native American,” “Asian American,” and “Hawaiian/Pacific Islander”). Additionally, teachers reported significantly higher Total Behavior Problems scores for the boys of participants than for the girls of participants. Taken together, these results suggest that African American boys are the children most likely to be perceived by their teachers as having the most total problem behavior.

These findings are consistent with the research literature, which often identifies minority children from low socio-economic status (SES) backgrounds as being at an increased risk for developing clinical levels of disordered behavior as compared to their higher SES, non-minority peers (Rafferty & Griffin, 2010). Some prevalence studies indicate that as many as 30% of young, minority children from low SES environments are rated by their parents or teachers as having clinical levels of problem behavior (Qi & Kaiser, 2003). Added to the current body of research, the results from this study that utilized an urban sample of predominantly minority, low SES families suggests that low SES, minority preschool children with a developmental delay may be particularly vulnerable to developing severe and persistent behavior problems.

The remaining socio-demographic characteristics of participant’s relation to child, reported ethnic background, family structure, current relationship status, child gender and child
age were not found to be significantly related to reports of children’s problem behavior in this sample.

**Family Functioning and Communication.** Just as household income was a socio-demographic characteristic related to reports of children’s problem behavior, it also proved to be significant to reports of family functioning. Specifically, participants with a reported household income of less than $10,000 reported lower levels of family functioning than was reported by those participants with a reported household income of $50,000+. Additionally, family structure and participants’ relationship status were also found to be related to reports of family functioning. Data collected in this study revealed that families with one parent report significantly lower family functioning, including family cohesion, than those families with two parents in this sample. The data also indicate that participants who are currently single parents in the household report lower levels of family cohesion and overall family functioning than those participants living with a partner, whether they are married or living together.

The Circumplex Model of Marital and Family Systems (Olson, 2000) provides a theoretical means for understanding how family structure and relationship status might relate to outcomes in family functioning. As the family cohesion dimension of the Circumplex Model has been proposed to focus on “how systems balance separateness versus togetherness” (Olson & Gorall, 2003, p. 516), it seems likely that families with one parent may have more difficulty finding and maintaining this balance, also impacting their overall level of family functioning.

Overall, the relationship found between these socio-demographic characteristics of household income, family structure, and current relationship status to family functioning contributes to the research literature that has traditionally explored these variables in samples of predominantly two-parent, middle SES families (Mitchell & Hauser-Cram, 2009). Specifically,
this research demonstrates a significant difference in the family functioning of one-parent families versus two-parent families, as well as a significant difference in the family functioning of low SES (less than $10,000) families versus higher SES ($50,000+) families. It appears as if these socio-demographic characteristics are related to each other in a predictable way, in that participants from one parent households, or who are currently single, are likely to report a lower household income than those participants with two adults in the household. Thus, these families are most likely prone to the stressors associated with living in a lower SES. Yet, it is beyond the scope of this current study to identify the mechanisms by which these variables impact each other.

The remaining socio-demographic characteristics of participant’s relation to child, education level, ethnic background, child gender and child age were not found to be significantly related to family functioning or family communication in this sample.

Parenting Stress. The socio-demographic characteristics pertaining to reported household income and family structure appear to have a relationship to parenting stress for participants in this study. Specifically, participants with a reported household income of less than $10,000 reported higher average scores of parenting stress on the PSI-4 than participants who reported a household income of $50,000+. Additionally, results from the present study suggest families with one parent experience higher levels of parenting stress than those families with two parents in this sample. As parenting stress has been defined in the research literature as “the aversive psychological reaction to the demands of being a parent,” (Deater-Deckard, 1998, p. 315) and includes the demands placed on parents’ personal, physical, and financial resources, these results appear consistent with the literature. Overall, it seems likely that families with fewer
financial resources and/or those families with only one parent to manage the needs of the household are likely to experience more stress related to their roles as a parent.

The remaining socio-demographic characteristics of participant’s relation to child, education level, ethnic background, current relationship status, child gender and child age were not found to be significantly related to parenting stress in this sample.

**Parenting Self-Esteem.** Finally, data analysis revealed that mothers in this sample reported lower levels of parenting self-esteem than the fathers in the sample. More specifically, this result indicates that mothers feel less competent and capable of solving problems and more frustration in their role as a parent than the fathers in this sample. Although it was beyond the scope of the present study to evaluate why mothers may be more likely to feel this way than fathers, the principal investigator hypothesizes that this finding may be related to the pressure many mothers often feel in being the primary caretaker to their child. Yet, any interpretations of this finding must be made cautiously, as the sample of fathers (n = 3) in this study was much smaller than the sample of mothers (n = 69).

The remaining socio-demographic characteristics of participant’s education level, household income, ethnic background, family structure, current relationship status, child gender and child age were not found to be significantly related to parenting self-esteem in this sample.

**Research Questions**

**The Relationship of Developmental Delay to the Prevalence of Behavior Problems in Preschool Children.** The first research question guiding this study sought to explore if preschool children who are classified and receiving services for a developmental delay present with significantly more behavior problems than what is found within a typically developing sample of preschool children. The high prevalence of behavior problems in children with developmental
delays is documented throughout the research literature, with some evidence suggesting that the prevalence of behavior problems in children with developmental delays ranges from 40 – 60% (Roberts et al., 2003). The common co-morbidity of behavior problems in children with developmental delays has also been established in preschool samples. For example, Baker et al., (2002) found that children with developmental delays were 3 – 4 times more likely to fall within a clinical range of behavior problems at age three than children without developmental delays. These findings remained stable when the sample of preschool children was assessed again at age 4, with parents continuing to rate children with developmental delays as having more internalizing, externalizing, and total-problem behavioral difficulties than their non-delayed counterparts (Baker et al., 2003).

In the current study, the results of the analysis revealed that preschool children with developmental delays were reported by their parents on the CBCL to have higher levels of internalizing, externalizing, and total problem behaviors than their typically developing peers. These findings are consistent with a study conducted by Eisenhower, Baker, and Blacher (2005) who assessed problem behaviors in a sample of preschoolers at age 3, 4, and 5 and found that typically developing children were significantly less likely to present with behavior problems in the clinical or borderline range on the CBCL than children with developmental delays.

The current study also expanded this research to reveal that teachers rated the preschool children in the sample with developmental delays as having higher levels of internalizing, externalizing, and total problem behaviors than their typically developing peers on the C-TRF. In fact, the teachers in this sample reported more internalizing, externalizing, and total problems behaviors for preschool children with developmental delays in this sample than the children’s parents. Thus, results from this study suggest that preschool children with developmental delays...
are likely to demonstrate more behavioral difficulties than their typically developing peers in both the home and classroom.

The findings from this study have also contributed to the research literature by employing an urban sample consisting predominately of lower SES, minority families. This population has typically been underrepresented in the current research literature pertaining to the behavioral difficulties in children with developmental delays. This is unfortunate, as the previously reported findings pertaining to the socio-demographic characteristics of this sample suggest that this population may be particularly vulnerable to behavior problems. Overall, this study supported the hypothesis that preschool children with developmental delays present with significantly more behavior problems than their typically developing peers.


*Cognitive Delay.* The second research question was presented to examine the extent to which child-specific variables, such as type and/or severity of developmental delay, are associated with the prevalence of behavior problems of preschool children with developmental delays. Some research evidence suggests that the level or severity of cognitive functioning is a child vulnerability factor for problem behavior, as children with cognitive delays often lack the self-awareness and self-regulation skills necessary to maintain appropriate behavior (Guralnick, 1999; Wilson, 1999). Specifically, some studies have found that children with mild cognitive impairment may have greater awareness of their deficits and be likely to present with more internalizing behavior problems, such as depression and anxiety, and more externalizing behavior problems, as compared to children with more severe cognitive impairments (Heiman, 2001).
In the current study, the results consistently revealed that the presence of a cognitive delay was associated with both parents’ and teachers’ reports of children’s behavior problems. Specifically, the mere presence of a cognitive delay was associated with an increase in the reported levels of children’s internalizing, externalizing and total problem behaviors over children who do not have a cognitive delay. Yet, the level or severity of the cognitive delay was not associated with parents’ or teachers’ reports of children’s levels of behavior problems, including internalizing, externalizing and total problem behaviors, within this sample of preschool children. Thus, children with mild levels of cognitive delays did not present with significantly more internalizing, externalizing, and total problem behaviors than children with more severe levels of cognitive delays as originally hypothesized by the study.

Also pertaining to this research question and the previously stated findings, this study sought to explore if preschool children with more moderate and severe levels of cognitive delays presented with more externalizing behaviors than internalizing behaviors. Some evidence in the research literature suggest that children with more moderate to severe cognitive impairments may not be as self-aware and may have greater difficulty expressing feelings of anxiety or discomfort, thus making them more likely to display externalizing behaviors such as aggression, inattention, and communication problems (Ruiter et al., 2008). The results from this study did not provide evidence for this hypothesis. Specifically, there was no significant difference in the reported internalizing and externalizing behaviors for children identified as having a moderate or severe cognitive delay. Thus, the preschool children in this sample with a moderate or severe cognitive delay were reported to have similar levels of both internalizing and externalizing behaviors.
The inconsistency between the findings of the current study and the research literature regarding the differences in internalizing and externalizing behaviors based upon the severity of a child’s cognitive delay may reflect the young age of the children in this sample, as the majority of the research that sought to explore this relationship has relied on older, school-age children (Dykens, 2000). As children begin the developmental shift from the dependency of infancy into the more autonomous toddler/preschool years, high rates of both externalizing behaviors, including disobedience, defiance, and overactivity, and internalizing behaviors, including anxiety, are considered common in all preschool children (Campbell, 1995). Thus, the impact of the severity of a cognitive delay on children’s internalizing and externalizing behaviors may not be fully visible until children have moved into the school-age years when they are expected to be more socially and cognitively competent.

*Speech/Language Delay, Adaptive Skills Delay, Motor Skills Delay, Multiple Delays.*

Although the research questions guiding this study were designed to examine the specific relationship between cognitive delays and behavior problems, the data collected also allowed the principal investigator to explore the relationship between the presence of a speech/language delay, adaptive skills delay, and/or motor skills delay and behavior problems within this sample of preschool children. Previous research has found a relationship between the presence of speech/language delays and behavior problems, such that children with language delays have also demonstrated elevated levels of problem behaviors, including more physical aggression, disruptive behavior, negative responses, and fewer initiations of engagement than did children with typically developing language (Green et al., 2005; Qi & Kaiser, 2004). Similarly, the research literature suggests that children with motor delays have been found to present with
increased risk for problem behaviors, such as anxiety and attention difficulties (Caniato et al., 2011).

Consistent with the results obtained in the examination of the severity of cognitive delays on reports of children’s behavior problems, this current research study found the very presence of a speech/language delay, adaptive skills delay, motor skills delay, or a combination of multiple delays was associated with an increase in the reported levels of children’s total problem behaviors. Thus, the presence of at least one developmental delay is associated with an increase in the reported levels of children’s behavior problems. However, the specific number of developmental delays and/or the severity of the delay present was not significantly associated with parents’ and teachers’ reports of children’s total behavior problems. The only variation from this finding occurred in the analysis of the number of developmental delays present to teachers’ report of children’s internalizing problem behaviors. Specifically, children with three or more developmental delays were reported by teachers to have higher levels of internalizing behavior problems.

As previously discussed, the young age of the children in this sample may have contributed to the lack of support for a significant variance in behavior problems based upon the severity of or number of developmental delays present in a preschool child. Again, the typical trajectory of development and expectations of behavior for preschool age children may contribute to this finding. As all preschool children are expected to demonstrate some form of internalizing and externalizing behaviors, parent and teacher reports of behavior may reflect this developmental expectation regardless of the severity or number of developmental delays present.

*Family Functioning and Communication.* The third research question guiding this study sought to examine the extent to which family functioning, such as family cohesion, flexibility, and communication is associated with the prevalence of behavior problems in preschool children with developmental delays. The research literature has consistently demonstrated that family functioning has a significant influence upon children’s developmental and behavioral outcomes (Crawford et al., 2011; Smith et al., 2001). For example, in a sample of 718 African American families, Smith et al. (2001) found that kindergarteners of families who had higher levels of cohesion and communication exhibited higher levels of social competence. Mitchell and Hauser-Cram (2009) used a longitudinal design to examine the extent to which a child’s family environment at age 3 predicted the behavioral outcomes of children with developmental delays at age 5. The authors found that family climate, or more specifically cohesiveness, expressiveness, and conflict, added a significant unique variance to the statistical analysis used in predicting both externalizing and internalizing behavior problems of a child with developmental delays at age 5.

In the current research study, there was no correlation between family functioning, including the variables of family cohesion, family flexibility, total family functioning and family communication as measured by the FACES IV, and children’s internalizing, externalizing, and/or total problem behaviors as reported by both parents and teachers on the CBCL or C-TRF respectively. Specifically, higher reported levels of behavior problems in preschool children with developmental delays was not associated with lower levels of family functioning, including family cohesion, flexibility, and/or communication.
The results of this study did not provide evidence of the relationship between family functioning and children’s behavioral difficulties that is commonly supported within the research literature. As the behavioral outcomes for all children is most likely the result of a complex interaction between biological, child-specific factors and environmental, family-specific factors, there may be many reasons why this relationship was not supported within this sample. Bronfenbrenner’s (2001) Bioecological Theory of Human Development and proposed ecological systems, which has often been used as a theoretical foundation supporting the relationship between family functioning and children’s behavioral outcomes, may provide an explanation for why this direct relationship was not observed. Specifically, Bronfenbrenner’s theory emphasizes the interdependence of a system of ecological levels as the context for human development (Lerner, 2005). Thus, it is possible that within the given sample of families and preschool children with developmental delays, there are other complex interactions between the child and factors within his/her ecological system influencing behavioral outcomes that were not measured by this study.

Additionally, the reliance on parent report of family functioning may have influenced the results obtained by this study. As the parent participant is deeply entrenched within the microsystem of the child, his/her perception of the family’s functioning is also influenced by his/her own biology, psychology and behavior. Thus, the parent participants in this sample may have reported skewed levels of family functioning. Specifically, due to their role within the family, the parent participant may not be able to provide an objective report of their family’s functioning. It is also possible that the parent participants in this sample wished to be viewed favorably by the primary investigator and thus, reported higher levels of family functioning than what might be observed by a third, unrelated party.

*Parenting Stress.* The fourth research question guiding the current study sought to explore the extent to which parent variables, such as parenting stress and parenting self-esteem, including parenting-efficacy and satisfaction, were associated with the prevalence of behavior problems of preschool children with developmental delays. The research literature has consistently linked elevated levels of parenting stress to dysfunctional parent-child relationships and adverse child outcomes, including increased child behavior problems (Crnic et al, 2005; Deater-Deckard, 2005). For example, in a sample of over 200 families of four-year-olds, Baker et al. (2003) found a correlation between children’s behavioral outcomes and parenting stress, such that changes in children’s problem behaviors were found to be associated with increases in parenting stress. Additionally, the research literature has provided evidence suggesting that parents of children with various disabilities, including developmental delays, report greater levels of stress relating to their children than parents of children without disabilities (Dyson, 1997).

In the current study, increases in parenting stress were correlated with an increase in parents’ report of their children’s internalizing, externalizing, and total problem behaviors. Thus, the results of this study were consistent with evidence supporting this relationship within the research literature. Further examination of the relationship between parenting stress and children’s behavior problems in this sample revealed that a child’s developmental delay status does not modify the relationship found between parenting stress and parents’ or teachers’ reports of children’s behavior problems. Thus, parenting stress may be a risk-factor associated with children’s behavior problems, regardless of the child’s developmental delay status.
This result partially supports findings within the research literature pertaining to parenting stress and behavior problems in children with developmental delays. Specifically, this study provides further evidence that increases in parenting stress are related to increases in children’s behavior problems. However, this study did not support research findings that suggest parents of children with developmental delays experience higher levels of parenting stress than parents of typically developing children.

The inconsistency in findings between this study and the research literature may be related to the previously discussed relationship between parenting stress and the sample’s socio-demographic characteristics. Specifically, it appears as if families with fewer financial resources and/or those families with only one parent to manage the needs of the household are likely to experience more stress related to their roles as a parent. In this sample, it would appear as if the stress associated with these socio-demographic characteristics may play a larger role in the relationship between parenting stress and children’s behavior problems than a child’s developmental delay status.

Although a positive correlation was found between parenting stress and parents’ report of children’s behavior problems, the same relationship was not found between parenting stress and teachers’ report of children’s behavior problems. Specifically, an increase in parenting stress was not related to an increase in teachers’ report of children’s behavior problems. While it was beyond the scope of the current study to examine this finding in greater depth, hypotheses can be made. For example, it is possible that the stress experienced by a parent interferes with his/her perception of the child’s behavior. Thus, a parent under stress may perceive his/her child’s behavior as being more problematic than the same behavior would be perceived by that child’s teacher.
Parenting Self-Esteem. Also related to the fourth research question, the research literature suggests that parenting self-esteem, including the dimensions of parenting self-efficacy and parenting satisfaction, has emerged as a significant factor in the relationship between parent functioning and children’s behavioral outcomes. A study conducted by Swick and Hassall (1990), which sought to explore the impact of parents’ self-efficacy on preschoolers’ social competence and behavioral outcomes, revealed that children’s level of social competence and developmental functioning were significantly related to parenting self-efficacy. Additionally, Ohan et al., (2000) found a significant, negative relationship between parenting satisfaction and children’s internalizing and externalizing behaviors in a sample of school-age children.

The results of this study suggest that there is not a relationship between parenting self-esteem, including parenting efficacy and parenting satisfaction, and children’s internalizing, externalizing, or total problem behaviors as reported by parents and teachers in the sample. The lack of relationship found between parenting self-esteem and children’s behavioral problems in this study point to the complexities of this relationship. For example, some research evidence suggests that parenting self-esteem may play a more indirect role in the larger relationship between parenting behaviors and children’s behavioral outcomes (Hastings, 2002). Specifically, there is an assumption that parent cognitions, including parenting self-esteem, mediate the role between parenting behavior and children’s behavioral outcomes (Hassall et al., 2005; Hastings, 2002). Although the current research did not support a direct relationship between parenting self-esteem and children’s behavioral outcomes, the results may point to the need to examine the more indirect or mediating role of parenting self-esteem as it relates to children’s behavioral problems.
Educational Implications

Overall, the results from this study revealed that preschool children with developmental delays present with significantly more behavior problems than their typically developing peers. This relationship appears to be true for children with at least one developmental delay within the cognitive, speech and language, adaptive skills, and/or motor skills domains of development. Specifically, the mere presence of a developmental delay, regardless of the severity of the delay, was associated with higher levels of behavior problems as reported by both parents and teachers in this sample. Thus, it seems imperative that programs are put into place and treatments are provided to support the behavioral outcomes of preschool children identified with a developmental delay.

Unfortunately, many preschool children with developmental delays do not receive services specifically designed to address their behavioral difficulties. Data from the Pre-Elementary Education Longitudinal Study (PEELS; Markowitz et al., 2006), which followed a nationally representative sample of children ages 3 - 5 already identified with disabilities, revealed that only 5% of preschool-age children in the sample were reported to have received behavior-related services, such as behavior therapy or respite care, through the public school system. There is an assumption that young children with developmental delays and disabilities, may not benefit from “counseling” and the service is often not recommended for preschool-age children. Yet, the results from this study, in conjunction with evidence in the research literature, highlight the need to provide services that address the behavior problems of preschool children with developmental delays.

The need to provide services that address the behavioral problems of preschool children with developmental delays may be particularly important for children with certain socio-
demographic characteristics. Specifically, the data collected in this study suggests that preschool children with developmental delays from minority families, families with a household income of less than $10,000, and families with parents who have no or just some high school education may be particularly vulnerable to severe and persistent behavioral problems. As the PEELS data suggest that Black children are significantly more likely to have a primary disability of developmental delay and to receive special education services in school than White children (Markowitz et al., 2006), the educational system is in a prime position to meet the behavioral needs of these children at a young age by providing appropriate interventions and treatments.

To fully support the behavioral needs of preschool children with developmental delays, educational programs should also provide services to the parents and families of these children. The urban, minority families in this sample reported experiencing higher levels of parenting stress, which was positively related to reports of children’s behavior problems. Additionally, single parents or one-parent families in this sample reported experiencing lower levels of family functioning. Although a direct relationship between family functioning and children’s behavior problems was not supported in this study, there is still evidence among the research literature that a relationship between these variables exist. Thus, educational programs may promote the improved behavioral outcomes of preschool children with developmental delays by providing parenting workshops/training and other social programs that address the needs of families.

Finally, professionals who evaluate the development and functioning of preschool age children should also employ methods and/or tools for evaluating family and parenting variables. Evaluators should seek to identify family and parenting factors which may contribute to a child’s vulnerability for developing severe and persistent behavioral problems. Additionally, service providers working with preschool children with developmental delays should recommend and
advocate for these children to receive “counseling,” or other forms of play or behavior therapy to address their behavioral challenges, regardless of the child’s type or severity of delay.

**Limitations of the Study**

The purpose of this research study was to examine how child-specific variables, such as the type and/or level of developmental delay, and family variables, such as family functioning, parenting stress, and parenting self-esteem, relate to the behavior difficulties in an urban sample of minority children with developmental delays. Specifically, the investigator was interested in exploring if the independent variables of interest (child-specific and family variables) act as risk or protective factors associated with the relationship between developmental delays and behavior problems in an urban sample of preschool children. To address these questions, the study compared groups of parent volunteers with preschool children that had previously been identified as having a developmental delay to a group of parent volunteers with preschool children that were considered to be typically developing. A major limitation of the current study was the modest sample size. The obtained sample size may not have been large enough to reveal the true relationship between the variables of interest and reduce the extent to which the study results can be generalized.

The study materials employed by the current research may have contributed to the smaller than expected sample size. Specifically, the study materials included several pages of consent forms, participant instructions, and self-report measures to be read and completed. In total, the study packet included approximately 20 pages of materials. The preschool programs reported that many potential parent volunteers found the volume of materials overwhelming and this contributed to their decision to decline participation. Language and cultural differences between participants and study materials may also have contributed to a parent’s decision to
decline participation in the study. Many of the families in the schools targeted for inclusion in this study speak English as a second language. Although the parents of these families may be comfortable speaking in English, they may not have been comfortable reading and completing all materials in English. Unfortunately, the principal investigator lacked the resources necessary to provide all study materials in other languages.

Furthermore, the self-report measures used to collect data in this study were primarily based on American norms and employed likert scales to ask questions. Parents who are immigrants or who speak English as a second language may have had difficulty interpreting the questions asked and/or may not have been familiar with this form of research. They may also have been uncomfortable providing the personal and sensitive information required by the questions on the self-report measures. Additionally, self-report measures only afford the opportunity to examine the participant’s perception of the study variables, but do not allow for more objective measures of the variables of interest, such as direct observation of the child’s behavior and/or family functioning. Again, it was beyond the scope of this current research study to objectively measure through direct observation and/or evaluation the study variables.

There are also limitations to this study’s use of children’s educational records. First, several potential volunteers indicated that they were uncomfortable with the primary investigator examining their child’s educational records and declined participation in order to maintain their child’s privacy. Thus, this component of the study may also have contributed to the smaller than expected sample size.

Additionally, the educational records, which were used to determine a child’s developmental delay status and severity, may not accurately describe the child’s current functioning. Specifically, the primary investigator relied on reports from previously conducted
evaluations to determine if a child met the developmental delay status and, if so, the severity of delay. These previously conducted evaluations may or may not have employed best practices to evaluate the child, potentially hindering the reported results. Moreover, reliance on the child’s educational records and previous evaluations could not alert the study investigator to a situation in which a child included in the “typically developing” group was at-risk for being identified with a developmental delay in the near future, or if a child’s severity of delay had improved or declined since the educational records had last been updated. Again, such limitations may hinder the extent to which the reported results can be generalized.

**Directions for Future Research**

The limitations of this study provide several avenues for future research. First and foremost, future research should employ larger samples that might strengthen results and enhance the extent to which results can be generalized to the population. Larger samples may be easier to obtain by addressing the limitations stemming from study materials. Specifically, future research should utilize study materials translated in different languages that allow for parents and families of various cultural and linguistic backgrounds to participate. Not only would providing study materials in different languages promote study participation among a larger, more diverse segment of the population, but it might also address issues related to misinterpretation and comfort level due to cultural differences.

Additionally, future research can address parent concerns regarding lengthy study materials by relying less on self-report measures and utilizing more direct methods of data collection. Specifically, future research may benefit from employing methodology that includes direct observation and evaluation of study variables, including children’s behavior, cognitive functioning/developmental delay status, and family functioning/communication. Not only would
such changes address concerns regarding the lengthy study materials required for parent participation, it might also address limitations that arose within the current study regarding the use of student’s educational records. Methodology that included direct observation and evaluation of the child’s behavior and/or developmental delay status would help ensure the most accurate grouping of children based upon the child’s current functioning rather than relying on previous evaluations completed by individuals unrelated to the research being conducted.

Future research could build upon this study by exploring in more detail the types and severities of children’s developmental delays in relation to their behavioral problems. Work by Eisenhower et al., (2005) suggests that syndrome-specific behavioral patterns in children with developmental delays may emerge by age 3 and remain relatively stable or increase through the preschool years. Thus, examining specific combinations of developmental delay, including delays in cognitive functioning, speech and language, adaptive skills, and motor skills, may reveal common patterns of behavior in preschool children that can inform intervention and treatment efforts. Additionally, expanding the exploration of the relationship of severity or level of delay to developmental domains beyond cognitive functioning, including speech and language, adaptive skills, and motor skills, may also reveal patterns of behavior in preschool children that may guide the educational and treatment approach to meeting the needs of these children.

The research literature might also benefit from future research that includes a more detailed review of the relationship between the services/treatments preschool children with developmental delays are receiving and their behavioral outcomes. Specifically, an evaluation of the current special education services that preschool children with developmental delays and behavior problems are receiving might strengthen service providers’ ability to plan the
educational and treatment approach necessary to meet the needs of these children. Relatedly, research that evaluates specific treatment approaches, such as play therapy, behavior modification programs, or class-wide behavior programs, to the behavioral problems of preschool children with developmental delays would also contribute significantly to the ability of all service providers to meet the needs of these children.

Evaluating the school ecology as it relates to the behavioral problems in preschool children with developmental delays might also contribute to the research literature. Specifically, exploring and comparing the types of preschools (i.e., special education versus inclusion, large versus small schools), may provide insight into the programs that best serve the needs of these children. Additionally, an examination of the types and frequency in which schools provide support to parents (i.e., parent trainings, support groups, family therapy) might also prove beneficial to understanding the relationship between behavior problems and children with developmental delays. As parenting stress was found to be related to parents’ report of children’s behavior, it seems relevant to evaluate the specific supports parents receive and how these programs relate to the behavior problems of preschool children with developmental delays.

**Conclusion**

Overall, this study sought to explore how child-specific variables, such as the type and/or level of developmental delay, and family variables, such as family functioning, parenting stress, and parenting self-esteem, relate to the behavior difficulties in an urban sample of minority preschool children with developmental delays. As previous research has predominately employed samples of white, middle SES, two-parent families, this study added to the literature by investigating this relationship in an ethnically diverse sample of non-traditional urban families. The current study also improved on previous research designs by including a control
group of typically developing preschool children. The study also added to the available literature by examining the relationship of both child-specific and family-specific variables to the behavior problems of preschool children with developmental delay and by comparing both parents and teachers’ reports of children’s behavior.

In general, results from this study reveal that preschool children with developmental delays are reported to have significantly more internalizing, externalizing, and total behaviors than their typically developing peers. Additionally, it was discovered that the mere presence of one developmental delay, regardless of the type or severity of the delay, is associated with higher reported levels of internalizing, externalizing, and total problem behaviors in preschool children. Although the family-specific variables of family functioning, family communication and parenting self-esteem were not related to the behavioral problems of preschool children with developmental delays in this sample, increased levels of parenting stress was found to be associated with increased reports of preschool children’s behavior problems. Furthermore, several of the socio-demographic characteristics found within this non-traditional sample, including parents’ education level, household income, ethnic background and child gender, appear to increase preschool children’s vulnerability to develop severe and persistent behavior problems.

Overall, the current study added to the growing body of literature examining behavioral outcomes in preschool children with developmental delays. The results of this study revealed real-life applications to the educational programs of preschool children with developmental delays. The study also identified avenues for future research that will continue to expand the understanding of preschool children with developmental delays.
APPENDIX A

Educational Record Review Form

STUDY CLASSIFICATION:

➢ Typically Developing
➢ Developmental Delay
➢ Does Not Qualify

Child Identification Number:

Child’s Date of Birth:

Child’s Age:

Child’s Gender:

Does the Child have an Individualized Education Plan (IEP): YES No

If child DOES NOT have an IEP:

Child qualifies for study as Typically Developing Preschooler. STOP here and circle correct option at top of Page One.

If child DOES have an IEP:

Continue to next page to determine if child qualifies for study as a Preschooler with Developmental Delay.
Developmental Delay Status

Date of Child’s Evaluation:

Child’s age at time of Evaluation:

Language in which Evaluation was administered:

Is this child’s native language: YES NO*

* If NO, Child does not qualify for the study. STOP here and circle correct option at the top of Page One.

Concerns/ Reasons for Evaluation:

<table>
<thead>
<tr>
<th>Standardized Assessment Tools Used:</th>
<th>Standard Score Obtained:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Was a Standardized Score on an appropriate Norm-Referenced Standardized Assessment Tool obtained?

YES No

If a Standard Score WAS NOT obtained:

Child does not qualify for the study as a Preschooler with a Developmental Delay. STOP here and circle correct option at the top of Page One.

If a Standard Score WAS obtained:

Child qualifies for the study as a Preschooler with a Developmental Delay. Circle correct option at the top of Page One and continue on to next page for data collection.
# Standardized Evaluation Results

<table>
<thead>
<tr>
<th>Area of Development</th>
<th>Standard Score</th>
<th>Standard Deviations From Mean</th>
<th>Severity of Delay:*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication/Speech</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See chart on next page to determine and document “Severity of Delay”

## Services Mandated by IEP

<table>
<thead>
<tr>
<th>Service Type and Ratio:</th>
<th>Frequency:</th>
<th>Date Started:</th>
<th>Date Discharged: (If Applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Severity of Developmental Delay

<table>
<thead>
<tr>
<th>Range of Standard Deviations Below the Mean for Standard Scores (SS)</th>
<th>Severity of Developmental Delay Classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.5 &lt; SS ≤ -2</td>
<td>Mild Developmental Delay</td>
</tr>
<tr>
<td>Standard deviations below the mean</td>
<td></td>
</tr>
<tr>
<td>-2 &lt; SS ≤ -2.5</td>
<td>Moderate Developmental Delay</td>
</tr>
<tr>
<td>Standard deviations below the mean</td>
<td></td>
</tr>
<tr>
<td>-2.5 &lt; SS</td>
<td>Severe Developmental Delay</td>
</tr>
<tr>
<td>Standard deviations below the mean</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

Letter to School Director

Dear Sir or Madam:

My name is Jaclyn Babcock. I am a Doctoral Candidate in the Educational Psychology Ph.D. Program at The Graduate Center of the City University of New York (CUNY) and principal investigator of the project entitled Identifying Risk and Protective Factors that Impact the Relationship between Developmental Delays and Behavior Problems in an Urban Sample of Preschool Children. This is a research study that will look at the factors that contribute to the development of behavior problems in preschool children with developmental delays as compared to their typically developing peers.

I would like your participation by allowing me to recruit parent participants from your program. This recruitment would include inviting voluntary parent participation by sending home an informational letter/consent form and demographic questionnaire to all parents in your program. Additionally, I would like your permission to place recruitment flyers (see attached) in your school program. If parents agree to take part in the study, they will sign a consent form and be asked to complete four questionnaires pertaining to their child and their family. Parents will be compensated for their participation.

Additionally, I will need to review the educational records (evaluation results, IEP’s, progress reports) of the children whose parents consent for participation in the study. Although many parents will be able to supply copies of such records, it may be necessary for the parent to sign a consent allowing your program to release copies of the child’s educational records to the principal investigator. The teachers of children whose parents consent for participation in the study will also be invited to participate by completing a brief questionnaire regarding the child’s classroom behavior. This questionnaire should not cause any undue burden on the teacher’s daily classroom activities and those teachers who participate will be compensated for their time.

The results of this research study will contribute to our understanding of the behaviors of preschool children with developmental delays. It is also hoped that the results of this study will be used to inform intervention and treatment services to better meet the need of families and children with developmental delays. If you have any questions regarding the study, or if you are interested in allowing the principal investigator to recruit participants from your program, please feel free to contact me at 917-696-6301 or jbabcock@gc.cuny.edu; or my study advisor, Marian Fish at mfish@gc.cuny.edu or 212-817-8290.

Thank you for your time and consideration.

Sincerely,

Jaclyn Babcock, M.S. Ed, Doctoral Candidate and Principal Investigator
The Graduate Center, CUNY
APPENDIX C

Telephone Script for Preschool Recruitment

“Hello, (Insert Preschool Director’s Name Here), my name is Jaclyn Babcock. I am a Doctoral Candidate in the Educational Psychology Ph.D. Program at The Graduate Center of the City University of New York (CUNY) and principal investigator of a research project entitled Identifying Risk and Protective Factors that Impact the Relationship between Developmental Delays and Behavior Problems in an Urban Sample of Preschool Children.

I recently sent you an introduction letter regarding this study and I was calling to see if you had received the letter?”

1.) If NO, “This is a research study that will look at the factors that contribute to the development of behavior problems in preschool children with developmental delays as compared to their typically developing peers.

If you have a few minutes, I’d like to tell you more about the study?”

2.) If NO, “May I schedule a time that is more convenient for you to discuss my research further?

3.) If NO, “OK, thank you for your time. If you receive the letter and would like to discuss the study further, please feel free to contact me by phone or email. Thanks for your time and have a nice day. Good-bye.”

3.) If YES, “Great, please let me know when might be a more convenient time for me to call and discuss the research with you further.” Schedule another telephone call accordingly.

2.) If YES, “I would like your participation by allowing me to recruit parent participants from your program. This recruitment would include inviting voluntary parent participation by sending home an informational letter/consent form and demographic questionnaire to all parents in your program. Additionally, I would like your permission to place recruitment flyers in your school program. If parents agree to take part in the study, they will sign a consent form and be asked to complete four questionnaires pertaining to their child and their family. Parents will be compensated for their participation.

Additionally, I will need to review the educational records, including evaluation results, IEP’s, and progress reports, of the children whose parents consent for participation in the study. Although many parents will be able to supply copies of such records, it may be necessary for the parent to sign a consent allowing your program to release copies of the child’s educational records to me as the principal investigator.”
Finally, the teachers of children whose parents consent for participation in the study will also be invited to participate by completing a brief questionnaire regarding the child’s classroom behavior. This questionnaire should not cause any undo burden on the teacher’s daily classroom activities and those teachers who participate will be compensated for their time.

The results of this research study will contribute to our understanding of the behaviors of preschool children with developmental delays. It is also hoped that the results of this study will be used to inform intervention and treatment services to better meet the need of families and children with developmental delays.

Do you have any questions that I can answer for you?”

3.) **If YES,** Answer questions accordingly.

3.) **If NO,** (or when questions have been answered), “Thank you for allowing me to discuss my research with you.

Would you be willing to allow me to recruit parent participants from your preschool program?”

4.) **If NO,** “Thank you for your time and consideration. Have a great day.”

4.) **IF YES,** “I would like to schedule a time that I can come, introduce myself in person, and bring study materials to send home to parents. Please let me know when might be a good time for me to stop by.”

   *Schedule a meeting accordingly.*

   5.) “I look forward to meeting with you on (insert date and time). Thank you and have a great day.”

1.) **If YES,** “Great, I’m glad you received the letter. Do you have any questions about the research that I can answer for you now?”

2.) **If YES,** Answer questions accordingly.

2.) **If NO,** (or when questions have been answered), “Thank you for allowing me to discuss my research with you.

Would you be willing to allow me to recruit parent participants from your preschool program?”

3.) **If NO,** “Thank you for your time and consideration. Have a great day.”

3.) **IF YES,** “I would like to schedule a time that I can come, introduce myself in person, and bring study materials to send home to parents.
Please let me know when might be a good time for me to stop by.”
Schedule a meeting accordingly.

4.) “I look forward to meeting with you on (insert date and time).
Thank you and have a great day.”

END SCRIPT
APPENDIX D

Consent for the Recruitment of Research Participants

Project Title: Identifying Risk and Protective Factors that Impact the Relationship between Developmental Delays and Behavior Problems in an Urban Sample of Preschool Children

Principal Investigator:  
Jaclyn Babcock, M.S. Ed.  
Graduate Student  
The Graduate Center, CUNY  
265 Fifth Avenue, Room 3204  
New York, NY 10016-4309  
917-696-6301

Faculty Advisor:  
Marian Fish, Ph.D.  
Professor  
Queens College, CUNY  
Powdemaker Hall, Room 033G  
65 – 30 Kissena Blvd.  
Flushing, NY 11367  
718 – 997 – 5250

I, __________________________,  
Name of Director

of __________________________,  
Name of School

understand that Jaclyn Babcock, a graduate student at The Graduate Center, CUNY, will be conducting a research study on Identifying Risk and Protective Factors that Impact the Relationship between Developmental Delays and Behavior Problems in an Urban Sample of Preschool Children. Mrs. Babcock has informed me of the design of the study, including participation requirements, anticipated risks and benefits, compensation for participation, and the voluntary nature of subjects’ decision to participate in the study. Mrs. Babcock has explained her desire to recruit parent participants from our school and the procedures involved in this recruitment process.

I support this effort and give my consent for the following research-related activities:

- Recruitment of parent participants including the dissemination of information letters/consent forms and a demographic questionnaire to the parents/legal guardians of children in this program.
- Recruitment of parent participants by posting informational flyers in locations I deem appropriate in the school.
- The release of the educational records of children whose parents have volunteered to participate in the study and have provided their written consent for said records.
- To allow the teachers of families who have volunteered to participate in the study to complete one questionnaire related to the child’s classroom behavior.

“I understand that the activities specified above are being conducted for research purposes only. Any deviation from the research activities listed above will not be conducted without my prior written consent.”

________________________________________  
Signature of Director

________________________________________  
Date Signed

CUNY UI - Institutional Review Board  
Approval Date: May 5, 2011  
Expiration Date: May 4, 2014  
Coordinator Initials: M
Dear Parent or Guardian,

This letter is to inform you that a research study is being conducted to explore the factors that contribute to the development of behavior problems in preschool children with developmental delays as compared to their typically developing peers. The study, entitled *Identifying Risk and Protective Factors that Impact the Relationship between Developmental Delays and Behavior Problems in an Urban Sample of Preschool Children*, is being conducted by Jaclyn Babcock, a doctoral student in the Ph.D. Program in Educational Psychology at the Graduate Center of the City University of New York (CUNY). The results of this research study will contribute to our understanding of the behaviors of preschool children with developmental delays. It is also hoped that the results of this study will be used to inform intervention and treatment services to better meet the need of families and children with developmental delays.

I’d like to invite you to join the study. Participation will involve the completion of four questionnaires related to your child and your family. It will take approximately 30 – 60 minutes to complete the questionnaires and you will be compensated $20 for your time and participation. Additionally, I will need to review the educational records of the children whose parents consent for participation in the study. The teachers of children whose parents consent for participation in the study will also be invited to participate by completing a brief questionnaire regarding the child’s classroom behavior. This questionnaire should not cause any undue burden on the teacher’s daily classroom activities and those teachers who participate will be compensated for their time.

Your participation in this study is strictly voluntary and there are absolutely no repercussions for deciding not to participate. Please read and carefully review the consent form provided in the attached envelope. The consent form describes the study in more detail, including the research procedures, exclusionary criteria, risks, benefits, voluntary nature of participation, financial compensation, and confidentiality. After you have carefully read and reviewed the consent form, and if you voluntarily decide to participate, you will be asked to sign the Statement of Consent form and follow the Parent Instructions provided within the attached envelope.

If you decide not to participate, I kindly ask that you return the blank documents in the self-addressed and postage-paid envelope provided. If you have any questions about this research study, please feel free to contact Jaclyn Babcock at 917-696-6301 or at jbabcock@gc.cuny.edu. You may also contact my dissertation advisor, Dr. Marion Fish at mfish@gc.cuny.edu. If you have any questions concerning your rights as a participant in this study, you may also contact the Associate Director, Office of Regulatory Compliance of Queens College at 718-997-5415 or email at qcorc@gc.cuny.edu.

Thank you for your time and consideration.
Sincerely,

Jaclyn Babcock, M.S. Ed.
CUNY Doctoral Student and Principal Investigator
APPENDIX F

CITY UNIVERSITY OF NEW YORK

The Graduate Center
Department of Educational Psychology

CONSENT TO PARTICIPATE IN A RESEARCH PROJECT

Project Title: Identifying Risk and Protective Factors that Impact the Relationship between Developmental Delays and Behavior Problems in an Urban Sample of Preschool Children

Principal Investigator: Jaclyn Babcock, M.S. Ed.
Graduate Student
The Graduate Center, CUNY
365 Fifth Avenue, Room 3204
New York, NY 10016-4309
917-696-6301

Faculty Advisor: Marian Fish, Ph.D.
Professor
Queens College, CUNY
Powdermaker Hall, Room 033G
65 – 30 Kissena Blvd.
Flushing, NY 11367
718 – 997 – 5250

Introduction/Purpose: You are invited to participate in a research study. The study is conducted under the direction of Jaclyn Babcock, Graduate Student, The Graduate Center, CUNY. The purpose of this research study is to examine the factors that contribute to the development of behavior problems in preschool children with developmental delays as compared to their typically developing peers. The results of this study may contribute to our understanding of the behaviors of preschool children with developmental delays. It is also hoped that the results of this study will be used to inform intervention and treatment services to better meet the needs of families and children with developmental delays.

Procedures: In order to study this, it is necessary to collect information about typically developing preschool children, as well as preschool children with developmental delays, between ages 3 – 5 who are currently enrolled in a full-time preschool classroom. Approximately 100 parents/legal guardians are being sought to participate in this study. Each parent/guardian will participate by completing and returning four questionnaires pertaining to their child’s behavior, their family’s functioning, their parenting stress, and parenting self-esteem. The time commitment for each parent participant is expected to last approximately 30 – 60 minutes. Additionally, the principal investigator will need to review the educational records of children whose parent/guardian consent to participate in order to obtain information regarding the child’s developmental delay status and educational services. This record review will include a review of the child’s demographic information (i.e., age, gender), any available evaluation reports/results, the Individualized Education Plan (IEP) if relevant, and reports of the child’s progress in their educational program. Parents may provide the principal investigator with copies of their child’s educational records, or give consent for the researcher to receive copies of the educational records from the child’s school. Finally, the teachers of children whose parents consent for participation in the study will also be invited to participate by completing a brief questionnaire regarding the child’s classroom behavior. This questionnaire takes approximately 5 – 10 minutes to complete and should not cause any undo burden on the teacher’s daily classroom activities. There will be no direct contact or interaction with children whose parents consent to participate in this research study. It is not expected that the study will expose the children to any experiences that are different from that which is usual from the day-to-day classroom activities. This study and all study materials will be conducted entirely in the English language.

CUNY IRB - Institutional Review Board
Approval Date: May 5, 2013
Expiration Date: May 4, 2014
Coordinator Initials: M
**Exclusionary Criteria:** Individuals who are unable to read and complete all study materials in English, as well as sign the informed consent stating their ability to do so, will not be included in the research study. To properly address the research questions proposed within the study, the principal investigator must include some exclusionary criteria for all research participants. Specifically, the families of children with developmental delays who were not evaluated in their native language and/or who did not receive a standard score on test materials during their evaluation will not be included in the research sample. Additionally, families of all children whose household income exceeds a maximum amount set by the principal investigator will not be included in the research sample. Families and children who do not qualify for the study based on the exclusionary criteria will be sent a letter identifying the reason they are not eligible to participate.

**Possible Discomforts and Risks:** You may find some of the items on the questionnaires regarding your child’s behavior, family functioning, parenting stress and/or parenting self-esteem sensitive, resulting in the risk for emotional distress or anxiety. Another potential risk of participating in this research study is the breach of confidentiality or unintentional release of personal data to an unauthorized person, which may cause you stress or embarrassment. If you become bothered or upset as a result of this study, you should contact the principal investigator, Jaclyn Babcock, at 917-696-6301 or email at jabcock@ge.cuny.edu, and she will put you in contact with a certified school psychologist, school social worker, or family therapist who is qualified to provide assistance with feelings of emotional distress and/or embarrassment.

**Benefits:** There are no direct benefits to parents who participate in the study. However, participating in the study may increase our general knowledge of the development of behavior problems in preschool children with developmental delays as compared to their typically developing peers and inform intervention and treatment services for their families.

**Voluntary Participation:** Your participation in this study is voluntary, and you may decide not to participate without prejudice, penalty, or loss of benefits or services to which you or your child are otherwise entitled. If you decide to leave the study, please contact the principal investigator, Jaclyn Babcock, at 917-696-6301 or jabcock@ge.cuny.edu to inform her of your decision.

**Financial Considerations and Compensation:** Participation in this study will involve no cost to you. For your participation in this study you will receive $20 in cash following the completion and return of all parent questionnaires to the principal investigator. Additionally, in appreciation of the teacher’s cooperation with this research, participating teachers will receive $5 in cash after completing and returning the questionnaire regarding your child’s behavior in the classroom.

**Confidentiality:** All data obtained during the study will be collected via self-report questionnaires and written document. The collected data will only be accessible to the principal investigator, Jaclyn Babcock, her faculty advisor, Dr. Mariam Fish, and reviewing members of CUNY’s Institutional Review Board. Confidentiality will be maintained by removing all identifying information and labeling the collected documents with a study number. Participant consent forms, the list of participant names corresponding to study numbers, and the collected written documents will all be kept separate from each other in paper format and secured in locked file cabinets that are only accessible to the principal investigator. Quantitative data taken from these written documents and entered on a computer for the sole purpose of data analysis will be stored in password protected files that are only accessible to the primary investigator and her faculty advisor. When the study is completed, the results may be submitted for publication. However, names of people or individual identifying characteristics will not be used in any of the publications. If you would like a copy of the study results, please provide me with a copy of your address or email and I will send you a copy in the future.

In order to protect the confidentiality of children’s educational records, all parents have a choice regarding their preference for sharing these records with the principal investigator. Once the principal investigator has completed the review of the child’s educational records, all educational records will be returned to the parents in order to maintain their confidentiality. Parents may choose to either:

---

CUNY UI - Institutional Review Board
Approval Date: May 5, 2013
Expiration Date: May 4, 2014
Coordinator Initials: tt
1.) Attach copies of their child’s educational records, including any available evaluation reports/results, the Individualized Education Plan (IEP) if relevant, and progress reports from my child’s educational program, OR

2.) Complete and attach the Release of Educational Records Form, giving their consent for the principal investigator to receive copies of their child’s educational records, including child’s demographic information (i.e., age, gender), any available evaluation reports/results, the Individualized Education Plan (IEP) if relevant, and reports of child’s progress in their educational program.

Contact Questions/Persons: If you have any questions about the research now or in the future, you should contact the Principal Investigator, Jaclyn Babcock, 917-696-6301, or email at jbabcock@gc.cuny.edu. If you have any questions concerning your rights as a participant in this study, you may also contact the Associate Director, Office of Regulatory Compliance of Queens College, Institutional Review Board at 718-997-3413 or email at orcc@gc.cuny.edu.

Statement of Consent:

“I have read the above description of this research and I understand it. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. I also understand that this study will be conducted in the English language, and I am able to read and complete all study materials in English. Furthermore, I have been assured that any future questions that I may have will also be answered by the principal investigator of the research study. I voluntarily agree to participate in this study.

By signing this form I have not waived any of my legal rights to which I would otherwise be entitled.

I will be given a copy of this statement.”

Printed Name of Subject __________________________ Signature of Subject __________________________ Date Signed ________

Printed Name of Investigator __________________________ Signature of Investigator __________________________ Date Signed ________

Parent/Guardian address to receive study materials:

Street Address _______________________________________

City, State, Zip Code ___________________________________

Parent/Guardian email address (if applicable): _______________________________________

Child’s Name: __________________________ Date of Birth: __________________________

School Attending: __________________________ Teacher: __________________________
APPENDIX G

Consent for Release of Records
For Research Purposes Only

Project Title: Identifying Risk and Protective Factors that Impact the Relationship between Developmental Delays and Behavior Problems in an Urban Sample of Preschool Children

Principal Investigator: Joelyn Babcock, M.S. Ed.
Graduate Student
The Graduate Center, CUNY
365 Fifth Avenue, Room 3204
New York, NY 10016-4309
917-696-6301

Faculty Advisor: Marian Fish, Ph.D.
Professor
Queens College, CUNY
Powdermaker Hall, Room 033G
65 – 30 Kissena Blvd.
Flushing, NY 11367
718 – 997 – 5250

I hereby authorize: ____________________________
Name of School

To release information concerning: ____________________________
Name of Student

Type of Records to be released include:
- Demographic Information (i.e., date of birth, age, gender)
- Evaluation Reports/Results (if applicable)
- Individualized Education Plan (if applicable)
- Progress Reports

Records to be released to: Principal Research Investigator
Joelyn Babcock, M.S. Ed.
Graduate Student, The Graduate Center, CUNY
365 Fifth Avenue, Room 3204
New York, NY 10016
917-696-6301

“I understand that the recipient of the record(s) will use the material for research purposes only and that the information contained therein shall not be further disclosed to any other party or agency without my prior written consent. I also understand that all copies of the records will be returned to me when the principal investigator has completed the review of records for this research study.”

Printed Name of Parent ____________________________ Signature of Parent ____________________________ Date Signed ____________________________

| CUNY UI - Institutional Review Board |
| Approval Date: May 5, 2013 |
| Expiration Date: May 4, 2014 |
| Coordinator Initials: M |
APPENDIX H

PARENT INSTRUCTIONS

If you have read the Consent Form in its entirety, believe all your questions have been answered, and have voluntarily decided to participate in the research study, please follow the directions in the order provided below.

Directions:

1) Complete the Statement of Consent page (page 3) of the Consent Form.
   i) Print your name, sign your name, and record the date on the Subject lines of the form. The principal investigator will print, sign, and date the consent form on the Investigator lines when it has been received. A copy of the signed Statement of Consent will be sent to you with the package of study materials.
   ii) Provide the mailing address where you would like to receive the study packet containing the four questionnaires you are being asked to complete.
   iii) Provide your email address IF you would like to have a copy of the study results emailed to you at the completion of the study.
   iv) Provide the information pertaining to your child (child’s name, date of birth, name of school, and name of teacher). This information is necessary in order to link your data to your child’s data. This information is also necessary in order to invite your child’s teacher to participate.

2) Provide Copies of OR Consent for your Child’s Educational Records.
   i) If you have copies of your child’s educational records, including all evaluation reports if applicable, IEP if applicable, and current progress reports from teachers and/or therapists, please include them with your signed Statement of Consent. Mark the first choice on the bottom of the Statement of Consent Form.
   ii) If you do not have copies of your child’s educational records and would like the principal investigator of the research study to receive copies from your child’s school, mark the second choice on the bottom of the Statement of Consent Form.
      i) You must next complete the Consent for Release of Records in its entirety and include it with the Statement of Consent Form.

3) Complete the Family Demographic Questionnaire.
   i) Complete the Family Demographic Questionnaire, which is labeled “FACES IV: Background Information.” Items asking for identifying information that is not necessary for this study have been crossed out for your protection. Please do not complete any item that has been crossed out.
4) Place all completed documents in the addressed, postage-paid envelope provided. This should include:
   - The Statement of Consent Form
   - The Family Demographic Form, labeled “FACES IV: Background Information

   **AND**
   - Copies of your child’s evaluation reports if applicable, IEP if applicable, and current progress reports from teacher and/or therapists

   **OR**
   - The signed *Consent for Release of Records* Form

5) Send all completed documents to the principal investigator, Jaclyn Babcock, in the addressed, postage-paid envelope provided within one week.

When the principal investigator has received your signed *Statement of Consent Form*, copies of your child’s educational records or the signed *Consent for the Release of Records* Form, and the completed *Family Demographic Questionnaire*, the study investigator will review the documents to determine your family’s eligibility for participation in the study.

- If it is determined that you do not meet the criteria to be included in the research study for any reason, you will be sent a letter explaining why you did not meet inclusion criteria.

- If it is determined that you do meet criteria to be included in the research study, you will be sent the study materials, including instructions for completing the four questionnaires pertaining to your child’s behavior, your family functioning, parenting stress, and parenting self-esteem. This packet of study materials will also include your copy of the *Statement of Consent Form*.

   **Thank you** for your time and participation with this research study!
APPENDIX I

Participant Instructions

Thank you for volunteering to participate in this research study designed to examine the factors that contribute to the development of behavior problems in preschool children with developmental delays as compared to their typically developing peers. Contained within this package are all the materials you will need to participate in the study, including:

- The Child Behavior Checklist 1½ - 5 (CBCL)
- The Family Adaptability and Cohesion Evaluation Scales IV (FACES IV)
- The Parenting Stress Index – Short Form (PSI-SF)
- The Parent Sense of Competence Scale (PSOC)

Please follow the directions in the order provided below. When you have completed the four questionnaires, please place them in the provided addressed and postage-paid envelope and send the sealed package to Jaclyn Babcock. Also, please self-address the smaller envelope that has been provided and include it with your package. Once the completed package has been received, Ms. Babcock will send you $20 in the self-addressed envelope as compensation for your participation. Along with your compensation, Ms. Babcock will return any copies of your child’s educational records that were used for this study.

Please follow the directions in the provided order:

1. Carefully read the directions and complete the Child Behavior Checklist (CBCL), which is labeled as Item #1 in your package. Please complete both sides of the CBCL. Items asking for identifying information that is not necessary for this study have been crossed out for your protection. Please do not complete any item that has been crossed out.

2. Carefully read the directions and complete the Family Adaptability and Cohesion Evaluation Scales (FACES IV), which is labeled as Item #2 in your package. This form includes two sides of questions and one answer sheet. Please complete both sides of the FACES IV. Items asking for identifying information that is not necessary for this study have been crossed out for your protection. Please do not complete any item that has been crossed out.

3. Carefully read the directions and complete The Parenting Stress Index – Short Form (PSI-SF), which is labeled as Item #3 in your package. Please complete both sides of the PSI-SF. Items asking for identifying information that is not necessary for this study have been crossed out for your protection. Please do not complete any item that has been crossed out.
4. Carefully read the directions and complete the Parent Sense of Competence Scale (PSOC), which is labeled as **Item #4** in your package. Please complete *both sides* of the PSOC. Items asking for identifying information that is not necessary for this study have been crossed out for your protection. Please do not complete any item that has been crossed out.

5. When you have completed the *CBCL (Item #1), FACES IV (Item #2), PSI – SF (Item #3)*, and *PSOC (Item #4)* place them in the provided envelope.

6. Self-address the smaller envelope that has been provided in the package. Include this self-addressed envelope in the package with your four completed questionnaires.

7. Send the sealed package to Jaclyn Babcock in the provided addressed and postage-paid envelope within one week. Once the completed package has been received, Ms. Babcock will send you $20 in the self-addressed envelope as compensation for your participation. Along with your compensation, Ms. Babcock will return any copies of your child’s educational records that were used for this study.

8. **Thank you** for your time and participation with this research study!

---

If you have any questions about this research study or would like feedback on the results, please feel free to contact Jaclyn Babcock at 917-696-6301 or at jbabcock@gc.cuny.edu. You may also contact my dissertation advisor, Dr. Marion Fish at mfish@gc.cuny.edu. If you have any questions concerning your rights as a participant in this study, you may also contact the Associate Director, Office of Regulatory Compliance of Queens College at 718-997-5415 or email at gcore@gc.cuny.edu. Thank you!
APPENDIX J

CITY UNIVERSITY OF NEW YORK

The Graduate Center
Department of Educational Psychology

TEACHER CONSENT TO PARTICIPATE IN A RESEARCH PROJECT

Project Title: Identifying Risk and Protective Factors that Impact the Relationship between Developmental Delays and Behavior Problems in an Urban Sample of Preschool Children

Principal Investigator: 
Jaclyn Babcock, M.S. Ed.
Graduate Student
The Graduate Center, CUNY
365 Fifth Avenue, Room 3204
New York, NY 10016-4309
917-696-6301

Faculty Advisor: 
Marian Fish, Ph.D.
Professor
Queens College, CUNY
Powdermaker Hall, Room 033G
65 – 30 Kissena Blvd.
Flushing, NY 11367
718 – 997 – 5250

Introduction/Purpose: As you may know, a research study entitled Identifying Risk and Protective Factors that Impact the Relationship between Developmental Delays and Behavior Problems in an Urban Sample of Preschool Children, is currently being conducted with some parents in your school. This is a research study that seeks to examine the factors that contribute to the development of behavior problems in preschool children with developmental delays as compared to their typically developing peers. The results of this research study will contribute to our understanding of the behaviors of preschool children with developmental delays. It is also hoped that the results of this study will be used to inform intervention and treatment services to better meet the need of families and children with developmental delays.

Procedures: The parent of a child in your class has volunteered to participate. Parents’ participation in the study requires them to complete four questionnaires pertaining to their child and their family. Additionally, Jaclyn Babcock, the principal investigator of the research study, is reviewing the educational records of the child in order to collect data pertaining to the child’s developmental delays status and progress in his/her current preschool program. The final component of the research study includes collecting data regarding the child’s behavior in the classroom. As part of the parent’s voluntary participation in the research study, he/she and I are asking you to complete the Caregiver-Teacher Report Form for Ages 1 ½ - 5 (C-TRF). This questionnaire requires approximately 5 - 10 minutes to complete and should not cause any undo burden on your daily classroom activities.

Exclusionary Criteria: Individuals who are unable to read and complete all study materials in English, will not be included in the research study.
**Possible Discomforts and Risks:** You may find some of the items on the questionnaires regarding the child’s behavior sensitive, resulting in the risk for emotional distress or anxiety. Another potential risk of participating in this research study is the breach of confidentiality or unintentional release of your evaluation of the child’s classroom behavior to an unauthorized person, which may cause you stress or embarrassment. If you become bothered or upset as a result of this study, you should contact the principal investigator, Jaclyn Babcock, at 917-696-6301 or email at jbabcock@gc.cuny.edu, and she will put you in contact with a certified school psychologist or school social worker who is qualified to provide assistance with feelings of emotional distress and/or embarrassment.

**Benefits:** There are no direct benefits to teachers who participate in the study. However, participating in the study may increase our general knowledge of the development of behavior problems in preschool children with developmental delays as compared to their typically developing peers and inform intervention and treatment services for their families.

**Voluntary Participation:** Your participation in this study is voluntary, and you may decide not to participate without prejudice, penalty, or loss of benefits or services to which you are otherwise entitled. If you decide to leave the study, please contact the principal investigator, Jaclyn Babcock, at 917-696-6301 or jbabcock@gc.cuny.edu to inform her of your decision.

**Financial Considerations and Compensation:** Participation in this study will involve no cost to you. For your participation in this study you will receive $5 in cash following the completion and return of the C-TRF to the principal investigator.

**Confidentiality:** All data obtained from teachers during the study will be collected via self-report questionnaires. The collected data will only be accessible to the principal investigator, Jaclyn Babcock, her faculty advisor, Dr. Marion Fish, and reviewing members of CUNY’s Institutional Review Board. Confidentiality will be maintained by removing all identifying information and labeling the collected documents with a study number. Participant consent forms, the list of participant names corresponding to study numbers, and the collected written documents will all be kept separate from each other in paper format and secured in locked file cabinets that are only accessible to the principal investigator. Quantitative data taken from these written documents and entered on a computer for the sole purpose of data analysis will be stored in password protected files that are only accessible to the primary investigator and her faculty advisor. When the study is completed, the results may be submitted for publication. However, names of people or individual identifying characteristics will not be used in any of the publications. If you would like a copy of the study results, please email me at jbabcock@gc.cuny.edu and I will send you a copy in the future.

**Contact Questions/Persons:** If you have any questions about the research now or in the future, you should contact the Principal Investigator, Jaclyn Babcock, 917-696-6301 or email at jbabcock@gc.cuny.edu. You may also contact my dissertation advisor, Dr. Marion Fish at mfish@gc.cuny.edu. If you have any questions concerning your rights as a participant in this
study, you may also contact the Associate Director, Office of Regulatory Compliance of Queens College at 718-997-5415 or email at gcore@qc.cuny.edu.

**Statement of Consent**

“I have read the description of this research and I understand it. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. I also understand that this study will be conducted in the English language, and I am able to read and complete all study materials in English. Furthermore, I have been assured that any future questions that I may have will also be answered by the principal investigator of the research study.

**I voluntarily agree to participate in this study and I understand that returning the completed C-TRF is my consent to participate in the research.**

By returning the completed C-TRF as my consent for participation, I have not waived any of my legal rights to which I would otherwise be entitled.”

If you have voluntarily agreed to participate in the study by completing and returning the C-TRF, please keep this consent document for your records and proceed to the Teacher Instructions accompanying this letter.

If you are not willing to assist us at this time, I kindly ask that you return the blank C-TRF form to Jaclyn Babcock in the pre-addressed and postage-paid envelope provided. If you have any questions regarding the study, please feel free to contact me at 917-696-6301 or jbabcock@qc.cuny.edu; or my study advisor, Marian Fish at mfish@qc.cuny.edu or 212-817-8290. If you have any questions concerning your rights as a participant in this study, you may also contact the Associate Director, Office of Regulatory Compliance of Queens College at 718-997-5415 or email at gcore@qc.cuny.edu.

Thank you for your time and consideration.

Sincerely,

Jaclyn Babcock, M.S. Ed, Doctoral Candidate and Principal Investigator
The Graduate Center, City University of New York
Teacher Instructions

Please follow the directions in the order provided below. When you have completed the C-TRF, please place it in the provided addressed and postage-paid envelope and send the sealed envelope to Jaclyn Babcock. Once the completed C-TRF has been received, Ms. Babcock will send you $5 as compensation for your participation.

Please follow the directions in the provided order:

1. Carefully read the directions and complete the Caregiver-Teacher Report Form for Ages 1 ½ - 5 (C-TRF), which is attached to this form. Please complete both sides of the C-TRF. Items asking for identifying information that is not necessary for this study have been crossed out for participants’ protection. Please do not complete any item that has been crossed out.

2. When you have completed the C-TRF place it in the provided envelope and seal.

3. Send the completed C-TRF to Jaclyn Babcock in the provided addressed and postage-paid envelope within one week. Once the completed C-TRF has been received, Ms. Babcock will send you $5 as compensation for your participation.

4. Thank you for your time and participation with this research study!

If you have any questions about this research study or would like feedback on the results, please feel free to contact Jaclyn Babcock at 917-696-6301 or at jabolicok@gc.cuny.edu. You may also contact my dissertation advisor, Dr. Marion Fish at mfish@gc.cuny.edu. If you have any questions concerning your rights as a participant in this study, you may also contact the Associate Director, Office of Regulatory Compliance of Queens College at 718-997-5415 or email at gcarc@gc.cuny.edu. Thank you!
References


Doi: 10.1007/s10578-010-0202-5


Swick & Hassall (1990)

U.S. Census Bureau (2012). State and County QuickFacts.

  http://quickfacts.census.gov/qfd/states/36000.html

