Longitudinal Analysis of Relations among Behavior Problems, Language, and Early Literacy Growth Trajectories for Young Children At-Risk for Significant Behavior Problems

By

Carol L. Pitchlyn

Submitted to the Department of Special Education and the
Faculty of the Graduate School of the University of Kansas
In partial fulfillment of the requirements for the degree of
Doctor of Education

Committee:

_____
Chairperson

_____

_____

_____

_____

Date defended: _____

This Dissertation Committee for Carol Pitchlyn certifies
That this is the approved version of the following dissertation

Longitudinal Analysis of Relations among Behavior Problems, Language, and Early Literacy

Growth Trajectories for Young Children At-Risk for Significant Behavior Problems

Committee:

_____
Chairperson

_____

_____

_____

_____

Date approved: _____

Abstract

Many children exhibit challenging behavior even in preschool. Recent reports have suggested that behavior problems, language skills, and academic delays are interrelated and perhaps mutually causal mechanisms, each adversely influencing the other. Language difficulties lead to behavior problems, behavior problems lead to academic delays, and academic delays lead again to behavior problems, all leading to early school failure. Little is known about this relationship in young children, 18 to 60 months of age, relative to what is known in older children, particularly in high risk samples. This investigation examined these relations among early measures of behavior problems (i.e., externalizing and internalizing), receptive and expressive language, and early literacy skills in a multisite sample of young children at risk for challenging behavior. Additionally considered were two cohorts of children specified by age and the language most heard at home. Using the severity and stability of behavior problems as a primary analytic factor, results for children who most heard English at home indicated: (a) distinct over-time patterns in behavior problems and (b) mixed covarying relationships to lower language proficiency and lower early literacy developmental outcome patterns. Results for a small sample of children, who most heard Spanish at home, when compared to the English group, indicated no differences in language proficiency on tests administered in English and Spanish, but lower outcomes on early literacy measures administered in English. Implications and the need for further research are discussed.

Dedication

To God only wise, be glory through Jesus Christ forever,… *(Romans, 16:27).*

…***To the acknowledgement of the mystery of God, and of the Father, and of Christ; in whom are hid all the treasures of wisdom and knowledge*** (*Colossians, 2:3*).

…but if any of you lacks wisdom, let him ask of God, who gives to all generously, and without reproach, and it will be given to him,… (*James 1:5*).

It is with gratefulness of heart and humbleness of spirit that I first dedicate this work to the glory of Almighty God, my Heavenly Father, and His Son, my Lord and Savior, Jesus Christ who have fulfilled the promise of this sacred word. Without His favor and abundant grace, this reality would have not come to pass.

To my soul mate, my life partner, my C.E.O., my confidante, and loving husband, Mr. Vernon Erroll Pitchlyn, I secondly dedicate this to you. Thank you for your undying love and support for me throughout this entire academic adventure. You were always available with an encouraging word when I was overwhelmed, a shoulder to lean on when I felt too burdened to move forward, an ear to listen when I needed to vent, and arms to embrace me when I needed that physical touch. I love you. ….***what therefore God has joined together, let not man put asunder,…*** (*Matthew 19:16*).

To my first born and very special man-child, Mr. Paul Eugene Jackson, your life and the goal of maintaining a quality of life for you and those like you of unique cognitive nature and function, has become the center of my work. I also dedicate this labor of love to you.

And to my beautiful daughter, my fellow KU grad with whom I share this special day, Delores LeeHannah Pitchlyn, thanks for making this experience even more meaningful because we were blessed to share it together.

Acknowledgements

*To Dr. Charles Greenwood, my advisor, my instructor, and respected scholar; thank you for the investment of your time, skill and wisdom in me.

*To Dr. Judith Carta, thank you for sharing the wealth of your knowledge and research with this doctoral cohort.

*To Dr. Barbara Terry, thank you for showing me the "nuts and bolts" of writing a technical, academic document.

*To Mrs. Bernadine Roberts and Ms.Liang-Shye Reynolds, thank you for your time and technical expertise in making this completed work the perfected professional document that it is.

*To Dr. Cheryl A. Utley and Dr. Tom Skrtic, thank you for your wisdom and insight for the need of female and minority leaders in multi-cultural and special education, and seeing this leadership grant come to fruition.

*To Mrs. Alva Beasley, thank you for your invaluable help with presentation preparations.

*To Dr. Eva Tucker-Nevels, my sister in Christ, my choir director, my friend, and educator role model; thank you for encouraging me, inspiring me and recommending me to begin a career in public education.

*To Dr. Virginia H. Cook, my colleague and very close friend, thank you for your time, friendship and means to help me cross this finish line to completion.

Table of Contents

List of Tables

List of Figures

Chapter 1

Introduction

Recently, the nation has become seriously aware that expulsion rates among preschoolers were reported to be higher in some states than the high school rates (Dobbs, 2005; Gilliam, 2005; Gilliam & Shahar, 2006). In a randomly selected sample of preschool teachers in Massachusetts, 15% of those teachers reported suspending at least one student, and 39% of the teachers reported expelling one student. This translates to an expulsion rate of 27 per 1000 students, 34 times more than the K-12 rate and 13 times more than the national rate (Gilliam & Shahar, 2006).

Statement of the Problem

The growing number of young children with behavior problems has become an increasingly severe concern. The national expectation for preschool students is that they will be ready to learn in kindergarten. The expectation for those students exiting from preschool is that they will have acquired the behavior regulation, and the social conduct skills needed to function in a classroom environment. They are also increasingly expected to have acquired spoken language and early literacy skills.

Challenging behavior is known to prevent the achievement of reaching these desired outcomes both for the child and his or her peers in the preschool classroom. When serious enough, challenging behavior leads to expulsion, representing the termination of educational services and in most cases without alternative services from the educational provider (Gilliam & Shahar, 2006). This phenomenon is very likely producing a subpopulation of children not ready for kindergarten.

Prevalence

The prevalence of young children with and without disabilities exhibiting challenging behaviors is increasing (Conroy, Dunlap, Clarke, & Alter, 2005). Recent reports are that 7% to 25% of preschool-age children meet the criteria for a diagnosis of Oppositional Defiant Disorder (ODD) (Webster-Stratton, 2000). Additionally, 22% of girls and 39% of boys enrolled in Head Start score in the clinical range for both internalizing and externalizing problem behaviors (Kaiser, Cai, Hancock & Foster, 2002). Other epidemiological studies suggest that 13 to 30% of young children with developmental disabilities engage in problem behaviors serious enough to warrant intervention (Emerson, 1995; Horner, Carr, Strain, Todd, & Reed, 2002; McDougal & Hiralall, 1998).

Negative Impacts of Preschool Behavior Problems

Student Impact: The proximal negative impact of challenging behavior in young children through age five is the failure to learn key skills, which has a toxic effect on their readiness for Kindergarten. Children with challenging behavior are at high risk for developing more serious problems in school, including behavior disorders and early learning problems. Students with challenging behaviors also face isolation, rejection from classroom peers, exclusion from educational settings, and separation from community activities (Sprague & Rian, 1993).

Webster-Stratton (1997) described two progressive pathways related to aberrant conduct disorders based on age in young children. This is known as the “early starter” versus “late starter” pathways (Loeber, 1982). For young children, the hypothesized early starter pathway begins formally with the emergence of aggressive and oppositional behaviors in the preschool period. For the late starter, the adolescent-onset pathway is observed when the emergence of

oppositional disorder is not apparent until middle to high school. The prognoses for the adolescent late starter pathway seem much more favorable than for the early onset preschooler.

The more distal impact on children with histories of challenging behavior in 9-12 grade level education and beyond indicate school dropout rates ranging from 50% to 60%, and unemployment rates for this sector of students between 30% and 40% (Nelson, 1996). If employed, these likely undereducated individuals often hold low paying, menial jobs, and few enter and complete postsecondary educational training programs. Many of these individuals are arrested at least once in the two years following their exit from school (Nelson, 1996, p. 147). Unfortunately, the post-school outcomes of students with negative externalizing behavior are rather bleak (Edgar & Levine, 1987; Neel, Meadow, Levine, & Edgar, 1988).

Family Implications in Early Onset Challenging Behavior: Preschool children exhibiting negative behavior have distinctly greater emotional, academic, and social morbidity than their typically developing peers (Barkley, Shelton, Crosswait, Moorehouse, Fletcher, Barrett, Jenkins, & Metevia, 2002). Maladjustment in school has been associated with harsh family conditions, and poor parental child-rearing skills. Children most at risk for school maladjustment are in many instances, from families that are distinguished by notably higher levels of hostility among other family members, and have unpredictable, insensitive methods of child control. Parents in these families report greater discord in marital relations, higher likelihood of divorce, and greater levels of emotional disorders (Berkley et al., 2002). Webster-Stratton (1997) noted that families of children with conduct problems report major stressors at a rate two to four times greater than families with typically developing children. Stressors in these families lead to depression and demoralization, and when in this situation, are less able to provide cognitive stimulation and compassionate parental management strategies necessary to cultivate a child's academic and

social performance at school. Blackman (1999) argued, “Parents of these children are exasperated, tired, embarrassed, and sometimes fearful” (p. 1101).

School Impact: The Readiness to Serve Children.

The school readiness construct implies not only learning readiness, but also school preparedness to teach incoming students possessing a diversity of skills and experiences. Because children with challenging behaviors test a teacher’s ability to successfully teach, manage, and prevent classroom disruptions, issues of evidence-based practice and proactive use of effective behavior management and teaching strategies are a priority. Teachers and school administrators however, vary widely in their preparation to serve a behaviorally diverse student population using effective prevention strategies. It is unfortunate that too many schools appear to address challenging behavior only by using punitive disciplinary procedures that remove students from educational experiences rather than using interventions like school-wide Positive Behavior Support (PBS). Negative practices include zero tolerance policies, the hiring of security officers, expulsion, and student placement in alternative educational, and/or special education facilities (Lassen, Steele, & Sailor, 2006; Sugai & Horner, 2002; Utley, Kozleski, Smith & Draper, 2002).

Contribution to the Poor National Educational Product

Young students who experience early school failure and in due course drop out of school, contribute to a national population of citizens whose incomes are low, which increases the cost of living in respect to imprisonment, welfare, health, and the overall missed opportunity of their intellectual contribution to the country. Shelton (2006) found that language development and its positive impact on school preparedness are aggravated by disruptive behavior, peer rejection, school suspension/expulsion, and later incarceration. She also finds that this high use of

imprisonment as a means of managing persons with behavioral problems indicates a division between society and youth. This division cancels opportunities for prevention and creates barriers to services.

What is needed?

Early screening and identification: The importance of universal, early identification of challenging behavior and behavioral maladjustment is paramount in preventing the early onset of challenging behavior. Early detection enables use of systematic and timely interventions that support prevention of future severe behavior problems (Stormont, 2002). Research suggests universal screening using parents as information resources. Parent ratings of preschool children's behavior problems are the strongest predictor of antisocial behavior disorders (White, Moffitt, Earls, Robins, & Silva, 1990). Children who were rated by their mothers as having externalizing problems when they were 7 years old were rated as having more difficult temperaments in infancy (Sanson, Smart, Prior, & Oberklaid, 1993). Egeland, Kalkoske, Gottesman, and Erikson (1990) reported that maternal ratings of difficult child temperament at age 3 were strong predictors of behavior problems when children reached age 9. These findings align with the earlier work of Stevenson, Richman, and Graham (1985) whose study reported a significant association between restlessness assessed at ages 3-5 and anti-social behavior at age 8 employing behavioral, cognitive, and health variables. Studies such as these support making the practice of universal screening for challenging behavior in young children in programs economically feasible.

Prevention, early intervention and use of evidence-based practices: Preschool personnel need measures, tools, and interventions that shed light on educational factors that trigger and maintain problem behaviors, so that interventions can be applied addressing these problems.

Without such tools and measures there should not be an expectation that problem behaviors will decrease (Oliver, Murphy, & Corbett, 1987; Rojahn, Matson, Lott, Esbensen & Smalls, 2001). While great strides have been made in recent years developing effective intervention practices (e.g., PBS), research is needed that examines the mechanisms and problem conditions operating in the early onset pathway to challenging behavior. In particular, the interrelationship among challenging behavior, language, and early literacy needs to be better understood to help guide future lines of intervention research designed to achieve school readiness for young children who are facing these risks.

Purpose of the Study. The purpose of the study was to examine the correlation of measures between language and behavior in a sample of young children at risk for school failure.

Significance of the Study. Knowledge and deeper understanding of the correlation between these variables enable and empower parents, caregivers and educational professionals to develop and implement preventative strategies and practices for young learners. These strategies and practices promote positive and successful classroom experiences.

Literature Review

The Relationship between Language Impairment, Behavior, and Mental Health

Over 25 years of research has been conducted regarding the presence of language delays in children with behavioral disorders (Benner, Nelson, & Epstien, 2002; Rogers-Adkinson & Hooper, 2003) from within multiple fields including child psychiatry (Cantwell & Baker, 1977), special education (Griffith, Rogers-Adkinson & Cusick, 1997), juvenile justice (Zabel & Nigro, 2001), and neuropsychology (Hooper & Brown, 2003). Daunic, Conroy, Sowell, Harman, Bell-Ellison et al. (2007) reported finding significant positive correlations between the intensity of behavior problems and expressive and receptive language skills in preschool children for children with clinical levels of externalizing behavior, but not internalizing behavior.

Other researchers reported links between language, behavior, and mental functioning (Brenner, Nelson, & Epstien, 2002; Carson, Klee, Perry, Muskina & Donaghy, 1998; Estrem, 2005; Hooper, Roberts, Zeisel & Poe, 2003; Kaiser, Hancock, Cai, Foster & Hester, 2000; McCabe, 2005; Redmond & Rice, 2002; Rescorla, Ross & McClure, 2007; Rogers-Adkinson, 2003 Qi & Kaiser, 2004; Tervo, 2007;). Carson et al. (p. 61) reported that the relationship between language delay or impairments and behavior problems was complex. Their research confirmed the work of Baker & Cantwell (1983) and Crowley (1992) in that children who cannot communicate well verbally and/or have limited comprehension abilities will sometimes express themselves in disruptive ways of personal frustration, social rejection, or limited social-cognitive skills. Moreover, behavior problems may exacerbate difficulties with speech and language (Rutter & Lord, 1987), and delay and impairment of language contributes to or is associated with difficulties in learning, possibly negatively influencing self- concept and self-efficacy.

The research of Kaiser et al. (2000) aligns with the earlier studies of Carson et al. (1998) in that they report that the relationship between language deficits and behavioral problems is not well understood (Hester & Kaiser, 1998). This adds to the literature indicating that language deficits and behavioral problems may both arise from common etiological factors or common environmental factors such as patterns of parent-child interactions. Difficulties in either understanding language or producing verbal responses appropriate to the social context may lead to aggressive behavior, non-compliance, or social withdrawal from peers (Fujiki, Brinton, Morgan & Hart, 1999). Redmond & Rice (2002) reported that children with developmental language impairments are often characterized as at risk for significant socio-emotional problems during kindergarten through second grade. Benner and colleagues (2002) reported that this rate of comorbidity between language deficits and Emotional and Behavioral Disorders (EBD) tends to either be stable or increases over time.

The research of Hooper et al. (2003) showed that children with behavioral disorders tended to show a higher rate of language dysfunction than their peers without behavioral disorders. They also reported that a language-based learning problem represents a critical pathway toward manifestations of internal and external psychopathology. The studies of Qi and Kaiser (2004) and Guralnick (1996) point out that language and social behavior are key aspects of the early development of children, specifically preschool age children. Longitudinal studies as other studies of like nature have documented associations between language impairment, problem behaviors, and poor social skills (Bietchman et al., 2001; Camarata, Hughes & Ruhl, 1998; Cantwell & Baker, 1977). Estrem (2005) also confirmed that language skills were a necessary (though not sufficient) characteristic of social competence, and that limited language

skills co-occur with physical aggression, and added that the effect of language on aggression was modeled by gender.

In more studies regarding the relationship between language and behavior, the more recent research of McCabe (2005) and the previous Redmond and Rice study(1988) affirmed that the comorbidity of social and behavioral difficulties in children with Specific Language Impaired (SLI) is well established. Comorbidity rates gathered from two lines of inquiry, (a) children with specific language impairments as a primary diagnosis versus (b) children with a primary diagnosis of emotional or behavioral disorders, supported the linkage between language impairment and socioemotional/ behavioral difficulties. Tervo (2007) reported that children with a developmental language disorder were more likely to have cognitive and behavioral problems in mixed receptive-expressive disorders than in expressive disorders. Rescorla (2007) and Cohen (2001) reported that about half of all children in mental health clinics have language impairment, and about half of all children seen in speech-language clinics have a behavioral or emotional disorder.

The Relationship between Language, Behavior and Academic Success/Failure

Research reports indicate that language impairments are associated with deficits in cognition and academic achievement (Beitchman, Nair, Clegg, Ferguson & Patel, 1986; Cantwell & Baker, 1991; Cohen, Davine, Horodezky, Lipsett & Isaacson, 1993; Cohen, Menna, Vallance, Barwick, Im, & Horodezky, 1998; Warr-Leeper, Wright & Mack, 1994).

A delay in expressive/receptive communication is a cognitive deficit (Bartak, Rutter & Cox, 1977; Charlop & Haymes, 1994; Charlop-Christy, Carpenter Le, LeBlanc & Kellet, 2002). The language and communication deficits of children at risk for challenging behavior have been reviewed as primary, causal symptoms underlying other critical features of the disorder

(Churchill, 1972; Rutter, 1974; Wetherby & Prutting, 1984;), as one manifestation of an impairment in the ability to code and manipulate symbols (Hermelin & O'Connor, 1970; Ricks & Wing, 1975), or as stemming from the failure to participate jointly in social interaction (Wing, 1981). Earlier studies of language deficits in children at risk for behavior problems also showed pervasive universal deficits in pragmatics, the practical preoccupation processes, and that these two deficits are linked as pragmatics is part of social competence (Baron-Cohen, 1998). Other researchers (Kobayashi, Murata & Yoshinaga, 1992; Lord, Risi, Lambrecht, Cook, Leventhal, DiLavore, Pickles, & Rutter, 2000; Venter, Lord, & Schopler, 1992) have documented that the expressive language level is probably the strongest predictor of outcome in at risk children. The expressive language level affects almost every aspect of social interaction and play and therefore is difficult to disentangle the effects of language level in children who are at risk (Mahoney, Szatmari, MacLean, Bryson, Bartolucci, Walter, Hoult & Jones, 1998). Problems in language, as reported by Kjelgaard & Tager- Flusberg (2001), are central to our understanding of this population of children. Language difficulties are often the first presenting symptom (Kurita, 1985; Lord & Paul, 1997). They vary widely in the population, and are the most important feature for predicting the progress and developmental course of these children (Rutter, 1970). Swensen, Kelley, Fein & Naigles (2007) observed that language difficulties in children at risk arise primarily from social, motor, or cognitive impairments, but different processes may imply specifically linguistic impairments. Gernbacher, Geye & Ellis-Weismer (2005), state that little research has investigated the processes of language acquisition in children at risk, particularly at the early stages of their development. Additionally, most children at risk fail *theory of mind* tasks (Happe', 1995*)*, which are the pervasive tendencies to explain one's own and others' actions in terms of beliefs, desires and goals (Castelli, Frith, Happe' & Frith, 2002).

In addition to language impairment, learning a second-language is also a potential moderator in the behavior challenges, communication, and early literacy interrelationship. Learning and using more than one language is considered to be an ordinary and common aspect of human cognition with positive benefits of using information to restructure knowledge in one environment to the other (Yoshida, 2008). Clarke (2009) reported that young children can learn more than one language with ease as long as they are exposed to good language models and have plenty of exposure to both languages. And, the learning of a second language is advantaged by proficiency in a first language (Clarke, 2009), and by the earliest exposure to both languages, affects bilingual reading development (Kovelman, Baker, & Petitto, 2008).

Yet, Hakuta, Butler, and Witt, (2000) reported that Hispanics compared to non-Hispanic whites performed lower on English reading-related skills throughout elementary school years. Additionally, they reported that attaining oral English proficiency my take up to 7 years. Findings from the report of the National Literacy Panel on Language Minority Children and Youth (2006) indicated that second-language learners of English (a) benefit the related reading skills contained in the report of the National Reading Panel (2000), and that learning these skills (phonemic awareness, phonics, etc.), predict later reading proficiency, and (b) with effective instruction, language minority students can reach similar levels of attainment (e.g., word reading, spelling, oral reading fluency). A growing body of research reports positive effects of explicit, systematic instruction on these kinds of outcomes (Calderon, et al., 2005; Graves, Gerston, & Haager, 2004, Vaughn, et al., 2006).

Problems in communication and language are not isolated occurrences but are intertwined in the learning experience and may be misinterpreted and mislabeled as inattention and non-compliant behavior which is a contributing factor to academic failure (Cohen, 1996).

Language is viewed as the tool necessary for successful academic and social/behavioral achievement (Tomblin, Zhang, Buckwalter, & Catts, 2000). Children experiencing school failure and social difficulties are expected to have language problems. Each of these accounts predicts that an association exists between language disorders, reading disorders, and social and behavioral challenges. Cognitive strategies, researchers have found, can decrease student disruption/aggression and strengthen prosocial behavior (Daunic, Smith, Brank, & Penfield, 2006).

Academic deficiencies mediate the correlation between language impairments and problem behavior (Bowman, Barnett, Johnson & Reeve, 2006). These three developmental domains of language impairment, academic difficulties, and behavior problems tend to co-vary, but have interestingly received only marginal attention. It is widely understood however, that educational achievement is clearly the most reliable route to breaking the all-too-common cycle of academic underachievement (Price, 1995).

The Search for the Causes of Challenging Behavior

Recent work on the early starter pathway towards deviant behavior seems to be coalescing around a complex, dynamic interaction between behavior problems, language, social communication, and early literacy. Challenging behavior is strengthened because of its function to have the child removed or escaped from aversive school tasks. Most of the empirical support for this theory to date is based on descriptive research with older children. Olson and Hoza, (1993) reporting on the link between vocabulary ability, academic performance, and challenges with expressive and receptive communication in preschool children stated that deficits in social competence were consistently related to childhood externalizing problems. Other studies have

suggested that cognitive and linguistic deficits may play a substantial role in early conduct problem stabilization (Moffitt, 1990; Pianta & Caldwell, 1990).

Bott, Farmer and Rohde (1997), and Cantwell and Baker (1987) reported that children with communication disorders are at risk of psychiatric as well as developmental disorders. Sigafoos (2000) shed light on how this might actually operate. He reported a strong inverse relationship between communication ability and the severity of aberrant behavior, and added that communication deficits place individuals at risk for severe behavior problems. Umbreit, Lane, and Dejud (2004) reported that curricular variables, namely task difficulty, exacerbated problem behaviors in the classroom. Similarly, Gunter, Denny, Jack, Shores, and Nelson (1993) reported that any mismatch between student ability and task difficulty was potentially problematic because academic tasks that are too difficult constitute aversive stimulation. Students often respond to instructional "aversive stimulation" by engaging in escape-motivated problem behavior. These findings suggest a dynamic interaction between a child's behavior problems, communication skills, and early literacy proficiency.

Research Questions

In order to advance what we know about the challenging behavior, language, and early literacy relationship, the current investigation sought to examine the growth trajectories as well the relationships between these variables. Thus, the purpose of this study is to examine the development of language and early literacy skills in relation to their behavior in a sample of young children who are at differential levels of risk for school readiness failure due to early onset challenging behavior.

Statement of the Problem

Although research on the relationship between language deficits, the home language environment, early literacy, and behavioral problems is advancing, it is still not well understood, particularly in preschool children, 3 to 4 years of age (Hester &Kaiser, 1998). Research reports indicate that language and early literacy deficits and behavioral problems may arise from common etiological factors or common environmental factors such as patterns of parent-child interactions. However, there are very few studies that have examined the actual growth trajectories in language/literacy as a function of the level of behavioral adjustment and home language environment in young children and their interrelationship over time. To address these issues, research questions related to the effects of behavioral adjustment were investigated in the study sample of children whose home language environment was English. Research questions related to differences in these effects due to Spanish home environment were examined separately for these children.

Research Questions for Children Whose Home Language was English

1. **What is the developmental pattern of challenging behaviors in a sample of young preschool children at high risk for behavior problems as measured by the Child Behavior Checklist (CBCL)?** Rationale: Addressing this question will provide an estimate of the extent of challenging behavior and its stability and trend over time in a high risk sample. We hypothesized that high levels of problem behavior would be evident in this sample with an increasing trend over time.

2. **For this sample of children:**
    a. **Was the pattern of language acquisition measured by the Preschool Language Scale (PLS) different based on level of challenging behavior?**
    b. **Was the pattern of early literacy measured by the Individual Growth and Development Indicators (IGDIs) different based on level of challenging behavior?**

Rationale: We examined whether or not this sample of children with challenging behavior is also low performing in language and early literacy skills, and tracked the pattern (trend) in these skills over time. Our hypothesis was that the children with more challenging behavior will be lower than expected in performance, with a trend towards decreasing proficiency over time.

Research Questions for Children Whose Home Language was Spanish

1. What is the Behavioral risk of this group on the CBCL and how did it compare to the children whose home language environment was English?

2. What was the PLS language proficiency of these children, the trend over time, and how did it compare with the children whose home language environment was English?

3. What was the status and trend in children's early literacy skills and how did they compare with the children whose home language environment was English?

Rationale: We examined whether or not this sample of children with challenging behavior from non-English home environments were also lower performing in language and early literacy skills, and track the pattern (trend) in these skills over time. We compared them to the sample of children whose home language was English. Our hypothesis was that children whose home language is Spanish will demonstrate slower growth relative to typically developing peers, with a

trend towards decreasing proficiency over time, and lower than children whose home language is English.

Chapter 2

Methodology

Overview

To address the research questions, a set of analyses were planned using data collected as part of the multi-site, longitudinal Kids in Development Study (KIDS). The KIDS study had produced a database containing information on a sample of preschool-aged children with challenging behavior. The database was produced in a 5-year prospective study completed by the Center on Evidence-based practice (CEBP): Young Children with Challenging Behavior for purposes of both primary and secondary data analyses. It was available from the authors' research study for use in this analysis. Variables from that database that directly informed this author's research interests were used.

The principal goals of the KIDS study were to: (a) describe in detail the developmental trajectories of a diverse population of young children who in common exhibited serious challenging behaviors, or who were at risk for developing challenging behaviors, and (b) identify variables that predicted different trajectories as well as different outcomes, such as readiness for Kindergarten. Six collaborating sites participated in the multisite KIDS study. These were located at the University of Florida (Conroy), University of South Florida (Dunlap, Fox), University of Colorado-Denver (Strain), University of Kansas, Juniper Gardens Children's Project (Carta), Lehigh University in Pennsylvania (Kern), and Tennessee Voices for Children (Timm). In common, the sites represented programs serving children at risk for challenging behavior but differed in terms of the nature of the early intervention treatment programs, childcare, and community-based center programs serving these children.

Aims of the study were to (a) describe the natural history of challenging behaviors in important populations of young children, (b) provide first empirical evidence of preventive factors regarding challenging behaviors from a multivariate perspective, and (c) provide necessary first-generation data for second-generation empirical tests of interventions (Office of Special Education Programs (OSEP) Center on Evidence Based Practice (CEBP), 2006). As of this writing, some reports and analyses of these data have been completed (e.g., Daunic, Conroy, Sowell, Harman, Bell-Ellison & KIDS in development study, 2007).

Participants

The database contained longitudinal data collected for 244 children enrolled in the study between the ages of 18 and 48 months along with their parents or guardians during the period of 2003 to 2007. Data collected included information regarding these children and their families across six waves of measurement spaced approximately six months apart during the study's duration. Each measurement wave included up to six specific measures each with multiple scales and scores (see details below). All participants provided parental informed consent based on Institutional Review Board (IRB) through the University of Kansas approved study procedures. This proposal was reviewed and approved by the CEBP as well as the Doctoral Committee.

Study Sample

Children. Children were recruited and enrolled in the KIDs study using the following inclusionary criteria:

(1) A child was between 18 and 48 months of age at enrollment, and assigned to either one of two cohorts based on age: Cohort 1 contained children who were 18 to 33 months of age. (M = 26 months, n = 103), Cohort 2 contained children who were 34 to 54 months of age at enrollment (M = 42 months n = 139).

(2) Parent/legal guardian provided informed consent and expressed a willingness to participate for at least 3 years.

(3) Child exhibits challenging behavior that was (a) being formally addressed by an early intervention or early special education provider, or (b) child displayed challenging behavior according to CEBP Center's definition (impediment to development and social participation; chronicity), or (c) child meets criteria for being at high risk of challenging behaviors due to the presence of at least 4 of 10 risk factors. These factors include but are not limited to; prolonged tantrums, physical and/or verbal aggression, disruptive vocal and motor behavior, property destruction, self injury, non-compliance and withdrawal (McCabe & Frede, 2007).

As shown in Table 1, the majority of the participants were male, starting the study below 36 months of age. The racial and ethnic distribution was nearly equal for African-Americans and Caucasians. Hispanic representation was slightly smaller, and other ethnic representation (French Creole, and Mexican bi-racial) was significantly smaller. Related delays, conditions and disabilities ranged from 5.1% with Autism Spectrum Disorder (ASD) to 40.6%, with external behavior problems. At start of the study, 9.1% of sample had an Individual Family Service Plan (IFSP); 8.3% had an Individual Education Program (IEP) (N = 242). Fifteen percent of caregivers reported that they did not know if their child had an IFSP or an IEP.

Table 1. *Study Enrollment Sample Summary (N = 244).*

Variable	Percentage
Gender	
Male	62.6%
Female	37.4%
Age	
Enrollment Age > 36 months	47.2%
Enrollment Age < 36 months	52.8%
Race	
African-American	34.1%
African-American & Caucasian	2.8%
African-American & Hispanic	1.2%
Caucasian	37.1%
French Creole	.4%
Exceptionality	
Known Autism	5.1%
Known Language Problems	29.7%

Table 1. *Study Enrollment Sample Summary (N = 244). (continued)*

Variable	Percentage
CBCL Statistics	
CBCL Total > Clinical	34.9%
CBCL Internal >Clinical	23.3%
CBCL External >Clinical	40.6%

With respect to the home language environment, primary caregivers reported that 23 of the children heard mostly Spanish at home, while 220 heard English. One caregiver reported the home language of one child was French-Creole (see Table 2). Caregivers were also asked if the child heard other languages at home as well. Of the children hearing English most, 173 heard no other languages at home, 41 also heard Spanish, and 6 also heard other languages (e.g., Creole, etc.). Of the children hearing Spanish most, 11 heard no other languages while 22 heard English.

Table 2. *Study Sample Language Most Heard at Home*.

Language	Frequency	Percentage
English	220	90.2
Spanish	23	9.4
French Creole	1	0.4
Total	244	100

Settings. The children were drawn from the six sites in roughly comparable numbers, with the least number of children coming from the University of Colorado- Denver (UC) and the University of Florida (UF) (12.3% each) and the most from the University of South Florida (USF) (24.1%). In 5 of the 6 sites there were more boys than girls, and in the UC-Denver site there are more children younger than 36 months at start (see Table 3).

Children were recruited and enrolled in the study at six sites or programs serving high risk populations in Lehigh Valley, PA; Nashville, TN (RIP), Gainesville, FL; Tampa Bay, FL; Denver, CO; Kansas City, KS and Lawrence, KS. Table below shows the study sample features by site. The majority of the Spanish speakers were from the CO site (15), the FL1 and FL 2 sites (3 each), and the PA site (1).

Table 3. *Study Sample Features by Site.*

Features	UC-D	KU	Lehigh	TVC	FL1	FL2
% of Total (*N* = 244)	12.3	16.9	18.8	15.7	12.3	24.1
% Male	46.9	68.2	73.5	65.9	56.3	58.7
% > 36 Months	25	50	55.1	58.5	43.8	42.9

Measures

The measures in this research were drawn from the KIDS database and included indices of challenging behavior, language proficiency, early literacy skill, and other variables used to address the research questions. The measures were as follows:

Challenging behavior. Challenging behavior was measured using the Child Behavior Checklist for ages 1-5 (CBCL, Achenbach 1991). It was completed by the child's parent or

guardian. The CBCL was administered in English or Spanish depending on the primary caregiver's primary language. The CBCL provides a measure of parent and guardian perceptions about his or her child's behavioral, social-emotional, and developmental functioning within the previous two months. Directions asked parents to rate 99 items descriptive of problems, disabilities, and concerns. Although the instrument includes multiple scales of varying generality, analysis was restricted to the CBCL Total Problems, Externalizing, and Internalizing scales.

Scores available for these scales were *t* scores (M = 50, SD = 10). To define behavior risk groups at each Wave of measurement, a *t*-score cut point of 59 was used to separate children into typical (59 or lower) vs. borderline to clinical (60 or higher) groups. It was possible for each child to form a cumulative behavior severity score ranging from: (1) Never borderline to clinical, (2) one to two waves borderline to clinical, (3) three to four waves borderline to clinical, and (4) always borderline to clinical.

Language Proficiency. The child's language proficiency was measured using the Preschool Language Scale, Fourth Edition (PLS-4; Zimmerman, Steiner, & Pond, 1992). The PLS-4 is commonly used to assess a broad range of language skills in children under the age of seven. The PLS was administered in either English or Spanish depending on the primary caregivers' language, and the language the child most heard at home. The Expressive Communication score on the PLS-4 estimates expressive language abilities; the Auditory Comprehension score estimates receptive language abilities, and the Total Language score on the PLS-4 approximates overall language abilities (Zimmerman et al., 1992). The PLS-4 was administered by a trained research assistant and all three PLS-4 scale (i.e., Expressive, Auditory

and Total) were included in the current study. Scores available for each scale were standard scores (*M* = 100, *SD* = 15).

Early Literacy Skills. The child's early literacy skills in English were measured using McConnell's Early Literacy Individual Growth and Development Indicators (IGDIs). IGDIs are progress monitoring measures (http://ggg.umn.edu) of spoken vocabulary (picture naming) and phonemic awareness (alliteration and rhyming) (McConnell, Priest, Davis, & McEvoy, 2002; Missall, Reschly, Sheran, Pickart, Heistad, Marston et al., 2007). These measures have proven useful in community preschool programs (Cadigan & Missall, 2007; Phaneuf & Silberglitt, 2003), and are sensitive to instruction and needs of students with disabilities, English-language learners, and children at risk for later delays (Missall, McConnell & Cadigan, 2006). Empirical links are reported between preschool and later elementary measures of language and literacy development (Missall et al., in press; McConnell, Missall, Wackerle, Wagner, Hays, & Roverud, 2007). Early Literacy IGDIs are currently being used to evaluate and refine intervention effects in Early Reading First classrooms (Wagner & Davis, 2007), national studies of young children receiving Individuals with Disabilities Education Act (IDEA), Part B Early Childhood Special Education (ECSE) services (Markowitz, J., Carlson, E., et al. 2006; Pre-Elementary Education Longitudinal Study (PEELS) Wave 1, IGDI data, *N* = 2,906), and other individual early childhood programs. Indeed, many Early Reading First grantees have adopted IGDIs in their evaluation protocol in the last three years (U.S. Department of Education, 2004). A recent report indicated that 18,597 children and 3,606 teachers from 49 states are registered in the website and constitute the normative sample. Children were administered each IGDI by a trained assessor. The measurement materials and data processing were obtained from the Get it!, Got it!, Go! website(https://ggg.umn.edu) at the University of Minnesota. Each administration is a 1 minute

sample of fluency in which the child produces as many responses (identified pictures, rhymes, etc.) as possible in the allotted time. Scores for each measure per occasion were rated by correct frequency per minute divided by 60 seconds.

Other variables. Other variables included in the current study included gender, language heard most at home, and the child's age at enrollment in the study. A child's start age was calculated by the difference between their dates of birth from the PLS-4 administration date at the first data collection occasion.

Study Procedures

After enrolling families in the study and completing informed consent, children and caregivers participated in six waves of assessment in areas of behavior, language, and early literacy time points approximately 6 months apart. Assessment procedures were supervised by an assessment coordinator in each site who was in contact with the Center's assessment coordinator. In this way, site coordinators and their staff members were trained to administer measures as needed.

Statistical Analysis Plan

The variables needed to address the research questions in this study were extracted from the longitudinal KIDS database and saved in a separate Statistical Package for the Social Sciences (SPSS) file for analysis. One child was eliminated due to an age at enrollment out-of-range error because of an inaccurate recording of a birth date. Another child who heard French-Creole most at home was eliminated because of the lack of language appropriate measures.

As a preliminary step, the variables in the analysis file were analyzed descriptively for attrition and missing values. Wave 6 was eliminated because of overall missing data including loss of all data from one study site. Complete data were available for 7.4% of variables, 8.2% of

cases, and 68.7% of values in Waves 1 to 5. However, patterns in the missing data in the 5 Waves (see Figure 1) suggested sufficient coverage both across and within variables and waves; thus, it was decided to impute missing data for waves 1 through 5.

Missing data were imputed using the SPSS imputation routine that employed maximum likelihood estimation (EM). The number of imputations was set to 20 in order to provide a sufficient number of imputations for pooling of the new values to estimate the missing values and no constraints were used. The estimated values for each variable were averaged over the 20 different estimates resulting in an analysis file containing the pooled values.

Simple descriptive statistics were used to describe the mean and variation properties of study variables, and thus support selection of the most appropriate analytical techniques. Graphical displays were used to produce the mean trajectories for behavior problems, language proficiency, and early literacy skills. Because of the longitudinal measurement model and several independent variable factors, analyses addressing the primary research question were conducted using ANOVA for Repeated Measures. Because of the number of ANOVAs conducted and the

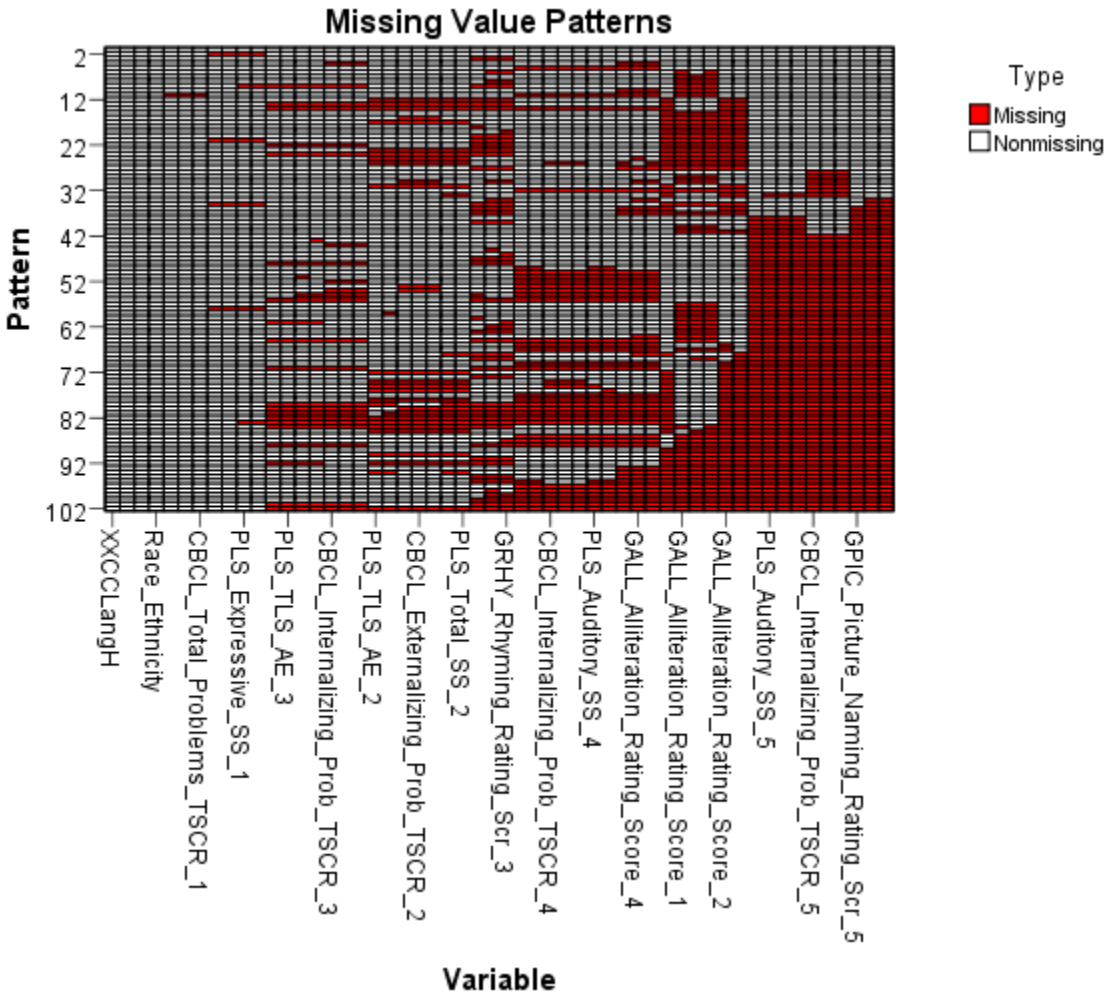

Figure 1. *Missing data pattern across study variables and 5 Waves of measurement*.

risk of comparison-wise errors, the Greenhouse-Geisser adjustment to degrees of freedom was used.

To address questions related to children's age at enrollment, the Cohort variable was used. To address questions related to behavior problem severity, an initial Severity score was created based on each child's CBCL Total Problem Behavior scores. Description of the Severity score indicated that it segmented the total sample of children into groups of size 57, 54, 47, 33, 31, and 20 with cumulative Severity scores of 0, 1, 2, 3, 4, and 5, respectively. While this was a relatively balanced breakdown of the full sample, when segmented again by Cohorts, cell sizes

were considered too small for analysis. To create a behavior severity score with sufficient cell sizes for statistical analyses including both Cohort and Severity factors, Severity was redefined as follows. Group 1 (Never Borderline to Clinical) were those children who were never borderline to clinical in any wave (*n*=57). Group 2 (One or Two waves Borderline to clinical) (*n* = 101), Group 3 (Three or Four Waves Borderline to Clinical) (*n* = 64), and Group 4 (Always Borderline to Clinical) were those children whose behavior were in the borderline to clinical range in all waves (*n* = 20).

To address questions of the influence of language heard at home, the sample was divided by English versus Spanish, as described below.

Thus, for addressing questions of the English home language, children's growth, and change over time, a 2 (Cohorts: 1 vs. 2) by 2 (4 levels of behavior problems: Never Clinical, Once or Twice, 3 to 4 Waves, Borderline to Clinical) by 5 (Waves) ANOVA Repeated design was used. In this analysis, significant effects at the Age Cohort level were indicative of the influence age at start of the study exerted on children's growth and change over time, while Behavior Problem Severity levels were indicative of the influence that severity of behavior problems had on growth and change, while Waves, the occasion of measurement was indicative of the trend or shape of children's change over time.

Because children whose home language was other than English could reasonably be expected to respond differently to the language and early literacy skill measures administered in English, they were examined separately. Exploration of the data revealed that 23 children heard Spanish most often at home and met this criterion. For addressing questions regarding this difference between Spanish and English groups, a 2 (Home Language: English vs. Spanish) by 5

(Waves 1 to 5) ANOVA repeated design was used. Due to small the number in the Spanish groups, Cohort was not included in the analysis.

Results

Findings Based on the English Home Language Sample

What Challenging Behavior Developmental Patterns Emerged as Measured by the Child Behavior Checklist (CBCL)?

Distinct patterns of problem behavior change and stability over time did emerge. The pattern of challenging behavior for the Always (borderline to clinical) group was highest (about 2 standard deviations above the normative mean) and stable over time. This group declined only slightly, not nearly as much as did the other three groups (see Figure 2). ANOVA indicated significant main effects for Waves (F [3.655, 635.11] = 17.514, p = .0001), *partial eta*^{2} = .077) and Severity groups (F [3, 211] = 144.198, p = .0001, *partial eta*^{2} = .672). Main effects for age Cohorts and all interaction effects were not significant.

Instead of all children increasing in total behavior problems over time as hypothesized, results indicated an overall decline. The main effect trend in mean Total Problems scores was 59.9, 56.8, 56.2, 53.3, and 52.7 for Waves 1-5 respectively. Children were highest at Wave 1 and lowest at Waves 4 and 5. Severity groups differed significantly in the order expected with the Never (borderline to clinical) group with the lowest Total Problems scores at or below the normative mean of 50 (Means $_{[Never]}$ = 50.5, 47.4, 43.9, 43.8, and 43.6 for Waves1through 5 respectively) versus the Always (borderline to clinical) group with Total Problem scores above the normative mean (Means $_{[Always]}$ = 72.3, 69.7, 70.6, 70.5, and 68.5).

ANOVA results indicated similar significant effects for the CBCL Externalizing score. The main effect of Waves was significant F [3.720, 784.847] = 22.046, p = .0001, *partial eta*^{2} = .095) as was the Severity groups main effect for the F [3,211] = 87.666, p = .0001, *partial eta*^{2} = .555). Additionally, the Wave by Severity groups interaction effect was significant F [11.159,

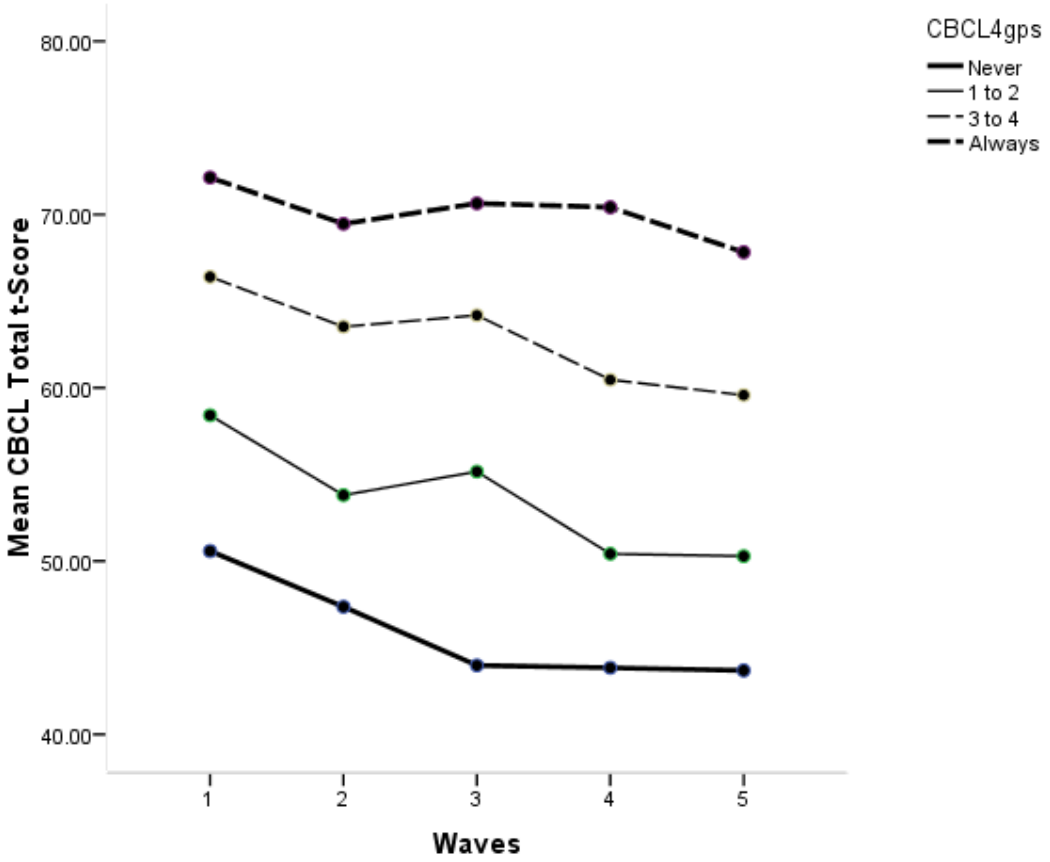

Figure 2. *Mean CBCL total behavior problems by wave of measurement.*

784.847] = 1.905, p = .035, *partial eta*^{2} = .026) reflecting the fact that the Never group increased in Externalizing problems in the last wave compared to earlier phases while the other groups showed a downward trend (see Figure 3, left panel).

ANOVA results for the CBCL Internalizing score indicated similar main effects; however, none of the interaction effects were significant. The Internalizing main effect for Waves was significant F [3.236, 682.731] = 7.334, p = .0001, *partial eta*^{2} = .034) as was the main effect of severity groups F [3,211] = 72.762, p = .0001, *partial eta*^{2} = .508). It was also clear that Externalizing behavior problems were greater in magnitude for all four groups, than were internalizing behavior problems as seen in Figure 3.

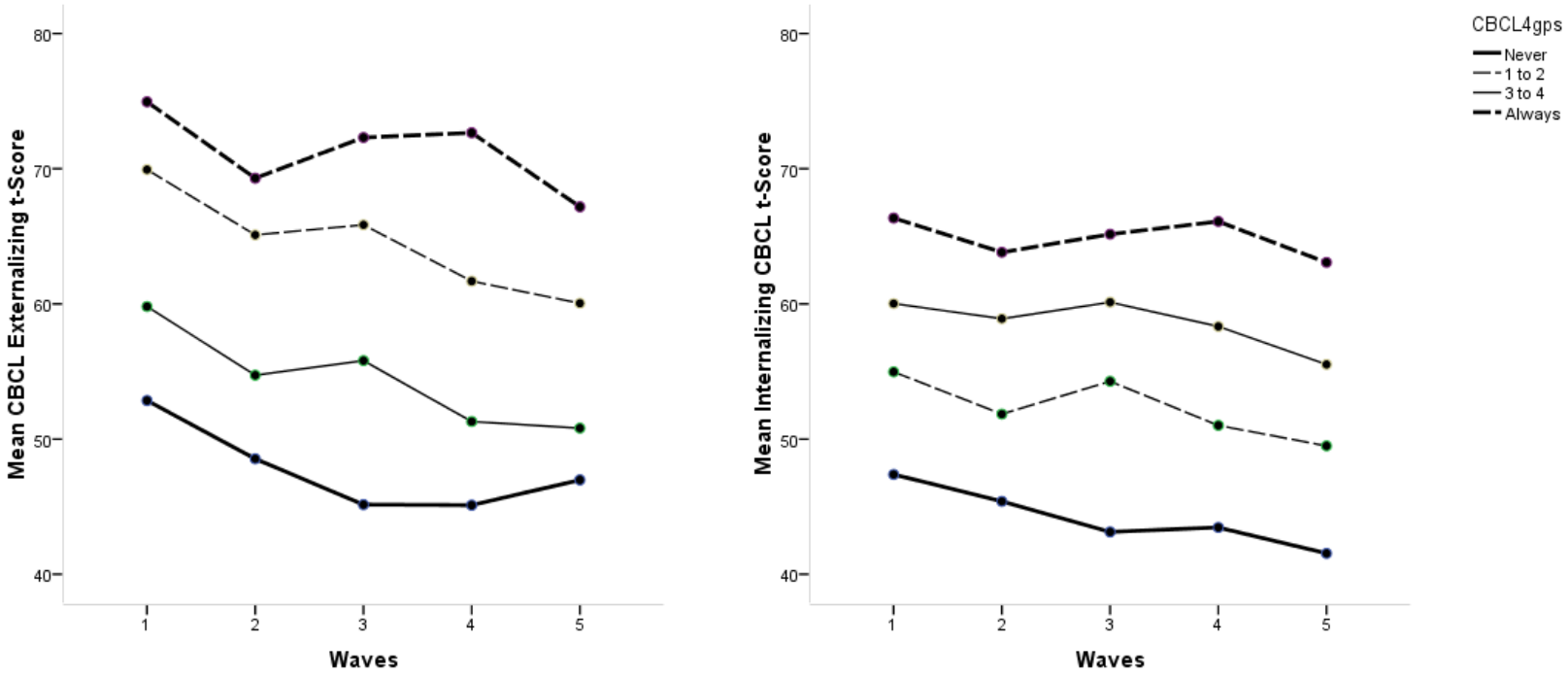

Figure 3. *Mean Externalizing (left panel) and Internalizing (right panel) behavior problems by wave of measurement.*

Based on behavior problem severity, were the children with the most severe behavior problems also lowest in language proficiency (PLS-4 Expressive Communication and Auditory Comprehension) and Early Literacy (i.e., picture naming, alliteration, rhyming)?

Preliminary correlational analyses were conducted to inform the pattern of relationships between variables over time (see Table 4). The first analysis was the relationship pattern between the language and early literacy measures. Results of this analysis indicated moderately strong (e.g., ranging from .4 to .7), systematic patterns of positive correlation over waves of measurement between the Expressive and Auditory Comprehension language proficiency measures and the Picture Naming early literacy skill. Similar patterns involving the Alliteration, and Rhyming skills and the language measures were also positive but relatively weaker (e.g., ranging .1 to .4).

The second analysis examined the patterns of correlation between the CBCL Total Problems score and the Language and Early Literacy scores indicated a pattern of weak, negative relationships between CBCL Total Behavior Problems and the Language Measures (see Table 4). The more behavior problems, the lower were the children's language proficiency.
As shown in the table, the strongest pattern of stable relationship was between Total Behavior Problems and Expressive Communication and Auditory Reception where all but one correlation was statistically significant. In contrast, only one of the 15 correlations involving early literacy skills was statistically significant.

Language (PLS-4). The hypothesis that children with the most severe patterns of behavior problems (Severity group) were also lowest in language development was in the right direction, but not statistically significant at alpha = .05 (see Figure 4). ANOVA for **PLS-4**

Table 4. *Relationships Between Measures of Behavior Problems, Language Proficiency, and Early Literacy Skills.*

Relationship	Wave				
	1	2	3	4	5
Expressive Communication vs. Picture Naming	.490**	.509**	.621**	.523**	.127**
Expressive Communication vs. Alliteration	.177**	.220**	.306**	.353**	-.008
Expressive Communication vs. Rhyming	.226**	.203**	.399**	.363**	.097
Auditory Comprehension vs. Picture Naming	.454**	.430**	.610**	.502**	.399**
Auditory Comprehension vs. Alliteration	.145*	.200**	.333**	.326**	.204**
Auditory Comprehension vs. Rhyming	.177**	.217**	.371**	.310**	.171**
CBCL Tot Prob. vs. Expressive Communication	-.177**	-.185**	-.201**	-.196**	-.065**
CBCL Total Prob. vs. Auditory Comprehension	-.146**	-.158**	-.203**	-.133*	-.065
CBCL Total Prob. vs. Picture Naming	-.024	-.127	-.255**	-.063	-.100
CBCL Total Prob. vs. Alliteration	-.053	-.038	-.079	-.051	-.113
CBCL Total Prob. vs. Rhyming	.025	-.093	-.113	-.056	-.035

Note. *p = .05; **p = .01. Prob. = Problems

Expressive Communication indicated a significant main effect for waves (F [3.519, 742.595] = 7.188, p = .0001, *partial eta*^{2} = .033) primarily due to the drop in Wave 5 (see Figure 4, left panel). The groups and cohorts Expressive Communication main effects were not significant, nor were any of the interaction effects.

None of the ANOVA effects for **PLS-4 Auditory Reception** were significant at alpha = .05, however, like Expressive Communication, the Severity groups effect was in the right direction with the exception of the data at Wave 5. Otherwise, the Always (borderline to clinical) group was lowest in Auditory Reception while the Never and 1 to 2 groups were highest in Auditory Reception (see Figure 4, right panel).

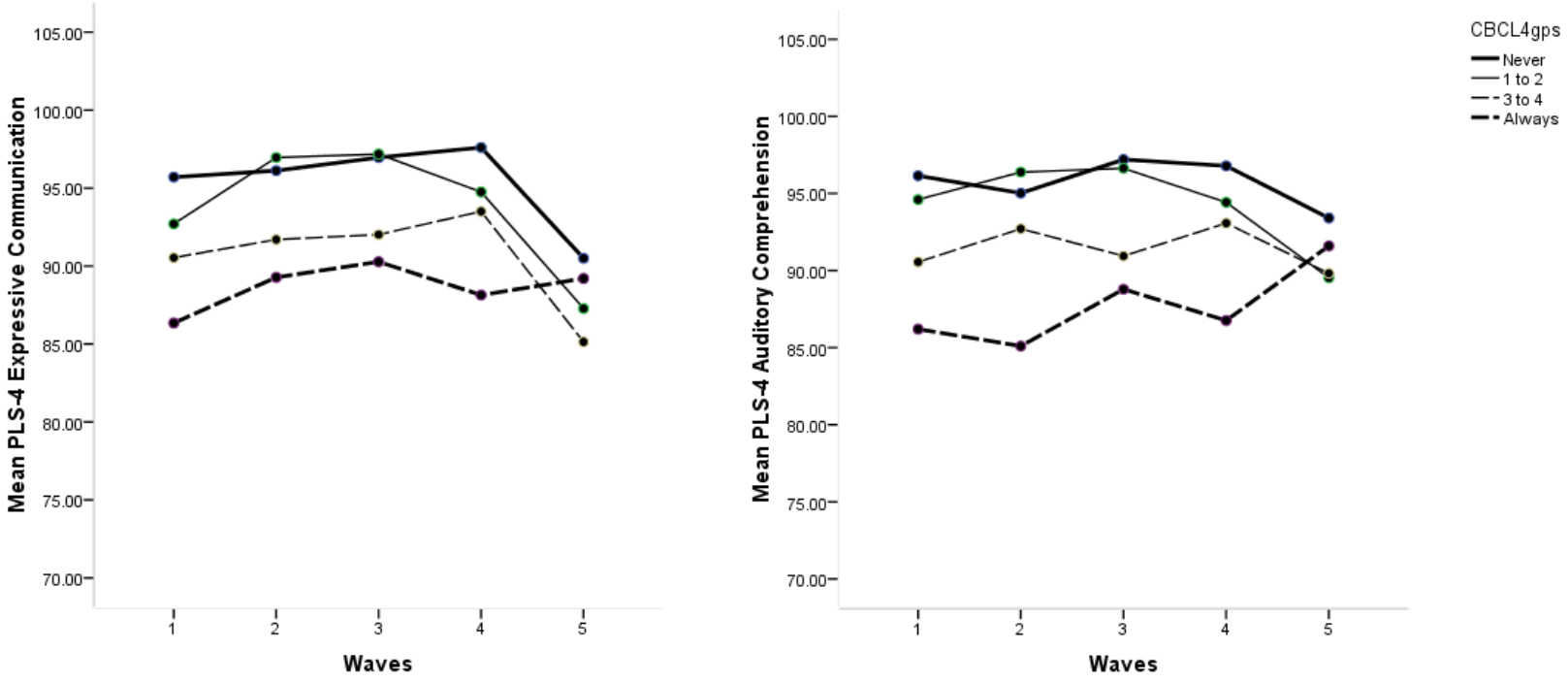

Figure 4. *Mean PLS-4 expressive communication (left panel) and auditory comprehension (right panel) over waves of measurement.*

Language Findings ANOVA results for **Picture Naming** produced main effects for Waves (F[1.796, 378.966] = 29.14, p = .0001, *partial eta*^{2} = .121) and Cohorts (F[1, 211] = 28.257, p = .0001, *partial eta*^{2} = .118). Younger children performed lower than older children at start, and children improved their performance over time (see Figure 5). Somewhat greater spread in Picture Naming Severity group trajectories was observed in Cohort 2 compared to Cohort 1 suggesting increased variability between groups was emerging. However, the severity group main effect and the interaction effects were not significant.

Results for **Alliteration** indicated main effects for Wave (F[2.472, 521.637] = 35.988, p = .0001, *partial eta*^{2} = .146) and Cohort (F[1,211] = 15.958, p = .0001, *partial eta*^{2} = .070). Results for **Rhyming** indicated main effects for Wave (F [2.227, 469.813] = 47.968, p = .001, *partial eta*^{2} = .185) and Cohort (F [1/211] = 26.094, p = .0001, *partial eta*^{2} = .110). Additionally, the Wave by Cohort interaction was significant (F [2.227, 469.813] = 15.601, p = .0001, and *partial eta*^{2} = .069). As with Picture Naming, greater spread in Alliteration and Rhyming Severity groups was suggested in the older Cohort.

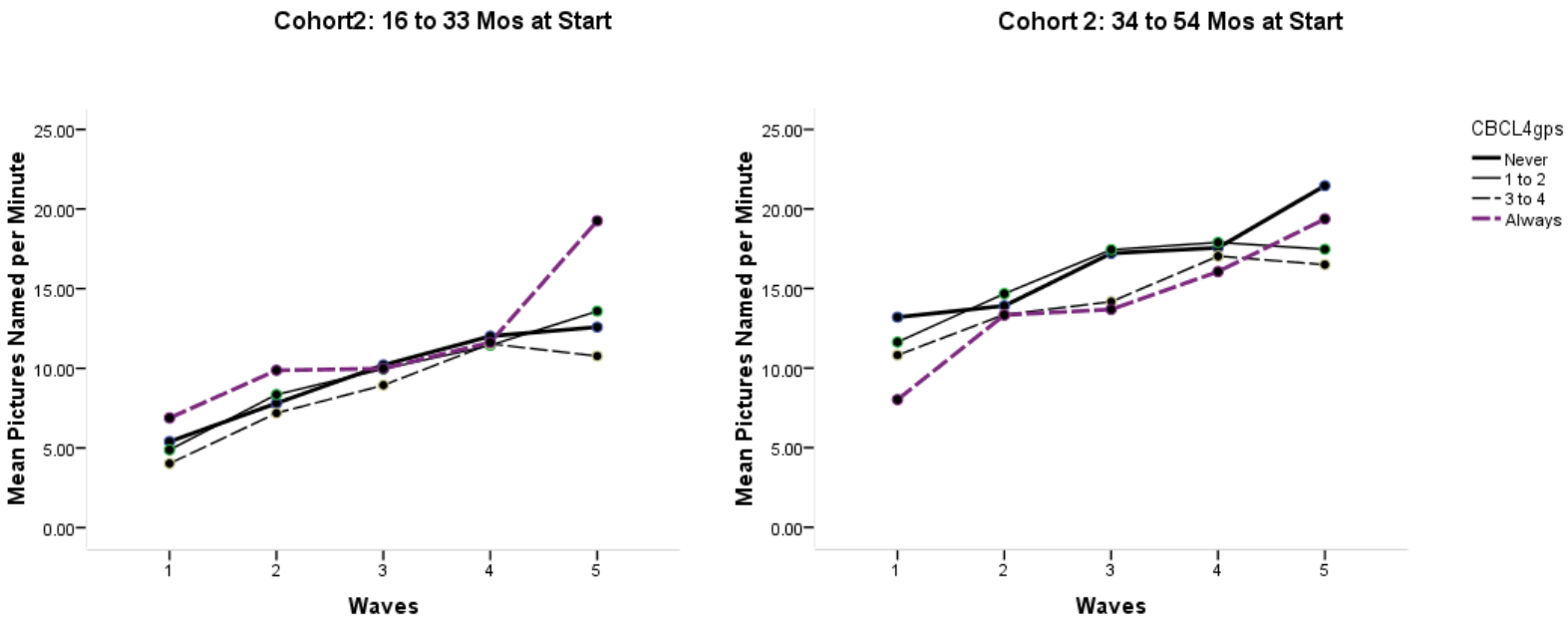

Figure 5. *Mean Picture Naming for Cohort 1 (left panel) and Cohort 2 (right panel) by wave of measurement.*

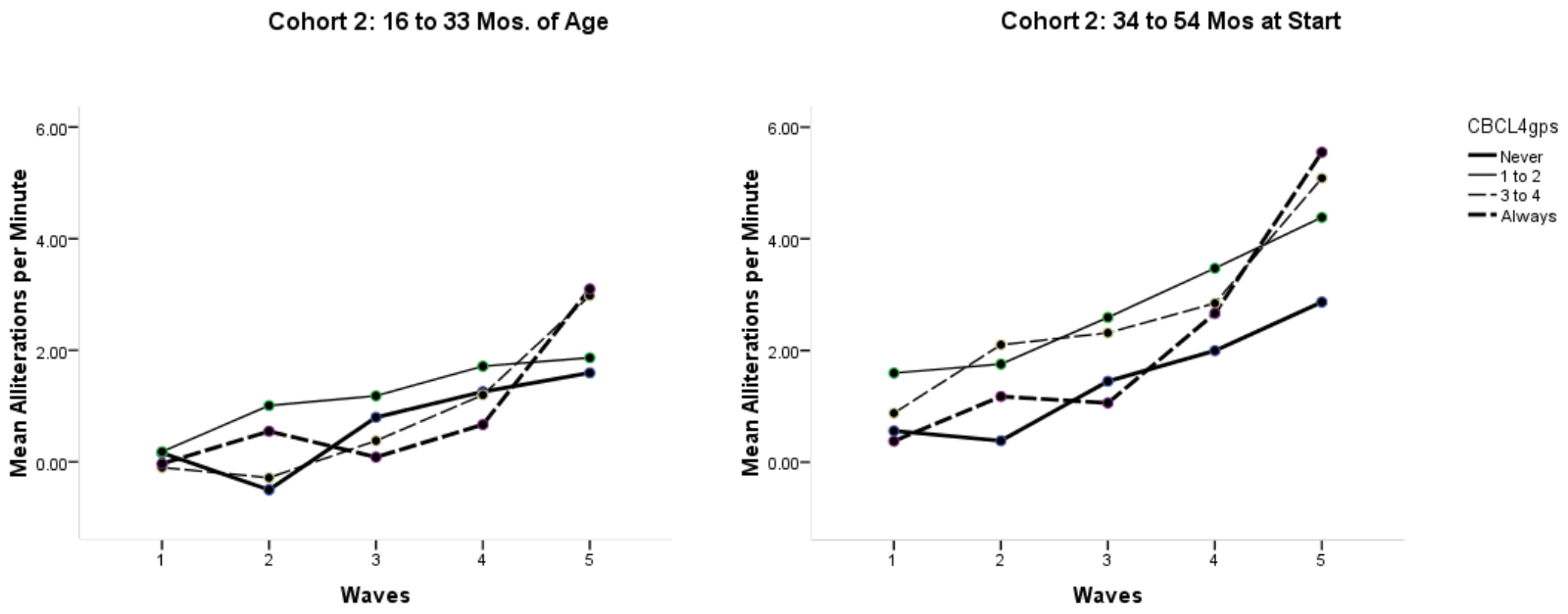

Figure 6. *Mean Alliteration for Cohort 1 (left panel) and Cohort 2 (right panel) by wave of measurement.*

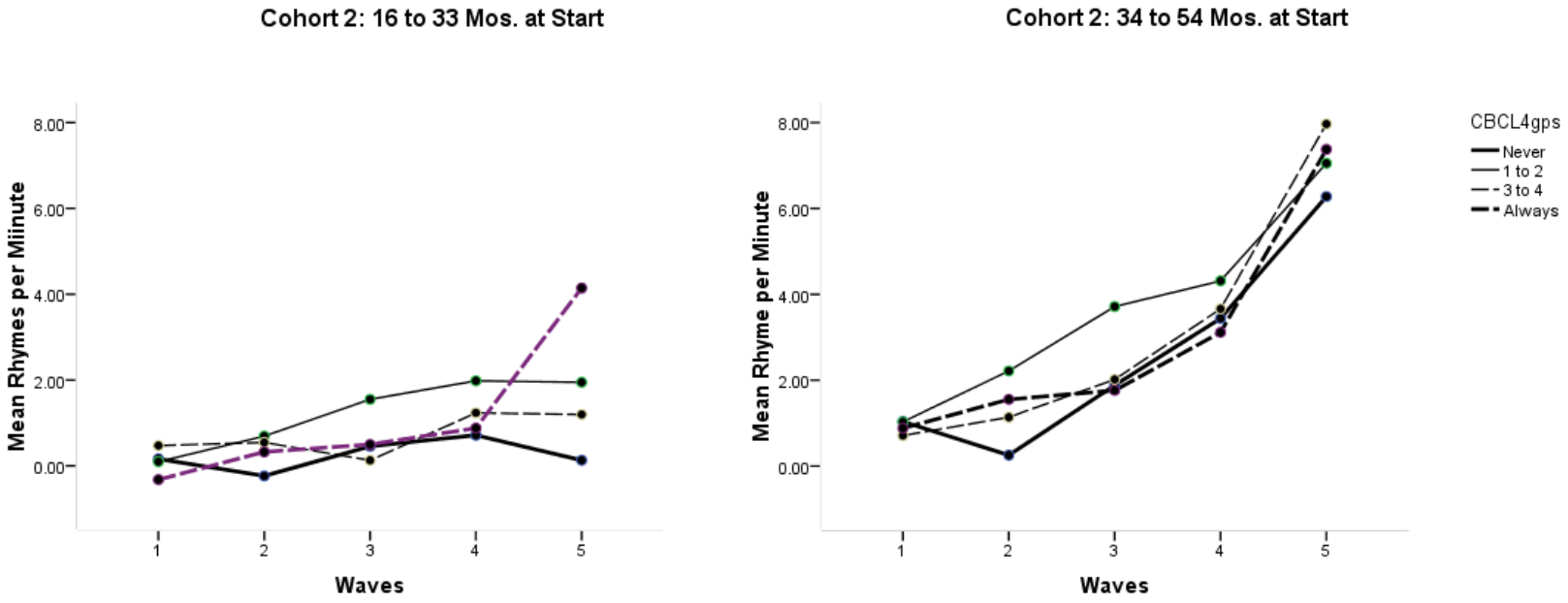

Figure 7. *Mean Rhyming for Cohort 1 (left panel) and Cohort 2 (right panel) by wave of measurement*.

Findings Regarding Children Whose Home Language was Spanish

What was the Composition of the Spanish Subsample?

Of the 23 children from a predominantly Spanish speaking environment sample, 11 caregivers reported the child heard no other languages while 12 also heard English as well. Twelve were from age Cohort 1 and 11 were from Cohort 2. Ten were male, 13 were female.

How Did the Spanish Group Compare to the English Group in Age at Start and CBCL Total Problems?

In terms of age at enrollment, the groups from Spanish and English home language environments appeared comparable. The mean age of this Hears Spanish Most group at enrollment was 33.4 (SD = 8.6) months versus 35.4 (SD = 9.2) for the English language group. In terms of CBCL Total Behavior Problems, ANOVA results indicated a significant main effect for Waves (F [3.6414, 867.431] = 8.703, p = .0001, *partial eta*^{2} = .035) and the Waves by Language Most Heard groups interaction effect (F[3.6414, 867.431] = 4.418, p = .0001, *partial eta*^{2} = .030). No other effects were significant. As shown in Figure 8, there was generally a downward trend in behavior problems. Only at Wave 1 was there a difference between the two groups, the Spanish group was lower in behavior problems than the English group. Thus, the two groups were relatively comparable in behavior problem risk ranging above the normative mean level of 50 and at times (Wave 2 and 3) close to the 59 borderline to clinical cut point.

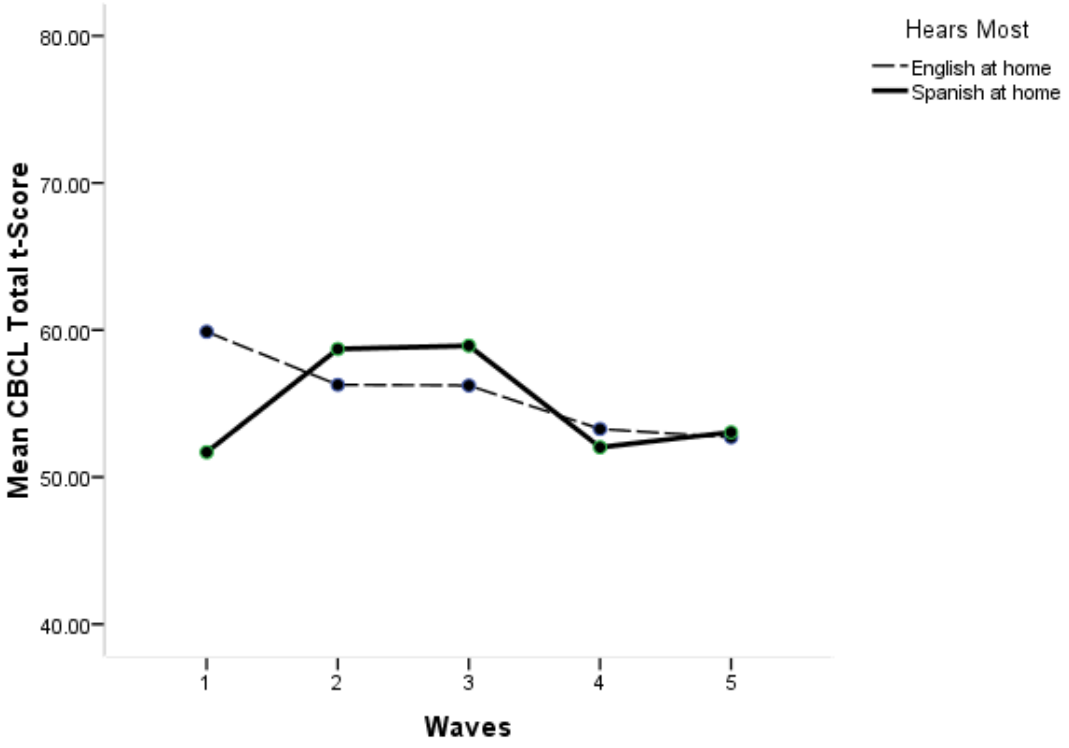

Figure 8. *Mean CBCL total behavior problems by Spanish and English group by wave of measurement.*

Did the Children Differ in PLS-4 Language Proficiency?

Interestingly, these PLS-4 results consistently favored the Spanish group, over the English group for all five waves (see Figure 9).

Expressive Communication ANOVA results indicated a significant main effect for Waves (F[3.544, 850.630] = 7.789, p = .0001, *partial eta2* = .031). As in earlier results, there was a declining trend overall (see Figure 9). The Language Heard Most effect was only marginally significant (F[1, 240] = 3.020, p = .084, *partial eta2* = .012).

Auditory Comprehension ANOVA results for auditory comprehension also indicated a significant main effect for Waves (F[3.384, 812.344] = 5.564, p = .0001, *partial eta2* = .023)

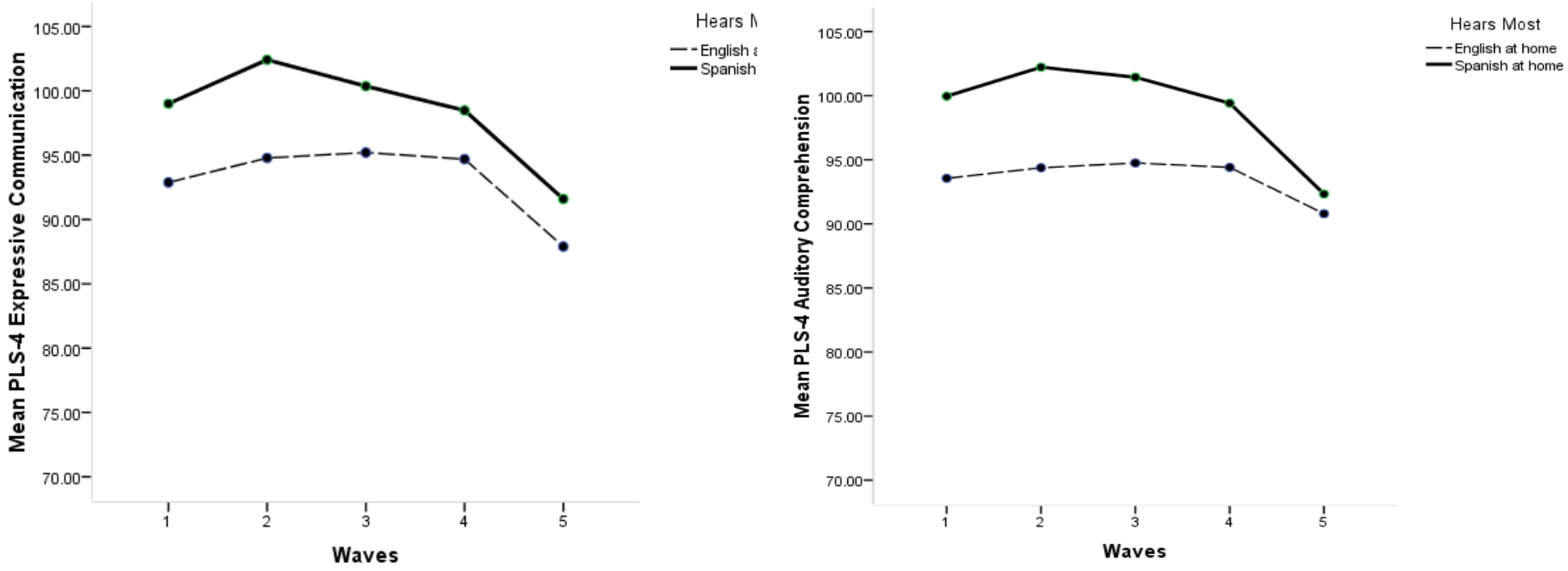

Figure 9. *Mean PLS-4 Expressive Communication (left panel) and Auditory Comprehension (right panel) by language group and wave of measurement.*

reflecting the previously reported downward trend. The Language Most Heard effect was again marginally significant (F[1, 240] = 2.926, p = .088, *partial eta2* = .012). This Hears Most group difference also favored the Spanish, over the English group (see Figure 9). No other effects were significant.

What was the Children's performance on the Early Literacy Skills and Trends over Time?

Trends in children's early literacy skills were accelerating over time for both groups (see Figure 10. ANOVA results for **Picture naming** indicated a significant main effect for Waves(F[1.792, 430.150] = 15.562, p = .0001, *partial eta*^{2} = .061) as both groups increased over time. Additionally there was a main effect for Hears Most groups (F[1, 240] = 5.226, p = .023, *partial eta*^{2} = .021). As seen in Figure 10 (upper left panel), the Spanish group had less English Spoken vocabulary and were growing slower in vocabulary over time.

ANOVA results for **Alliteration** also indicated a significant main effect for Waves (F[2.537, 608.868] = 37.176, p = .0001, *partial eta*^{2} = .134) as both groups improved over time. Interesting here was the slow start in growth for the Spanish group in the first two Waves, followed by acceleration above the English group in Waves 3 through 5 (see Figure 10, upper right panel). This Wave by Hears Most groups interaction effect was significant (F[2.368, 568.336] = 4.076, p = .011, *partial eta*^{2} = .017). Again, **Rhyming** ANOVA results indicated a significant main effect for Waves (F[2.368, 568.336] = 60.850, p = .0001, *partial eta*^{2} = .202) as both groups improved over time (see Figure 10, lower left panel). As with Alliteration, the Wave by Hears Most interaction effect was significant (F[2.368, 568.336] = 27.079, p = .0001, *partial eta*^{2} = .101) because of the slower acceleration of the Spanish group compared to the English group in Waves 1 and 2, and the catch up pattern shown by the Spanish group over the last three Waves (see Figure 10).

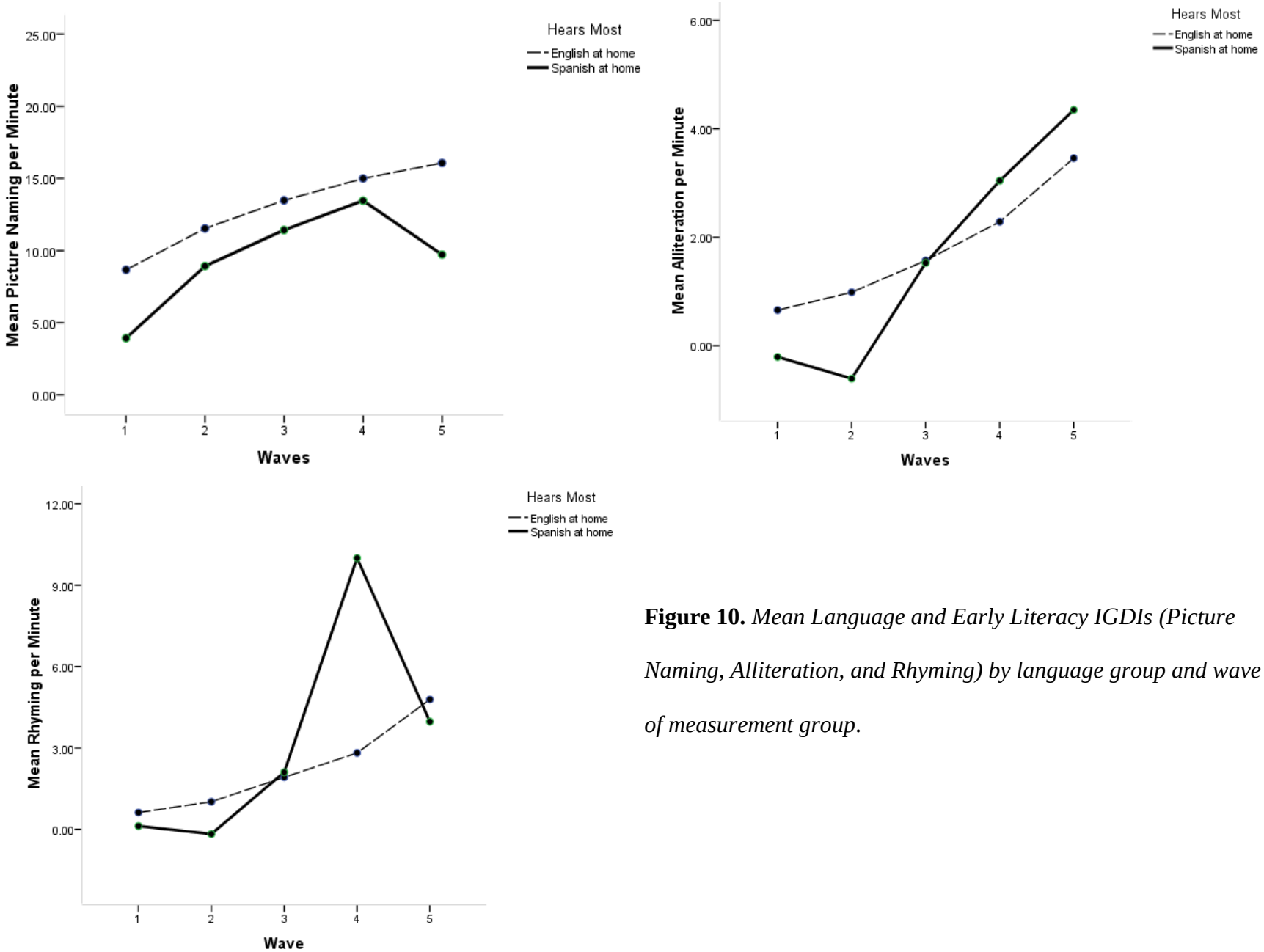

Figure 10. *Mean Language and Early Literacy IGDIs (Picture Naming, Alliteration, and Rhyming) by language group and wave of measurement group.*

Chapter 4

Discussion

Understanding the relationship between behavioral problems, language delays, early literacy skills, and the home language environment is advancing but is still not well understood particularly in preschool age children (Hester &Kaiser, 1998). Few studies have examined the actual growth trajectories in language/literacy as a function of the level of behavioral adjustment and home language environment in young children and their interrelationship over time. We sought to address this issue and advance what we know by examining how young children's growth patterns in challenging behavior covaried with their language and early literacy development over a three-year period. Secondly, because little is known about how the home language environment influences growth in learning early English literacy skills, we compared the growth patterns in these skills in terms of the language most heard at home (i.e., English versus Spanish).

The hypothesis that high levels of problem behaviors would increase over time in this high risk sample of children was rejected. Overall there was a main effect, declining trend over the five waves in Total Problems and in Externalizing and Internalizing behavior problems on the CBCL. However, this was less true for the children whose Total Behavior scores were in the borderline to clinical range of severity on all 5 waves of measurement. This group remained comparatively stable in their level of behavior problems, ranging 2 standard deviations above the normatively mean range over the entire study. These children appeared to be early starters and maintained that path. In contrast, the Never (borderline to clinical) group of children by definition had mean standard scores below the normative mean t-score of 50 and were declining over time. The other two groups (1 to 2 versus 3 to 4 waves in the borderline to clinical range),

produced ordered levels between the Always and Never groups and were also declining over time. There were no effects by age cohort. An explanation for the declining trend in behavior may have been the children making the social adjustment in a classroom environment.

The hypothesis that children with high-levels of challenging behavior would <u>perform lower than expected on language and early literacy skills</u> trending towards decreasing proficiency over time was partially supported at best.

The correlational analyses located that the strongest, positive patterns of relationship over time between the Language (Expressive Communication and Auditory Comprehension) versus Early Literacy Skills (Picture Naming, Alliteration, and Rhyming) measures. The very strongest patterns of relationship over time were between Picture Naming vocabulary versus Expressive Communication and Auditory Comprehension. Relationships between Behavior Problems and Language and Early Literacy skills, while negative in direction as expected, were not nearly as strong. The strongest patterns emerged between Total Problems and the two PLS-4 Language scales.

In terms of the covariation between Behavior Problem Severity groups, and lower language performance trajectories over time, results were in the right direction but not statistically significant. With respect to Early Literacy Skills, age cohort was significant in that younger children performed lower in Early Literacy than the older group. Behavior Problem Severity patterns in Early Literacy Skills was neither significant, nor in the right direction. Both groups appeared to be emerging in these skills. It was noted that the Severity groups appeared to spread greater in the older cohort of children indicating more emergence in skills for these children.

With respect to the findings for the children who most hear Spanish at home language, analyses indicated the two language groups were roughly equal in level of behavior problems in the range between the normative mean of 50 and 1 standard deviation above the mean (t-score = 60) on the CBLC. The Spanish group exceeded the English group in both Expressive Communication and in Auditory Comprehension. And, trends over time were declining for both groups. The Spanish level of performance ranged close to the PLS-4 normative mean, compared to half a standard deviation below the mean for the English group. As might be expected, the Spanish group was significantly lower performing on Picture Naming English vocabulary. In the case of both Alliteration and Rhyming, the Spanish group was initially slower growing in the first two waves, but exceeded (Alliteration) or equaled (Rhyming) the English performance in the last three waves. In these two phonemic skills, the Spanish students appeared to catch up with the English group.

Interpretation of Results: With respect to the declining trends in behavior problems, several explanations were possible. One was that most the children in the study were receiving some form of early intervention that was more or less effective. Another was that the sensitivity of the CBCL measure was changing over time. Measures of young children are known to be less accurate in the earliest ages compared older ages of measurement. The lack of age cohort effects for the CBCL and PLS-4 measures was most likely due to their relativistic, standard score metrics in that individual children's raw scores were adjusted "relative" to the normative mean score (standard scores), making age cohort effects difficult to see. However, age cohort effects were observed in the Early Literacy Skills because these measures were idiographic equal interval scales, increasing from zero to some upper limits based on frequency of occurrence. Idiographic scales are particularly useful in depicting rates and patterns of growth or change over

time. With respect to the Spanish sample, they were relatively equal in level of behavior problems over time and clearly language proficient, in either Spanish or English. They were disadvantaged in spoken English vocabulary in the first two Waves, but appeared to be catching up or exceeding the English sample in the last three Waves, given greater opportunity and time to learn.

Limitations: Because the Spanish sample was small, these findings are only preliminary. However, these findings suggested the appropriateness of removing them from the earlier analysis because of their different patterns on the English Early Literacy measures. In a number of cases, established trends in Behavior Severity groups Waves 1 to 4 trends in Language Proficiency and Early Literacy did not carry forward through Wave 5. This was seen both in terms of the graphed trajectories and in the simple correlations. Things just looked different at Wave 5. Whether or not this was a true effect or an artifact of the missing value calculation in Wave 5, was not entirely clear. Analyzing these data in future research using multi-level growth model might obviate this problem because unlike ANOVA repeated it does not assume complete data on the repeated measures variable.

Future research and conclusion: Additional research is necessary to gain more knowledge and understanding about the relationship between behavior, language environment, and early literacy specifically as they relate to children ages 3 to 5. While these findings did support the notion of earlier starter behavior problems, an adverse relationship to language and early literacy was much less clear. As more research studies examine the trajectories surrounding these children at different levels of risk, the more advanced our understanding of how these functions influence each other will be, hopefully to the point of enabling early childhood teachers to design and implement effective, research based behavioral interventions and

preschool language arts curriculums. Rigorously planned programs can prepare young learners to be Kindergarten ready, equipped with social and behavioral skills that can allow for a successful classroom experience.

References

Achenbach, T. M. (1991). Child Behavior Checklist/ 4-18. University Associates in Psychiatry, 1 South Prospect Street, Burlington, VT 05401-3456.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Baker, L. & Cantwell, D. P. (1983). Developmental, social, and behavioral characteristics of speech and language disordered children. In S. Chess and A. Thomas (Eds.), *Annual progress in child psychiatry and child development* (206-216). New York Bruner-Mazel.

Barkley, R. A., Shelton, T. L., Crosswait, C., Moorehouse, M., Fletcher, K., Barrett, S., Jenkins, L. & Metevia, L. (2002). Preschool children with disruptive behavior: Three-year outcome as a function of adaptive disability. *Development and Psychopathology,* 14, 45-67.

Baron-Cohen, S. (1998). Social and pragmatic deficits in autism: Cognitive or affective? *Journal of Autism and Developmental Disorders,* 18 (3), 379-402.

Bartak, L., Rutter, M., & Cox, A. (1977). A comparative study of infantile autism and specific developmental receptive language disorders III. Discriminate function analysis. *Journal of Autism and Developmental Disorders,* 7 (4), 383-396.

Beitchman, J. H., Wilson, B., Johnson, C. J., Atkinson, L., Young, A., Adlaf, E. et al., (2001). Fourteen -year follow-up of speech/language-impaired and control children: Psychiatric outcome. *Journal of the American Academy of Child and Adolescent Psychiatry,* 40, 75-82.

Beitchman, J H., Nair, R., Clegg, M., Ferguson, B. A & Patel, P. G. (1986). Prevalence of Psychiatric disorders in children with speech and language disorders. *Journal of the American Academy of Child and Adolescent Psychiatry,* 25, 528-535.

Benner, G., Nelson, J. R., & Epstein, M. H. (2002). Language skills of children with EBD: A literature review. *Journal of Emotional & Behavioral Disorders, 10 (1).*

Blackman, J. A. (1999). Attention-deficit/hyperactivity disorders in preschoolers: Does it exist and should we treat it? *Pediatric clinics of North America,* 46 (5), 1011-1025.

Bott, C., Farmer, R., & Rohde, J. (1997). Behaviour problems associated with lack of Speech in people with learning disabilities. *Journal of Intellectual Disability Research,* 41 (1), 3-7.

Bowman, M., Barnett, D., Johnson, A. & Reeve, K. (2006). Language, school functioning, and behavior among African American urban kindergarteners. *Merrill-Palmer Quarterly,* 52 (2), 216-238.

Cadigan, K., & Missall, K. N. (2007). Measuring expressive language growth in young children with autism spectrum disorders. *Topics in Early Childhood Special Education*, 27 (2), 110-118.

Calderon, M., August, D., Slavin, D., Duran, R., Madden, N., & Cheung, A. (2005). Bring words to life in classrooms with English-language learners. In E. J. Hieber & M. I. Hamil (Eds.), *Teach and learning vocabulary: Bridging research to practice*. Mahway, N. J.: Erlbaum.

Camarata, S. M., Hughes, C A., & Ruhl,K. L. (1998). Mild/moderate behaviorally disordered students: A population at risk for language disorders. *Language, Speech, and Hearing Services in Schools,*19, 191-200.

Cantwell, D. P. & Baker, L. (1977). Psychiatric disorders in children with speech and language retardation: A critical review. *Archives of General Psychiatry*, 34, 583-591.

Cantwell, D. P. & Baker, (1987). Clinical significance of childhood communication disorders: perspectives from a longitudinal study. *Journal of Child Neurology*, 2, 257-264.

Carson, D., Klee, T., Perry, C., Muskina, G. and Donaghy, T. (1998). Comparisons of children with delayed and normal language at 24 months of age on measures of behavioral difficulties, social and cognitive development. *Infant Mental Health Journal,* 19 (1) 59-75.

Castelli, F., Frith, C., Happe', F. & Frith, U. (2002). Autism, asperger syndrome and brain mechanisms for the attribution of mental states to animated shapes. *Brain*, 125, 1839- 1849.

Charlop, M. H. & Haymes, L. K. (1994). Speech and language acquisition and intervention: Behavioral approaches. In J. L. Matson (Ed.), *Autism in children and adults: Etiology, assessment, and intervention* (213-240). Pacific Grove, CA: Brooks/Cole.

Charlop-Christy, M. H., Carpenter, M., Le, L., LeBlanc, L. A., & Kellett, K. (2002). Using the picture exchange communication system (PECS) with children with autism: assessment of PECS acquisition, speech, social-communicative behavior, and problem behavior. *Journal of Applied Behavior Analysis,* 35, 213-231.

Churchill, D. (1972). The relation of infantile autism and early childhood schizophrenia to developmental language disorders of childhood. *Journal of Autism and Childhood Schizophrenia,* 2, 192-197.

Clarke, P. (2009). Supporting children learning English as a second language in the early years. *Victorian Curriculum and Assessment Authority*, 1-31.

Cohen, N. J. (2001). *Language impairment and psychopathology in infants, children, and adolescents*. Thousand Oaks, CA: Sage.

Cohen, N. J., Menna, R., Vallance, D. D., Barwick, M. A., Im, N., & Horodezky, N. B. (1998). Language, social cognitive processing, and behavioral characteristics of psychiatrically disturbed children with previously identified and unsuspected language impairments. *Journal of Child Psychology/Psychiatry* 39 (6), 853-864.

Cohen, N. J., Davine, M., Horodezky, N., Lipsett, L. &Isaacson, L. (1993). Unsuspected language impairment in psychiatrically disturbed children: Prevalence and language and behavioral characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry,* 32, 595 603.

Conroy, M. A., Dunlap, G., Clarke, S., & Alter, P. J. (2005). A descriptive analysis of positive behavioral intervention research with young children with challenging behavior. *Topics in Early Childhood Special Education,* 25 (3), 157-166.

Crowley, M. (1992). Behavioral difficulties and their relationship to language development. In J. Law (Ed.), *The early identification of language impairment in children* (63-83). London: Chapman & Hall.

Daunic, A. P., Smith, S. W., Brank, E. M. & Penfield, R. D. (2006). Classroom-based cognitive-behavioral intervention to prevent aggression: Efficacy and social validity. *Journal of School of Psychology,* 44, 123-139.

Daunic, A. P., Conroy, M. A. Sowell, C., Harman, J., Bell-Edison, B. A. & the KIDS Development Study (2007). *Relations among measures of language and behavior for high-risk children in early childhood.* Center for Evidence-based Practice: Young Children with Challenging Behavior, University of South Florida.

Dobbs, M. (2005, May 17). Youngest Students Most Likely to Be Expelled: Preschoolers' Self-Esteem at Risk, Study Says. *Washington Post*, p. A02.

Edgar, E. & Levine, P. (1987). Special education students in transition: Washington state data 1976-1986. Seattle: University of Washington, experimental education unit.

Egeland, B., Kalkoske, M., Gottesman, N., & Erikson, M. F. (1990). Preschool behavior problems: stability and factors accounting for change. *Journal of child Psychology and Psychiatry,* 31, 891-909.

Emerson, E. (1995). *Challenging behavior: Analysis and intervention in people with learning difficulties.* New York, NY: Cambridge University Press.

Estrem, T. (2005). Relational and physical aggression among preschoolers: The effect of language skills and gender. Early *Education & Development, 16 (2).*

Fujiki, M., Brinton, B., Morgan, M. & Hart, C. H. (1999). Withdrawn and sociable behavior of children with language impairment. *Language, Speech, and Hearing services in Schools,* 30, 183-195.

Gallagher, T. M., (1999). Interrelationships among children's language, behavior, and emotional problems. *Topics in Language Disorders,* 19 (2), 1-15.

Gernsbacher, M., Geye, E. & Ellis-Weismer, S. (2005). The role of language and communication impairments within autism. In P. Fletcher and J. F. Miller (Eds.), *Developmental theory and language disorders: Trends in language acquisition research 4* (71-93). Amsterdam: John Benjamin.

Gilliam, W. S. (2005). Prekindergarteners Left Behind: Expulsion Rates in State Prekindergarten Systems. New York: Yale University Child study Center Foundation for Child Development.

Gillam, W. S., & Shahar, G (2006). Preschool and Child Care Expulsion and Suspension: Rates and Predictors in One State. *Infants and Young Children, 19*(3), 228-245.

Graves, A. W., Gersten, R., & Haager, D. (2004). Literacy instruction in multiple-language first grade classrooms: Linking student outcomes to observed instructional practice. *Learning Disabilities Research and Practice, 19*, 262-272.

Griffith, P. L., Rogers-Adkinson, D. L., & Cusick, G. M. (1997). Comparing language disorders in two groups of students with behavioral disorders. *Behavior Disorders*, 22, 160-166.

Gunter, P., Denny, R. K., Jack, S. L., Shores, R., & Nelson, C. M. (1993). Aversive stimuli in academic interactions between students with serious emotional disturbance and their teachers. *Behavioral Disorders*, 18, 265-274.

Guralnick, M. (1996). The peer relations of preschool children with communication disorders. *Child Development*, 67, 471-489.

Hakuta, K., Butler, Y. G., & Witt, D. (2000). *How long does it take English learners to attain proficiency?* Santa Barbara, CA: The University of California Language Minority Research Institute.

Happe′, F. G. (1995). The role of age and verbal ability in the theory of mind task performance of subjects with autism. *Child Development,* 66, 843-85.

Hermelin, B. & O'Connor, N. (1970). Psychological experiments with autistic children. Oxford: Pergamon Press.

Hester, P. P. & Kaiser, A. P. (1998). Early intervention for the prevention of behavior disorders: Research issues in early identification and implementation of treatment outcomes. *Behavioral Disorders,* 24, 58-66.

Hinshaw, S. P. (1992). Externalizating behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin*, 111 (1), 127-155.

Hooper S. R., Roberts, J. E., Zeisel, S. A., & Poe, M. (2003). Core language predictors of behavioral functioning in early elementary school children: Concurrent and longitudinal findings. *Behavioral Disorders, 29 (1), 10-24.*

Hooper, S. R. & Brown, T. (2003). Neuropsychological functioning in children and adolescents with conduct disorder. Manuscript submitted for publication.

Horner, R. H., Carr, E. G., Strain, P., Todd, A. W. & Reed, H. K. (2002). Problem behavior interventions for young children with autism: a research synthesis. *Journal of Autism and developmental Disorders,* 32 (5), 423-446.

Howes, C. (2000). Social-emotional classroom climate in child care, child-teacher Relationships and children's second grade peer relations. *Social Development, 9* (2), 191-204.

Howes, C., Matheson, C. C., & Hamilton, C. E. (1994). Maternal, teacher. And child care history correlates of children's relationships with peers. *Child Development,* 65, 264-273.

Kaiser, A. P., Cai, X., Hancock, T. B., & Foster, M. E. (2002). Teacher reported behavior problems and language delays in boys and girls enrolled in Head Start. *Behavioral Disorders,*(28), 23-29.

Kaiser, A. P., Hancock, T. B., Cai, X., Foster, E. M., & Hester, P.P. (2000). Parent-reported behavioral problems and language delays in boys and girls enrolled in head start classrooms. *Behavioral Disorders,* 26 (1), 26-41.

Kobayashi, R., Murata,T. &Yoshinaga, K. (1992). A follow-up study of 201 children with autism in Kyushu and Yamguchi areas, Japan. *Journal of Autism and Developmental Disorders, (22), 395-411.*

Kovelmann, I., Baker, S. A., & Petitto, L. (2008). Age of first bilingual language exposure as a new window into bilingual reading development. *Bilingualism: Language and Cognition, 11*(2), 2003-223.

Kurita, H. (1985). Infantile autism with speech loss before the age of 30 months. *Journal of the American Academy of Child Psychiatry*, 24, 191-196.

Lassen, S. R., Steele, M. M., & Sailor, W. (2006). The relationship of school-wide positive behavior support to academic achievement in an urban middle school. *Psychology in the Schools*, 43 (6), 701-712.

Loeber, R. (1982). The stability of antisocial and delinquent child behavior: A review. *Child Development,* 53, 1431-1446.

Lord, C., Risi, S., Lambrecht, L., Cook, E. H., Leventhal, B. L., DiLavore, P.C., Pickles, A., & Rutter, M. (2000). The autism diagnostic observation schedule- generic: a standard measure of social and communication deficits associated with the spectrum of autism. *Journal of Autism and Developmental Disorders,* 30 (3), 205-233.

Lord, C., & Paul, R. (1997). Language and communication in autism. In D. J. Cohen and F.R. Volkmar (Eds.), *Handbook of autism and pervasive developmental disorders (*2nd ed., 195-225). New York: John Wiley and Sons.

Mahoney, W., Szatmari, P., Maclean, J., Bryson, S., Bartolucci, G., Walter, S., Hoult, L. & Jones, M. (1998). Reliability and accuracy of differentiating pervasive developmental disorder and subtypes. *Journal of the American Academy of Child and Adolescent Psychiatry,* 37, 278-285.

McCabe, L. A. & Frede, E. (2007). Challenging behaviors: Preschool as a contributing or an Ameliorating factor? *Nieer Policy Paper.*

McCabe, P. (2005). Social and behavioral correlates of preschoolers with specific language impairment. *Psychology in the Schools,* 42 (4), 373-387.

McConnell, S. R., Missall, K. N., Wackerle, A., Wagner, A., & Roverud, J. (2007). Recent assessment and intervention research in early literacy development. National Association for School Psychologists. New York, NY.

McConnell, S. R., Priest, J.S., Davis, S. D., & McEvoy, M. A. (2002). Best practices in measuring growth and development for preschool children. In A. Thomas & J. Grimes (Eds.), *Best Practices in School Psychology* (4th ed., pp.1231-1246).Washington D. C.: National Association of Psychologists.

McDougal, J., & Hiralall, A. S. (1998, April 14-18). *Bridging research into practice to intervene with young aggressive students in the public school setting: Evaluation of the behavior consultation team (BCT) Project.* Paper presented at the Annual Convention of the National Association of School Psychologists, Orlando, FL.

Mendelsohn, A. L. Mogilner, L. N., Dreyer, B. P., Forman, J. A., Weinstein, S. C., Broderick, M., Cheng, K. J., Maglorie, T., Moore, T., & Napier, C. (2001). The impact of a clinic-based literacy intervention on language development in inner-city preschool children. *Pediatrics,* 107 (1), 130-134.

Missall, K. N., McConnell, S. R., & Cadigan, K. (2006). Early literacy development: Skill growth and relations between classroom variables for preschool children. *Journal of Early Intervention*, 29 (1), 1-21.

Missall, K., Reschly, A., Sheran, C., Pickart, M., Heistad, D., Marston, D. et al. (2007). A longitudinal examination of early literacy skills. *School Psychology Review, 36*(3), 433-452.

Moffitt, T. E. (1990). Juvenile delinquency and ADD: Boys' developmental trajectories from age 3 to age 15. *Child Development,* 61, 893-910.

National Center for Education Statistics. "National Assessment of Educational Progress: 1998 National Reading Summary Data Tables for Grade 4." [http://nces.ed.gov/nationsreportcard/site/tables/sdttool.htm]. 1998.

Neel, R., Meadow, N., Levine, P., & Edgar, E. (1988). What happens after special education: A statewide follow-up of secondary students who have EBD. *Behavioral Disorders*, 13 (3), 209-216.

National Literacy Panel on Language-Minority Children and Youth. (2006). Developing literacy in second-language learners: Executive summary. *Report of the National Literacy Panel on Language-Minority Children and Youth*. Retrieved from http://www.cal.org/projects/archive/nlpreports/executive_summary.pdf

National Reading Panel. (2000). Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction. Washington DC: National Institute of Child Health and Human Development.

Nelson, J. R. (1996). Designing schools to meet the needs of students who exhibit disruptive behavior. Journal of Emotional & Behavioral Disorders, 106 (3), 147-166.

Oliver, C., Murphy, G. H. & Corbett, J. A. (1987). Self injurious behavior in people with mental handicap: A total population study. *Journal of Mental Deficiency Research*, 31, 149-156.

Olson, S. L. & Hoza, B. (1993). Preschool developmental antecedents of Conduct Problems in children beginning school. *Journal of Clinical Child Psychology*, 22 (1), 60-67.

OSEP Center on Evidence-based Practice (2006). *The multisite, longitudinal study: The KIDS study.* Presentation at the biannual meeting of the Conference on Research Innovations in Early Intervention (CRIEI), Retrieved September 22, 2008 online at www.challengingbehavior.org

Phaneuf, R., L. & Silberglitt, B. (2003). Tracking preschoolers' language and preliteracy development using a general outcome measurement system: One education district's experience. *Topics in Early Childhood Special Education*, 23 (3), 114-123.

Pianta, R. C. & Caldwell, C. B. (1990). Stability of externalizing symptoms from kindergarten to first grade and factors related to instability. *Development and Psychopathology,* 2, 247-258.

Price, H. (1995). *The role of the Urban League movement in overcoming inner-city Poverty: Challenges for the 21st century.* Boston: University of Massachusetts Press.

Qi, C. H. & Kaiser, A. P. (2004). Problem behaviors of low-income children with language delays: An observation study. *Journal of Speech, Language, and Hearing Research*, 47, 595-609.

Redmond, S. M., & Rice, M. L. (1998). The socioemotional behaviors of children with SLI: Social adaptation or social deviance? *Journal of Speech, Language, and Hearing Research,* 41, 688-700.

Redmond, S. M., & Rice, M. L. (2002). Stability of behavioral ratings of children with SLI. Journal of *Speech, Language, and Hearing Research, 45, 190-201.*

Rescorla, L., Ross, G. S., & McClure (2007). Language delay and behavioral/emotional problems in toddlers: Findings from two developmental clinics. *Journal of Speech, Language, and Hearing Research,* 50, 1063-1078.

Ricks, D. & Wing, L. (1975). Language, communication and the use of symbols in normal and autistic children. *Journal of Autism and Childhood Schizophrenia,* 5, 191-221.

Rogers-Adkinson, D. L., & Hooper, S. R. (2003). The relationship of language and behavior: Introduction to the special issue. *Behavioral Disorders,* 29, (1) 5.

Rojahn, J., Matson, J. L., Lott, D., Esbensen, A. J., & Smalls, Y. (2001). The behaviors problems inventory: An instrument for the assessment of self-injury, stereotyped behavior, and aggression/destruction in individuals with developmental disabilities. *Journal of Autism and Developmental Disorders,* 31 (6), 577-588.

Rutter, M. (1970). Autistic children: Infancy to adulthood. *Seminars in Psychology, (2),* 435-450.

Rutter, M. (1974). The development of infantile autism. *Psychological Medicine*, 4, 147-163.

Rutter, M. & Lord, C. (1987). Language disorders associated with psychiatric disturbance. In W. Yule and M. Rutter (Eds.), *Language development and disorders* (206-233). Oxford: MacKieth Press.

Sanson, A., Smart, D., Prior, M., & Oberklaid, F, (1993). Precursors of hyperactivity and aggression. *Journal of the American Academy of Child and Adolescent Psychiatry*, 32, 1207-1216.

Shelton, D. (2006). A study of young offenders with learning disabilities. *Journal of Correctional Health Care*, 12 (36), 36-44.

Sigafoos, J. (2000). Communication development and aberrant behavior in children with developmental disabilities. *Education and Training in Mental Retardation and Developmental Disabilities*, 35 (2), 168-176.

Sprague, J. & Rian, V. (1993). *Support systems for students with severe problem Behaviors in Indiana: A descriptive analysis of school structure and student demographics :* Unpublished manuscript, Indiana University Institute for the study of Developmental Disabilities, Bloomington, IN.

Stevenson, J., Richmond, N., & Graham, P. (1985). Behavior problems and language abilities at three years and behavioural defiance at eight years. *Journal of Child Psychology and Psychiatry*, 26 (2), 215-230.

Sugai, G. & Horner, R. (2002). Evolution of discipline practices: School-wide positive behavior supports. *Child and Family Behavior Therapy*, 24 (1&2), 23-50.

Storch, S. A. & Whitehurst, G. J, (2001). The role of family and home in the literacy *development of children from low-income backgrounds. New Directions for Child and Adolescent Development,* 92, 53-71.

Stormont, M. (2002). Externalizing behavior problems in young children: Contributing Factors and early intervention. *Psychology in the Schools*, 39, (2), 127-138.

Swensen, L. D., Kelley, E. Fein, D.,& Naigles, L. R. (2007). Processes of language acquisition in children with autism: Evidence from preferential looking. *Child Development, 78 (2), 542-557.*

Tervo, R. C. (2007). Language proficiency, development, and behavioral difficulties in toddlers. *Clinical Pediatrics, 46 (6), 530-539.*

Tomblin, J. B., Zhang, X., Buckwalter, P. & Catts, H. (2000). The association of reading, behavioral disorders, and language impairment among second grade children. *Journal of Child Psychology/Psychiatry,* 41 (4), 473-482.

Umbreit, J, Lane, K. L. & Dejud, C. (2004). Improving classroom behavior by modifying task difficulty: Effects of increasing the difficulty of too-easy tasks. Journal of Positive Behavior Interventions, 6 (1), 130-20.

Utley, C. A., Kozleski, E., Smith, A., & Draper, I. L. (2002). Positive behavior support: A proactive strategy for minimizing behavior problems in urban multicultural youth. *Journal of Positive Behavior Interventions,* 4 (4), 196-207.

Vaughn, S., Linan-Thompson, S., Mathes, P. G., Cirino, P. T., Carlson, C. D., & Pollard-Durdola, S. D. (2006). Effectiveness of Spanish intervention for first-grade English language learners at risk for reading difficulties. *Journal of Learning Disabilities, 39,* 56-73.

Venter, A., Lord, C. & Schopler, E. (1992). A follow-up study of high-functioning autistic children. *Journal of Child Psychology and Psychiatry and Allied Disciplines,(33),* 489-507.

Warr-Leeper, G., Wright, N A., & Mack, A. (1994). Language disabilities of anti-social boys in residential treatment. *Behavioral Disorders,* 19, 159-169.

Webster-Stratton, C. (2000). Oppositional- defiant and conduct disordered children. In M. Hersen & R. T. Ammerman (Eds.), Advanced abnormal child psychology (2nd ed., pp. 387-412). Mahwah, NJ: Erlbaum.

Webster-Stratton, C. (1997). Early intervention for families of preschool children with conduct problems. In M. J. Guralnick (Ed.),The effectiveness of early intervention (p. 429-454). Baltimore: Brookes.

Wetherby, A. M., &Prutting, (1984). Profiles of communicative and cognitive-social abilities in autistic children. *Journal of Speech and Hearing Research, 27, 364-377.*

White, J. L., Moffitt, T. E., Earls, F., Robins, L., & Silva, P.A. (1990). How early can we tell?: Predictors of childhood conduct disorder and adolescent delinquency. *Criminology,* 28, 505-533.

Wing, L. (1981). Language, social and cognitive impairments in autism and severe mental retardation. *Journal of Autism and Developmental Disorders*, 11, 31-44.

Yoshida, H. (2008). The cognitive consequences of early bilingualism. *Zero to Three*, 26-30.

Zabel, R.,& Nigro, F. (2001). The influence of special education experience and gender in juvenile offenders on academic achievement scores in reading, language, and mathematics. *Behavioral Disorders*, 26, 164-172.

Zimmerman, I. L., Steiner, V. G. & Pond, R. E. (1992). Preschool Language Scale. The Psychological Corporation.