

Predicting Academic Achievement from Classroom Behaviors

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PREDICTING ACADEMIC ACHIEVEMENT FROM CLASSROOM BEHAVIORS

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(ABSTRACT)

This study examined the influence of behaviors exhibited in the classroom on reading and math achievement in the first, third and eighth grades; and the influence of teacher perceptions on reading and math achievement of African-Americans versus White students and male versus female students. Lastly, the study examined teacher ratings of student behavior and standardized measures of intelligence in predicting reading and math achievement.

The Classroom Behavior Inventory (CBI) was used to measure student classroom behavior. The CBI contains 10 subscales of classroom behaviors: extroversion, introversion, independence, dependence, creativity/curiosity, task orientation, verbal intelligence, hostility, distractibility, and considerateness. Reading and math achievement were measured using reading and math subtests from the Woodcock-Johnson Psychoeducational Battery. The Peabody Picture Vocabulary Test (PPVT) in first grade, and the Weschler Intelligence Scale for Children-Revised (WISC-R) in third grade, were used as standardized measures of intelligence.

Results revealed that overall, teacher ratings, as measured by the CBI, were better predictors of reading and math achievement than standardized measures of intelligence in first, third and eighth grades. Students who were rated higher on positive behaviors had overall higher achievement scores than students who were rated higher on negative behaviors. Minor differences in teacher ratings of classroom behavior based on race and gender were observed.

Teachers rated White students higher on consideration and independence, while African American students were rated as more dependent and hostile. Males were rated as more hostile, introverted and distracted, while females were rated higher on consideration.

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DEDICATION

This paper is dedicated to my parents who helped me and always believed I could accomplish my goals. Thank you so much.

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CHAPTER I

INTRODUCTION

With standards increasing for educating students, ensuring the growth of every student can be challenging. The passing of the No Child Left Behind (NCLB) law in 2002 placed more emphasis on quality education for all students. The primary goal of NCLB is that all students regardless of ethnicity, gender or exceptionality receive a quality education, and achieve proficiency in the areas of reading and math. While in theory NCLB seems to benefit educators and students alike, there are, on occasion, obstacles to achieving the goals set forth in the law. For example, student classroom behaviors can often impact the amount and quality of instruction in the classroom, especially, if the behaviors are negative and disruptive in nature.

Research has shown that there is a relationship between negative or disruptive behaviors and reading and math achievement (Akey, 2006; Good & Brophy, 1987; Wexler, 1992). Investigating negative or disruptive behaviors among students is important because these behaviors can act as barriers to classroom instruction and subsequently affect academic outcomes (Akey, 2006; Barriga et al. Good & Brophy, 1987; Wexler, 1992). When these behaviors occur within the classroom setting, it is often difficult for the teacher to simultaneously redirect or discipline the student and provide quality instruction (Wexler, 1992; Williams & McGee, 1994). For the purposes of the current research, negative or disruptive behaviors were defined as behaviors exhibited by a student that interrupt normal classroom procedure, and include behaviors identified on the classroom behavior inventory (CBI), which will be discussed in detail later.

Several studies have found that students who exhibited inattentive, withdrawn or aggressive behaviors had low academic performance in the elementary grades (Finn, Pannozzo, & Voelkl, 1995; Ladd & Burgess, 1997). Literature suggests that students who exhibit these

maladaptive behaviors throughout the early years of school are more likely to gravitate to other students engaging in negative behaviors, face academic failure, and have trouble interacting with their peers (Akey, 2006; Barriga et al., 2002). Without intervention, these negative behaviors can persist and appear to be fairly stable over time.

An extensive literature review cites a relationship between classroom behavior and teacher perceptions and expectations (Egan & Archer, 1985; Jussim, 1989; Jussim & Eccles, 1995; Palardy, 1969; Safran & Safran, 1985). Some studies suggest that teachers prefer students who exhibit more positive behavior patterns, such as cooperation and responsibility, rather than students who are argumentative or disruptive (Alvidrez & Weinstein, 1999). Negative behaviors are viewed as highly disadvantageous to classroom order and can be detrimental to student/teacher interactions (Alvidrez & Weinstein, 1999; Safran & Safran, 1985). Research also suggests that a students' ethnicity can play a role in student/teacher interactions (Baron, Tom, & Cooper, 1985; Hartley, 1982; Steele & Aronson, 1995).

Some literature has reported that teachers praise, encourage and pay more attention to White students more often than African-American students (Brophy, 1983; Entwisle & Alexander, 1988; Finn, Gaier, Peng & Banks, 1975). As a result, minority students can withdraw from learning-related activities in class, appear disengaged (Finn, Folger & Cox, 1991; Swift & Spivack, 1968; Treuba, 1983), and exhibit more behavior problems in school (McFadden, Marsh, Price, & Hwang, 1992) in comparison to their non-minority peers.

Gender differences have also been reported in literature. Some studies suggest that a higher percentage of boys are more likely to exhibit inappropriate classroom conduct (Barriga et al, 2002; Williams & McGee, 1994). Literature has also shown that teachers tend to rate boys lower than girls on reading ability (Hartley, 1982; Southgate, Arnold & Johnson, 1981) even

when boys and girls had identical achievement (Ross & Jackson, 1991). Palardy (1969) found that when teachers had higher expectations for reading achievement in girls versus boys, the girls tended to perform better than the boys. Others have found teachers may overestimate the ability of boys (Doherty & Connolly, 1985; Jussim, 1989; Jussim & Eccles, 1995), and still other studies show no gender bias in teacher judgments of elementary and middle students (Dusek & Joseph, 1983; Hoge & Coladarci, 1989).

Teacher judgments of student ability have also been shown to be consistent with performance on standardized tests (Hoge & Coladarci, 1989) including IQ (Svanum & Bringle, 1982) and achievement tests (Doherty & Connolly, 1985; Egan & Archer, 1985). These findings have been found as early as students in preschool (Stoner & Purcell, 1985) and have been demonstrated across elementary school subject areas (Hopkins, George, & Williams, 1985).

The goals of this study were to investigate the effects of specific behaviors exhibited in the classroom on academic achievement, to examine the influence of ethnicity and gender on teacher ratings of behavior, and to investigate the accuracy of teacher ratings versus standardized measures of intelligence in predicting student achievement. The Classroom Behavior Inventory (CBI), (Schaefer & Edgerton, 1978), which is a teacher rating scale, was used to examine student classroom behaviors. The CBI is an unpublished measure of student behavior and was originally developed at the Frank Porter Graham Child Development Center on the campus of the University of North Carolina at Chapel Hill (UNC-CH). Reading and math achievement were measured using subtests from the Woodcock-Johnson Psycho-educational Battery. The standardized measures of intelligence include the Peabody Picture Vocabulary Test (PPVT) in the first grade and the Weschler Intelligence Scale for Children-Revised (WISC-R) in the third grade. These measures will be discussed in further detail in chapter three.

Statement of the Problem

The problem to be investigated in this study is how well classroom behaviors predict reading and math achievement over time. The predictability of standardized measures of intelligence is also investigated. Specific behaviors in the classroom can directly affect the learning environment. Disruptive behaviors, such as inattention or aggression, detract from the learning setting, usually requiring more teacher redirection, and thus compromising the amount and type of instruction received. Teachers can develop negative perceptions of students who are constantly disruptive. Teacher perceptions of student behavior can have an effect on how children acquire and use knowledge taught in the classroom setting. Teacher perceptions are seen as important contributing factors in student development. Teachers are often seen as influential figures in the lives of students, and their thoughts, feelings and actions toward students can often have a direct impact on their growth and motivation. Ethnicity and gender can also affect teacher attitudes towards students.

Research Questions

- (1) Do the CBI subscales in the first and third grades (extroversion, creativity/curiosity, distractibility, independence, hostility, verbal intelligence, task orientation, introversion, consideration, and dependence) predict reading and math achievement scores in the first grade, third grade and eighth grade?
- (2) Do the CBI subscales differentially predict reading and math achievement in males versus females?
- (3) Do the CBI subscales differentially predict reading and math achievement in black versus white students?
- (4) Are the subscales of the CBI better predictors of reading and math achievement in the first and third grades than IQ as measured by the PPVT in the first grade and the WISC-R in the third grade?

Definition of Terms

For the purpose of this study, the following definitions apply:

Teacher Perceptions-- Teacher perceptions are direct feelings about a students' ability to perform a specific activity, or task. These perceptions can have an impact on the type of Instruction students receive from teachers, as well as the messages conveyed to students (Alvidrez & Weinstein, 1999).

Teacher Ratings— Teacher ratings of behavior are based on the classroom behavior inventory.

Academic Achievement-- Academic achievement was measured using reading and math Subtests from the Woodcock-Johnson Psychoeducational Battery. Three subtests were used for reading achievement, including letter-word identification, word attack, and passage comprehension. Two subtests were used for math achievement, including calculations and applied problems. The terms “academic achievement” and “reading and math achievement” will be used interchangeably throughout this paper.

Classroom Behaviors-- Classroom behavior was measured using the Classroom Behavior Inventory (CBI). The CBI is comprised of ten subscales measuring dimensions of behavior including: introversion, extroversion, independence, dependence, hyperactivity, inattention, verbal intelligence, creativity/curiosity.

African American Students—American students of African descent.

Limitations

The first limitation is there is no information available on the teachers who completed the Classroom Behavior Inventory for students in the first and third grades. Multiple attempts were

made to acquire this information, with no success. Next, teachers in the first and third grades only completed the CBI. And, lastly, data were not available for the fifth grade due to an inadequate number of research participants.

Summary

This chapter included an introduction to the research addressed in this study. It covered a brief overview of the purpose of the study, including the goals for the proposed research, a statement of the problem, the research questions, and definitions. The rationale and limitations of the study were also discussed.

CHAPTER II

LITERATURE REVIEW

The following chapter provides a review of the literature on factors that can affect reading and math achievement including classroom behaviors, teacher perceptions, as well as gender and ethnicity. The theoretical basis for the research will also be discussed, as well as the role of school counselors in influencing student academic achievement. The procedures used for conducting the literature review will be discussed first.

Procedure for Literature Review

The procedure for the literature review began with gathering information about the Classroom Behavior Inventory (CBI) from the staff at the Frank Porter Graham Child Development Center, where the instrument was developed. Additional information for the literature review was gathered through academic journals using the search engines PsychInfo and ERIC, accessed through the Virginia Tech website. The internet search engines Google, Altavista, and Yahoo were also utilized for literature searches. The keyword combinations used included classroom behavior and academic achievement, teacher perceptions and academic achievement, teacher expectations and academic achievement, classroom behavior and African Americans, teacher perceptions and African Americans, and teacher perceptions and gender.

Classroom Behaviors and Academic Achievement

Numerous studies have documented a relationship between negative behaviors and academic achievement (Akey, 2006; Feshbach, Adelman & Fuller, 1977; Kane, 2004; Kohn, & Rosman, 1972; Kravetz, Faust, Lipshitz & Shalhav, 1998; Perry & Weinstein, 1998; Svanum & Bringle, 1982). In the last few decades, research studies have focused on identifying the factors that influence academic achievement (Akey, 2006; Hamre & Pianta, 2001; Kane, 2004; McKinney

& Feagans, 1984; Wentzel, 1993). Traditionally, positive behaviors such as compliance with classroom rules and expectations, interest and engagement in class activities, and mastery of subject matter have been associated with positive academic outcomes (Birch & Ladd, 1997; Feshbach & Feshbach, 1987; Wentzel, 1993), while negative behaviors such as inattention, distractibility, and withdrawn behaviors have been associated with negative academic outcomes (Akey, 2006; Kane, 2004). Negative behaviors, especially when exhibited within the classroom, can have a direct impact on the quality and amount of instruction delivered by the teacher. Teachers who spend an inordinate amount of time addressing negative student behaviors invariably spend less time focused on classroom instruction.

Wentzel (1993) examined the effects of classroom behaviors on the academic achievement of middle school students. Academic achievement was measured using grade point average (GPA), and scale scores from the Stanford Test of Basic Skills (STBS). Predictor variables included measures of pro-social, antisocial, and academically oriented behavior. Results revealed that there was a significant relationship between academic achievement and academically oriented behavior, teacher preferences for behaviors, and pro-social behavior.

Rutter, Tizard, and Whitmore (1970) found that low reading skills were more common in students displaying conduct problems than in students who displayed no conduct problems.

A meta-analysis conducted by Horn and Packard (1985), found that distractibility and poor impulse control measured in kindergarten and first grade were as effective at predicting later academic achievement as intellectual ability. Ledingham and Schwartzman (1984) found an increased risk for grade retention and special education placement among elementary school students who displayed aggressive behaviors. A longitudinal achievement study conducted by Jimerson, Egeland, and Teo

(1999) reported that behavior problems accounted for decreased achievement outcomes, even when controlling for previous levels of achievement.

Although shy and withdrawn behavior is not typically associated with classroom disruptions, students who are introverted can have difficulty in the classroom setting as well. Introverted students have been shown to have decreased engagement in the classroom setting and fewer peer interactions. Poor and inappropriate social interactions have been associated with present and future achievement outcomes (Hinshaw, 1992; Martin & Hoffman, 1990).

While negative behaviors have been associated with negative academic outcomes, research has shown that positive and socially appropriate student behaviors such as independence, appropriate classroom conduct, compliance with classroom rules, and socially appropriate interactions with peers, contribute to positive academic outcomes. These positive interactions can create a more pleasurable environment conducive to positive student and teacher communications. As a result, teachers become more involved in the students' learning process, which may in turn increase student motivation to learn and engagement in school activities (Akey, 2006; Niebuhr & Niebuhr, 1999; Wentzel, 1993). Positive behaviors have been associated with an increased ability and willingness to complete classroom projects through motivation from both students and teachers. It is suggested that these positive behaviors contribute to positive academic outcomes because they promote academically oriented behavior, such as intellectual curiosity, active listening and an interest in schoolwork (Waxman and Huang, 1997; Wentzel, 1993).

It is reasonable to assume that positive social interactions can contribute to academic achievement independently even when there are diverse learning styles among students. This is true in particular for learning that occurs within groups, such as cooperative learning groups, or when a student must adhere to specific sets of rules or regulations necessary to complete

classroom assignments or projects. Amicable behavior encourages classroom learning indirectly by facilitating achievement-oriented behavior (Wentzel, 1993). For example, being cooperative and helpful can result in positive, academically relevant interactions with teachers and peers (Waxman & Huang, 1997; Wentzel, 1993), and positive perceptions by teachers.

Teacher Perceptions and Academic Achievement

Teacher perceptions have been shown to be good predictors of academic achievement, (Alvidrez & Weinstein, 1999; Friedel, Marachi & Midgley, 2002; Good, 1981; Hamre & Pianta, 2001; McKinney, 1975; Pianta, 1997), although the extent to which these perceptions affect or impact achievement has been debated (Dusek & Joseph, 1983; Jussim, 1991; O'Connell, Dusek & Wheeler, 1974). Teachers make decisions about student abilities on a continuous basis. These decisions can impact the quality of instruction communicated to students by teachers (Brophy, 1983; Jussim & Eccles, 1995; Payne, 1994; Sbarra & Pianta, 2001). Social perception theorists, such as Merton (1948), have written about the ability of teacher perceptions to affect present and future student outcomes. Naturalistic and experimental studies examining the impact of teacher perceptions on academic achievement are mixed over the magnitude of these perceptions to affect future achievement (Carroll, 1963; Feshbach, 1969; Merton, 1948; Ross & Jackson, 1991).

Teachers' perceptions and expectations of students can play a significant role in determining how well and how much students learn (Pianta, 1999; Pianta & Steinberg, 1992). Rosenthal and Jacobson (cited in Good and Brophy, 1987), manipulated teacher expectations for student achievement. When teachers were told that randomly selected students had been identified as intellectual late bloomers, teacher behavior changed enough to have a significant effect on student performance, both in the classroom and on achievement tests. Results were

explained in terms of the powerful effects of the self-fulfilling prophecy effects of teacher expectations.

The expectations that teachers have of students are often reflected in the outcome of student achievement. Sbarra & Pianta (2001), probed first-grade teachers about their estimations of students' IQ scores before formal testing. Later in the school year they found that students whose IQ scores had been overestimated by the teacher had achieved more in reading than would have been predicted from their IQ scores. The students whose IQ scores had been underestimated achieved less.

Teachers also adapt their perceptions and interactions with students on the basis of their expectations. Good and Brophy (1987) found that students whom teachers perceived as high achievers received more response opportunities and more positive feedback than classmates perceived as low achievers. One of the major findings from the Beginning Teacher Evaluation Study was that academic feedback was positively associated with student learning. This finding supported the research of Aspy and Roebuck (1972) who found that positive feedback from teachers was related to higher cognitive outcomes.

Perry, Guidubaldi, & Kehle (1979) found that kindergarten teacher ratings of children's social skills predicted their third grade spelling and math achievement. Alexander, Entwisle, and Dauber (1993) examined teacher ratings of classroom behavior and found that first grade teacher ratings on interest, participation and attention span restlessness scales were correlated with student achievement test scores at the end of the first year and with student grades for the next three years. Other studies have also shown the efficacy of early teacher ratings in predicting achievement in elementary school (Good & Brophy, 1987; Weinstein, 1989; Wentzel, 1993).

Teacher expectations and perceptions can produce achievement variations among students during the early years of schooling, even when these perceptions are not yet based on documented student performance. As children progress through elementary, middle and high school, teacher perceptions about student performance and potential can maintain and amplify pre-existing achievement differences (Alvidrez & Weinstein, 1999; Sbarra & Pianta, 2001).

Alvidrez and Weinstein (1999) explored the relationship between early teacher perceptions of preschool performance and future high school performance. Their sample consisted of 110 preschool students. Results indicated that students from high socioeconomic (SES) status groups were more positively rated by their teachers and judged to be more independent than students from low SES, who were judged by teachers to be immature. Also, a teacher rating of intelligence scores was a good predictor of grade point average (GPA) and SAT scores.

Interactions between a student and teacher are important in shaping the image a student has of him or herself. Student motivation to learn can be reduced by low teacher expectations. Specific teacher behaviors that are shown towards students, believed to be low-achievers include providing students with general, often insincere praise, providing them with less feedback, interrupting them more often, seating them farther away from the teacher, paying less attention to them, calling on them less often, waiting less time for them to respond to questions, criticizing them more often and smiling at them less often. Low expectations reinforce the belief that regardless of what is done, it will not make a difference. Teachers who frequently use negative feedback for low-achieving students are contributing to the belief, on the part of the students, that effort does not influence educational outcomes (Graybill, 1997; Tatum, 1997). Teacher expectations are particularly important in the development of positive self-image in African American students. Positive racial attitudes by teachers are associated with greater minority achievement.

African Americans and Academic Achievement

African American students are often heavily influenced by teacher perceptions (Cross, 1991; Fordham, 1996). Preconceived ideas from educators about the intellectual ability of minority youth can have lasting effects (Bankston & Caldas, 1996; Helms, 1990; Ross & Jackson, 1991; Scott-Jones & Clark, 1986; Steele & Aronson, 1995; Svanum & Bringle, 1982; Vasquez, 1988; Washington, 1982). Oftentimes, these preconceived notions are not based on fact or actual performance, but on speculation and a lack of understanding or appreciation of the cultural differences that are inherent in minority youth (Cross, 1991; Fordham, 1996; Fordham & Ogbu, 1986).

Initial impressions of these students are often based on external factors such as different physical characteristics and language use. Teachers are sometimes not aware of how one's culture, including their styles of communication and interactions, can impact the learning process. There are sometimes misconceptions about language and behavior patterns of minority students. These misconceptions can arise due to a lack of understanding of the cultural intricacies of different racial and ethnic groups.

Literature on learning styles of students suggest that there are differences in learning styles among African American and white students. Studies have shown that white students prefer competitive learning situations, while African American students appear to work best when using a cooperative learning style, which appears to be more conducive to a positive learning outcome (Boykin, 1986; Davis & Rimm, 1997). Cooperative learning is a teaching strategy that utilizes small groups of students with different levels of abilities, using a variety of learning activities to improve understanding of the subject matter (Goor & Schwenn, 1993). Peer relationships among African American students also appear to be important in the educational process (Davis & Rimm, 1997).

Students who use the nonstandard forms of English in the classroom setting may find learning difficult. These students have learned different styles of communication than those typically used in the

classroom environment. If educators lack the requisite information about cultural differences, such as behavior patterns or communication and language differences, they may falsely perceive these students as exhibiting negative behavior (Labov, 1972; Payne, 1994). Studies with American Indians and African American students have shown that students' levels of verbal responsiveness depend on social circumstances, how questions are posed, and who is posing the questions (Labov, 1972).

Misunderstandings are not uncommon between students and teachers whose behavior, language, and communication styles differ. When confronted directly with a criticism or correction, especially in front of others, a student from a culture that privileges indirect communication might feel far more embarrassed than his or her teacher realizes.

Roscigno (1998) found that Black youngsters, regardless of actual intelligence or gifted labels, were given less attention and ignored more than their White counterparts in classroom settings.

Fordham & Ogbu (1986) found that Black students received more negative behavioral feedback and mixed messages than White students. Learning is essential for survival and, with very few exceptions, all children have the ability to learn and grow in their environment. Furthermore, whether children learn in school depends as much on the school environment as it does on the children. All children should enter school ready to learn, and schools should be ready to teach all children, irrespective of race or culture.

Variability in academic achievement outcomes among minority and majority students has been of particular interest for decades. The difficulty arises in accounting for the variability in academic outcomes with African American students, when compared with their White counterparts (Bernal, 2000; Fair, 1980; Ford, 1998; Oakes, 1992; Reynolds, 2000; Valenzuela, 2000). Differences in the academic performance of children appear early. Minority students tend to score below their White counterparts on measures of academic achievement. This test score gap starts early in the students' academic career and persists throughout their education.

Roscigno (1998) examined some of the causes for the test score gap among African American and White students to study the influences on Black educational attainment. The sample was drawn from the National Educational Longitudinal Study (NELS), and consisted of 11,058 students across 971 schools. European Americans comprised eighty percent of the sample, and African Americans comprised fourteen percent of the population. The results of the study indicate that African Americans fall behind their white counterparts in mathematics by 6.7 standardized points. Thirty percent of the racial difference in mathematics was due to family and peer group indicators, with students whose parents lived in lower SES neighborhoods scoring lower. There was likely to be a .4-point increase in mathematics scores on average for a 1% increase in family income.

Historically, African American students have higher enrollment in less challenging classes in school, and lower enrollment in academically gifted classes. Black students internalize messages received from educators that they cannot succeed (Hammond, 2000), and this translates into a lack of desire or a belief that they cannot succeed. Studies have found that both White and Black teachers valued neatness, conformity, particular concepts of beauty or appearance, attitudes, language and behavior. Both White and Black teachers viewed Black males as most negatively different from the valued characteristics above and White females as the most positively similar (Washington, 1982).

Most students enter school with the same desire and ability to learn, but through school and classroom experiences changes can occur. Howard (1987) examined the impact of “institutional racism” on Black students and stated that in some instances, Black students avoid intellectual advancement and competition for fear they will be judged unfairly by teachers or by their peers. The negative messages received can have an effect on motivation and self-esteem, and ultimately learning. Variability in teacher judgments has also been observed between males and females.

Gender and Academic Achievement

Pedersen, Faucher, and Eaton (1978) conducted a major study of the long-term effects of teachers. They studied the report cards of students at an elementary school and they discovered a pattern of IQ change among students that varied by gender. To investigate this, the researchers drew a random sample of fifty permanent record cards for boys and fifty for girls, and analyzed the association between gender and IQ change. The analysis showed that girls were about as likely to increase in IQ, as they were to decrease, but that boys were twice as likely to decrease, as they were to increase. The researchers believed that their analysis supported the proposition that higher teacher expectations for the academic achievement of girls as opposed to that of boys was part of the reason for the observed scores.

Teacher perceptions and expectations can vary among males and females. Research has shown that there are differences in how male and female students receive instruction. Male students receive more praise, more attention, more precise teacher comments, more criticism and more remediation, while female students receive less praise, less attention and less behavioral feedback (Baker, 1986; Sadker, Sadker, & Steindam, 1989). Baker (1986) reported that in science classrooms teachers gave more praise and feedback to male students. Kahle (1990) reported that science classrooms were biased in favor of males. Fordham & Ogbu (1986) reported that females received less behavioral feedback and less attention from the teacher.

Research has also shown that early on, activities geared towards males are more accepted, and presentation formats selected are those in which males excel or are encouraged more than females. Teachers ask more content specific questions when talking with and giving feedback to males (Sadker, Sadker & Steindam, 1989). Teaching practices are dominated by lectures, workbook exercises and writing. The male style of learning is more independent and structured, and geared towards writing and lectures, while the female style of learning is geared towards more interaction

and hands on work. The former style is the normal practice in classroom settings and therefore this can give an advantage to males (Randhawa, 1991). Studies have found that competitive classroom activities contributed to male achievement, while these interactions in the classroom can be detrimental to female achievement (Sadker, Sadker & Steindam, 1989). The belief that interactions in the classroom setting can have an influence or effect on student achievement is one of the main ideas of social learning theory.

Social Learning Theory

Social learning theory (SLT) looks at learning that occurs within a social context. It considers that people learn from one another, through observational learning, imitation, and modeling. Bandura (1977), who is considered one of the leading proponents of SLT, believed that classroom learning could be influenced by the type of instruction delivered and by the interactions that occurred within the classroom. The interactions between the person and environment can have a reciprocal effect by which the environment influences behavior, and behaviors influence the environment. This process is explained in terms of a continuous reciprocal interaction, called reciprocal determinism.

Reciprocal determinism does not imply that all sources of influence are of equal strength. Some sources of influence are stronger than others. In fact, interactions will differ based on the individual, the particular behavior being examined, and the specific situation in which the behavior occurs. For example, a person's expectations, beliefs, self-perceptions, goals, and intentions give shape and direction to behavior. However, the behavior that is carried out will then affect one's thoughts and emotions (Bandura, 1977; 1989).

A reciprocal interaction also occurs between the environment and personal characteristics. Expectations and beliefs are developed and modified by social influences within the environment.

These social influences can convey information and activate emotional reactions, through such dynamics as instruction, and social persuasion. In addition, humans evoke different reactions from their social environment as a result of their physical characteristics, such as race, (Bandura, 1977; 1989).

Bandura believes that people are both products and producers of their environment. A person's behavior will determine the aspects of their environment to which they are exposed, and behavior is, in turn, modified by that environment. A person's behavior can affect the way in which they experience the environment through selective attention. Human behavior also influences the environment, such as when an aggressive person creates a hostile environment. Thus, behavior determines which of the many potential environmental influences come into play and what forms they will take. In turn, the environment partly determines which forms of one's behavior are developed and activated (Bandura, 1977; 1989).

A fundamental idea of reciprocal determinism is the belief that people have the ability to influence their destiny, while at the same time recognizing that people are not free agents of their own will. Humans are neither driven by inner forces nor automatically shaped and controlled by the environment. Thus, humans function as contributors to their own motivation, behavior, and development within a network of reciprocally interacting influences.

Intelligence Tests and Academic Achievement

Intelligence tests have had a long and controversial history in the United States. In 1905, Alfred Binet and Theodore Simon developed a system for testing intelligence based on standardized average mental levels for varying age groups. The Binet-Simon Intelligence Scale was developed. This scale was revised by Lewis Terman at Stanford University, and was later revised into the Stanford-Binet Intelligence Test. David Weschler designed the Weschler-

Bellevue Intelligence Scale, and later the Weschler Adult Intelligence Scale, which is still in use today. The work of Binet, Terman and Weschler paved the way for a method of classifying intelligence in terms of a standardized measure, with standardization ensured by the large number of individuals of various ages taking the test (Phares, 1988).

William Stern, a German psychologist, was the first to coin the term intelligence quotient (IQ), which was a number derived from the ratio of mental age to chronological age. Stern's method for determining IQ is no longer in use, however, the term IQ is still currently used to describe results on many different tests. An average IQ score is considered to be 100, with deviations based on this figure (Phares, 1988).

A criticism of intelligence testing is that it is difficult to ensure that test items are equally meaningful or difficult for members of different cultural and ethnic groups. Much controversy has surrounded the use of intelligence tests with African Americans (Ross & Jackson, 1991; Svanum & Bringle, 1982; Williams, 1975). Historically, African Americans have scored below their White counterparts on tests of intelligence (Fordham & Ogbu, 1986; Roscigno, 1998), contributing to what is known as the test score gap (Fordham, 1996; Fordham & Ogbu, 1986; Roscigno, 1998). There are varying opinions as to the cause of the disparities in intelligence scores between African Americans and their White counterparts, including, genetic inferiority (Hernstein & Murray, 1994), low socioeconomic status (Clark, 1983; Haller, 1985), and reduced teacher perceptions and expectations for performance (Ross & Jackson, 1991; Steele & Aronson, 1995). The controversy of the use of intelligence tests with African Americans surrounds the belief that the tests are culturally biased (Fordham, 1996; Fordham & Ogbu, 1986; Williams, 1975).

Several attempts were made to develop tests that were more culturally fair, but met with little success. For example, Williams (1975) developed the Black Intelligence Test of Cultural

Homogeneity to show that when a test is developed with certain populations in mind, that is the cultural background of a specific population, that population will most likely excel on that test.

He used an equal number of white and black students to tests his hypothesis. The results show that the black subjects performed better on the test than their white counterparts. Williams (1975) did not intend for this measure to be an accurate indicator of intelligence, his purpose was to showcase the different language that may be used between different cultures.

Adrian Dove (1971), a sociologist, developed a similar measure. His test was called the Chitling Test. The construction of this test was similar to the Black Intelligence Test of Cultural Homogeneity developed by Williams. The aim of the test was to highlight that individuals with different dialects will perform better on a test when that test is geared towards their language. The test was a half- hearted attempt to illustrate a point that certain tests, including standardized measures of intelligence and achievement used today are geared towards individuals who use Standard American English in their everyday lives.

In the current study intelligence measures in the first and third grades were measured against the CBI to examine the accuracy of each measure in predicting future reading and math achievement. Several studies have reported on the accuracy of teacher ratings in predicting academic achievement more accurately than standardized measures (Babad, 1993; Dusek, 1985; Jussim & Eccles, 1995). Mantzicopoulos & Morrison (1994) found teacher ratings and intelligence measures to be equally proficient at predicting future academic achievement. However, Childs & McKay (2001) found that standardized measures of intelligence are more stable over time than teacher ratings and were better predictors of future academic performance. Silverstein, Brownlee, Legutki, & Macmillian (1983) had similar findings. Academic performance has also been shown to be influenced by school counseling.

School Counseling and Academic Achievement

School counseling programs are beginning to examine the role of school counselors in promoting academic success among students. Counselors are assuming a more active role in the educational process of students (Stone & Dyal, 1997). School systems have responded to the call for rigorous academic standards by examining and increasing standards of professional practices and accountability for counseling services to students (Harris, 1999). The American School Counseling Association (ASCA) has established national school counseling standards in an effort to bring counselors to the heart of the educational reform movement. By viewing themselves as an integral part of the mission of schools, counselors can empower themselves to seek new ways to benefit students' academic success (Brigman & Goodman, 2001; Whiston & Sexton, 1998).

School counselors can have a powerful impact on student academic achievement, and can be effective contributors to educational reform initiatives. Counselors are often not used to their full potential in the public school system. School counselors can aid students in developing high aspirations and character education skills. School counselors have the capability of positively impacting a student's desire to grow academically as well. Academic growth involves educating students on the full range of career development opportunities and the steps that are involved in reaching their desired goals (Stone & Dyal, 1997; Worzbyt & Zook, 1992). As an academic advisor, school counselors have the responsibility to clearly communicate to students and their parents that academic and behavioral choices influence future opportunities. The academic advising role includes helping students register for appropriate courses and helping them understand the relationship between academic choices and future goals (Worzbyt & Zook,

1992). The school counselor is in a good position to act as an advocate in helping to improve student academic achievement.

Classroom Behavior Inventory

The Classroom Behavior Inventory (CBI), which was used to measure student classroom behaviors and teacher perceptions in the study, is an unpublished measure of classroom behavior. The CBI is a multidimensional behavior rating scale designed to appraise the students' academic and adaptive functioning, as well as, their problem behaviors. It measures dimensions of social emotional and behavioral characteristics across ten scales including extraversion, introversion, independence, dependence, creativity/curiosity, task orientation, verbal intelligence, hostility, distractibility, and considerateness. Information on the norming sample could not be located.

Many of the studies utilizing the CBI have dealt with students with learning disabilities. This measure has been used specifically with many learning disabled populations (LD) to explore the relationship between social and emotional behaviors, patterns of classroom behaviors and academic competence. McKinney and Speece (1983) investigated the academic progress of learning-disabled students related to their classroom behavior. There were forty-three learning disabled students who participated in the study. The researchers had the teachers complete the CBI for each student. Multiple regression analysis was used to analyze the data, and the results revealed that classroom behavior of students, as perceived by their teachers, was a good predictor of reading achievement during the first year and successfully predicted academic progress for the students from one year to the next.

Howes (2000) used the CBI to examine social and emotional competence and its contributions to preschool social and emotional climate, early individual child-teacher

relationships and behavior problems in predicting second year competence with peers. Three hundred seven students were used in the study. The CBI was used to measure behavior problems. The results showed that second grade competence could be predicted by preschool classroom social and emotional climate, four year old behavior problems and the child-teacher relationship quality.

McKinney and Feagans (1984) examined the behavioral and academic characteristics of normal achieving and learning disabled populations over a three- year period. Behavioral characteristics were measured using the Schedule for Classroom Activity (SCAN), which measures dimensions of task-orientation, as well as social and affective behavior, and the CBI. Academic characteristics were measured using the Wechsler Intelligence Scale for Children-Revised (WISC-R), and the reading recognition, reading comprehension and math subtests of the Peabody Individual Achievement Test (PIAT). Results indicated that reading comprehension of the LD students was below that of their normal peers and that classroom behavior of LD students was more off task.

Summary

Literature relating to the effects of classroom behaviors on academic achievement was discussed. It revealed that positive classroom behaviors are associated with positive academic outcomes and positive student-teacher exchanges, while negative classroom behaviors are associated with low academic achievement. Also discussed in this chapter were the effects of teacher perceptions and expectations on student performance. Literature revealed that teacher perceptions and expectations could have an affect on academic achievement by affecting the amount of individual instruction given to students as well as, expectations for future performance. The ethnicity and gender of a student can also have an affect on teacher expectations and preferences for student-teacher interactions.

CHAPTER III

METHODOLOGY

This chapter describes the methods used in the study. The description of the methodology includes the research participants, instrumentation, data collection procedures and data analysis to answer the research questions.

Research Questions

The following research questions were addressed in the study:

1. Do the CBI subscales in the first and third grades (extroversion, creativity/curiosity, distractibility, independence, hostility, verbal intelligence, task orientation, introversion, consideration, and dependence), predict reading achievement scores in the first grade, third grade and eighth grade?
2. Do the CBI subscales differentially predict reading and math achievement in males versus females?
3. Do the CBI subscales differentially predict reading and math achievement in black versus white students?
4. Are the subscales of the CBI better predictors of reading scores, in the first grade, reading and math scores in the first, third and eighth grades than IQ, as measured by the PPVT and the WISC-R?

Research Participants

This study included longitudinal data collected from the Winston-Salem, Forsyth County school system in Winston-Salem, North Carolina in the 1986-87 school year. The subjects were tested approximately every three years starting in first grade. They were subsequently tested in the third and eighth grades. Fifth grade data were omitted, because fewer subjects were tested.

In the first and third grades, the sample consisted of 339 participants. There were 233 White and 106 African American participants, and 182 males and 157 females in the first grade. Sample size varies on IQ and reading and math achievement scores across the three grades. The participants' teachers completed the Classroom Behavior Inventory in the spring of their first grade year. Also, the Woodcock-Johnson reading scores and PPVT scores were obtained from the participants. In the third grade, the participants' teachers completed the CBI. Woodcock-Johnson reading and mathematics scores and WISC scores were also obtained. Participants remained in the study even if they were retained in a grade.

Instrumentation

Classroom Behavior Inventory

The Classroom Behavior Inventory (CBI) (Schaefer & Edgerton, 1978) is a 42 item teacher rating scale that measures dimensions of social and emotional behavior among children. The instrument yields scores on 6 scales of positive behaviors and 4 scales of negative behaviors. The CBI was originally developed at the Frank Porter Graham Child Development Center on the campus of the University of North Carolina at Chapel Hill (UNC-CH) in the early 1960s. It included the dimensions of Considerateness versus Hostility and Extroversion versus Introversion. Subsequent revisions were made in the early 1970s and 1980s to include the scales of Task Orientation versus Distractibility, Creativity/Curiosity, Independence versus Dependence, and Verbal Intelligence. The current version of the CBI (Schaefer & Edgerton, 1978) contains 42 items within 10 subscales. The 10 scales of the CBI and a brief description include:

Verbal Intelligence – “Has a good fund of information for a child his/her age”

Task Orientation – “Works carefully and does his/her best”

Creativity/Curiosity – “Thinks up interesting things to do”

Independence – “Tries to figure things out for himself/herself before he/she asks questions”

Extroversion – “Does not wait for others to approach him, but seeks others out”

Considerateness – “Is agreeable and easy to get along with”

Distractibility – “Is quickly distracted by events in or outside the classroom”

Dependence – “Asks for my help when it is not really needed”

Introversion – “Tends to withdraw and isolate himself/herself when he/she is supposed to be working in a group”

Hostility – “Gets angry quickly when others do not agree with him/her”

The instrument requires the teacher to rate subjects on the above mentioned topics on 5 dimensions from “not at all like” to very much like”. The instrument has been found to correlate highly with academic achievement (Schaefer & Edgerton, 1978).

Reliability. The current version of the Classroom Behavior Inventory was validated on 294 kindergarten students. Internal consistency reliabilities for a sample of 294 kindergarten children ranged from .83 to .96 for the six 5-item scales, and from .75 to .89 for the four 3-item scales. Test-retest reliabilities for the same teacher in January and April ranged from .63 to .89 for the ten scales (Schaefer & Edgerton, 1978).

Validity. Concurrent validity with corresponding Bipolar Traits Rating scales ranged from .78 to .84. Validity of the verbal intelligence scale ranged from .60 to .72 with mental tests including the TOBE and WPPSI. The scales of curiosity/creativity, independence and task orientation, that have substantial loadings on a factor of academic competence, have correlations with mental test scores ranging from .51 to .62 (McKinney & Forman, 1982).

Woodcock-Johnson Psycho-educational Battery.

The Woodcock-Johnson Battery (Woodcock & Johnson, 1977) is a battery of standardized tests measuring cognitive abilities, scholastic aptitudes, and achievement. The subjects were given 3 reading subtests from the battery, as well as 2 math subtests.

Letter-Word Identification - This is a test of real word reading, which requires the subject to read vocabulary words presented to them.

Passage Comprehension - This test requires the subject to read a passage and fill in the blank with a word appropriate to complete the passage.

Word Attack - This is a test of nonword reading, which requires the subject to read lists of nonsense words presented to them.

Calculations - This is a math test that requires the subject to complete math problems presented to them on a form.

Applied Problems - This is a math test that requires the subject to complete math problems that are read to them by an examiner.

Peabody Picture Vocabulary Test.

The Peabody Picture Vocabulary Test (PPVT) is a measure of verbal intelligence. Four pictures are presented on a card, and subjects are presented with a word and are required to pick out the picture that corresponds with the word spoken.

Weschler Intelligence Scale for Children-Revised.

The Weschler Intelligence Scale for Children- Revised (WISC-R), (Wechsler, 1974) is a test of intelligence for children up to age 16. This measure of intelligence yields a Full Scale IQ, from verbal and performance scores. The mean score is 100; the standard deviation is 15.

Independent and Dependent Variables

In the current study, the independent variables were the 10 subscales of the CBI, which are independence, dependence, creativity/curiosity, hostility, hyperactivity, introversion,

extroversion, verbal intelligence, task orientation and consideration. The dependent variables included the Woodcock-Johnson subscales, the PPVT and the WISC-R.

Data Analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS 10.0) for windows. Descriptive statistics were conducted on all demographic variables. Descriptive statistics were calculated for each subscale of the Classroom Behavior Inventory, the Diagnostic Interview for Children and Adolescents, the Peabody Picture Vocabulary Test, the Weschler Intelligence Scale for Children-Revised and the Woodcock-Johnson reading and math subtests for first, third and eighth grades. The analysis included descriptive statistics and independent t-tests to examine gender and ethnicity based differences. Regression analyses were conducted to examine how well the subscales of the CBI predicted the outcome variables.

Reliabilities of the 10 scales of the CBI were calculated and analyzed to determine their appropriateness with the sample. Reliability estimates were calculated for the Woodcock-Johnson reading and math subtests, the PPVT and the WISC-R. Scores for the 10 scales of the CBI were correlated to examine the relationship that exists between them.

Pearson product moment correlations were calculated between the extroversion, creativity/curiosity, distractibility, independence, hostility, verbal intelligence, task orientation, introversion, consideration, and dependence scales of the first grade CBI and first, third and eighth grade reading and math achievement standard scores, the PPVT standard scores, and the WISC-R full scale IQ score. Pearson product moment correlations were calculated between the extroversion, creativity/curiosity, distractibility, independence, hostility, verbal intelligence, task orientation, introversion, consideration, and dependence scales of the third grade CBI and third and eighth grade reading and math standard scores, and the WISC-R full scale IQ score. Pearson

correlations were run between the first and third grade CBI subscales and ethnicity and gender of research participants.

Linear regression analysis was used to examine the relationship between the CBI subscales in the first and third grades and reading achievement scores and the intelligence test scores. The independent variables were the 10 first and third grade CBI subscales: Independence, Dependence, Task Orientation, Distractibility, Extroversion, Introversion, Considerateness, Hostility, Verbal Intelligence, and Creativity/Curiosity. The dependent variables were reading scores from the Woodcock-Johnson Psycho-educational battery: Letter-Word Identification, Word Attack, and Passage Comprehension. In the individual regression models the 10 first grade CBI subscales were entered as independent variables, and the first grade reading standard score was entered as the dependent variable. The reading standard score was made up of the three individual reading test scores.

In the first model the first grade CBI subscales were entered as the independent variables, and the first grade reading standard scores was entered as the outcome variable. Next, the 10 first grade CBI subscales were entered as independent variables and the first grade math standard scores were entered as dependent variable. In the next model the third grade CBI scales were entered as independent variables and the third grade reading standard scores were entered as the dependent variable. Next the third grade CBI subscales were entered as independent variables and the third grade math standard score was entered as the dependent variable.

The relationship between race and teacher ratings of behavior and its effect on reading outcome was measured using independent samples t-test to examine mean differences in CBI subscale scores between male and female participants for the first and third grade CBI subscales. Mean differences were examined for the first and third grade CBI subscale scores for male and female

participants. Next, an independent samples t-test was used to examine the mean differences in reading scores between male and female participants.

The relationship between gender and teacher ratings of behavior was examined by using independent samples t-test to examine mean differences in CBI subscale scores between African American and White participants for the first and third grade CBI subscales. Mean differences were examined for the first and third grade CBI subscale scores for African American and White participants. Next, an independent samples t-test was used to examine the mean differences in reading scores between African American and White participants.

The relationship between teacher ratings of student behavior and standardized measures of intelligence was examined using linear regression. The CBI subscales were the independent variables and the reading and math standard scores were the dependent variables. Next, standardized measures of intelligence were entered into the model as independent variable to examine the R square change.

Summary

This chapter presented descriptions of the methodology of the study, as well as, detailed descriptions of the measures used in the study. Also covered in the chapter were the data analysis procedures used to answer the research questions.

CHAPTER IV

RESULTS OF THE STUDY

The following chapter discusses the results of the study. The chapter highlights the results obtained for each research question and offers explanations for the findings. The research questions addressed the effectiveness of the Classroom Behavior Inventory (CBI) in predicting reading and math achievement, the effectiveness of standardized measures of intelligence versus the CBI in predicting reading and math achievement, and the variations in teacher ratings of behavior from the CBI among African American and white students and male and female students. Descriptive statistics are provided. Linear regression analyses were used to examine the relationship between classroom behaviors and reading and math achievement. T-tests were conducted to examine differences in teacher ratings of classroom behaviors based on ethnicity and gender. A summary of the chapter will follow the presentation of results.

Demographic Characteristics of the Sample

The research participants used in this study were recruited from the Winston-Salem/Forsyth County School System during the 1986-87 school year. Research participants were recruited in the first grade, and were subsequently tested and interviewed approximately every three years in the first, third, and eighth grades. In this study, fifth grade data were omitted because fewer subjects participated in the study. Research participants' teachers completed the CBI questionnaire in the first and third grades only. In the first and third grades, the sample consisted of 339 students. There were 157 females and 182 males, and 233 white students and 106 African Americans in the study.

Scale Reliabilities

Table 1 presents means, standard deviations and reliability coefficients for the 10 subscales of the first and third grade CBI subscales. Higher mean scores indicated that the students were rated higher on those characteristics. Reliability coefficients calculated for the 10 subscales of the CBI in the first and third grades revealed alpha coefficient ranges from .72 to .96. The results for the first and third grade CBI subscales indicate they are reliable. The item wording, means, standard deviations and scale reliabilities are presented in Table 1.

Intercorrelations of First Grade CBI Subscales

Table 2 shows intercorrelations between the 10 subscales of the first grade CBI. Results reveal that the positive CBI subscales were highly positively correlated with each other, and the negative CBI subscales were correlated with each other. Verbal intelligence was positively correlated with independence (.77), creativity/curiosity (.86), task orientation (.69), consideration (.41), and was negatively correlated with distractibility (-.62), and dependence (-.57), and introversion (-.42) at $p < .01$. Students whom teachers perceived as possessing high verbal skills were also seen as being creative, considerate and on task. Task orientation was positively correlated with independence (.86), and creativity/curiosity (.66), and negatively correlated with distractibility (-.82). There were significant positive correlations between independence and creativity/curiosity (.75), and independence and consideration (.56) and a significant negative correlation between independence and distractibility (-.75), at $p < .01$. Students who were perceived by their teachers as being creative were more focused and required less assistance from the teacher. There were strong positive correlations between dependence and distractibility (.66), and dependence and hostility (.46) at $p < .01$. There was also a small negative correlation between dependence and extroversion (-.27), and a negative correlation between dependence and

creativity/curiosity (-.47) at $p < .01$. Therefore, students who exhibited more off task behavior were seen as being more hostile and requiring more attention.

Intercorrelations of Third Grade CBI Subscales

There were similar intercorrelations among the third grade CBI subscales as those reported for the first grade CBI. Results, as shown in Table 3, reveal that the positive subscales were significantly and positively correlated with each other. Verbal intelligence was positively correlated with independence (.77), creativity/curiosity (.84), task orientation (.69), consideration (.35), and was negatively correlated with distractibility (-.61), dependence (-.55), and introversion (-.41) at $p < .01$. Being focused and on task was related positively to being independent (.87), and creative (.67), and negatively with being highly distracted (-.85), $p < .01$. There were significant positive correlations between independence and creativity/curiosity (.72), and a significant negative correlation between independence and distractibility (-.77), as well as a positive correlation between independence and consideration (.64), $p < .01$. There was a small, but significant correlation between introversion and hostility (.19), and a negative correlation between consideration and distractibility (-.66) at $p < .01$. There was a small, but significant positive correlation between consideration and extroversion (.14), and strong positive correlations between dependence and distractibility (.60), dependence and hostility (.51), as well as a small negative correlation between dependence and extroversion (-.18), $p < .01$.

Intercorrelations of First and Third Grade CBI Subscales

Intercorrelations between the first and third grade CBI subscales, presented in table 4, looked at the consistency of teacher predictions across first and third grades. There were no particular surprises with regard to intercorrelations of first and third grade CBI subscales. Many of the first and third grade CBI subscales were significantly and positively correlated with each

other at $p < .01$ level. Creativity/curiosity in the third grade was positively correlated with independence (.75), and verbal intelligence (.85) in the first grade. Distractibility in the third grade was negatively correlated with task orientation in the first grade (-.81), independence (-.73), and verbal intelligence (-.59), $p < .01$.

There was a significant positive correlation between verbal intelligence in the third grade and first grade creativity/curiosity (.60), independence (.57), and task orientation (.51), $p < .01$. There were significant negative correlations between third grade task orientation and first grade, and hostility (-.34), and significant positive correlations with verbal intelligence (.48), and independence (.56), $p < .01$. There was a small, but significant, negative correlation between dependence in the third grade and extroversion in the first grade (-.16), $p < .01$.

Correlations among the First Grade CBI and Reading and Math Achievement

Results, presented in table 5, show that the positive first grade subscales were positively correlated with reading and math outcome in first, third and eighth grades. In the first grade, verbal intelligence was positively correlated with first grade reading (.61), third grade math (.61), eighth grade reading (.62), and eighth grade math (.58), $p < .01$. Significant positive correlations were shown between first grade creativity/curiosity and reading outcome in the first grade (.46), third grade (.50) and eighth grade (.51), as well as math outcome in the third grade (.57), and eighth grade (.49), $p < .01$. Significant positive correlations were also shown between independence and reading in first grade (.43), third grade (.52) and eighth grade (.49), as well as math in the third grade (.54) and eighth grade (.47), $p < .01$.

There were negative correlations between distractibility and first, third and eighth grade reading and math and dependence and first, third and eighth grade reading and math achievement, at the $p < .01$ level.

Correlations among the Third Grade CBI and Reading and Math Achievement

Results, presented in table 6, show significant positive correlations between verbal intelligence and reading in the eighth grade (.65), and math achievement in the third grade (.56) and eighth grade (.59), $p < .01$. There were positive correlations between creativity/curiosity in the third grade and reading achievement in the third grade (.51) and eighth grade (.52) and positive correlations with math achievement in the third grade (.45), and eighth grade (.46), $p < .01$. Significant positive correlations were also shown between independence and reading achievement in third grade (.54) and eighth grade (.50), as well as math achievement in the third grade (.44) and eighth grade (.49), $p < .01$. Negative correlations existed between distractibility and introversion and third and eighth grade reading and math achievement.

Correlations among First Grade CBI and the PPVT

Correlations among the first grade CBI and the PPVT reveal small significant correlations between the first grade CBI subscales and the PPVT administered in the first grade. There were small significant positive correlations between the PPVT and creativity/curiosity (.17), independence (.12), and verbal intelligence (.18), $p < .05$. Results are presented in Table 7.

Correlations among the Third Grade CBI and the WISC-R

Results, as shown in table 8, show that there were significant positive correlations between the WISC-R and creativity/curiosity (.55), task orientation (.38), consideration (.22), independence (.47), and verbal intelligence (.63), and small, but significant negative correlations with hostility (-.17), distractibility (-.35), dependence (-.37), and introversion (-.20), $p < .05$.

Table 1.

Means, Standard Deviations and Alpha scores of CBI Subscales for First and Third Grades

Subscales	Items	First Grade CBI			Third Grade CBI		
		M	SD	Alpha	M	SD	Alpha
Extroversion	Laughs and smiles easily and spontaneously in class.	19.47	3.78	.81	18.72	3.94	.77
	Does not wait for other children to approach him, but seeks them out.						
	Likes to talk or socialize with classmates before or after class.						
	Is almost always lighthearted and cheerful.						
	Tries to be with another child or group of children.						
Creativity/Curiosity	Says interesting and original things.	17.29	5.19	.94	16.62	5.30	.93
	Thinks up interesting things to do.						
	Asks questions that show an interest in things.						
	Uses materials in imaginative ways.						
	Wants to know more about things that are presented in class.						
Distractibility	Often cannot answer a question because his mind has wandered.	8.11	3.52	.87	7.97	3.85	.86
	Is quickly distracted by events in or outside the classroom.						
	Sometimes pays attention; other times must be spoken to constantly.						

Subscales	Items	First Grade CBI				Third Grade CBI			
		M	SD	Alpha	M	SD	Alpha	M	SD
Independence	Tries to do things for himself.	18.03	5.06	.92	17.84	5.25	.91		
	Works without asking me for help.								
	Keeps busy for long periods of time without my attention.								
	Tries to figure things out for himself before he asks questions.								
	Can look out for himself; doesn't usually ask for help.								
Hostility .90	Ridicules and mocks others without regard for their feelings.	6.11	3.23	.87	5.94	3.64			
	Tries to get even with a child with whom he is angry.								
	Gets angry quickly when others do not agree with his opinion.								
Verbal Intelligence	Understands difficult words.	17.11	5.63	.96	16.45	5.94	.96		
	Has a good fund of information for a child his age.								
	Uses a large and varied vocabulary.								
	Grasps important ideas without having every detail spelled out.								
	Can draw reasonable conclusions from information given him.								

Subscales	Items	First Grade CBI			Third Grade CBI		
		M	SD	Alpha	M	SD	Alpha
Task Orientation	Works earnestly; doesn't take it lightly. Stays with a job until it is finished, even if it is difficult for him. Works carefully and does his best. Pays attention to what he is doing and is not easily distracted.	17.32	5.80	.96	16.93	6.14	.96
Introversion	Has a low, unsteady or uncertain voice when speaking to a group of students. Tends to withdraw and isolate himself, even when he is supposed to be working in a group. Is usually sad, solemn, and serious looking.	6.24	2.73	.72	6.27	3.03	.72
Consideration	Awaits his turn willingly. Tries not to do or say anything that would hurt another. Is agreeable and easy to get along with. Respects the rights of other children. Gives other children an opportunity to express their views.	19.11	4.81	.92	18.75	5.54	.92
Dependence	Asks for my help when it's not really needed. Asks me to do even simple things for him. Wants my help for problems he could solve alone.	6.20	2.94	.88	5.87	3.03	.88

Table 2.
Intercorrelations among First Grade CBI Subscales

Subscales	1	2	3	4	5	6	7	8	9	10
1. Extroversion										
2. Creativity/Curiosity	.48**									
3. Distractibility	-.21**	-.54**								
4. Independence	.33**	.75**	-.75**							
5. Hostility	-.09	-.26**	.53**	-.40**						
6. Verbal Intelligence	.37**	.86**	-.62**	.77**	-.28**					
7. Task Orientation	.31**	.66**	-.82**	.86**	-.48**	.69**				
8. Introversion	-.66**	-.44**	.33**	-.35**	.12**	-.42**	-.30**			
9. Consideration	.19**	.40**	-.64**	.56**	-.82**	.41**	.66**	-.14**		
10. Dependence	-.27**	-.47**	.66**	-.75**	.46**	-.57**	-.68**	.32**	-.52**	

Note. * $p < .05$ ** $p < .01$

Table 3.
Intercorrelations among Third Grade CBI Subscales

Subscales	1	2	3	4	5	6	7	8	9	10
1. Extroversion										
2. Creativity/Curiosity	.53**									
3. Distractibility	-.24**	-.55**								
4. Independence	.33**	.72**	-.77**							
5. Hostility	-.03	-.26**	.60**	-.51**						
6. Verbal Intelligence	.35**	.84**	-.61**	.77**	-.25**					
7. Task Orientation	.30**	.67**	-.85**	.87**	-.55**	.69**				
8. Introversion	-.62**	-.52**	.39**	-.42**	.19**	-.41**	-.39**			
9. Consideration	.14*	.37**	-.66**	.64**	-.81**	.35**	.68**	-.17**		
10. Dependence	-.18**	-.49**	.60**	-.72**	.51**	-.55**	-.61**	.39**	-.55**	

Note. * p < .05 ** p < .01

Table 4.
Intercorrelations among First and Third Grade CBI Subscales

Third Grade CBI Subscales	First Grade CBI Subscales									
	1	2	3	4	5	6	7	8	9	10
1. Extroversion		.18**	-.18**	.16**	.02	.17**	.19**	-.31**	-.02	-.09
2. Creativity/Curiosity	.51**		-.54**	.75**	-.21**	.85**	.66**	-.31**	-.02	-.09
3. Distractibility	-.21**	-.54**		-.73**	.51**	-.59**	-.81**	.16**	-.44**	.39**
4. Independence	.24**	.49**	-.50**		-.29**	.54**	.57**	-.27**	.40**	-.48**
5. Hostility	-.09	-.18**	.36**	-.29**		-.22**	-.35**	.48	-.49**	.30**
6. Verbal Intelligence	.29**	.60**	-.41**	.57**	-.14**		.51**	-.34**	.25**	-.39**
7. Task Orientation	.21**	.46**	-.51	.56**	-.34**	.48**		-.23**	.46**	-.46**
8. Introversion	-.37**	-.27**	.22**	-.22**	.04	-.25**	-.24**		-.09	.17**
9. Consideration	.09	.24**	-.43**	.37**	-.46**	.28**	.43**	-.08		-.35**
10. Dependence	-.16**	-.38**	.42**	-.47**	.27**	-.43**	-.45**	.14*	-.37**	

Note. * p < .05, ** p < .01

Table 5.
Correlations among the First Grade CBI and First, Third and Eighth Grade Reading and Third and Eighth Grade Math

Subscales	W-JR 1	W-JR 3	W-JM 3	W-JR 8	W-JM 8
1. Extroversion	.202**	.135*	.191**	.212**	.155*
2. Creativity/Curiosity	.465**	.503**	.573**	.513**	.491**
3. Distractibility	-.375**	-.374**	-.390**	-.349**	-.344**
4. Independence	.436**	.523**	.546**	.490**	.476**
5. Hostility	-.307**	-.152*	-.102	-.152**	-.193**
6. Verbal Intelligence	.613**	.593	.606**	.626**	.581**
7. Task Orientation	.425**	.453**	.493**	.414**	.436**
8. Introversion	-.250**	-.113	-.153**	-.195**	-.147*
9. Consideration	.252**	.259**	.240**	.245**	.274**
10. Dependence	-.404**	-.425**	-.357**	-.415**	-.361**

Note. * $p < .05$ ** $p < .01$; W-J R 1 = Woodcock-Johnson reading standard score in the first grade; W-J R 3 = Woodcock-Johnson reading standard score in the third grade; W-J M 3 = Woodcock-Johnson math standard score in the third grade; W-J R 8 = Woodcock-Johnson reading standard score in the eighth grade; W-J M 8 = Woodcock-Johnson math standard score in the eighth grade.

Table 6.
Correlations among the Third Grade CBI and Third and Eighth Grade Reading and Third and Eighth Grade Math

Subscales	W-JR 3	W-JM 3	W-JR 8	W-JM 8
1. Extroversion	.056	.016	.102	-.001
2. Creativity/Curiosity	.519**	.459**	.528**	.461**
3. Distractibility	-.429**	-.359**	-.402**	-.404**
4. Independence	.541**	.446**	.500**	.499**
5. Hostility	-.210**	-.107	-.171**	-.223**
6. Verbal Intelligence	.664	.564**	.655**	.599**
7. Task Orientation	.463**	.430**	.456**	.498**
8. Introversion	-.197**	-.261**	-.182**	-.195**
9. Consideration	.229**	.127*	.177**	.258**
10. Dependence	-.436**	-.327	-.348**	-.347**

Note. * $p < .05$ ** $p < .01$; W-J R 3 = Woodcock-Johnson reading standard score in the third grade; W-J M 3 = Woodcock-Johnson math standard score in the third grade; W-J R 8 = Woodcock-Johnson reading standard score in the eighth grade; W-J M 8 = Woodcock-Johnson math standard score in the eighth grade.

Table 7.
Correlations among First Grade CBI and PPVT

Subscales	PPVT
1. Extroversion	.02
2. Creativity/Curiosity	.17*
3. Distractibility	-.04
4. Independence	.12*
5. Hostility	-.07
6. Verbal Intelligence	.18*
7. Task Orientation	.09
8. Introversion	.03
9. Consideration	.09
10. Dependence	-.06

Note. * $p < .05$, ** $p < .01$

PPVT = Peabody Picture Vocabulary Test

Table 8.
Correlations among Third Grade CBI and WISC-R

Subscales	WISC-R
1. Extroversion	.04
2. Creativity/Curiosity	.55**
3. Distractibility	-.35**
4. Independence	.47**
5. Hostility	-.17*
6. Verbal Intelligence	.63**
7. Task Orientation	.38**
8. Introversion	-.20**
9. Consideration	.22**
10. Dependence	-.37**

Note. * $p < .05$, ** $p < .01$

WISC-R = Weschler Intelligence for Children - Revised

Regression Analyses

Regression analyses were conducted to assess the relationship between classroom behaviors and reading and math achievement. Furthermore, the relationship between teacher perceived classroom behaviors and research participants' ethnicity and gender was examined. A comparison of teacher ratings of classroom behavior and standardized measures of intelligence was done to determine which construct is a better predictor of reading and math achievement in the first, third and eighth grades. Correlations were used to estimate the degree of association between behaviors on the CBI and reading and math achievement measures. The CBI subscales exhibited significant correlations with reading and math achievement measures.

First Grade CBI and Reading and Math Achievement

The first grade CBI subscales examined teacher perceived classroom behaviors. The subscales included: introversion, extroversion, independence, dependence, creativity/curiosity, task orientation, verbal intelligence, consideration, distractibility, and hostility. Teachers rated participants on their observations and perceptions of participant behavior. There were separate scores obtained for each subscale of the CBI, culminating in 10 separate scores.

Regression analyses were used to examine relationships between the first grade CBI sub scores and reading and math achievement in first, third and eighth grades. Research participants were not administered math tests in the first grade.

Significant Predictors of 1st grade reading achievement

All 10 first grade CBI subscales were entered into the model as predictors (independent variables) and the reading standard score for the Woodcock-Johnson was entered as the dependent variable. Significant results were obtained, and are shown in table 9. In the first grade teacher perceived verbal intelligence ($B = 1.9$) was a significant positive predictor of first grade

reading, while hostility ($B = -2.0$), and consideration (-1.1), were significant negative predictors of first grade reading, [$F(3, 335) = 83.9, p < .01$]. Students' whom teachers believe to possess high verbal skills were more likely to perform better on reading achievement measures, while students rated as more hostile, considerate and creative did not perform as well on the reading measure.

Significant predictors of 3rd grade reading and math achievement

Additional regression analyses using the first grade CBI and third grade reading and math achievement scores show that first grade teacher perceived verbal intelligence ($B = 1.5$) and introversion ($B = .84$), were significant positive predictors of third grade reading outcome, while dependence ($B = -.81$) was a negative predictor of third grade reading outcome [$F(3, 277) = 58.8, p < .01$]. Therefore, high verbal skills in the first grade were related to a positive reading outcome in the third grade, while students who were more dependent were more likely to have a negative outcome.

First grade creativity/curiosity ($B = .66$), verbal intelligence ($B = 1.1$), task orientation ($B = .57$) and introversion ($.77$), and hostility ($.59$) were significant predictors of third grade math outcome, [$F(5, 277) = 39.6, p < .01$].

Significant predictors of 8th grade reading and math achievement

First grade verbal intelligence ($B = 1.6$) was a significant positive predictor of eighth grade reading outcome, [$F(1, 235) = 151.6, p < .01$].

First grade verbal intelligence ($B = 2.1$) and introversion ($B = .75$) were significant positive predictors of eighth grade math outcome, [$F(2, 231) = 61.6, p < .01$].

Table 9. Linear Regression Analyses for Variables Predicting Reading and Math Achievement in First, Third and Eighth Grades.

First Grade CBI															
	W-J Reading 1 st Grade (n = 339)			W-J Reading 3 rd Grade (n = 281)			W-J Math 3 rd Grade (n = 283)			W-J Reading 8 th Grade (n = 237)			W-J Math 8 th Grade (n = 234)		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Creativity/Curiosity							.66*	.28	.21						
Hostility	-2.0*	.37	-.39						.59*	.26	.12				
Verbal Intelligence	1.9*	.13	.64	1.5*	.15	.57	1.1*	.27	.38	1.6*	.13	.63	2.1*	.19	.63
Consideration	-1.1*	.26	-.33												
Task Orientation							.57*	.19	.20						
Introversion				.84*	.27	.16	.77*	.30	.13				.75*	.39	.11
Dependence				-.81*	.27	-.17									
Total R ²	.43			.39			.42			.39			.35		

* All B values reported in the text represent unstandardized regression coefficients

Third Grade CBI and Reading and Math Achievement

The regression analyses for the third grade CBI subscales were very similar to the analyses for the first grade CBI and reading and math achievement in the third and eighth grades. The participants' third grade teachers completed the third grade CBI. The prediction model looked at the relationship between the third grade CBI and reading and math achievement in the third and eighth grades.

Significant predictors of 3rd grade reading and math achievement

The 10 subscales of the third grade CBI were entered together as independent variables and the standard scores for reading and math were entered as dependent variables. Results presented in table 10 show that third grade verbal intelligence ($B = 1.8$) was a significant positive predictor of third grade reading, while extroversion ($B = -.59$), was a significant negative predictor of third grade reading [$F(2, 278) = 121.3, p < .01$]. Students believed to have strong verbal skills were more likely to have a higher reading outcome, whereas students seen as being more outgoing were more likely to have a lower reading outcome.

Third grade verbal intelligence ($B = 1.3$) and task orientation ($B = .55$) were significant positive predictors of third grade math, while consideration ($B = -.49$), introversion ($B = -.91$) and extroversion ($B = -1.1$) were significant negative predictors of third grade math [$F(5, 277) = 34.5, p < .01$].

Significant predictors of 8th grade reading and math achievement

Third grade verbal intelligence ($B = 1.7$) and introversion ($B = .57$) were significant positive predictors of eighth grade reading [$F(2, 234) = 92.1, p < .01$]. Students believed to have high verbal skills in the third grade and exhibited withdrawn behaviors were more likely to have a positive eighth grade reading outcome.

Verbal intelligence ($B = 1.7$) and task orientation ($B = .58$) contributed positively to the variance in eighth grade math, while extroversion ($B = -1.0$) contributed negatively to the variance in eighth grade math [$F(3, 230) = 56.2, p < .01$]. High verbal skills and on task behavior in the third grade contributed to a positive eighth grade math outcome, while third grade outgoing and talkative behavior contributed to a negative eighth grade math outcome.

Table 10. Linear Regression Analyses for Variables Predicting Reading and Math Achievement in Third and Eighth Grades.

Third Grade CBI									
	W-J Reading 3 rd Grade (n = 281)			W-J Math 3 rd Grade (n = 283)			W-J Reading 8 th Grade (n = 237)		
	B	SE	β	B	SE	β	B	SE	β
Verbal Intelligence	1.8*	.11	.71	1.3*	.19	.49	1.7*	.13	.71
Consideration				-.49*	.19	-.17			
Task Orientation				.55*	.22	.21			
Introversion				-.91*	.34	-.18	.57*	.25	.12
Extroversion	-.59*	.17	-.17	-1.1*	.25	-.29	-1.0	.24	-.23
Total R ²	.47			.38			.44		

* All B values reported in the text represent unstandardized regression coefficients.

IQ and Reading and Math Achievement

The predictive ability of IQ measures in predicting reading and math achievement over time was examined. In the first grade, IQ was measured using the Peabody Picture Vocabulary Test (PPVT), and in third grade IQ was measured using the Weschler Intelligence Scale for Children – Revised (WISC-R). IQ measures were entered into multiple regression models as predictors and reading and math achievement standard scores from the Woodcock-Johnson in first and third grades were entered as dependent variables.

Significant predictors of first grade achievement

Table 11 shows that the PPVT ($B = .35$), accounted for 21% of the variance in reading achievement in the first grade [$F(1, 218) = 56.8, p < .01$].

Significant predictors of third grade reading and math achievement

The WISC-R accounted for 37% of the variance in third grade reading ($B = .56$) [$F(1, 243) = 144.7, p < .01$], and 48% of the variance in third grade math ($B = .68$) [$F(1, 243) = 224.3, p < .01$]. Results are presented in Table 12.

Table 11.
Summary of Linear Regression Analysis for
Variables Predicting Reading and Math
Achievement in first grade from PPVT

<u>First Grade Reading</u>			
Predictor	B	SE	β
PPVT	.35	.05	.45

$R^2 = .21$

Note. $p < .01$

Table 12.
Summary of Linear Regression Analysis for
Variables Predicting reading and math
achievement in third grade from WISC-R

<u>Third Grade Reading</u>				<u>Third Grade Math</u>		
Predictor	B	SE	β	B	SE	β
WISC-R	.56	.05	.61	.68	.05	.69
$R^2 = .37$				$R^2 = .48$		

Note. $p < .01$

Ethnicity, Teacher Ratings and Reading and Math Achievement

The first grade CBI subscales were compared by race using Independent Samples T-test to examine differences in teacher ratings based on race. Results are presented in Table 13.

Significant results were obtained for one subscale. In the first grade, black students were rated higher on the hostility subscale [(M = 7.45, SD = 3.34), $t(184.3) = -5.36$, $p = .04$].

In the third grade, white students were rated as being more independent, [(M = 19.08, SD = 4.65), $t(176.4) = 6.83$, $p = .05$], and considerate, [(M = 19.94, SD = 4.88), $t(170.2) = 6.13$, $p = .002$], while black students were perceived as being more hostile [(M = 7.42, SD = 4.17), $t(161.9) = -5.22$, $p = .000$], and dependent [(M = 7.51, SD = 3.29), $t(166.2) = -7.20$, $p = .001$]. Further results are presented in Table 14.

Table 13.

T-test, Means and Standard Deviations by Race for 1st Grade CBI Subscales

	<u>White</u>		<u>Black</u>		Significant Differences	
	M	SD	M	SD		
Extroversion	19.72	3.78	18.94	4.74	<u>F</u> .263	<u>p</u> .609
Creativity/Curiosity	18.64	4.81	14.32	4.75	.113	.736
Distractibility	7.45	3.44	9.58	3.24	1.33	.250
Independence	19.29	4.71	15.26	4.70	1.46	.703
Hostility	5.50	2.99	7.45	3.34	4.45	.036*
Verbal Intelligence	18.68	5.09	13.65	5.21	.001	.976
Task Orientation	18.61	5.54	14.48	5.34	.690	.407
Introversion	6.09	2.67	6.58	2.86	1.17	.279
Consideration	20.14	4.52	16.84	4.66	.023	.879
Dependence	5.74	2.80	7.21	3.00	.800	.372

Note. CBI = Classroom Behavior Inventory. *p<.05; **p<.01

Table 14.

T-test, Means and Standard Deviations by Race for 3rd Grade CBI Subscales

	<u>White</u>		<u>Black</u>		Significant Differences	
	M	SD	M	SD		
Extroversion	19.01	3.83	18.08	4.11	<u>F</u> .210	<u>p</u> .647
Creativity/Curiosity	17.76	4.93	14.12	5.25	.450	.503
Distractibility	7.30	3.71	9.43	3.77	.226	.634
Independence	19.08	4.65	15.13	5.48	3.70	.05*
Hostility	5.27	3.16	7.42	4.17	22.7	.000**
Verbal Intelligence	17.88	5.40	13.33	5.90	.420	.517
Task Orientation	18.09	5.84	14.38	6.04	.281	.596
Introversion	6.03	2.90	6.82	3.25	1.57	.210
Consideration	19.94	4.88	16.45	6.03	9.94	.002**
Dependence	5.12	2.59	7.51	3.29	12.2	.001**

Note. CBI = Classroom Behavior Inventory. *p<.05; **p<.01

Gender, Teacher Ratings and Reading and Math Achievement

Differences in teacher ratings based on gender for the first grade CBI subscales are presented in Table 15. Significant results were obtained for four subscales. In the first grade, males were rated as being more distracted [(M = 8.73, SD = 3.78), $t(335.4) = 3.54$, $p = .000$], hostile [(M = 6.60, SD = 3.43), $t(336.7) = 3.06$, $p = .005$], and introverted [(M = 6.37, SD = 2.89), $t(336.8) = .89$, $p = .037$], while females were rated as being more considerate [(M = 19.93, SD = 4.32), $t(336.9) = -2.95$, $p = .006$].

Independent samples T-tests conducted on the third grade CBI also yielded significant results. In the third grade, males were rated as being more hostile, [(M = 6.69, SD = 4.01), $t(328.5) = 40.3$, $p = .000$], and females were rated as being more considerate [(M = 19.96, SD = 4.88), $t(336.5) = 8.07$, $p = .005$]. Additional results are presented in table 16.

Table 15.

T-test, Means and Standard Deviations by Gender for 1st Grade CBI Subscales

	<u>Male</u>		<u>Female</u>		Significant Differences	
	M	SD	M	SD		
Extroversion	19.49	3.71	19.45	3.87	<u>F</u> 1.44	<u>p</u> .231
Creativity/Curiosity	17.44	5.34	17.11	5.02	2.98	.085
Distractibility	8.73	3.78	7.39	3.04	12.6	.000**
Independence	17.49	5.30	18.65	4.69	2.73	.099
Hostility	6.60	3.43	5.54	2.88	7.88	.005**
Verbal Intelligence	17.06	5.68	17.16	5.58	.155	.694
Task Orientation	16.42	5.94	18.36	5.46	2.00	.158
Introversion	6.37	2.89	6.10	2.55	4.36	.037*
Consideration	18.40	5.10	19.93	4.32	7.79	.006**
Dependence	6.35	3.09	6.03	2.75	2.67	.103

Note. CBI = Classroom Behavior Inventory. *p<.05; **p<.01

Table 16.

T-test, Means and Standard Deviations by Gender for 3rd Grade CBI Subscales

	<u>Male</u>		<u>Female</u>		Significant Differences	
	M	SD	M	SD		
Extroversion	18.46	4.04	19.01	3.81	<u>F</u> .379	<u>p</u> .539
Creativity/Curiosity	16.77	5.22	16.45	5.41	.136	.712
Distractibility	8.63	3.86	7.21	3.71	.776	.379
Independence	17.55	5.21	18.18	5.29	.141	.708
Hostility	6.69	4.01	5.07	2.93	40.3	.000**
Verbal Intelligence	16.68	5.99	16.19	5.90	100	.752
Task Orientation	16.16	6.23	17.82	5.94	.499	.481
Introversion	6.16	3.07	6.41	2.99	.033	.857
Consideration	17.71	5.88	19.96	4.88	8.07	.005**
Dependence	5.84	3.03	5.91	3.05	.000	.999

Note. CBI = Classroom Behavior Inventory. *p<.05; **p<.01

Summary

Teacher ratings of student classroom behavior as measured by the CBI in first grade were better predictors of reading achievement than IQ as measured by the PPVT in the first grade. In the first grade the CBI accounted for 43% of the variance in first grade reading, while the PPVT accounted for 21% of the variance in first grade reading. In the third grade the CBI and the WISC-R accounted almost equally for the variance in third grade reading. The WISC-R in third grade was a slightly better predictor of math outcome than the CBI.

There were significant differences in how teachers rated participants based on race. In the first grade, black participants were rated higher on the subscale hostility, and in the third grade, white students were rated higher on independence and consideration, while black participants were rated higher on hostility and dependence.

There were also significant differences in how teachers rated participants based on gender. In the first grade males were rated higher on distractibility, hostility and introversion, while females were rated higher on consideration. In the third grade, males were rated higher on hostility and females were rated higher on consideration.

CHAPTER V

DISCUSSION AND RECOMMENDATIONS

In this chapter, the results of the study are discussed. The following chapter also discusses the literature to support the findings, as well as, the implications for the findings.

Recommendations about research on how to improve classroom behaviors and academic achievement are discussed.

Overview of Study

There were several reasons for conducting the study. First, the study investigated how well classroom behaviors impacted reading and math achievement in a longitudinal sample of research participants. The Classroom Behavior Inventory (CBI) was used to obtain information on classroom behavior among the research participants. The CBI is a 42-item teacher rating scale that measures dimensions of social and emotional behavior among children. It was originally developed at the Frank Porter Graham Child Development Center on the campus of the University of North Carolina at Chapel Hill (UNC-CH) in the early 1960s. The instrument yields scores on 6 scales of positive behaviors and 4 scales of negative behaviors. The 10 subscales of the CBI include introversion, extroversion, hostility, consideration, verbal intelligence, task orientation, distractibility, dependence, independence, and creativity/curiosity. Each subscale was assessed independently and yielded 10 separate scores. Correlations were computed for the 10 subscales of the first and third grade CBI subscales and the subscales of the Woodcock-Johnson Psycho-educational Battery. Reading and math achievement were measured using the Woodcock-Johnson Psycho-educational Battery, which is a battery of standardized tests. Five subscales of the Woodcock-Johnson were used: 3 reading subtests and 2 math subtests.

The study also looked at how well IQ versus classroom behaviors predicted reading and math achievement in the sample. In the first grade, the IQ measurement used was the Peabody Picture Vocabulary Test (PPVT), which is a test of verbal intelligence. The Weschler Intelligence Scale for Children-Revised (WISC-R) was used to measure IQ in the third grade and yields a full scale IQ score. There was no measurement used for the sample in the eighth grade. Lastly, t-tests were conducted to see if there were differences in how teachers rated students on the CBI based on the participants' gender or ethnicity.

The research data were collected from students in the Winston-Salem/Forsyth County School System in the 1986-87 school year. The participants were tested approximately every three years starting in the first grade, and were subsequently tested in the third and eighth grades. Fifth grade data were omitted because fewer subjects were tested. The research participants' teachers completed the CBI in the first and third grades only. A different set of teachers completed the CBI on the participants in the first and third grades.

Summary of Results

Regression analyses were conducted to investigate the relationship between the CBI and reading and math achievement. In the first grade, when only reading achievement was measured, first grade teacher ratings were found to be better predictors of reading achievement than IQ, as measured by the PPVT. Teacher perceived verbal intelligence was a positive predictor of first grade reading, while hostility and consideration were negative predictors of first grade reading. Additional regression analyses using the first grade CBI show that verbal intelligence and introversion, were significant positive predictors of third grade reading. Students rated as having high verbal skills, being creative and on task in the first grade were more likely to have a higher

third grade math achievement. First grade verbal intelligence was a significant positive predictors of eighth grade reading and eighth grade math.

In the third grade, when reading and math achievement were measured, teacher ratings were found to be better predictors of third grade reading achievement than IQ. Alternatively IQ, as measured by the WISC-R, was shown to be a better predictor of third grade math. Third grade verbal intelligence and introversion were significant positive predictors of eighth grade reading. Verbal intelligence and task orientation were positive predictors of eighth grade math.

T-tests were used to see if there were differences in how teachers rated male versus female participants. The results revealed that females were rated as more considerate, whereas, males were rated as being more distracted, introverted and hostile than their female counterparts.

T-tests were also used to see if teacher rated participants differently based on ethnicity. The results revealed that White students were rated as being more independent and considerate, while African-American students were rated as being more dependent and hostile.

Discussion

The present study addressed the effectiveness of teacher ratings of classroom behavior in predicting reading and math achievement in a longitudinal sample of research participants. The results are consistent with the findings from previous studies that show that teacher ratings are strong predictors of reading and math achievement across grade levels, and are more consistent than IQ measures in predicting achievement over time (Brophy & Evertson, 1981; Good & Brophy, 1987; Perry, Guidubaldi & Kehle, 1979; Sbarra & Pianta, 2001; Wentzel, 1993). Teacher expectancies, whether high or low can have a significant impact on student achievement. Teachers interact with students based on information they receive about that student, either through documented evidence or verbal communications with others. If they believe that a

student will exhibit behavior problems they may be more strict and rigid with that student and develop low expectations for their achievement. If students believe their teachers do not want them around they may act out in response. Conversely, if a teacher believes that a student displays academic potential they may present them with more challenging work and offer them more instruction and guidance. Students can internalize negative messages received from their teachers and they may behave accordingly, adversely affecting their sense of self-esteem.

The findings from this study also suggest that classroom behaviors are strongly related to academic achievement across grade levels, and that teachers perceptions of verbal intelligence and creativity are strongly correlated with higher reading and math scores across grades. Verbal intelligence was the best predictor of achievement over time, and was highly correlated with creative, focused and on task behaviors. Students who exhibited these positive behaviors generally had higher reading and math achievement scores than students who were perceived as exhibiting negative behaviors such as hostility or dependence. So, why are students whom teachers perceive as possessing high verbal skills, creativity and on task behaviors performing better on reading and math achievement measures than students whom teachers rate higher on negative behaviors? Are these students more academically competent than students who are rated higher on negative behaviors, or are teachers rating them more favorably because their behavior is more conducive to learning?

It would appear that students who are rated higher on verbal intelligence and creativity would perform better on reading and math achievement measures because they are exhibiting behaviors that generally lead to positive academic outcome. Teachers sometimes assess students' academic competence based on outward behavior rather than actual academic performance. Students, who are more conforming and pleasant to be around, are more likely to get positive

attention and feedback from their teachers, while students who exhibit negative behaviors are more likely to get more negative attention from their teachers.

The current study illustrates the strong relationship between teacher ratings and student achievement. Several studies have reported that the predictive ability of teacher ratings in predicting achievement over time may reflect evidence of insight and accuracy in teacher ratings. Because of experiences within the classroom, teachers may be more discerning than IQ measures in predicting achievement over time. Their perceptions of a student's abilities may reflect more accurate notions of intelligence. Over time, teachers may have drawn upon a range of student characteristics and classroom behaviors that better describe a student's current and continued achievement (Hamre & Pianta, 2001; Teisl, Mazzocco, & Myers, 2001).

Differences in how teachers' perceived students based on ethnicity were examined in the study. The findings suggest that White students were rated as being more independent and considerate, while African-American students were rated as being more dependent and hostile. The findings in this study are consistent with literature that has reported variations in teacher perceptions and interactions with African-American students. Literature has reported that teachers by and large have lower educational expectations for African-American students compared with White students, and often view the behaviors of African-American students more negatively based on preconceived ideas of intelligence (Baron, Tom & Cooper, 1985). Some literature has shown that lower educational expectations for African-American students are consistent irrespective of the race of the teacher.

This study also addressed possible gender differences in how teachers rated students on the CBI. The results of the study suggest that females were seen as being more considerate, while males were seen as being more distracted, introverted and hostile. The findings of this study were

consistent with Sadker et al. (1989), who found that females are usually more people oriented than male students. Several studies have reported that males tend to receive more instruction than females, and are often asked more questions and given more feedback than female students (Baker, 1986; Childs & McKay, 2001; Hartley, 1982; Jussim & Eccles, 1995; Kahle, 1990).

Additional findings show that consideration in the third grade, which is a positive subscale, was a significant negative predictor of third grade math. Students who were rated as considerate were seen as being able to “await his turn willingly”, “try not to do or say anything that would hurt another”, or “is agreeable and easy to get along with” (Schaefer & Edgerton, 1978). This seems counterintuitive since these are traits that would appear to make the classroom environment more conducive to learning.

First grade introversion was a positive predictor of third grade reading and math and eighth grade math. This is counterintuitive; the intercorrelations of all outcome variables with introversion was negative, and in different models its coefficient tended to change sign from one analysis to another, which points to collinearity with other predictors.

Another area addressed in the study was the predictive ability of teacher ratings versus standardized measures of intelligence in predicting academic achievement. As stated earlier, overall teacher ratings were better predictors of achievement, however, in the third grade, the WISC-R was a better predictor of third grade math than teacher ratings. This is consistent with Childs & McKay (2001), who reported that IQ measures tend to be more reliable over time, while teacher ratings of a students’ classroom behavior can change over time, and vary from year to year.

Recommendations for Practice

Based on the results of this study, several recommendations for teachers and students are indicated. It is important for teachers to understand how their perceptions of students can impact the students' present and future academic achievement. It is also important for students to understand how their behaviors impact their academic achievement. This study showed that overall, teacher ratings were better predictors of reading and math achievement, except in third grade, where IQ was a better predictor of third grade math.. This study also suggests that teachers perceived African-American students more negatively than their White counterparts. The study also suggests that males were perceived as more distracted, hostile and introverted, while females were rated as more considerate. The following recommendations are given in an attempt to improve academic achievement, as well as improve student and teacher relationships.

Working with Teachers to Improve Perceptions

It is important to work with teachers on how they perceive students and understand how their perceptions can impact student achievement. Adding a counseling component to teacher preparation could go towards improving teachers' perceptions about students. The primary recommendation is for teachers to work with school counselors to improve their perceptions and thus the classroom environment. Counselors can work with teachers to improve student and teacher interactions through the use of positive communication, and coach them on methods of affirming students' importance and providing encouragement to them (Akey, 2006; Weissbourd, 2003). This will help teachers recognize how their values and personal beliefs can impact their interactions with students. Gouleta (2006) suggested a model for helping teachers utilize counseling principles and techniques in working with students. The Counseling Curriculum for

Teachers Model involves learning basic counseling techniques to improve the classroom environment.

The first step begins by introducing teachers to counseling theories and approaches commonly used to work with students and parents. The next step involves learning counseling strategies and techniques to work with diverse populations. The next step of the model involves exposing teachers to multicultural counseling concepts, issues and practices with the aim of helping teachers become more aware of personal values, biases and worldview. The aim is to help them recognize how these beliefs can influence their interactions with students. Next, the model discusses the counseling and educational theories identifying their similarities and differences. It also examines key concepts with respect to human development, culture and social history as they relate to psychological and educational problems of students.

The model allows opportunities for teachers to practice multicultural counseling techniques and strategies in their interactions with students. Teachers should evaluate student issues for appropriate intervention and referral decisions through case studies. The last step is to explore attitudes and beliefs about diverse populations within the context of one's role as an educator.

As stated earlier, differences in the learning styles among African American and white students have been reported in the literature. Working with teachers on improving perceptions about students and incorporating learning style differences within the classroom setting are important steps towards improving academic achievement. African American students appear to benefit from peer oriented learning and cooperative learning groups, while white students appear to work better independently (Davis & Rimm; Goor & Schwenn, 1993).

Teaching practices specifically aimed at working with African American students that have been shown to be effective include providing opportunities to learn collectively and cooperatively, making fewer assumptions about prior knowledge, stressing critical thinking skills, and providing encouragement on a regular basis. Teachers should also work with students to develop long and short term goals for academic success (Goor & Schwenn, 1993).

It is also important to incorporate methods to address inappropriate conduct within the classroom. It is sometimes difficult for students to understand that the behaviors they exhibit in their home or with their friends may not be appropriate for the classroom setting. The idea of code switching should be incorporated into the classroom curriculum. Code switching is the ability to differentiate between appropriate and inappropriate behavior based on the environment (Zeller, 2004). However, teaching students to differentiate between what is and what is not appropriate in the classroom can sometimes be difficult because the behaviors are ingrained.

Improving Student Behavior

Changing student attitudes about school and themselves is crucial to improving students' academic achievement. Students who have difficulty in school can become frustrated and give up without trying. A school intervention, where the primary objective is to target the causes of negative behaviors, is important in helping decrease these behaviors and subsequently increase academic achievement. It is important to keep up with these students so they do not get lost in the shuffle.

Future research should focus on the importance of teaching character education within the schools. Counselors and other school officials often talk about the importance of character education, but it is not consistently taught in the classroom environment. Several studies have shown a relationship between implementation of character education lessons and higher academic

achievement (Benninga, Berkowitz, Kuehn, & Smith, 2003; Elliott, 1998; Flay, Allred & Ordway, 2001)

A role that school counselors can play in reducing negative behaviors among students is to assist in improving school climate. Students who feel disconnected from the school environment or who feel that their efforts are not being rewarded are more likely to engage in negative, attention seeking behaviors. School counselors can work with students on ways to improve academic achievement through various interventions, such as behavioral contracts with objectives and short-term goals that are specific and attainable by the student.

Regular monitoring should occur and adjustments made as needed to suit the needs of the student. Brown (1999) stated that behavioral contracts are effective at influencing academic achievement. Other interventions that can be implemented by the school counselor to improve academic achievement include study skills groups, time management training, and guidance activities designed to improve test-taking skills. Mentoring might also be an effective strategy to use to improve student behavior.

Mentoring

Mentoring is an effective strategy for working with youth who are at risk and who need a positive role model and support system. Mentoring is a caring and supportive relationship between a student and responsible adult based on trust and respect. Various mentoring programs are developed with different designs and objectives, however, the goals are generally similar in that positive changes are anticipated and benefits in the areas of behavior modification and academic achievement are expected. Success in a mentoring program requires a clear statement of the purpose of the program and expectations for the students. An effective selection process for both mentor and mentee is necessary in order to create a trusting relationship. Effective

mentoring relationships require that both parties decide how their time can best be spent with each other and require that the mentor be a strong and consistent presence in the students' life.

Drop out Prevention Programs

As stated earlier, students who exhibit negative behaviors in the classroom environment often have fewer positive interactions with their teachers and peers, and more difficulties academically. These students may become disengaged from the classroom environment, making it difficult to take in and retain information. Teachers may find it difficult to engage these students in classroom discussions. Student disengagement from school should be understood as a long-term process, developed over time, beginning with early school experiences. Poor academic achievement is one of the strongest predictors of early dropout (Woods, 1995). Studies have shown that early academic performance and engagement in both elementary and middle school are indicators that predict early withdrawal from high school (Rumberger, 2001, Woods, 1995). Early school failure may act as the starting point in a cycle that causes students to question their competence, weaken their attachment to school, and eventually results in their dropping out. Wehlage and Rutter (1986) found that students who drop out see all schooling in relation to their experiences in school, and in terms of their lack of academic success and disciplinary problems, and these students often decide to terminate this negative situation.

The aim of drop out prevention programs is to address the causes of early drop out for students and help keep them in school. Reducing the drop out rate among students requires an analysis of how school districts work with students who are at risk for dropping out. Professional development activities for teachers that address the drop out rates among students can help them understand the necessity for caring relationships with students and can help them convey and develop that caring effectively. Many students do not believe teachers are very interested in them,

so developing caring relationships is important. According to Black (2002), students with repeated discipline problems become convinced that teachers no longer want them in school. This in turn can exacerbate existing disruptive behavior, resulting in students who are chronically absent, and give up trying to succeed academically. Many of them may eventually drop out.

Another aspect of school change is to challenge traditional models of school organization to make schools more interesting and responsive places where students learn more and can meet higher standards. Restructuring strategies should include developing curricular and instructional methods to promote higher-order thinking, as well as, more active and team-oriented learning, having teachers play a more active role in managing schools, and encouraging schools to be more sensitive to the concerns of their students.

Recommendations for Future Research

Further study of the effects of classroom behavior on academic achievement, as well as the effects of teacher expectancies on academic achievement is needed.

Recommendation #1

Information about teachers' ethnicity was not available for this study, and it would be valuable to include this information in future studies. The race of the teacher rating students on classroom behavior may have an impact on their perceptions of the students.

Recommendation #2

When using longitudinal data teacher perceptions should be measured at all grade levels assessed. In the current study, although longitudinal data was used through eighth grade, teacher ratings were only available for first and third grades.

Recommendation #3

When comparing teacher ratings and IQ, it is recommended to have comparable IQ measurements. In the first grade the PPVT was used, however it only measures verbal intelligence, while the WISC-R yields a full-scale IQ score.

Recommendation #4

In the current study teacher perceptions of student behavior were examined, however future research could examine how students' perceptions of their teachers impact the classroom environment.

Limitations

This research has some limitations. There was no IQ measurement used for the 8th grade sample. Teachers did not complete the CBI questionnaire for the longitudinal sample of students in the 8th grade. Information on the norming sample was not available for the CBI. Also, the sample consisted of a large school system in the south (Winston-Salem/Forsyth County Schools). The results may not be generalizable to samples from another area of the country.

Summary

The current study was conducted to investigate how well the classroom behavior inventory and IQ measures predicted reading and math achievement in a longitudinal sample of research participants. The study also looked at whether there were differences in teacher ratings on the classroom behavior inventory based on gender or ethnicity. An overview of the study was discussed, as well as the results and recommendations for improving teacher perceptions, student behavior and academic achievement.

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APPENDIX A

Means and Standard Deviations of First and Third Grade CBI Subscales

	Minimum	Maximum	Mean	Std. Deviation
Extroversion	5	25	19.36	3.87
Creativity/Curiosity	5	25	17.22	5.23
Distractibility	3	15	8.06	3.44
Independence	5	25	18.01	5.07
Hostility	3	15	6.07	3.22
Verbal Intelligence	5	25	17.06	5.70
Task Orientation	5	25	17.33	5.79
Introversion	3	15	6.38	2.83
Consideration	5	25	25.63	54.28
Dependence	3	15	11.24	42.86
Extroversion3	5	25	18.78	3.84
Creativity/Curiosity3	5	25	16.55	5.29
Distractibility3	3	15	8.02	3.76
Independence3	5	25	17.80	5.14
Hostility3	3	15	6.10	3.65
Verbal Intelligence3	5	25	16.27	5.81
Task Orientation3	5	25	16.80	6.01
Introversion 3	3	15	6.28	2.92
Consideration3	5	25	18.70	5.29
Dependence3	3	15	5.98	3.05