

ASSESSMENT AND ACCOUNTABILITY: FACTORS THAT INFLUENCE
THE PARTICIPATION AND PERFORMANCE OF STUDENTS WITH AN
EMOTIONAL DISTURBANCE ON A STATEWIDE ACCOUNTABILITY
ASSESSMENT IN MATH

A Dissertation

by

KIMBERLY TEMPLE HARVEY

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

December 2008

Major Subject: Educational Psychology

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Approved by:

Chair of Committee, Kimberly J. Vannest
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ABSTRACT

Assessment and Accountability: Factors That Influence the Participation and Performance of Students with an Emotional Disturbance on a Statewide Accountability Assessment in Math. (December 2008)

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Educational policy mandates student participation in statewide accountability assessments with the expectation that students achieve proficiency on content objectives. Demonstrating proficiency may be most difficult for students with an Emotional Disturbance (ED) who experience poor school outcomes. This study examined the participation and performance of students with ED on a regular statewide accountability assessment in math and examined the relationship between student and school level factors to student participation and performance. In the study, 34% of the students with ED participated and met proficiency standards on the regular statewide assessment in math. Student level factors examined were grade level, gender, ethnicity, and intelligence. School level factors were school-wide socioeconomic status and instructional setting for math; ethnicity, intelligence, and instructional setting associated with participation; grade level, ethnicity, and intelligence associated with performance. Level of intelligence was the only factor predictive of both participation and performance on the regular statewide accountability assessment in math.

DEDICATION

To my children,
Brian, Sarah, and Jonathan

I Love You

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TABLE OF CONTENTS

	Page
ABSTRACT	iii
DEDICATION.....	iv
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS	vii
LIST OF TABLES.....	xi
CHAPTER	
I INTRODUCTION	1
Inclusion of Students with Disabilities in Accountability Systems.....	3
Students with Emotional Disturbance	4
Instructional Placement	5
Academic Achievement per Instructional Setting.....	7
Participation in Statewide Assessments	8
Performance of Students with Disabilities on Statewide Assessments.....	8
Purpose of Study.....	10
Research Questions.....	11
Dissertation Format	11
II ASSESSMENT AND ACCOUNTABILITY: FACTORS THAT INFLUENCE THE PARTICIPATION OF STUDENTS WITH AN EMOTIONAL DISTURBANCE ON A STATEWIDE ACCOUNTABILITY ASSESSMENT IN MATH	13
Literature Review	13
Participation Rates.....	15
Instructional Placement	17
Academic Status of Students with ED across Settings.....	18
Present Study	19
Methodology.....	20
Participants	20
Dependent Variable	22
Independent Variables	24

CHAPTER	Page
Procedures	26
Reliability	27
Analysis	28
Results	29
Student Level Factors	30
School Level Factors	38
Discussion.....	42
Overall Participation.....	42
Ethnicity and Participation	45
School-Wide Socioeconomic Status and Participation	47
Level of Intellectual Functioning and Participation	47
Instructional Setting and Participation	48
Limitations.....	50
Implications	51
Conclusion.....	52
III ASSESSMENT AND ACCOUNTABILITY: FACTORS THAT INFLUENCE THE PERFORMANCE OF STUDENTS WITH AN EMOTIONAL DISTURBANCE ON A STATEWIDE ACCOUNTABILITY ASSESSMENT IN MATH	54
Literature Review	54
Performance Based on Instructional Setting	57
Performance on Statewide Assessments.....	60
Present Study.....	61
Methodology.....	63
Participants	63
Dependent Variable	65
Independent Variables	66
Procedures	68
Reliability	70
Analysis	70
Results	73
Student Level Factors	73
School Level Factors	80
Discussion.....	83
Grade Level	87
Gender	87
Ethnicity.....	88
School-Wide Socioeconomic Status.....	89
Instructional Setting.....	90
Level of Intellectual Functioning	91

CHAPTER	Page
Limitations.....	92
Implications.....	94
Conclusion.....	97
IV ASSESSMENT AND ACCOUNTABILITY: PREDICTIVE FACTORS OF PARTICIPATION AND PERFORMANCE FOR STUDENTS WITH AN EMOTIONAL DISTURBANCE ON A STATEWIDE ACCOUNTABILITY ASSESSMENT IN MATH	98
Literature Review	98
Participation in Statewide Assessments	101
Performance on Statewide Assessments.....	102
Performance of Students with an Emotional Disturbance.....	103
Instructional Setting.....	105
Present Study.....	107
Methodology.....	108
Participants	108
Dependent Variable	111
Independent Variables	113
Procedures	115
Reliability	116
Analysis	117
Results	118
Participation.....	119
Performance.....	123
Discussion.....	125
Participation and Performance.....	126
Limitations.....	131
Implications	133
Conclusion.....	135

CHAPTER	Page
V SUMMARY AND CONCLUSIONS.....	136
Inclusion of Students with Disabilities in Accountability Systems	137
Students with Emotional Disturbance	138
Instructional Placement	138
Academic Achievement per Instructional Setting	139
Participation in Statewide Assessments	140
Performance of Students with Disabilities on Statewide Assessments.....	141
Purpose of Study.....	142
Participation of Students with ED, Chapter II.....	143
Performance of Students with ED, Chapter III.....	145
Participation and Performance of Students with ED, Chapter IV	146
Summary.....	148
Conclusion.....	150
REFERENCES	152
VITA.....	167

LIST OF TABLES

TABLE		Page
1	Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Grade Level	31
2	Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Gender	33
3	Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Ethnicity	35
4	Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Level of Intellectual Functioning.....	37
5	Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per School-Wide Socioeconomic Status	39
6	Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Instructional Setting for Math ..	41
7	Chi-Square Analysis Data for Participation Status and Student and School Level Factors	45
8	Frequency Distribution of Students with ED Meeting Proficiency on the Statewide Assessment in Math per Grade Level	74
9	Frequency Distribution of Students with ED Meeting Proficiency on the Statewide Assessment in Math per Gender	76
10	Frequency Distribution of Students with ED Meeting Proficiency on the Statewide Assessment in Math per Ethnicity	77
11	Frequency Distribution of Students with ED Meeting Proficiency on the Statewide Assessment in Math per Level of Intellectual Functioning.....	79

TABLE	Page
12 Frequency Distribution of Students with ED Meeting Proficiency on the Statewide Assessment in Math per School-Wide Socioeconomic Status.....	81
13 Frequency Distribution of Students with ED Meeting Proficiency Standards on the Statewide Assessment in Math per Instructional Setting for Math	83
14 Chi-Square Analysis Data for Performance and Student and School Level Factors	86
15 Logistic Regression for Student and School Level Factors Predictive of Participation on the Statewide Assessment in Math.....	121
16 Logistic Regression for Student and School Level Factors Predictive of Performance on the Statewide Assessment in Math.....	124

CHAPTER I

INTRODUCTION

Educational policy is designed to reform schools so all children receive an appropriate education, learn expected content material, and demonstrate mastery on standard based objectives. Most notable is the No Child Left Behind (NCLB) Act of 2002 which may be the most comprehensive and systematic education reform act approved by congress in the past 40 years (Wanker & Christie, 2005). Through stronger accountability, use of proven education methods, more freedom for states and communities, and increased parental choice, (U.S. Department of Education, 2004), NCLB reflects the standards era, with high expectations for learning, and demonstration of proficiency on state standards, with schools accountable for student success and failure (Rosenberg, Sindelar, & Hardman, 2004). The “cornerstone” of NCLBs accountability mandate is state assessment programs that allow school systems to collect student achievement data to identify where students are performing well or poorly, so education can be customized to help students, even students most in need (United States Department of Education, 2008a). A tenet within NCLB is Adequate Yearly Progress (AYP) by which the participation and performance of students and schools are assessed. AYP requires 95% student participation, as well as 95% participation within subgroups (U.S. Department of Education, 2003) with the demonstration of progress towards 100% proficiency on achievement standards (U.S. Department of Education, 2008b).

This dissertation follows the style of *Exceptional Children*.

Statewide assessments and related accountability is for all students even those classified in specific subgroups (Goertz, 2005; Hursch, 2005; Nagle, Yunker, & Malmgren, 2006), such as special education. Separate and measurable achievement objectives must be developed for all students, economically disadvantaged students, students with disabilities, for racial and ethnic groups, and students with limited English proficiency (U.S. Department of Education, 2003). The inclusion of students with disabilities is thought to possibly be the “most controversial and contentious” (pg. 80) provision of NCLB (Goertz, 2005). Under NCLB most students with disabilities are held to the same proficiency standards as other students, with scores disaggregated and publically reported, making disparities in achievement visible (Goertz, 2005). The individual goal setting requirement in the Individual’s with Disabilities Education Act (IDEA) may contradict NCLB’s implication that all students will progress at the same rate and pass standardized accountability measures (Brigham, Gustashaw, Wiley, & Brigham, 2004). Never-the-less, the reauthorization of IDEA (2004) resulted in alignment to NCLB (Turnbull III, 2005; U.S. Department of Education, 2007). NCLB and IDEA imply that the participation and performance of students with disabilities parallel that of students without disabilities. Sitlington and Neubert (2004) report both IDEA and NCLB emphasize high expectations for all students through participation in content classes and state assessments. The inclusion of students with disabilities in statewide assessment and accountability programs has heightened interest in this area (Goertz, 2005; Thurlow, House, Scott, & Ysseldyke, 2000).

Inclusion of Students with Disabilities in Accountability Systems

The belief surrounding accountability systems and assessment, is that the inclusion of students with disabilities will benefit students instructionally, resulting in higher expectations (Rosenberg et al., 2004), increased learning, access to the curriculum (Defur, 2002; Rosenberg et al., 2004), and improved outcomes (Defur, 2002; Ysseldyke et al., 2004). The “promise” that all students will learn and succeed is grounded in IDEA and NCLB (Rosenberg et al., 2004). The intent of policy reform is improved outcomes, and research suggests the introduction of accountability programs into states has proven beneficial, resulting in positive consequences (Hanushek & Raymond, 2005; Ysseldyke et al., 2003), such as increased participation in testing programs, higher expectations and standards, improved instruction, and improved performance for students in special education (Ysseldyke et al., 2003). Additional data suggests that students with disabilities are doing better academically since the implementation of NCLB, though there is indication that positive change dissipates by the 8th grade (National Council on Disability, 2008).

Data suggests that students with disabilities benefit from accountability measures, though it is unknown how students perform based on area of disability. For instance, students with ED have academic deficits across subjects (Nelson, Benner, Lane, & Smith, 2004; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004) and poor school outcomes (Bradley, Henderson, & Monfore, 2004), and therefore may not fare well within accountability programs. Shriner and Wehby (2004) report that students with emotional and behavioral disorders are not prepared to participate in state-wide

assessments necessary for advancement in school. Thus, the participation and performance of students with ED may negatively contribute to accountability ratings, though most importantly may result in continued negative outcomes for students with ED.

Students with Emotional Disturbance

Students with Emotional or Behavioral Disorders have historically demonstrated academic deficits (Trout, Nordness, Pierce, & Epstein, 2003), and perform below expectations academically (Epstein, Kinder, and Bursuck, 1989; Nelson et al., 2004; Reid et al., 2004). Poor academic achievement of students with ED spans across age groups (Nelson et al., 2004; Reid et al., 2004), settings (Reid et al., 2004), and content areas (Nelson et al., 2004; Reid et al., 2004; Trout et al. 2003). While academic deficits span across subject areas, deficits are pronounced in math (Reid et al., 2004), with deficits increasing with age (Nelson et al., 2004). The knowledge that students with ED may be ill prepared to meet standards coupled with the demands of IDEA and NCLB have resulted in increased interest in their academic performance (Wehby, Lane, & Falk, 2003). Additionally, the inclusion of students with disabilities in high-stakes education reforms has created a sense of urgency to help these students achieve better outcomes (Bradley et al., 2004). Responding to the needs of students whose progress is problematic increases pressures teachers experience to effectively serve these students (Lashley, 2002).

Instructional Placement

In order to address the poor school outcomes of students with ED, Hayling, Cook, Gresham, State, and Kern (2008) report that students with ED are educated in a range of educational settings. Students with ED are often educated in restrictive educational environments (Bradley et al., 2004; Hosp & Reschley, 2002; Simpson, 2004; Sitlington & Neubert, 2004). Simpson (2004), however, reported that there has been an increase in inclusion for students in special education, to include students with emotional and behavioral disorders, and it is expected that the trend will continue. Simpson, however, reported that students with emotional or behavioral disorders are less likely to be recommended for full inclusion. Bradley et al. (2004) found that for students with ED in special education classes more than half use the general education curriculum with modifications, and almost 25% receive a specialized or individualized curriculum, and approximately 17% have no curriculum. Within general education, Bradley and colleagues report that about a third of the students use the general curriculum without modifications, and more than half with modifications.

IDEA requires access to the general education curriculum, which has prompted educators to seriously address instruction and the outcomes of achievement for students with disabilities (Mooney, Denny, & Gunter, 2004), particularly in consideration of inclusion in accountability and assessment programs. In response to high-stakes testing, instructional programs are being changed (Christenson, Decker, Triezenberg, Ysseldyke, & Reschly, 2007). Therefore, while students with ED may not be educated in inclusive settings to the same degree as students with disabilities other than ED, it would be

remiss, not to consider that the inclusion movement will also impact students with ED. Increased inclusion is related to social policy (Simpson, 2004), high-stakes, accountability driven education reforms (Bradley et al., 2004; Christenson et al., 2007), requirements within IDEA encouraging inclusion and access to the general curriculum, coupled with a reduction of classes due to alignment of resources and curriculum to state and district-wide assessments (Brigham et al., 2004).

As educators respond to reform efforts, it becomes imperative to study the educational outcomes of students based on academic placement settings, particularly if inclusion is utilized as an intervention for students with ED. Simpson (2004) reports the legacy of social policy outweighs the scientific aspects of inclusion, though inclusion has not been scientifically tested as a valid independent variable, and it is generally unknown if students with ED benefit from inclusion. Geoff (2007) reviewed 1373 articles published between the years 2001-2005, and found that only 1% (14) of the articles was comparative outcome studies with marginally positive results for inclusion. A concern expressed by Lane, Gresham, and O'Shaughnessy (2002) is that students with ED have predominately been educated in self-contained classrooms and have lacked exposure to the core curriculum. As Lane and colleagues report, students with ED are likely to experience academic deficits and lack basic skills which would make returning to general education difficult. Placing students with disabilities in general education in response to high-stakes testing may increase participation rates but may not affect student performance (Christenson et al., 2007). Additionally, Wood, Lawrenz, Huffman,

and Schultz (2006) report that changing practices, policies and resources at the school level have not resulted in improved performance on standardized assessments.

Academic Achievement per Instructional Setting

Research addressing academic outcomes and placement for students with ED is minimal, and research in this area is recommended (Hayling et al., 2008; Lane, Wehby, Little, & Cooley, 2005a b; Reid et al., 2004; Trout et al., 2003). Studies should be conducted comparing the academic performance of students with emotional or behavioral disorders in inclusion and non-inclusion programs (Simpson, 2004), performance differences amongst settings (i.e. self-contained and general education) (Lane et al., 2005a b), and settings within the general education campus, such as self-contained, resource, and general education classes (Trout et al., 2003). Research on placement and achievement is lacking and unclear for students with disabilities in special education especially for students with ED. Students with ED demonstrate academic deficits with no significant differences in academic performance across general education, resource, self-contained, and special school settings based on measures of a standardized test (i.e. WJ, WRAT) across subject areas (Reid et al., 2004).

In light of the NCLB and IDEA based policy changes, research needs to examine the performance of students with ED across instructional settings (general and special education classes) to determine how policy and curricular demands affect their performance and that of other students (Brigham et al., 2004). Examining patterns of participation between general education and assessment for students in special education is recommended (Jackson & Neel, 2006), as is the need to study placement, as it relates

to student performance on accountability measures (Malmgren, McLaughlin, & Nolet, 2005). The question of how many students with ED, in particular, participate and meet proficiency standards in statewide assessment programs is unanswered.

Participation in Statewide Assessments

Students in special education have not always been included in statewide assessments (Elliot, Erickson, Thurlow, & Shriner, 2000), though policy changes have resulted in increased participation (Thompson & Thurlow, 2001; Thurlow et al., 2000; Ysseldyke et al., 2004), and evolution of state participation policies (Thurlow, Lazarus, Thompson, & Morse, 2005). All states have policies in place regarding the participation of students in special education on statewide assessments (Thurlow et al. 2005), though improvement in the reporting of disaggregated data and the provision of participation rates for students with disabilities is recommended (Thurlow & Wiley, 2006). Without accurate reporting of data, it is difficult to determine the true extent of participation. Data that is available suggests that even though participation has increased, few states meet NCLB's requirement of 95% participation (Thurlow & Wiley, 2006). Furthermore, information on the participation of students with emotional and behavioral disorders in statewide accountability and assessment systems is generally unknown (Shriner & Wehby, 2004).

Performance of Students with Disabilities on Statewide Assessments

Research concerning the performance of students with disabilities on statewide assessments is minimal (Thurlow, Langenfield, Nelson, Shin, & Coleman, 1998), though existing data indicates students with disabilities benefit from high-stakes assessments

(Hanushek & Raymond, 2005). Researchers have found that across schools, grade levels, and content areas, a consistent predictor variable of performance was the performance of students in general education; in schools where general education students were successful, students with disabilities were also likely to be successful (Malmgren et al., 2005).

When considering the performance of students on statewide assessments, it is important to evaluate and study disaggregated data. Collecting such data becomes even more important when considering that tents of NCLB require disaggregation of data by components of disability, socioeconomic status, race-ethnicity (U.S. Department of Education, 2003). The field is deplete of literature that examines the academic status of students with ED based on demographic variables. The characteristics of students with ED, such as race, gender, and socioeconomic status are not readily present in research studies (Reid et al., 2004; Trout et al., 2003) even though such characteristics could be moderators towards the academic status of students (Reid et al., 2004). Demographic variables, though not specific to special education, are provided in data from the National Assessment of Educational Progress (NAEP) (Lee, Grigg, & Dion, 2007). Improved achievement in math occurred from 1990 to 2007, with gains made for subgroups of ethnicity, gender, and socioeconomic status for students in 4th and 8th grades. For students with disabilities Malmgren and colleagues (2005) found varying levels of proficiency in math performance.

These same researchers (Malmgren et al., 2005) found that in statewide assessments, socioeconomic status (percentage of students receiving free and reduced

price meals) was not predictive of performance. In another study examining a statewide assessment in reading (Stanford 8), students of White or East Asian descent, girls, or those from high-income families, had higher levels of performance (Uyeno, Zhang, & Chin-Chance, 2006). Only one study was found targeting students in different eligibility categories and their performance on statewide assessments. Gronna, Jenkins, & Chin-Chance, (1998) determined that students with emotional impairment scored below the national normative group and below students without disabilities at all tested grade levels on the statewide assessment (Stanford 8).

The mandate to utilize statewide assessments to determine student and school success makes it imperative to determine how students in special education perform relative to reform efforts (Thompson, Thurlow, & Staples, 2001). This includes evaluating the value of including students with ED in accountability and assessment systems (Shriner & Wehby, 2005). Since student performance and progress is measured by statewide assessments, it makes sense to determine the present academic status of students based on these assessments. The introduction of accountability assessments has resulted in alignment of curriculum, standards, and assessments (Ysseldyke et al. 2004), therefore, statewide assessments may be an appropriate measure of curriculum or what students are learning in classes. Measuring performance on statewide assessments will also provide increased data on the academic status of students with ED, an area recommended for additional research (Nelson et al., 2004; Reid et al., 2004).

Purpose of Study

The first purpose of this study is to determine the extent that students with ED

participate in the regular statewide assessment in math. The second purpose of this study is to determine the extent that students with ED meet at least minimum proficiency standards on a regular statewide accountability assessment in math. The third purpose of this study is to determine the extent that student and school level variables impact participation and performance. Student level variables are grade level, gender, ethnicity, and level of intellectual functioning. School level variables are school-wide socioeconomic status and instructional setting.

Research Questions

1. To what extent do students with an emotional disturbance participate in a regular statewide accountability assessment in math?
2. To what extent do students with an emotional disturbance meet at least minimum proficiency standards on a regular statewide accountability assessment in math?
3. To what extent do student and school level factors impact the participation of students with emotional disturbance on a regular statewide accountability assessment in math?
4. To what extent do student and school level factors impact the performance of students with emotional disturbance on a regular statewide accountability assessment in math?

Dissertation Format

This line of research addresses the participation and performance of students with Emotional Disturbance in a series of three manuscripts. The first examines the extent that students with an Emotional Disturbance participate in a regular statewide

accountability assessment in math, with data disaggregated by grade level, gender, ethnicity, intelligence, school-wide socioeconomic status, and instructional setting. The study also examines the degree of association of student and school level variables to participation. The second manuscript examines the extent to which students with ED meet at least minimum proficiency standards on a regular statewide accountability assessment in math, with data disaggregated by grade level, gender, ethnicity, intelligence, school-wide socioeconomic status, and instructional setting. The study also examines the association of student and school level variables to performance on a regular statewide accountability assessment in math. The third manuscript examines whether or not student and school level factors are predictive variables of student participation and performance. Student level factors are grade level, gender, ethnicity, and level of intellectual functioning. School level factors are school-wide socioeconomic status, and instructional setting.

CHAPTER II

ASSESSMENT AND ACCOUNTABILITY: FACTORS THAT INFLUENCE THE PARTICIPATION OF STUDENTS WITH AN EMOTIONAL DISTURBANCE ON A STATEWIDE ACCOUNTABILITY ASSESSMENT IN MATH

Literature Review

No Child Left Behind (NCLB) seeks to reform schools through stronger accountability, more freedom for states and communities, use of proven education methods, and increased parental choice (U.S. Department of Education, 2004). Assessment measuring student performance is the “cornerstone” of NCLB (U.S. Department of Education, 2008a). NCLB reflects the standards era, where high academic standards and proficiency on statewide assessment objectives is expected (Rosenberg, Sindelar, & Hardman, 2004). The administration of assessments and associated accountability is for all students and student subgroups (Goertz, 2005; Hursch, 2005; Nagle, Yunker, & Malmgren, 2006), including students in special education.

The use of assessments to measure student learning is not new (DeCesare, 2002), although mandates within NCLB suggesting all students in special education will participate and perform at par with nondisabled students is new. Previously, students in special education were excluded from statewide assessment programs (Elliot, Erickson, Thurlow, & Shriner, 2000), or were provided the option of taking an alternate assessment if the general state assessment was deemed inappropriate (Elliot et al., 2000; Lashley, 2002; Shriner & Wehby, 2004). The reauthorization of IDEA in 1997 mandated

participation as well as public reporting of the participation and performance of students with disabilities on statewide assessments (Elliot et al., 2000, Lashley, 2002; Thurlow, Wiley, & Bielinski, 2003). Thus, prior to the enactment of NCLB, most states had incorporated accountability systems into their schools (Hanushek & Raymond, 2005), and had established participation policies (Thurlow, Lazarus, Thompson, & Morse, 2005). Despite this, the passing of NCLB brought assessment and accountability to the forefront of educational reform.

NCLB mandates the participation of *all* students in state assessments measuring grade-level performance in at least math and reading-language arts (U.S. Department of Education, 2008b). A tenet of NCLB is AYP by which participation rates are monitored and progress assessed. AYP is progress towards 100% of students meeting achievement standards (U.S. Department of Education, 2008b), to include the participation and progress of student subgroups (U.S. Department of Education, 2003). Specifically, AYP requires the participation of 95% of students, as well as 95% of students classified into specific subgroups (U.S. Department of Education, 2003). Prior to the implementation of NCLB many states did not have subgroup performance built into accountability systems, and the disaggregation of data by subgroups will make disparities amongst students visible (Goertz, 2005). Schools or districts not demonstrating AYP may be subject to consequences such as the provision of parental choice in public schools, supplemental services, school restructuring, or corrective action (U.S. Department of Education, 2003).

Policy change has heightened interest in the participation of students with disabilities in statewide assessment programs (Thurlow, House, Scott, Ysseldyke, 2000). Legislation including mandates of assessment and accountability, have also resulted in involvement in state participation policies (Thurlow et al., 2005), increased participation in testing programs (Thomas & Thurlow, 2001; Ysseldyke, Dennison, & Nelson, 2003), and improvement in state reporting for students with disabilities (Thurlow & Wiley, 2006). All states have policies in place regarding the participation of students in special education on statewide assessments (Thurlow et al., 2005), however, improvement in reporting of disaggregated data is recommended, as well as reporting of participation rates for students with disabilities (Thurlow & Wiley, 2006).

Participation Rates

The participation of students with disabilities was initially not routine practice across the nation (Shriner & Wehby, 2004). Prior to NCLB, the reporting of participation rates was poor. Limited information was available on the participation of students with disabilities in accountability systems, and few states could produce estimates reflecting the number of students with disabilities participating in statewide assessments between the years 1991 to 1995 (Elliot et al., 2000). Originally, only 22% of states reported participation data for students with disabilities (Thompson et al., 2001). Following the implementation of NCLB (between the 2000-2001 and 2001-2002 school years), reporting of participation increased from 56% (n = 28) to 70% (n = 35) states (Thurlow & Wiley, 2006). For the 2001-2002 school year, 70% of states reported participation and performance data for students with disabilities for all general

assessments administered, and 32 states reported on alternate assessments. Despite increased reporting, few states (13) provided clear participation rates, and only 6 exceeded the 95% participation rate required under NCLB (Thurlow & Wiley, 2006). The increased reporting of participation rates (Elliott et al., 2000; Thurlow & Wiley, 2006), with the number and percentage of students participating (Thurlow et al., 2003), along with the need to examine the extent of inclusion of students with disabilities in statewide accountability programs (Elliott et al., 2000), and the need to know how students are doing relative to educational reforms (Thompson et al., 2001) is necessary.

The decision for students with disabilities to participate has predominately been a function of a student's IEP team, and a function of whether or not a student received instruction in the course or content area being evaluated in the assessment (Thurlow et al., 2000; Thurlow et al., 2005). Thus, the assumption is made that students receiving instruction in the general education setting were more likely designated to participate in the regular statewide assessment. As legislation mandates the participation of all students, IEP committees may play less of a role in deciding whether or not a student will participate in the regular statewide assessment, and more of a role in deciding upon appropriate accommodations, how to best prepare students to meet proficiency standards, and delivery of services. As a result of high-stakes assessments, student's instructional programs are being changed (Christenson, Decker, Treixenberg, Ysseldyke, & Reschly, 2007).

Instructional Placement

In order to address the poor school outcomes of students with ED, Hayling, Cook, Gresham, State, and Kern (2008) report that students with ED are educated in a range of educational settings. While students with ED have historically been educated in restrictive settings (Bradley, Henderson, & Monfore, 2004; Hosp & Reschley, 2002; Simpson, 2004; Sitlington & Neubert, 2004), inclusion may increase as a result of high-stakes assessments (Christensen et al., 2007). Increased inclusion is related to social policy (Simpson, 2004), high-stakes, accountability-driven education reforms (Bradley et al., 2004; Christenson et al., 2007), as well as IDEA, and class reductions resulting from pressures to align resources and curriculum with state and district-wide assessments (Brigham, Gustashaw, Wiley, & Brigham, 2004).

Sitlington and Neubert (2004) recommend the placement of students with ED in general education classes to ensure exposure to curriculum which may increase knowledge and the likelihood of meeting proficiency standards on statewide assessments. Unfortunately, decisions to place students in inclusive settings are made with no clear evidence on the effectiveness of inclusion (Geoff, 2007) or if students with ED benefit academically from experiences in general education (Simpson, 2004). Geoff reviewed 1373 articles published from 2001-2005, and found that only 1% (14) of the articles were comparative outcome studies with marginally positive results favoring inclusion. Wood, Lawrenz, Huffman, and Schultz (2006) report that changing practices, policies and resources at the school level has not resulted in improved performance on

standardized assessments. This may be particularly true for students with ED who have poor school outcomes.

Academic Status of Students with ED across Settings

Students with ED demonstrate academic deficits (Trout, Nordness, Pierce, & Epstein, 2003) with poor academic achievement spanning across age groups (Nelson, Benner, Lane, & Smith, 2004; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004), content areas (Nelson et al., 2004; Reid et al., 2004; Trout et al., 2003), and settings (Reid et al., 2004). Academic deficits are present across general education, resource, self-contained, and special school settings (Reid et al., 2004). Lane et al. (2005a b) found that academic deficits are present in self-contained classes and schools, and the recommendation for comparative studies with general education placement was recommended. Trout et al. (2003) also recommends research that evaluates the performance of students with ED across settings within a general education setting, such as general education, resource, or self-contained classes. Conducting studies with demographic variables used as moderators is also recommended (Reid et al., 2004; Trout et al., 2003).

Minnema, Thurlow, and VanGetson (2004) found that students exempt from participation in the regular statewide assessments were students who would not be able to exhibit knowledge of content standards. Students lacking subject knowledge may be students excluded from instruction in content areas, instructed outside of the general education setting, or who have specialized or individualized education plans. Bradley et al. (2004) found that about half of the students with ED used the general education

curriculum in a special education setting, and approximately 17% had no curriculum. Hence, students with ED may be more likely to be exempt from the regular statewide assessment than students with disabilities other than ED. Research on the participation of students in special education in statewide assessments based on instructional arrangements is minimal, and examining patterns of participation between general education and assessment is recommended (Jackson & Neel, 2006; Shriner & Wehby, 2004).

Present Study

Policy change has evolved so that students in special education have progressed from exclusion, to inclusion with alternative assessments, to inclusion in regular assessment and accountability programs. Changes make it necessary to monitor the extent of participation in accountability programs to determine the impact of reform efforts on students with disabilities (Elliot et al., 2000), and to determine the value of inclusion for students with emotional and behavior disorders in assessment and accountability programs (Shriner & Wehby, 2004). In order to learn how students are doing relative to reform efforts, it is important to examine district level performance (Thompson, Thurlow, & Staples, 2001). A major tenet in NCLB is AYP requiring 95% participation of student and student subgroups (U.S. Department of Education, 2003), making it necessary to determine the participation status of students based on the categories specific to policy. NCLB requires the disaggregation of test data by disability (but not type of disability), socioeconomic status, race-ethnicity (U.S. Department of Education, 2003). Special education is often studied as a homogenous group, which may

result in failure to gain an understanding or knowledge of the status of subgroups subsumed within the larger group, which is important for true change to occur.

This study will examine the extent of participation of students with ED on a regular statewide accountability assessment in math and explore patterns of participation based on student and school level factors that may impact participation. Student level factors are grade level, gender, ethnicity, and intellectual functioning. School level factors are school-wide socioeconomic status and instructional setting for math.

Methodology

The study was conducted in a suburban school district in Southeast Texas with a population of approximately 50,000 students. The demographic make-up of the district was 9% African-American, 28% Hispanic, 53% White, and 9% Asian-Pacific/Islander. Approximately 9% of students in the district met eligibility criteria for special education and of these 8% met eligibility criteria for an Emotional Disturbance (ED).

Participants

Participants were students with ED in grades 3 through 12 required to take either the regular statewide assessment in math or an alternate assessment. Students identified as ED in kindergarten, first, or second grades were not included because students in these grades do not participate in the statewide assessment. This is generally true for twelfth graders, although twelfth graders who did not meet standards prior to their twelfth grade year are required to take the exit-level assessment administered to eleventh graders.

Initially, 307 students were identified as ED in the participating district. Of the 307, 44 were excluded from the study due to (a) 36 students enrolled in grades not assessed, (b) 2 students lacking information, (c) 1 student entered into the district database twice, and (d) 5 students found to not be ED. Additionally, five students not in the original database were identified as ED during the data collection process and included in the study. In total, 268 students with ED in grades 3-12 were identified and included as subjects. ED was the primary disability for 91% (243), the secondary disability for 8% (22), and the tertiary disability for 1% (3) of the subjects.

Subjects were represented across gender, ethnicity, grade level, intellectual functioning, socioeconomic status, and instructional settings. Of the subjects 75% (200) were male and 25% (68) female, of which 70% (187) were White, 15% (41) Hispanic, 14% (38) African-American, and 1% (2) Asian-Pacific/Islander. Fifty-seven percent (152) were enrolled in schools where less than 35% of students were classified as economically disadvantaged, and 43% (116) were in schools where at least 35% of the students were classified as economically disadvantaged.

Of the subjects, 7% (18) were in 3rd grade, 11% (30) in 4th grade, 10% (27) in 5th grade, 13% (36) in 6th grade, 8% (22) in 7th grade, 12% (33) in 8th grade, 16% (44) in 9th grade, 13% (35) in 10th grade, 7% (19) in 11th grade, and 2% (4) in 12th grade.

Regarding instructional setting for math, 9% (23) received instruction in a self-contained setting, 26% (71) in a resource setting, 32% (85) in general education with in-class support, and 33% (89) in general education without designated in-class support. The self-contained setting consisted of 7 elementary students, and 16 secondary students. Of

these 23 students, 14 secondary students received instruction in a district-based off campus program for students with significant emotional or behavioral problems, 7 students were in an adaptive behavior room (6 elementary and 1 secondary) on a general education campus, 1 elementary student was in a nonpublic day school setting, and 1 secondary student was in a life skills program.

Subjects represented a range of cognitive functioning, with 3% (7) having IQs in the extremely low range, 12% (31) in the borderline range, 23% (61) in the low average range, 51% (132) in the average range, 9% (24) in the high average range, 2% (5) in the superior range, and <1% (1) in the very superior range. IQ scores were unobtainable for 9 students due to (a) 3 paper-based special education folders not located, (b) 3 student records lacking IQ scores, (c) lack of accessibility to a school for 1 student's file, (d) school refusal to provide information for 1 student, and (e) 1 student not administered an IQ test. In two cases the IQ classification range rather than IQ scores was provided.

Dependent Variable

The dependent measure is student participation in the regular Texas Assessment of Knowledge and Skills (TAKS) statewide assessment in math. The dependent variable (participation or nonparticipation) is dichotomous reflecting whether or not a student with ED was scheduled to participate in the regular statewide assessment in math during the spring 2006-2007 administration.

The math TAKS assessment, administered to students in grades 3-11 measures student learning on defined knowledge and skills at assessed grade levels (Texas Education Agency, 2008a). Reliability measures of internal consistency are in the high

.80s to low .90s, with reliabilities for TAKS assessments ranging from .83 to .93 (Texas Education Agency, 2008b). Validity measures include content validity (alignment to academic standards), concurrent validity (correlation with national testing program), criterion-related validity (compared to college preparedness assessments, and grade correlation (Texas Education Agency, 2008c).

TAKS was developed to be aligned with objectives outlined in the Texas Essentials of Knowledge and Skills (TEKS). The alignment of the TAKS to the TEKS to establish content validity was established by incorporating input from Texas educators across grade levels and subject areas (Texas Education Agency, 2008c). The TAKS assessment was developed through a sequential process of item development, item review, and internal reviews of items resulting in the improvement or elimination of items providing evidence for content validity (Texas Education Agency, 2008c).

In addition to content validity, concurrent validity has been established. A study was conducted in 2004-2005 during which student performance on the exit level TAKS was correlated with student performance on national testing programs (Texas Education Agency, 2008c). Additionally, criterion-related validity was found when the TAKS was compared to college preparedness assessments. The TAKS was correlated to the American College Test (ACT), Texas Academic Skills Program (TASP), and Scholastic Achievement Test 1 (SAT). Results indicated that TAKS scores (meeting standard performance) predicted ACT scores of approximately 20 in math; TAKS scores (commended performance) predicted ACT scores of approximately 27 in math (Texas Education Agency, 2008c). Also, the correlation of the TAKS with the SAT resulted in

TAKS scores (meeting standard performance) predictive of an approximate score of 470 in math on the SAT, and scores (commended performance) predictive of an approximate score of 620 in math (Texas Education Agency, 2008c). A Grade Correlation Study was also conducted, and students who passed classes were likely to also pass the TAKS assessment in the related area (Texas Education Agency, 2008c).

Independent Variables

Six independent variables were included as factors in this study. Variables were at the individual student and school level.

Student level factors. Four of the six variables identified to account for differences in participation were considered student level factors and are grade level, gender, ethnicity, and intellectual functioning. Independent variables are categorized as follows: (a) grade level (3-12), (b) gender (male or female), (c) ethnicity (African-American, Hispanic, White, and Asian-Pacific Islander), and (d) level of intellectual functioning (extremely low, 69 and below; borderline, 70 – 79; low average, 80 -89; average, 90 – 109; high average, 110 – 119; superior, 120 – 129; and very superior, 130 and above). Scores were classified using the Wechsler classification ranges (Sattler,2001).

School level factors. Two of the six factors were considered school-level variables, and were school-wide socioeconomic status and instructional setting in math. Factors are categorized as such: (a) socioeconomic status (schools with less than 35% of students classified as economically disadvantaged, and schools with at least 35% of students classified as economically disadvantaged), and b) instructional setting (self-

contained, resource, general education with in-class support, and general education without in-class support).

School socioeconomic data was collected from reports generated by the state education agency. Actual percentages were collected and categorized into schools below 35% and schools at or above 35%. The 35% cut-off was used due to a local education agency being able to designate schools eligible for Title 1 funds if at least 35% of the students in a school are from low-income families (Texas Education Agency, 2004). Fund allocation, requires schools to first allocate funds to schools exceeding 75% poverty (Texas Education Agency, 2004), though in the district under study no schools exceeded 75% poverty); therefore the 35% rate was used. The socioeconomic status of students in an adaptive behavior classroom was configured using their enrolled school.

Instructional setting refers to where a student receives instruction for math. Settings are general education, general education with in-class support, resource, or self-contained. Students in general education did not have a specified amount of time of in-class support, whereas students receiving in-class support received 10 to 90 minutes of in-class support daily from either a helping teacher (intermittent support) or co-teacher (daily support). Level of restrictiveness is considered from general education, general education with in-class support, resource, and self-contained. Students educated in the resource classroom receive instruction from a special education teacher based on modified objectives in the state curriculum. Students educated in the self-contained setting receive instruction outside of the general education or resource class settings.

Procedures

Data was collected from district maintained data-bases, and computer or paper-based individual student special education files. Data collection was completed by two researchers with experience and knowledge in special education. Both data collectors were completing doctoral degrees in educational psychology with an emphasis on special education and had a combined 25 years school experience.

Initially, a report identifying students with ED was generated to reflect enrollment on the Monday of the week of formal assessment. The initial report identified students with ED, attending school, and grade level. Following the identification of students with ED, data was collected from individual special education folders housed in a web-based program. From this web-based program demographic information (grade level, gender, and ethnicity), area of disability, level of intellectual functioning, scheduled participation status on the statewide assessment in math, and instructional setting for math was collected. Individual Education Plans (IEPs) for the 2006-2007 school year were reviewed, and if students had more than one IEP meeting during the year, the IEP completed closest to the time of assessment, but prior to, was utilized to best reflect information at the time of assessment. If needed, previous IEP records or deliberations were reviewed for clarification. Information not available through the web-based program was collected from individual student folders on campuses; IQ scores not obtainable from the web-based program were collected by personal contact with campus diagnosticians or from individual student folders.

Following the initial stage of data collection, a second district maintained data base was assessed. From the second data base, gender, ethnicity, and participation status was cross-referenced to verify initial data. Additionally, this data-base reflected whether or not a student *actually* participated in the statewide assessment in math by providing scores and passing status. During this stage of data collection, five discrepancies were identified in which the student's special education file was in disagreement with actual participation status. Specifically, special education files indicated participation in the regular grade level assessment when students actually participated in an alternate assessment. Identified discrepancies were re-verified by reviewing both the student's special education file and district maintained database. In all five cases, participation status was corrected to reflect actual participation status and students coded as nonparticipants.

Reliability

Data was verified for 22% of the participants. Data was initially verified for 9 elementary school, 12 junior high school, and 11 high school students during the data input stage; original data input was accurate. In order to obtain a reliability measure that included at least 20% of the subjects, additional subjects were randomly selected from the elementary, junior high, and high school subject pool. In total, 60 records were verified (20 from each level of elementary, junior high school, and high school). In total 22% of participant data was verified, and reliability was determined to be 97%.

Analysis

Data analysis was conducted for 268 students with an emotional disturbance attending a school in a large suburban school district in southeast Texas. Data was analyzed to determine the extent of participation on the regular statewide accountability assessment in math. The dependent variable was dichotomous, representing whether or not a student was scheduled to participate in the regular statewide assessment (not scheduled to participate = 0, scheduled to participate = 1). Independent variables were student (grade level, gender, ethnicity, and intelligence) and school level (school-wide socioeconomic status and instructional setting for math) factors. Employed statistical analyses were descriptive statistics, cross tabulation, and chi-square analysis.

Descriptive statistics summarize data (Gaur & Gaur, 2007; Hinkle, Wiersma, & Jurs, 1998), and provide descriptive assertions about traits and attributes of the population (Babbie, 1998). Descriptive measures provided the researcher with the ability to determine the extent that students with ED were scheduled to participate in the statewide assessment in math.

Cross tabulation examines the association between combinations of cross tabulated variables, by generation of contingency tables (Gaur & Gaur, 2007). Cross tabulation and related contingency tables were generated between participation status and student and school level factors. Contingency tables allowed the researcher to compare observed and expected cell frequencies employed in chi-square analysis to determine the independence of categorical variables (Gaur & Gaur, 2007). Due to the dichotomous nature of the dependent variable, chi-square analysis was employed (Huck

& Cormier, 1996) to determine the association between independent and dependent variables. The level of significance was set at .05, which is standard in the social sciences (Gaur & Gaur, 2007). In conducting chi-square analysis, in 2x2 classification tables, no cell is to have less than 5 subjects, and in tables larger than 2x2 (i.e. 2x4) no more than 20% of the cells are to have less than 5 (Garson, 2008a). When the minimum expected cell frequency is not met, the recommendation is to combine categories to achieve at least the minimum amount required (Hatcher, 2003).

The index of effect size was the Phi Coefficient in 2x2 tables and Cramer's V in tables 2x3 or larger (Garson, 2008b, Morgan, Leech, Gloeckner, & Barrett, 2004). The phi coefficient in chi-square analysis is a measure of association used for 2x2 tables when data is dichotomous to measure the strength of the relationship based on a 0 to 1 coefficient, commensurate to a correlation coefficient (Garson, 2008b). The phi coefficient is not readily interpretable for tables larger than 2x2 (Garson, 2008b), therefore Cramer's V was used as a measure of association for tables larger than 2x2 (Garson, 2008b). Cramer's V is the association between two variables, providing a measure from 0 to 1 (Garson, 2008b). The strength of the measure of association is based on Cohen's (1988) definition of effect size as .10 as small, .30 as medium, and .50 as large.

Results

Participants were 268 students with an emotional disturbance in grades 3 through 12 required to participate in the regular statewide accountability assessment in math or an alternate assessment. Of the 268 students, 54.5% (146) were scheduled to participate

in the regular statewide accountability assessment in math. By default, 45.5% (122) were scheduled to take an alternate assessment against grade level or alternate achievement standards.

Student Level Factors

Student level factors examined in relation to participation status were grade level, gender, ethnicity, and level of intellectual functioning. School level factors examined were school-wide socioeconomic status and instructional setting for math. Factors were analyzed using descriptive statistics, cross tabulation, and chi-square analysis.

Grade level. Of the 54% (146) scheduled to participate in the regular statewide accountability assessment in math, 7% (10) were 3rd graders, 12% (17) 4th graders, 10% (14) 5th graders, 16% (23) 6th graders, 8% (11) 7th graders, 14% (20) 8th graders, 14% (21) 9th graders, 10% (14) 10th graders, 8% (12) 11th graders, and 3% (4) 12th graders.

Per grade level 56% of 3rd graders, 57% of 4th graders, 52% of 5th graders, 64% of 6th graders, 50% of 7th graders, 61% of 8th graders, 48% of 9th graders, 40% of 10th graders, and 63% of 11th graders were scheduled to participate (see Table 1). All four 12th graders were scheduled to participate and this is expected as only 12th graders who did not take the assessment or meet standards during 11th grade were required to take or retake the test. In order to examine the relationship between student grade level and participation, cross-tabulation was conducted. Data from cross-tabulation did not suggest an association between participation and grade level.

Table 1.

Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Grade Level

Grade Level	Total Number of Students with ED per Grade Level	Number of Students with ED Scheduled to Participate per Grade Level	Percent of Students with ED within Participation Sample per Grade Level	Percent of Students with ED Scheduled to Participate per Grade Level
3	18	10	6.8	55.6
4	30	17	11.6	56.7
5	27	14	9.6	51.9
6	36	23	15.8	63.9
7	22	11	7.5	50.0
8	33	20	13.7	60.6
9	44	21	14.4	47.7
10	35	14	9.6	40.0
11	19	12	8.2	63.2
12	4	4	2.7	100

Chi-square analysis was conducted to further explore the association between participation and grade level. For the purpose of analysis, the four 12th grade students were included with the 11th graders, due to the limited number of 12th graders participating. This is rationalized in terms of 12th graders assessed by the 11th grade assessment, and by their assumed inclusion during their 11th grade year and requirement to take or retake the examination. Chi-Square analysis indicates that student grade level does not impact participation on the regular statewide accountability assessment in math. There was no significant relationship at the 5% significance level between participation on the regular statewide accountability assessment in math and grade level ($X^2 = 7.983$, $df = 8$, $p = .435$, $\eta^2 = .173$).

Gender. Of the students scheduled for participation, 74% (108) were boys, and 26% (38) girls, accounting for 54% of the boys and 56% of the girls in the sample (see Table 2). Cross-tabulation was conducted to identify patterns between participation and gender, and data from the cross-tabulation did not suggest differences between boys and girls. The overall percent of boys and girls scheduled to participate compared to those not scheduled was proportionate to the overall percent of males and females represented in the sample.

Table 2.

Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Gender

Gender	Total Number of Students with ED per Gender	Number of Students with ED Scheduled to Participate per Gender	Percent of Students with ED within Participation Sample per Gender	Percent of Students with ED Scheduled to Participate per Gender
Female	68	38	26	55.9
Male	200	108	74	54.0

Chi-Square analysis was conducted to further explore the relationship between gender and participation. Chi-Square analysis indicates that gender is not associated with whether or not a student with ED participates in the regular statewide accountability assessment in math. There was no significant relationship at 5% significance level between participation in the regular statewide accountability assessment in math and gender ($X^2 = .073$, $df = 1$, $p = .788$, $\eta^2 = .016$).

Ethnicity. The majority of subjects within the sample and of those scheduled for participation were White. Of the 146 students scheduled to participate in the regular statewide assessment in math, 78% (114) were White, 14% (20) Hispanic, 7.5% (11) African American, and 1% (1) Asian-Pacific Islander.

Within ethnic subgroups, 61% of the White students, 49% of Hispanic students, 29% of African American students, and one of the two Asian-Pacific Islander students were scheduled to participate (see Table 3). Cross-tabulation was conducted to identify patterns between participation and ethnicity, and data from the cross-tabulation suggests that ethnicity is associated with participation status. Minority students who are ED participate to a lesser degree in the regular statewide accountability assessment in math than students in the majority.

Table 3.

Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Ethnicity

Ethnicity	Total Number of Students with ED per Ethnicity	Number of Students with ED Scheduled to Participate per Ethnicity	Percent of Students with ED within Participation Sample per Ethnicity	Percent of Students with ED Scheduled to Participate per Ethnicity
African-American	38	11	7.5	28.9
Asian Pacific-Islander	2	1	.7	50
Hispanic	41	20	13.7	48.8
White	187	114	78.1	61

Chi-square analysis was conducted to further explore the relationship between participation and ethnicity. For analysis purposes the two Asian Pacific Islander students were excluded due to poor cell representation. Results suggest that ethnicity is associated with whether or not a student participates in the regular statewide accountability assessment in math. There was a significant relationship at 5% significance level

between participation in the regular statewide accountability assessment in math and student ethnicity ($X^2 = 13.697$, $df = 2$, $p = .001$, $\eta^2 = .227$). The measure of effect size ($\eta^2 = .23$) indicates a small association between ethnicity and participation.

Intellectual functioning. IQ scores were obtained for 259 students and IQ classifications for 2 students, thus analysis was conducted for 261 students. Measures of central tendency (based on 259 IQ scores) reveal a Mean IQ of 94, a Median of 94, and a mode of 97, with scores ranging from 60 to 138.

None of the seven students with an IQ in the extremely low range was scheduled to participate in the regular statewide accountability assessment in math. Of the students scheduled to participate, 3% (4) had IQs in the borderline range, 15% (22) had IQs in the low average range, 63% (90) had IQs in the average range, 14% (20) had IQs in the high average range, 3% (5) had IQs in the superior range, and 1% (1) had an IQ in the very superior range. This accounted for 13% of students with IQs in the borderline range, 36% with IQs in the low average range, 68% with IQs in the average range, 83% with IQs in the high average range, and all of the students with IQs in the superior to very superior range (see Table 4). Data from the cross-tabulation suggests an association between IQ and whether or not a student participates in the regular statewide accountability assessment in math: as level of intellectual functioning increases the rate of students scheduled to participate also increases.

Table 4.

Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Level of Intellectual Functioning

Intellectual Functioning Classification	Total Number of Students with ED per Level of Intellectual Functioning	Number of Students with ED Scheduled to Participate per Level of Intellectual Functioning	Percent of Students with ED within Participation Sample per Level of Intellectual Functioning	Percent of Students with ED Scheduled to Participate Per Level of Intellectual Functioning
Extremely Low	7	0	0	0
Borderline	31	4	2.8	12.9
Low Average	61	22	15.5	36.1
Average	132	90	63.4	68.2
High Average	24	20	14.1	83.3
Superior	5	5	3.5	100
Very Superior	1	1	.7	100

Chi-square analysis was conducted to further explore the observed relationship between participation and intelligence. For analysis purposes groups were collapsed to allow for adequate cell representation. The categories of extremely low, borderline, and

low average were combined as were the categories of high average, superior, and very superior. The category of average remained unchanged, resulting in three categories of less than average, average, and higher than average. Results suggest that IQ impacts whether or not a student participates in the regular statewide accountability assessment in math. There was a significant relationship at 5% significance level between participation in the regular statewide accountability assessment in math and level of intellectual functioning ($X^2 = 54.296$, $df = 2$, $p = .000$, $\eta^2 = .456$). The measure of effect size ($\eta^2 = .46$) indicates a medium association between intelligence and participation.

School Level Factors

In addition to student level factors, school level factors were investigated. School level factors were school-wide socioeconomic status and instructional setting.

School-wide socioeconomic status. Of students scheduled for participation, 62% (90) attended schools where less than 35% of the students were classified as economically disadvantaged, and 38% (56) attending schools where at least 35% of the students were classified as economically disadvantaged. This accounted for 59% of the students in higher income schools, and 48% of students in lower income schools (see Table 5). Data from the cross-tabulation suggests that students in schools where less than 35% of the students were classified as economically disadvantaged were slightly more likely to be scheduled for participation.

Table 5.

Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per School-Wide Socioeconomic Status

School-Wide Socioeconomic Status (SES)	Total Number of Students with ED Scheduled per SES	Number of Students with ED Scheduled to Participate per SES	Percent of Students with ED within Participation Sample per SES	Percent of Students with ED Scheduled to Participate per SES
Enrolled in Schools with Less than 35% Low-Income Families	152	90	61.6	59.2
Enrolled in Schools with at Least 35% Low-Income Families	116	56	38.4	48.3

To further explore the observed association between socioeconomic status and participation, chi-Square analysis was conducted. Level of socioeconomic status was not

found to impact participation status in the regular statewide accountability assessment in math. There was not a significant relationship at 5% significance level between participation in the regular statewide accountability assessment in math and socioeconomic status ($X^2 = 3.172$, $df = 1$, $p = .075$, $\eta^2 = .109$).

Instructional setting. Of the students scheduled for participation, 3% (5) were instructed in a self-contained setting, 3% (5) were in a resource setting, 36% (53) were in the general education setting with in-class support, and 57% (83) were in the general education setting without a specified time of in-class support. This accounts for 22% of students in the self-contained setting, 7% in the resource setting, 62% in the general education setting with in-class support, and 93% of students in the general education setting (see Table 6).

Cross-tabulation was employed to examine the relationship between a student's instructional setting for math and participation status on the regular statewide accountability assessment in math. Data from cross-tabulation suggests an association between the setting in which a student receives instruction for math and participation status. It appears that students instructed in settings other than general education (without in-class support) were less likely to participate, and as level of restrictiveness decreased participation increased.

Table 6.

Frequency Distribution of Students with ED Scheduled for Participation in the Statewide Assessment in Math per Instructional Setting for Math

Instructional Setting	Total Number of Students with ED per Setting	Number of Students with ED Scheduled to Participate per Setting	Percent of Students with ED within Participation Sample per Setting	Percent of Students with ED Scheduled to Participate per Setting
Self-Contained	23	5	3.4	21.7
Resource	71	5	3.4	7.0
General Education with In-Class Support	85	53	36.3	62.4
General Education without In-Class Support	89	83	56.8	93.3

Chi-square analysis was conducted to further explore the observed relationship between instructional setting and participation. Results indicate that a student's

instructional setting impacts whether or not a student participates in the regular statewide accountability assessment in math. There was a significant relationship between participation on the regular statewide accountability assessment in math and instructional setting for math ($X^2 = 130.459$, $df = 3$, $p = .000$, $\eta^2 = .698$). The measure of effect size ($\eta^2 = .70$) indicates a large association between where a student receives math instruction and participation.

Discussion

This study determined the extent to which students with ED participated in a regular statewide accountability assessment in math. This study also determined the effect of student and school level factors on student participation.

Overall Participation

Slightly more than half (54%) of students with ED in grades 3-12 were scheduled for participation in the regular statewide assessment in math. By default, nearly half of the students with ED were scheduled to take an alternate assessment, and not held to grade level achievement standards on the regular assessment in math, but rather to standards of an alternate assessment. Comparatively, during the 2005-2006 school year, Thurlow, Altman, Cormier, and Moen (2008) report that the percentage of students with IEPs taking regular math assessments with accommodations was between 50% and 74% for 25 states at the elementary level, 26 states at the middle school level, and 19 states at the high school level. Only 5 states at the elementary level and 4 states at the middle and high school levels exceeded 75% participation. In the state of Texas, 42% of students in special educated took an alternate assessment(s) during the 2006-2007 school year

(Texas Education Agency, 2007). Thus, the rate of exemption from the regular statewide assessment in math is greater for students with ED than for students in special education collectively. The failure to include students with ED is a concern, particularly since policy mandates require full student participation.

The participation in statewide assessments has evolved with policy. Prior to NCLB and the 2004 reauthorization of IDEA, students with disabilities, while not excluded from statewide assessments, could participate in an alternate assessment. Students participating in out-of-level assessments were believed to be students who could not pass content material on the regular statewide assessment (Minnema et al., 2004). There is evidence that exclusion from assessment programs result in negative consequences, such as exclusion from curriculum (Thurlow et al., 2000), therefore students with ED may not be prepared for statewide assessments, and may be more akin to negative consequences of high-stakes testing, such as failure to graduate (Thurlow & Johnson, 2000), grade retention (Christenson et al., 2007; Thurlow & Johnson, 2000) and dropping out of school (Christenson et al., 2007).

There was evidence that student and school level factors impact participation status. Two student level factors (ethnicity and intellectual functioning), and one school level factor (instructional setting), were identified as possible predictors of participation (see Table 7). Effect sizes for these factors ranged from .23 for ethnicity, .46 for intelligence, and .70 for instructional setting, indicating small, medium, and large associations, respectively (Cohen, 1988). Data suggests that students with ED are less likely to participate if they are of minority status, have a low level of intellectual functioning, or are educated in restrictive educational environments. A review of descriptive data tabulated for this study, indicates that 58% of African-American and Hispanic students had IQs in the low average range, compared to 29% of White students. Also, 50% of African-American and 46% of Hispanic students were educated in the most restrictive settings (self-contained and resource) compared to 30% of White students.

Table 7.

Chi-Square Analysis Data for Participation Status and Student and School Level Factors

Independent Variables: Student and School Level Factors	χ^2	df	P	η^2
Grade Level	7.983	8	.435	.173
Gender	.073	1	.788	.016
Ethnicity	13.697	2	.001	.227
Level of Intellectual Functioning	54.296	2	.000	.456
Socioeconomic Status	3.172	1	.075	.109
Instructional Setting	130.459	3	.000	.698

Ethnicity and Participation

Of the three variables found to associate with participation (ethnicity, intellectual functioning, and instructional setting) ethnicity had the weakest association. Cross-tabulation suggests that students of minority status were less likely than their nonminority peers to participate in the regular statewide accountability assessment in

math. The gap was particularly evident between African-American and White students, with 29% of African-American and 61% of White students participating. Nearly half (49%) of the Hispanic students with ED participated. Students of minority status were more likely to take an alternate assessment rather than the regular statewide accountability assessment in math. Additionally, the percentage of minority students participating in the regular statewide accountability assessment in math was less than their representation in the sample population, which was not true for nonminority students. Thus, students of minority status who are ED have larger gaps to close in terms of participation and subsequently performance.

The inclusion of students in accountability and assessment programs addresses the growing achievement gap between minority and White students, particularly students who are poor and of minority status (U.S. Department of Education, 2005). Cartledge, Singh, and Gibson (2008) indicate that students of minority status are educated in restrictive settings and have less access to the general curriculum than nonminority peers. This may be particularly true for African-American students (Grant, 2005). Thus, it can be assumed that students of minority status may be excluded from participation due to not being instructed in the general education curriculum. Students not included tend to be students not receiving instruction in the course or content being evaluated (Thurlow et al., 2000; Thurlow et al., 2005), it can be assumed that students in more restrictive settings have higher rates of exclusion from regular assessment measures. Since individuals of minority status are more likely to come from low socioeconomic backgrounds (DeNavas-Walt, Proctor, & Smith, 2007) there is indication that students

with ED of minority status and those of low income status may have even more gains to make within school accountability systems.

School-Wide Socioeconomic Status and Participation

While there was not a significant difference amongst students educated in schools with less than 35% or those with at least 35% economically disadvantaged students, the consideration of socioeconomic status as a factor deserves some attention, particularly when minority students are overrepresented in low-income families. The finding that there is not a significant association between socioeconomic status and participation is positive, particularly since research suggests an association between socioeconomic status and achievement. Sirin (2005) conducted a meta-analysis of research conducted from 1990 to 2000 regarding socioeconomic status and achievement, and found a medium to strong connection between socioeconomic status and school achievement, with strong correlations at the student level and even stronger correlations at the school level. Collecting data on the participation of students based on socioeconomic status is becoming increasingly important, particularly since NCLB requires schools to report on the performance of students based on economic background (U.S. Department of Education, 2003).

Level of Intellectual Functioning and Participation

Participation in the regular statewide assessment in math increases as level of intelligence increases. None of the students with IQs in the extremely low (69 and below) range participated and all of the students with IQs in the superior (120-129) or very superior (130 and above) range participated. The majority of students scheduled for

participation (97%) had IQs of 80 or above, and as level of intellectual functioning increased so did participation. For instance, students with IQs in the low average range participated at a rate of 36%, and students with average IQs participated at a rate of 68% with the rate of participation increasing as IQs moved above average. At present, research regarding the connection of intelligence and participation status on statewide assessments is minimal. Gronna, Jenkins, and Chin-Chance (1998) found that no students with a cognitive disability participated in a 1995 administration of a large-scale assessment (Stanford 8) in Hawaii.

The finding that level of intelligence affects participation is significant, and while this study focused on students with ED, additional studies are recommended to determine the connection between intelligence and participation, and ultimately performance. If findings continue to point to a connection between intelligence and participation status, this will affect not only students in special education but also permeate into the population of students in general education.

Instructional Setting and Participation

Instructional setting or *where* a student receives instruction for math was found to have a large association with participation status. The finding that instructional setting influences participation status supports previous research that found participation on statewide assessments related to course content and curricular validity (Thurlow et al., 2000; Thurlow et al., 2005) and whether or not students receive instruction in the course or content area evaluated (Thurlow et al., 2000), and non-pursuit of general education (Thurlow et al., 2005). Descriptive statistics indicate an inverse relationship between

participation and instructional setting; as the level of restrictiveness decreases the rate of participation increases, and this includes students receiving in-class support in general education. This inverse relationship holds for the instructional settings of resource, general education with in-class support, and general education. The exception was for students instructed in self-contained settings, and this may be attributed to students placed in this specific setting due to behavioral or emotional deficits and not ability. Students instructed in general education classes were less likely to participate in the statewide assessment in math if in-class support was received (62%) when compared to peers with no specified time of in-class support (93%). This implies that students are placed in general education classes in response to IDEAs mandate of access to the general curriculum, though students with support may be considered ill prepared to meet proficiency standards, and thus excluded from participation in the regular assessment, at least for students with ED.

The finding that participation relates to instructional setting is particularly relevant for the group of students with ED, who are often instructed in restrictive settings (Bradley et al., 2004; Hosp & Reschly, 2002; Sitlington & Neubert, 2004), and therefore more likely to be excluded from statewide assessment programs. Therefore, students with ED may have been held to lower educational standards than students with disabilities other than ED or to their general education counterparts. This is a concern as students who have historically been educated in more restrictive settings will now be held to the same standards as students who have historically been taught in general education.

Limitations

Generalization of this data is limited due to the study being conducted in one district. However the need to examine district level data has been recommended in order to determine how students are performing in light of educational reforms particularly since reform efforts are implemented at the district level (Thompson et al., 2001). Also, by cumulatively sampling from one large district, individual student level data could be collected, which has been recommended (Malmgren et al., 2005).

A second limitation is the inherent problem of measuring student performance on one accountability measure due to the variability of assessments across states. Positively, however, Texas has been identified by researchers as being demographically diverse, and has having a history of implementing standards-based reform (Malmgren et al., 2005). Additionally, the need to study student achievement based on district curriculum has been recommended (Nelson et al., 2004), and educational curriculum within Texas is aligned to the state assessment (Texas Education Agency, 2008c).

Studying data in only one content area is also a limitation and research in additional content areas is recommended. Future studies should focus on contents other than math, to determine if results are consistent across subject areas. Furthermore, additional research is needed for students with disabilities other than ED. This is particularly important when considering that classrooms are becoming more diverse in regards to student make-up, and identifying rates of participation and ultimately performance within different subgroups will provide increased information to educators.

Implications

The findings of this study indicate that students with ED have largely been excluded from participation in regular statewide accountability assessments, at least in the area of math. There is deep concern that this group of students with academic deficits (Nelson et al. 2004; Reid et al., 2004) who will now be required to participate and demonstrate proficiency on standard objectives will continue to have poor outcomes. Simply mandating participation, will not guarantee proficiency. This study focused on the participation status of students with ED on statewide assessments, and research in the area of performance is recommended. At present, students with ED fall short of the requirement that all students will participate and meet standards.

This study implies that students with ED instructed in general education without in-class support were the most likely group of students with ED to participate in the regular statewide accountability assessment in math. This suggests that assessment based decisions, such as participation, are based on instructional setting. This is commensurate to previous research (Thurlow et al., 2000; Thurlow et al., 2005). The logic then is that students instructed in the general education setting will be prepared to participate and meet proficiency standards on statewide assessments. However, as Christenson and colleagues (2007) purport, instructional changes in response to high-stakes testing may not result in improved performance. Research is needed in the area of instruction and academic achievement based on performance on statewide assessments in order to determine if instructional setting truly impacts performance on high-stakes assessments.

Another important implication is the finding that students with ED with IQs less than average were not as likely to participate in the statewide assessment in math. While this study is based on students with ED, the finding that students with cognitive deficits are less likely to participate is significant. This suggests that cognitive ability is taken into consideration when decisions are made about participation in statewide assessments. NCLB has a provision that allows students with cognitive deficits to participate in an alternate assessment (Goertz, 2005). Educators need to give careful consideration to not exempt students without severe cognitive deficits based on the belief that a student will not fare well, or due to eligibility in specific eligibility categories. Rather schools need to provide instruction that is focused on meeting the needs of students with ED, and this includes programs that are intensive and comprehensive (Nelson et al., 2004), as well as attend to deficits in cognition. For instance, extended time may be needed for learning material (Frisby, 2008).

Findings also imply that educators need to continuously monitor the participation status of all students in special education, as well as participation by disability. IDEA requires states to monitor and report on the progress of educational reforms (Thompson et al., 2001). Therefore, monitoring is necessary in order to identify disparities between subgroups, measure progress, and help ensure compliance to policy. When data is studied, and decisions made based on data, then the process of true chance can occur.

Conclusion

Students with ED are largely excluded from the regular statewide assessment in math. This indicates that students with ED have large gains to make regarding being

included and demonstrating proficiency within assessment and accountability systems. Educators need to attend to factors found associated to performance and develop programs within the school setting that will promote participation and ultimately proficiency on statewide standards. Just as the expectations of NCLB are high, so should the expectations of students with ED. However, for standards to be successfully mastered, particular attention needs to be given to students with ED who have historically demonstrated poor school outcomes; a group of students intended to benefit from policy initiatives.

CHAPTER III

ASSESSMENT AND ACCOUNTABILITY: FACTORS THAT INFLUENCE THE PERFORMANCE OF STUDENTS WITH AN EMOTIONAL DISTURBANCE ON A STATEWIDE ACCOUNTABILITY ASSESSMENT IN MATH

Literature Review

The performance of students on statewide accountability assessments is fast becoming a tool to measure student, school, and district success. Assessments and related accountability is for all students including those classified in specific subgroups (Goertz, 2005; Hursch, 2005; Nagle, Yunker, & Malmgren, 2006). This includes students in special education, who could previously, under IDEA (1997), take an alternative assessment subject to public reporting if the state assessment was deemed inappropriate (Lashley, 2002). Few states, however, reported the scores of all students in accountability systems prior to the enactment of No Child Left Behind (NCLB). (Thurlow, Lazarus, Thomson, & Roby, 2002). Reporting the scores of all students and the disaggregation of subgroup data, will make disparities amongst students and subgroups visible which has increased attention towards students in specific subgroups as intended by NCLB (Goertz, 2005).

NCLB requires schools to demonstrate Adequate Yearly Progress (AYP) towards the goal of 100% of students achieving academic standards in at least reading-language arts and math (U.S. Department of Education, 2008b). A fear, however, is holding all students, even those in special education, to the same proficiency standards (Goertz, 2005). Mandating grade level proficiency for all students, is a concern, since educators

(general and special education teachers, administrators, and testing coordinators) report that students who participate in out-of-level testing could not meet grade level standards (Minnema, Thurlow, & VanGetson, 2004). While, provisions of NCLB allow students with severe cognitive disabilities to be assessed by alternate achievement standards and other students to participate in an out-of-level assessment, only a limited percent of students can participate in these assessments, and have scores counted within the accountability system (Goertz, 2005). Schools not demonstrating adequate yearly progress are penalized if student test scores do not improve (Hursch, 2005). Penalties include the requirement to develop a school improvement plan, the provision for students to transfer schools, and free tutoring (U.S. Department of Education, 2008a). Hence, accountability driven assessments have far reaching implications for students, teachers, administrators, and schools (Minnema et al., 2004).

The fundamental intent of NCLB requiring the inclusion of all students in accountability systems and reporting annual progress is to improve instruction and outcomes for students in special education (Ysseldyke et al., 2004). In fact Ysseldyke et al., (2003) found evidence that large scale assessment and accountability programs result in a) increased participation in testing programs, b) higher expectations and standards, c) improved instruction, and d) improved performance. Thus, these researchers report that improved outcomes for students in special education has been a positive consequence of accountability programs. Positive outcomes, and the need to meet proficiency on state standards may be most important for students with an Emotional Disturbance (ED) who have historically demonstrate academic deficits, and perform years behind or below

grade level (Trout, Nordness, Pierce, & Epstein, 2003). Poor academic achievement of students with ED spans across age groups (Nelson, Benner, Lane, & Smith, 2004; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004), content areas (Nelson et al. 2004; Reid et al. 2004; Trout et al., 2003), and settings (Reid et.al. 2004). The knowledge that students with ED may be not be prepared (Shriner & Wehby, 2004; Wehby, Lane, & Falk, 2003) to meet standards coupled with the demands of IDEA and NCLB has resulted in increased interest in their academic performance (Wehby, Lane, & Falk, 2003).

Educators experience increased pressure to effectively serve students whose progress is problematic, while providing special education and being held accountable for student progress (Lashley, 2002). Tenets within NCLB and IDEA mandate instruction by highly qualified teachers (i.e. minimum of a bachelors degree, subject area competence, and full state certification) (Mooney, Denny, & Gunter, 2004), and access to the general curriculum. A natural response then is to place students in general education. In fact, high-stakes accountability reforms may result in increased inclusion (Bradley, Henderson, & Monfore, 2004) related to (a) IDEA and the reduction of classes created by pressures to align resources and curriculum with state and district-wide assessments (Brigham, Gustashaw, Wiley, & Brigham, 2004), and (b) the belief that inclusion is more effective than restrictive settings. Unfortunately, a literature review of 1373 studies found no clear endorsement of the positive effects of inclusion; only 1% of the studies were composite outcome studies and even those showed only marginal effectiveness (Geoff, 2007). It is also unknown if students with ED benefit academically from experiences in general education (Simpson, 2004).

Performance Based on Instructional Setting

Increased concern is directed towards educational programming for students with ED (Lane, Gresham, & O'Shaughnessy, 2002) and recent focus on inclusion has influenced educators to address the academic achievement and outcomes of students with ED (Mooney, Denny, & Gunter, 2004). Researchers (Reid et al., 2004; Trout et al., 2003) report little is known about the academic status of students with ED based on instructional setting. Students with ED are often educated in restrictive settings (Bradley et al., 2004; Hosp & Reschly, 2002; Sitlington & Neubert, 2004), though students in special education, to include students with ED, are increasingly being educated in general education settings (Simpson, 2004; Trout et al., 2003). Unfortunately, much of the research for students with ED has been conducted in restrictive settings, making it difficult to determine the academic performance of students in less restrictive settings (Trout et al., 2003). As the trend towards inclusion continues (Simpson, 2004), there is increased need to study the academic outcomes of students with ED across instructional settings. This may be particularly true as instructional programs are changed in response to policy (Christenson, Decker, Triezenberg, Ysseldyke, & Reschly, 2007), and not necessarily on student need, particularly when there is little empirical data to support these changes.

A meta-analysis of 25 studies conducted during the years 1961-2000 on the academic status of students with emotional or behavioral disorders (EBD) found that students with emotional or behavioral disorders perform significantly lower across all subjects and subject area categories, with pronounced deficits in spelling and math (Reid

et al., 2004). Reid and colleagues also found no significant differences in the academic performance of students with EBD across instructional settings of special school, self-contained, resource, and general education. Research on the performance of students with ED or behavior problems instructed in restrictive settings found (a) students educated in a self-contained classroom had stronger academic skills than students in a self-contained school, though teachers did not perceive academic competence as being different between the groups (Lane, Wehby, Little, & Cooley, 2005a), (b) limited progress in reading, math, and social skills for students instructed in a self-contained class or school, (Lane, Wehby, Little, & Cooley, 2005b), and (c) sub-average academic performance, and below average social skills adjustments in a self-contained school (Lane, Barton-Arwood, Nelson, & Wehby, 2008). Lane and colleagues (2008) also found that students had lower math skills and more behavior problems at the secondary level.

Students with ED present with co-morbid learning and academic deficits (Reid et al., 2004; Sutherland Lewis-Palmer, Stichter, & Morgan, 2008). Hence, educators are challenged with ensuring academic progress for the group of students with ED, who traditionally have poor educational outcomes. Educators must provide interventions for both academics and behavior and measure the effectiveness of techniques employed (Sutherland et al., 2008). As educators strive to educate students with ED in order to increase academic competence and proficiency on high-stakes assessments, it becomes relevant to first determine how students with ED perform, particularly in consideration of socio-demographic variables, and changes in programming. Ysseldyke et al. (2004)

contend that decisions regarding major legislation should be made based on data. This same logic applies to students in our schools; changes in instructional programs should be data based. This includes disaggregating data. Minnema et al., (2004) report school improvement plans fail to provide a true picture of the performance of all students, thus improvement for all is not observed.

During times of education reform, educators need to monitor progress of students in special education in order to determine student performance in response to reform efforts (Thompson, Thurlow, & Staples, 2001). As Lane et al., (2005b) report, overwhelming improvement of students with emotional or behavioral disorders should not be expected in the course of an academic year, and increased supports may be needed for students with ED if positive gains are to be made. Also, Wood, Lawrenz, Huffman, and Schultz (2006) report that changing practices, policies, and resources at the school level has not resulted in improved performance on standardized assessments.

Since legislative mandates require proficiency by all students on statewide assessments within accountability programs, it becomes increasingly important to monitor the progress of students in special education, as well as variables that may impact performance on statewide assessments, particularly for students who have poor outcomes. High quality assessments are the “cornerstone” of NCLB, making it possible for schools to collect student achievement data, to diagnose where students are doing well or poorly, so that education can be customized for students in the most need of help (U.S. Department of Education, 2008a), such as students with ED.

Performance on Statewide Assessments

Information that provides knowledge on the performance of students with disabilities on statewide assessments is minimal (Thurlow, Langenfield, Nelson, Shin, & Coleman, 1998). Research available suggests that accountability assessments benefit students in special education (Hanushek & Raymond, 2005; Ysseldyke et al., 2004), with evidence that the performance of students in special education is improving (Ysseldyke et al., 2004). As students in special education increasingly participate in testing programs, it becomes important to determine variables that may impact their performance. Malmgren, McLaughlin, and Nolet (2005) found that a consistent predictor variable across schools, grade levels, and content areas is the performance of students in general education; in schools where general education students are successful on statewide assessments, students in special education also tend to be successful (Malmgren et al., 2005). Malmgren and colleagues also report varying levels of proficiency on statewide accountability assessments in math for students in special education. In the content area of math, Helwig, Anderson, and Tindal (2002) found that general education students perform better than students with IEPs on a statewide assessment. Another study (Uyeno, Zhang, & Chin-Chance, 2006) focused on reading in the state of Hawaii, found students of White or East Asian descent, those from high-income families, or girls, performed better on a statewide assessment administered (Stanford 8). One study was located that included the performance outcomes for students with an emotional impairment (Gronna, Jenkins, & Chin-Chance, 1998). The study focused on the performance of students in special education on the statewide assessment

(Stanford 8) in Hawaii for reading and math and results were disaggregated per disability category. The researchers found that students with mild mental retardation, a specific learning disability, or an emotional impairment scored below the national normative group, and below students without disabilities in math and reading at all grade levels tested.

Present Study

This study was conducted to explore the performance of students in special education, specifically students with ED, on a statewide assessment in math. First, the extent that students with ED meet proficiency standards on statewide assessments will be examined. Second, individual and school level factors will be explored to determine their association with student performance on the regular statewide accountability assessment in math. Student level factors are grade level, gender, ethnicity, and level of intellectual functioning. School level factors are school-wide socioeconomic status and instructional setting.

Existing literature on the academic status of students with ED lacks the provision of demographic characteristics, such as gender, ethnicity, and socioeconomic status (Reid et al., 2004; Trout et al., 2004). Failure to provide information inhibits analysis of subgroups (Reid et al., 2004), and researchers express a need to include student characteristics within studies (Reid et al., 2004; Trout et al., 2003). Studying the relation between instructional setting and academic achievement (Lane et al., 2005a b; Reid et al., Trout et al., 2003; Wehby et al., 2003), and placement and student outcomes (Hayling, Cook, Gresham, State, & Kern, 2008) has also been encouraged. Furthermore,

recommendations are made for research focused on general education placements (Lane et al., 2005a b; Trout et al., 2003), and settings in a general education building, such as general education, resource, and self-contained settings (Trout et al., 2003). The need to study performance on accountability measures as well as individual student factors is also recommended (Malmgren et al. 2005).

There is a lack of research on the performance of students with ED on statewide accountability assessments, and minimal evidence on how students with ED perform based on student and school level variables. Only one study (Gronna et al., 1998) was found providing evidence as to how students with emotional disorders performed on a statewide assessment. If progress is going to be made for all students, then it is imperative to determine the existing status of students, particularly for students who may be in the most need of support such as students with ED. It also is important to collect performance based data that has been disaggregated per subgroup and per student or school characteristics, particularly since such is required in current legislation, and data is not readily available in current literature. Not only will this study present data that will guide educators in their decision making process as educators respond to reform efforts, the study will also add to the current research base on the academic status of students with ED, based on their performance on an accountability assessment. Notably, this study is one of the first in the field to examine the performance of students with ED on statewide accountability assessments, and the first to examine the relationship between student and school level factors and performance on a regular statewide accountability assessment in math.

Methodology

The study was conducted in a suburban school district in Southeast Texas with a population of approximately 50,000 students. The demographic make-up of the district was 9% African-American, 28% Hispanic, 53% White, and 9% Asian-Pacific/Islander. Approximately 9% of students in the district met eligibility criteria for special education and of these 8% met eligibility criteria for an Emotional Disturbance (ED).

Participants

Participants were students with ED in grades 3 through 12 required to take either the regular statewide assessment in math or an alternate assessment. Students identified as ED in kindergarten, first, or second grades were not included because students in these grades do not participate in the statewide assessment. This is generally true for twelfth graders, although twelfth graders who did not meet standards prior to their twelfth grade year are required to take the exit-level assessment administered to eleventh graders.

Initially, 307 students were identified as ED in the participating district. Of the 307, 44 were excluded from the study due to (a) 36 students enrolled in grades not assessed, (b) 2 students lacking information, (c) 1 student entered into the district database twice, and (d) 5 students found to not be ED. Additionally, five students not in the original database were identified as ED during the data collection process and included in the study. In total, 268 students with ED in grades 3-12 were identified and included as subjects. ED was the primary disability for 91% (243), the secondary disability for 8% (22), and the tertiary disability for 1% (3) of the subjects.

From the population of 268 students with ED scheduled to participate in a statewide assessment, 146 were scheduled to participate in the regular assessment, and 122 were scheduled to take an alternate assessment. Three students were absent on the date of administration, therefore, performance results are based on 143 students.

Performance sample. The sample of 143 students was 73% (105) male and 27% (38) female, of which 79% (113) were White, 13% (18) Hispanic, 8% (11) African American, and 1% (1) Asian Pacific Islander. Sixty-one percent (88) were enrolled in schools where less than 35% of the population was classified as economically disadvantaged, and 39% (55) were in schools where at least 35% of the students were classified as economically disadvantaged.

The grade distribution of students in the sample was as follows: 7% (10) were in 3rd grade, 12% (17) in 4th grade, 10% (14) in 5th grade, 15% (22) in 6th grade, 8% (11) in 7th grade, 13% (19) in 8th grade, 14% (20) in 9th grade, 10% (14) in 10th grade, 8% (12) in 11th grade, and 3% (4) in 12th grade. Regarding instructional setting, 3% (5) received instruction in a self-contained setting (2 elementary students in a campus based adaptive behavior room, and 3 secondary students in an off-campus program for students with significant emotional or behavioral concerns), 3% (4) in the resource setting, 36% (51) in the general education setting with in-class support, and 58% (83) in the general education setting without designated in-class support. IQ scores or classifications were obtained for 139 subjects in the sample. None of the students participating had IQs in the extremely low range, 2% (3) had an IQ in the borderline range, 15% (21) in the low

average range, 64% (89) in the average range, 14% (20) in the high average range, 4% (5) in the superior range, and 1% (1) in the very superior range.

Dependent Variable

The dependent measure was student performance on the Texas Assessment of Knowledge and Skills (TAKS) statewide assessment in math. The dependent variable (met at least minimum proficiency standards or did not meet at least minimum proficiency standards) is dichotomous reflecting whether or not a student met proficiency. The assessment was administered during the 2006-2007 school year.

The math TAKS assessment, administered to students in grades 3-11 measures student learning on defined knowledge and skills at assessed grade levels (Texas Education Agency, 2008a). Reliability measures of internal consistency are in the high .80s to low .90s, with reliabilities for TAKS assessments ranging from .83 to .93 (Texas Education Agency, 2008b). Validity measures include content validity (alignment to academic standards), concurrent validity (correlation with national testing program), criterion-related validity (compared to college preparedness assessments, and grade correlation (Texas Education Agency, 2008c).

TAKS was developed to be aligned with objectives outlined in the Texas Essentials of Knowledge and Skills (TEKS). The alignment of the TAKS to the TEKS to establish content validity was established by incorporating input from Texas educators across grade levels and subject areas (Texas Education Agency, 2008c). The TAKS assessment was developed through a sequential process of item development, item

review, and internal reviews of items resulting in the improvement or elimination of items providing evidence for content validity (Texas Education Agency, 2008c).

In addition to content validity, concurrent validity has been established. A study was conducted in 2004-2005 during which student performance on the exit level TAKS was correlated with student performance on national testing programs (Texas Education Agency, 2008c). Additionally, criterion-related validity was found when the TAKS was compared to college preparedness assessments. The TAKS was correlated to the American College Test (ACT), Texas Academic Skills Program (TASP), and Scholastic Achievement Test 1 (SAT 1). Results indicated that TAKS scores (meeting standard performance) predicted ACT scores of approximately 20 in math; TAKS scores (commended performance) predicted ACT scores of approximately 27 in math (Texas Education Agency, 2008c). Also, the correlation of the TAKS with the SAT resulted in TAKS scores (meeting standard performance) predictive of an approximate score of 470 in math on the SAT, and scores (commended performance) predictive of an approximate score of 620 in math (Texas Education Agency, 2008c). A Grade Correlation Study was also conducted, and students who passed classes were likely to also pass the TAKS assessment in the related area (Texas Education Agency, 2008c).

Independent Variables

Student level factors. Four of the six variables identified to account for differences in participation were considered student level factors and were grade level, gender, ethnicity, and intellectual functioning. Independent variables are categorized as follows: (a) grade level (3-12), (b) gender (male or female), (c) ethnicity (African-

American, Hispanic, White, and Asian-Pacific Islander), and (d) level of intellectual functioning (extremely low, 69 and below; borderline, 70 – 79; low average, 80 -89; average, 90 – 109; high average, 110 – 119; superior, 120 – 129; and very superior, 130 and above). Scores were classified using the Wechsler classification system (Sattler, 2001).

School level factors. Two of the six factors were considered school-level variables, and were school-wide socioeconomic status and instructional setting in math. Factors are categorized as such: (a) socioeconomic status (schools with less than 35% of students classified as economically disadvantaged, and schools with at least 35% of students classified as economically disadvantaged), and (b) instructional setting (self-contained, resource, general education with in-class support, and general education without in-class support). School socioeconomic data was collected from reports generated by the state education agency. Actual percentages were collected and categorized into schools below 35% and schools at or above 35%. The 35% cut-off was used due to a local education agency being able to designate schools eligible for Title 1 funds if at least 35% of the students in a school are from low-income families (Texas Education Agency, 2004). Fund allocation, requires schools to first allocate funds to schools exceeding 75% poverty (Texas Education Agency, 2004), though in the district under study no schools exceeded 75% poverty); therefore the 35% rate was used. The socioeconomic status of students in an adaptive behavior classroom was configured using their enrolled school.

Instructional setting is the classroom setting students receive math instruction. Instructional settings considered in this study are general education, general education with in-class support, resource, and self-contained. Level of restrictiveness is considered from general education, general education with in-class support, resource, and self-contained. In general education students in special education are educated in the general education setting and may receive academic or behavioral accommodations. Students educated in general education settings with in-class support receive 10-90 minutes of daily in-class support from either a helping teacher (intermittent support) or co-teacher (daily support) within the classroom. Students educated in the resource classroom receive instruction based on a modified curriculum from a special education teacher. Students educated in a self-contained setting receive the majority of their daily instruction outside of the general education campus or classroom. In the present study elementary students were educated in an adaptive behavior room on a general education campus by a resource teacher, and secondary students were receiving their instruction in an off-campus behavioral support program for students with significant emotional or behavioral disorders.

Procedures

Data was collected from district maintained data-bases, and computer or paper-based individual student special education files. Data collection was completed by two researchers with experience and knowledge in special education. Both data collectors were completing doctoral degrees in educational psychology with an emphasis on special education and had a combined 25 years school experience.

Initially, a report identifying students with ED was generated to reflect enrollment on the Monday of the week of formal assessment. The initial report identified students with ED, attending school, and grade level. Following the identification of students with ED, data was collected from individual special education folders housed in a web-based program. From this web-based program demographic information (grade level, gender, and ethnicity), area of disability, level of cognitive functioning (IQ), scheduled participation status on the statewide assessment in math, and instructional setting for math was collected. Individual Education Plans (IEPs) for the 2006-2007 school year were reviewed, and if students had more than one IEP meeting during the year, the IEP completed closest to the time of assessment, but prior to, was utilized to best reflect information at the time of assessment. If needed, previous IEP records or deliberations were reviewed for clarification. Information not available through the web-based program was collected from individual student folders on campuses; IQ scores not obtainable from the web-based program were collected by personal contact with campus diagnosticians or from individual student folders.

Following the initial stage of data collection, a second district maintained data base was assessed. From the second data base, gender, ethnicity, and participation status was cross-referenced to verify initial data. Additionally, this data-base reflected whether or not a student *actually* participated in the statewide assessment in math by providing scores and passing status. During this stage of data collection, five discrepancies were identified in which the student's special education file was in disagreement with actual participation status. Specifically, special education files indicated participation in the

regular grade level assessment when students actually participated in an alternate assessment. Identified discrepancies were re-verified by reviewing both the student's special education file and district maintained database. In all five cases, participation status was corrected to reflect actual participation status and students coded as nonparticipants.

Student performance on the math statewide assessment was determined by collecting student scores on the regular statewide assessment in math from a district maintained data-base. Actual scores were collected and then coded to represent whether the student met proficiency standards (1) or did not meet proficiency standards (0).

Reliability

Data was verified for 22% of the participants. Data was initially verified for 9 elementary school, 12 junior high school, and 11 high school students during the data input stage; original data input was accurate. In order to obtain a reliability measure that included at least 20% of the subjects, additional subjects were randomly selected from the elementary, junior high, and high school subject pool. In total, 60 records were verified (20 from each level of elementary, junior high school, and high school). In total 22% of participant data was verified, and reliability was determined to be 97%.

Analysis

Data analysis was conducted on records from 143 students with an emotional disturbance in a large suburban school district in southeast Texas. Data was analyzed to determine the extent that students with ED met at least minimum proficiency on the regular statewide accountability assessment in math, thus *passing* the assessment.

Employed statistical analysis included descriptive statistics, cross tabulation, and chi-square analysis.

Descriptive statistics classify and summarize data (Hinkle, Wiersma, & Jurs, 1998), and provide descriptive assertions about traits and attributes of the population (Babbie, 1998). Descriptive statistics allowed the researcher to determine the extent that students with ED met proficiency standards on the statewide assessment in math based on student and school level factors. Investigated variables were student performance on the regular statewide accountability assessment in math, student and school level factors.

Cross tabulation was employed to examine the association between combinations of cross tabulated variables, by the generation of contingency tables (Gaur & Gaur, 2007). Cross tabulation and related contingency tables were generated between performance status and student and school level factors of grade level, gender, ethnicity, intellectual functioning, school-wide socioeconomic status, and instructional setting in math. Contingency tables allowed the researcher to compare observed and expected cell frequencies employed in chi-square analysis to determine the independence of categorical variables (Gaur & Gaur, 2007). Chi-square analysis was then employed to examine the association between independent and dependent variables. Chi-square analysis is appropriate for use on dichotomous dependent variables (Huck & Cormier, 1996). The level of significance was set at .05, which is standard in the social sciences (Gaur & Gaur, 2007). In conducting chi-square analysis, in 2x2 classification tables, no cell is to have less than 5 subjects, and in tables larger than 2x2 (i.e. 2x4) no more than 20% of the cells are to have less than 5 (Garson, 2008a). When the minimum expected

cell frequency is not met, the recommendation is to combine categories to achieve at least the minimum amount required (Hatcher, 2003).

The index of effect size was the Phi Coefficient in 2x2 tables and Cramer's V in tables 2x3 or larger (Garson, 2008b; Morgan, Leech, Gloeckner, & Barrett, 2004). The phi coefficient in chi-square analysis is a measure of association used for 2x2 tables when data is dichotomous to measure the strength of the relationship based on a 0 to 1 coefficient, commensurate to a correlation coefficient (Garson, 2008b). The phi coefficient is not readily interpretable for tables larger than 2x2 (Garson, 2008b), therefore Cramer's V was used as a measure of association for tables larger than 2x2 (Garson, 2008b). Cramer's V is the association between two variables, providing a measure from 0 to 1 (Garson, 2008b). The strength of the measure of association is based on Cohen's (1988) definition of effect size as .10 as small, .30 as medium, and .50 as large.

Results

The number of students with ED scheduled to participate in statewide assessments was 268. Of the 268 students, 146 were scheduled to participate in the regular statewide assessment though 143 actually participated (3 were in nonattendance). Sixty four percent (92) students met at least minimum proficiency standards on the statewide assessment in math. Thus, only 34% (92 out of 268) of students with ED included in this study, participated *and* met proficiency standards in math.

Student Level Factors

Grade level. In order to examine the relationship between grade level and performance, cross-tabulation was conducted (see Table 8). Seventy percent (7) of 3rd graders, 77% (13) of 4th graders, 86% (12) of 5th graders, 73% (16) of 6th graders, 64% (7) of 7th graders, 53% (10) of 8th graders, 45% (9) of 9th graders, 64% (9) of 10th graders, and 75% (9) of 11th graders met at least minimum proficiency standards. None of the four 12th graders met proficiency.

Table 8.

Frequency Distribution of Students with ED Meeting Proficiency on the Statewide Assessment in Math per Grade Level

Grade Level	Number of Students with ED Participating per Grade Level	Number of Students with ED Meeting Proficiency per Grade Level	Percent of Students with ED Meeting Proficiency per Grade Level
3	10	7	70.0
4	17	13	76.5
5	14	12	85.7
6	22	16	72.7
7	11	7	63.6
8	19	10	52.6
9	20	9	45.0
10	14	9	64.3
11	12	9	
12	4	0	00.0

Cross-tabulation suggests that as grade level increases the percentage of students meeting proficiency also decreases. In order to explore this observed pattern through chi-square analysis, grade levels were combined to represent elementary (grades 3, 4, and 5), secondary at the junior high level (grades 6, 7, and 8), and secondary at the high school level (grades 9, 10, 11, and 12). Chi-square analysis indicates that grade level does not impact student performance on the regular statewide accountability assessment in math at the 5% significance level ($X^2 = 5.705$, $df = 2$, $p = .058$, $\eta^2 = .200$), though marginal significance is observed. The measure of effect size ($\eta^2 = .20$) indicates a small association between grade level and performance.

Gender. Sixty-four percent (67) of the males and 66% (25) of the females participating met at least minimum proficiency standards. Cross-tabulation was conducted to examine the relationship between gender and performance (see Table 9). Data from cross-tabulation did not indicate an association between socioeconomic status and performance.

Table 9.

Frequency Distribution of Students with ED Meeting Proficiency on the Statewide Assessment in Math per Gender

Gender	Total Number of Students with ED Participating per Gender	Number of Students with ED Meeting Proficiency per Gender	Percent of Students with ED Meeting Proficiency per Gender
Female	38	25	65.8
Male	105	67	63.8

Chi-square analysis was conducted to further explore the association between boys and girls. Chi-Square analysis indicates that gender does not impact student performance on the regular statewide accountability assessment in math. There was no significant relationship at 5% significance level between participation on the assessment and gender ($X^2 = .048$, $df = 1$, $p = .827$, $\chi^2 = .018$).

Ethnicity. Cross-tabulation was conducted to examine the relationship between ethnicity and performance. Within specific subgroups of ethnicity, 68% (77) of the White students, 39% (7) of the Hispanic students, and 64% (7) of the African-American students passed. The one participating student of Asian descent also met proficiency (see Table 10).

Table 10.

Frequency Distribution of Students with ED Meeting Proficiency on the Statewide Assessment in Math per Ethnicity

Ethnicity	Total Number of Students with ED Participating per Ethnicity	Number of Students with ED Meeting Proficiency per Ethnicity	Percent of Students with Meeting Proficiency per Ethnicity
African- American	11	7	63.6
Asian Pacific- Islander	1	1	100
Hispanic	18	7	38.9
White	113	77	68.1

Chi-square analysis was conducted to further explore the relationship between ethnicity and performance. Due to only one student being of Asian descent in the performance sample, chi-square analysis could not be run without excluding this student from the analysis due to the contingency table resulting in a cell with zero count data. Chi-Square analysis indicates that ethnicity does not impact student performance on the regular statewide accountability assessment in math at the 5% significance level ($X^2 = 5.774$, $df = 2$, $p = .056$, $\chi^2 = .202$), though a small association is observed ($p = .056$). The

measure of effect size ($\eta^2 = .20$) indicates a small association between ethnicity and performance.

Intellectual functioning. IQ scores were not available for four students, reducing the number of subjects in this category to 139. None of the students with IQs in the mentally deficient range participated in the assessment. One of the students with an IQ in the borderline range met at least minimum proficiency, as did 38% (8) of students with IQs in the low average range, 65% (58) with IQs in the average range, and 85% (17) in the above average range. All of the students with IQs in the superior range (5) and very superior range (1) met at least minimum proficiency (see Table 11). In order to examine the relationship between a student's intelligence and performance, cross-tabulation was conducted. Cross-tabulation resulted in an identifiable pattern between intelligence and performance. As level of intelligence increased so did the percentage of students passing. Also, a higher percentage of students with IQs falling in the Borderline and Low Average ranges were more likely to fail compared to students with higher levels of intelligence.

Table 11.

Frequency Distribution of Students with ED Meeting Proficiency on the Statewide Assessment in Math per Level of Intellectual Functioning

Intellectual Functioning Classification	Total Number of Students with ED Participating per Level of Intellectual Functioning	Number of Students with ED Meeting Proficiency per Level of Intellectual Functioning	Percent of Students with ED Meeting Proficiency per Level of Intellectual Functioning
Extremely Low	0	0	00.0
Borderline	3	1	33.3
Low Average	21	8	38.1
Average	89	58	65.2
High Average	20	17	85.0
Superior	5	5	100
Very Superior	1	1	100

Chi-square analysis was conducted to further explore the observed relationship between intelligence and performance. In order to have appropriate cell representation for chi-square analysis, ranges of intelligence were collapsed into three categories (students with IQs less than average, average, and higher than average). Chi-square

analysis indicates that level of intellectual functioning impacts student performance on the regular statewide accountability assessment in math. There was a significant relationship at 5% significance level between intellectual functioning and performance ($X^2 = 14.219$, $df = 2$, $p = .001$, $\eta^2 = .320$). The measure of effect size ($\eta^2 = .32$) indicates a medium association between intelligence and performance.

School Level Factors

School-wide socioeconomic status. Sixty-three percent (55) of students in schools with a student population of less than 35% of economically disadvantaged students met minimum proficiency standards compared to 67% (37) of students in schools with a student population of at least 35% economically disadvantaged students (see Table 12). Cross-tabulation was conducted to explore the relationship between socioeconomic status and performance, and performance between the groups was commensurate without an observable association.

Table 12.

Frequency Distribution of Students with ED Meeting Proficiency Standards on the Statewide Assessment in Math per School-Wide Socioeconomic Status

School-Wide Socioeconomic Status	Total Number of Students with ED Participating per SES	Number of Students with ED Meeting Proficiency per SES	Percent of Students with ED Meeting Proficiency per SES
Enrolled in Schools with Less than 35% Economically Disadvantaged Students	88	55	62.5
Enrolled in Schools with at Least 35% Economically Disadvantaged Students	55	37	67.3

Chi-square analysis was conducted to further explore the relationship between socioeconomic status and performance. Chi-square analysis indicates that socioeconomic status does not impact student performance on the regular statewide accountability assessment in math. There was not a significant relationship at the 5% significance level between socioeconomic status and performance ($X^2 = .336$, $df = 1$, $p = .562$, $2 = -.048$).

Instructional setting. Cross-tabulation was conducted to explore the relationship between instructional setting and math. Eighty percent (4) of students in the self-contained setting met at least minimum proficiency standards, as did 75% (3) of students in the resource setting, 55% (28) of students receiving in-class support in the general education setting, and 69% (57) of students in the general education setting without designated in-class support (see Table 13).

Chi-square analysis was conducted to explore the relationship between instructional setting and performance. In order to have adequate cell representation to conduct the analysis, students within the self-contained and resource classrooms were combined. There was not a significant relationship at 5% significance level between instructional setting and performance ($X^2 = 3.368$, $df = 2$, $p = .186$, $2 = .153$).

Table 13.

Frequency Distribution of Students with ED Meeting Proficiency Standards on the Statewide Assessment in Math per Instructional Setting for Math

Instructional Setting	Total Number of Students with ED Participating per Instructional Setting	Number of Students with ED Meeting Proficiency per Instructional Setting	Percent of Students with ED Meeting Proficiency per Instructional Setting
Self-Contained	5	4	80.0
Resource	4	3	75.0
General Education with In-Class Support	51	28	55.9
General Education without In-Class Support	83	57	68.7

Discussion

This study resulted in important findings relative to the performance of students with ED on a high-stakes assessment in math. First, a startling finding is that only 34% (92) of students with ED in the district under study actually participated *and* met

proficiency standards. This suggests that a large number of students with ED are not adequately prepared to meet proficiency standards, at least in the area of math. Of the participating students, 64% met at least minimum proficiency. In the state of Texas during the 2006-2007 school year, 77% of all students met proficiency standards on the math assessment, and 59% of students in special education met proficiency (Texas Education Agency, 2007). The percentage of all students and those in special education include the performance of students who are ED, though it can be estimated that for students with ED who took the assessment, their performance was less than the passage rate for all students, though greater than the passage rate of students in special education (59%). This does not take into consideration however the amount of students *not* participating in the regular statewide accountability assessment. Thus it is unknown how approximately half of the students with ED would perform if they had participated in the regular statewide assessment in math.

A major point highlighted in terms of participation (Chapter II) is that nearly half of the students with ED were exempt from the regular statewide accountability assessment in math. Thus, while the percentage of students meeting proficiency was 64%, it is expected that since students with ED have high exclusion rates the passing rate would be less if all students participated, as recommended in current policy. Minnema et al. (2004) found that based on information obtained from educators (special and general education teachers, administrators, and testing coordinators) that students in special education participating in out-of-level testing could not meet grade level standards.

Table 14 provides results of the chi-square analysis for performance and student and school level factors. Analysis found that only one variable (intellectual functioning) had a statistically significant impact on the performance of students with ED on the statewide assessment in math at the .05 level of significance. It should be noted, however, that other variables demonstrated marginal association, specifically grade level ($p = .058$), and ethnicity ($p = .056$), and "... surely, God loves the .06 nearly as much as the .05." (Rosnell & Rosenthal 1989).

Table 14.

Chi-Square Analysis Data for Performance and Student and School Level Factors

Student and School	χ^2	Df	P	η^2
Level Factors				
Grade Level	5.705	2	.058	.200
Gender	.048	1	.827	.018
Ethnicity	5.774	2	.056	.202
Level of Intellectual	14.219	2	.001	.320
Functioning				
Socioeconomic	.336	1	.562	-.048
Status				
Instructional Setting	3.368	2	.186	.153

Effect sizes for factors demonstrating association were as follows: grade level (.20), ethnicity (.20), and intellectual functioning (.32). Based on Cohen (1988), a small effect was found for grade level and ethnicity, and a medium effect for intellectual functioning. Descriptive statistics considered collectively with chi-square analysis, suggests that (a) as grade level increases performance rates decrease, (b) Hispanic students fail to meet proficiency at rates commensurate to African-American or White students, and (c) rate of students meeting proficiency increases as level of intellectual functioning increases. Student and school level variables of gender and school-wide socioeconomic status were not found to associate with performance.

Grade Level

Preliminary analysis indicates that the rate of passage decreases with increasing grade level. While, a significant difference was not found at the .05 level of significance, differences were identified at the .06 level, though the association was small ($ES = .20$). Results are commensurate to previous research finding no differences in academic achievement across age groups (Reid et al., 2004), but also gives some indication that math deficits may increase over time, as found by Nelson et al. (2004). While, these researchers did not base achievement on statewide assessments, results do provide some comparison regarding the academic assessment of students with ED in terms of advancement with age, or in the case of the present study, grade advancement. Malmgren et al. (2005) found no significant differences in statewide assessments across grade levels.

Gender

Difference in performance between genders was not observed on the statewide assessment for students with ED. Comparatively, math performance and progress measured by the National Assessment of Educational Progress (NAEP) found that while boys and girls demonstrated improved performance from 1990 to 2007, boys scored higher than girls (with the exception of 4th grade girls in the area of geometry) on the 2007 assessment (Lee, Grigg, & Dion, 2007). For students with ED, the finding that the performance of girls was commensurate to boys is consistent with research indicating boys and girls have similar achievement deficits (Nelson et al., 2004). Limited research was found regarding student performance on statewide assessments and gender for

students in special education or for those with ED. One study found that on a reading statewide assessment, girls passed at a higher rate than boys (Uyeno et al., 2006).

Unfortunately, for students with emotional and behavioral disorders, research has not been disaggregated, and in a meta-analysis conducted by Reid and colleagues (2004), gender was not provided in 30% of the research reviewed. As these researchers stated, this is a serious gap in the knowledge base. Findings in this study, indicating no significant difference amongst boys and girls and their achievement on the regular statewide assessment in math, will provide increased knowledge to the research base.

Ethnicity

Variances amongst subgroups within ethnicity were not found significant at the .05 level, but were found significant at the .06 significance level, although the effect size (.20) was small indicating a weak association between ethnicity and performance. Descriptive statistics indicate that the percentage of White students passing is commensurate (though slightly higher) to the percentage of African-American students passing. Hispanic students met proficiency to a lesser degree than their counterparts. Thus, chi-square analysis considered collectively with descriptive evidence, suggests that Hispanic students were more likely to fail the math assessment than African-Americans or White students. This finding is interesting when considering that more Hispanic students participated than African-American students. Approximately half of the Hispanic students in the sample participated (Chapter II), and of these only 39% passed. This finding contradicts research that found that within accountability programs, Hispanic students gain more than African-American students (Hanushek & Raymond,

2005). Also, the NAEP assessment in math resulted in performance gains for African-American, Hispanic, and White students, stating that the achievement gap is narrowing between African-American and White students, though not for Hispanic and White students (Lee et al., 2007). This is consistent with findings in this study: the performance of African-American students was commensurate to White students, though Hispanic students failed to meet achievement standards in math at a rate commensurate to White students. Additional research on academic performance of students with ED based on ethnicity has been recommended and Reid et al. (2004) report that the failure to include ethnicity is a serious omission within the research base.

Existing research on the performance of students on statewide assessments, found that schools with low minority concentrations reached higher levels of achievement (Harris, 2007). Additionally, researchers report that minority students were less likely to perform well on statewide assessments, though this finding was reported to be indirectly related to ethnicity, with the more direct relation occurring between low-income and ethnicity (Abbott & Joireman, 2001).

School-Wide Socioeconomic Status

Differences in performance was not found between students in schools with less than 35% of the population classified as economically disadvantaged and those where at least 35% of the students were economically disadvantaged. This conflicts with the NAEP assessment that found that students from low socioeconomic backgrounds (measured by students on free or reduced lunch) demonstrated poorer achievement in the area of math than students not on free or reduced lunch (Lee et al., 2007). Abbott and

Joireman (2001) also found students of low-income status (based on percentage of students in school receiving free and reduced price lunch) had lower rates of performance on statewide assessments than students not designated as low income. Findings also conflict with Harris (2007) who found that students in schools with low-poverty reached higher levels of achievement. Findings, however, are commensurate to research by Malmgren et al. (2005) who found that the percentage of students in special education qualifying for free and reduced-price meals in a school was not a significant moderator of performance.

Instructional Setting

Results suggest that instructional setting did not impact student performance on the regular statewide accountability assessment in math. This finding however is limited due to the number of students excluded from participation in the math assessment, particularly if instructed in the self-contained or resource settings. Within the self-contained settings, 18 students were excluded from participation, and in the resource setting, 66 students were excluded from participation in the regular statewide assessment in math. Therefore, it remains unknown how these students would have performed had they participated.

It is important, that as students increasingly participate in statewide assessments that the impact of instructional setting continue to be studied. Existing research has found that for students with ED academic deficits are identified across self-contained, resource, and general education settings (Reid et al., 2004). Researchers indicate that the research field is lacking in studies based on the academic performance of students based

on instructional setting (Reid et al., 2004), particularly in settings within the general education building, such as general education classrooms, resource rooms, and self-contained settings (Trout et al., 2003). Additionally, researchers note that there is no clear understanding of the academic abilities of students with emotional and behavioral disorders served in less restrictive settings (Trout et al., 2003). Furthermore, the need to study the impact of instructional setting is relevant, particularly if changes in placement are being made in response to accountability assessments.

Level of Intellectual Functioning

Level of intellectual functioning was the one variable found predictive of student performance on the statewide assessment in math for students with ED. The association ($ES = .32$) suggests a moderate association between intelligence and performance. The finding that intellectual functioning impacts performance of students with ED on statewide accountability assessments, at least in the area of math, is a finding not identified in previous research. However, research regarding intelligence being predictive of achievement was found. Watkins, Lei, and Canivez (2007) conducted a longitudinal study of 289 students in special education, of which 8% were ED, and found that measures of verbal comprehension and perceptual organization on the WISC-III predicted future achievement measured primarily by student performance on the Woodcock-Johnson Tests of Achievement, Wechsler Individual Achievement Test, or the Kaufman Test of Educational Achievement. Furthermore, Deary, Strand, Smith, and Fernandes (2007) studied the relationship between a cognitive abilities test and performance on the national public examination administered in England. While this

study is not reflective of performance in the United States, or reflective of the performance of students with severe learning difficulties, it does deserve mention particularly regarding the large sample size of 74,403 students and reference to a national assessment. Researchers found that cognitive ability at age 11 predicted academic achievement at age of 16, with the highest correlation between IQ and achievement occurring in math. Results validate the present finding that level of intellectual functioning, at least for students with ED, is predictive of student proficiency on the statewide assessment in math. Considered collectively with descriptive statistics, as level of intellectual functioning increases, the rate of students meeting proficiency on the regular statewide accountability assessment in math also increases.

Limitations

Research on the participation and performance of students with ED on statewide accountability assessments is virtually nonexistent. This study, examining factors that impact performance, is essentially the first, known to the author. Thus, while there are limitations, this study will provide a basis for future studies, add to the existing knowledge base on the academic achievement of students with ED, and provide information to educators and policy makers to assist in the decision-making process in response to education reforms.

The first limitation is utilizing data from a single school district, which limits generalization. Collecting data from a single school district provided the researchers with the opportunity to collect individual student level data, which has been recommended as a need by current researchers who have studied the participation of

students in special education on statewide assessments (Malmgren et al., 2005). The failure to provide individual demographic information, such as IQ and instructional processes, was also reported as a limitation in a study concerning the progress of students with learning disabilities and high stakes testing, and the need to provide such information was reported, particularly to boost generalization (Schulte, Villwock, Whichard, & Stallings, 2001). Thus, while collecting information from one district is a limitation, there is also strength in having the ability to present individual student data. Additionally, the study renders itself for replication in other districts.

A second limitation is formulating conclusions based on the statewide assessment in math administered in the state of Texas, thus limiting generalization across states or tests administered. Positively, however, Texas has been identified by researchers as having a history of implementing standards-based reform (Hursh, 2005; Malmgren et al., 2005). Furthermore, while it is recognized that there are variations amongst states concerning accountability policies, school policies, and population characteristics (Hanushek, & Raymond, 2005), the need to study student achievement with assessments aligned with curriculum has been recommended (Nelson et al., 2004), and the Texas state assessment in math is aligned with standard objectives (Texas Education Agency, 2008c).

A third limitation is in the lack of information regarding the criteria of eligibility for an emotional disturbance. For the purposes of this study all students identified as ED are being considered without specific consideration of eligibility criteria of (a) an inability to learn that cannot be explained by other intellectual, sensory, or health factors

(b) a pervasive mood of unhappiness or depression, (c) inappropriate types of behaviors or feelings under normal circumstances, (d) physical symptoms or fears associated with school, and (e) an inability to build or maintain satisfactory relationships with peers or teachers. Students meeting eligibility under different eligibility criteria may exhibit differences in performance, particularly since students with ED who exhibit externalizing behaviors have more pronounced achievement issues (Nelson et al., 2004). Positively, though, this study was conducted in a single school district where assessments, training, and practices are cohesive.

A fourth limitation is the small sample size, particularly for students in the self-contained and resource settings. The small sample size prevented the researcher from finding conclusive evidence regarding the association between instructional setting and performance on the regular statewide accountability assessment in math. This resulted in the failure to provide conclusive evidence regarding the relationship between student performance and instructional placement.

Finally, this study focused on student performance in the area of math for students with ED, thus limiting generalization. Additional research across content areas and disabilities is recommended.

Implications

This study finds that students with ED have been underrepresented in accountability measures, and have to a large degree been held to alternate achievement standards. This indicates that students with ED have large gaps to close to progress from being excluded from measures to meeting proficiency. Particularly, if students who have

taken out-of-level assessments, are not prepared to pass regular content standards (Minnema et al., 2004). Thus students with ED may be more likely to experience the negative consequences of accountability and assessment than students with disabilities other than ED or students in the general population. Negative consequences may be an increase in the drop-out rate (Christenson et al., 2007) which is already a concern for students with ED (Locke & Fuchs, 1995; Maag & Katsiyannis, 1998; Sitlington & Neubert, 2004). Negative consequences may also be grade retention (Christenson et al., 2007; Thurlow & Johnson, 2000), and performance outcomes affecting graduation or receipt of a standard diploma (Thurlow & Johnson, 2000).

Another inference from this study is that while grade level was, overall, not found to be a strong predictor of performance, there was indication that performance decreases with increasing grade levels. Bielinski and Ysseldyke (2000) caution, however, in using only information in an accountability assessment to measure academic achievement growth. Deficits in math performance with increasing age has previously been identified for students with ED (Lane et al. 2008; Nelson et al., 2004), and deserves attention, particularly since students in the higher grades pass at a lower rate than students in lower grades. In response to this finding, schools need to ensure that students with ED receive instruction in higher level math classes (Nelson et al., 2004), and receive effective academic interventions (Lewis, Hudson, Richter, & Johnson, 2004). Targeted interventions, and additional resources, such as tutoring at school may also be beneficial. While the research base lacks a large amount of evidence based instructional

strategies for students with ED, recommendations are available (Lewis, Hudson, Richter, & Johnson, 2004; Vannest, Parker, Harvey, & Ramsey, accepted with revision).

The finding that level of intelligence is predictive of student performance also has strong implications. While the focus of this study is on students with ED, the inference made that students with IQs less than average do not perform well on a statewide assessment in math may generalize to other students, to include students in special education with disabilities other than ED, and to students in the general education population. The finding further emphasizes the need for effective instructional strategies. For instance, Frisby (2008) reports that students with cognitive deficits require increased time to learn material.

Finally, this study implies the need for continued research on the academic status of students with ED, particularly on statewide assessments administered as part of accountability programs. Future research should continue to focus on demographic variables including gender, ethnicity, socioeconomic status, and grade or age level. Additional studies on the influence of instructional setting is also recommended, particularly since research is lacking in this area, and changes in instructional programs to include placement moves are being made in response to high stakes testing. Additional studies considering level of intelligence as a moderator towards performance is also recommended, for students with ED, as well as for other students both in special and in the general population. This study is easily replicable and lends itself to future research across districts, content areas, and disabilities, which will add knowledge to the existing research base for students with ED.

Conclusion

Notably, this study is one of the first of its kind for students with ED, contributing to the knowledge base of the academic status of students with ED. The provision of disaggregated data allows educators and researchers alike to examine variables found to associate and not associate with performance. These results found that overall, gender and socioeconomic status are not significantly associated with student performance on a regular statewide accountability assessment in math. The factors, grade level and ethnicity, showed some association, though the association was small. Level of intellectual functioning was the only variable found to significantly relate to performance on the regular statewide accountability assessment in math. While additional research is warranted, it is also important to monitor and report on the progress of students in special education due to educational reforms, as required by IDEA (Thompson et al., 2001). Only when we determine how students are truly performing based on student and school level factors can we begin to respond to their educational needs. This may be most important for students with ED who have poor educational outcomes, and have academic gains to achieve in order to reach proficiency standards.

CHAPTER IV
ASSESSMENT AND ACCOUNTABILITY: PREDICTIVE FACTORS OF
PARTICIPATION AND PERFORMANCE FOR STUDENTS WITH AN
EMOTIONAL DISTURBANCE ON A STATEWIDE ACCOUNTABILITY
ASSESSMENT IN MATH

Literature Review

Students with Emotional Disturbance (ED) experience poor outcomes (Bradley, Henderson, & Monfore, 2004), marked by emotional-behavioral, social, and academic concerns. A 25 year review of students with ED, found students with ED perform below expectations academically (Epstein, Kinder, & Bursuck, 1989), and a review of literature from 1961 to 2000 found 91% of students with ED to be academically deficient (Trout, Nordness, Pierce, & Epstein, 2003). Specifically, students with ED have poor academic achievement (Reid, Gonzalez, Nordness, Trout, & Epstein, 2004), lower grades than peers (Bradley et al., 2004; Wagner & Cameto, 2004), perform below grade level (Trout et al., 2003) have increased failure and drop-out rates (Maag & Katsiyannis, 1998; Sitlington & Neubert, 2004; Wagner & Cameto, 2004), and have poor post-school outcomes (Bullis & Yovanoff, 2006; Sitlington & Neubert, 2004). Poor academic achievement of students with ED spans across age groups (Nelson, Benner, Lane, & Smith, 2004; Reid et al., 2004), grade levels (Bradley et al., 2004), and content areas (Nelson et al., 2004; Reid et al., 2004; Trout et al., 2003), with pronounced deficits in math (Reid et al., 2004), that broaden over time (Nelson et al., 2004). Moreover, students with ED exhibit poor social skills, including disruptive classroom behaviors (Bradley et

al., 2004). In light of recent education reform focused on assessment and accountability, and the need for students to demonstrate proficiency on academic standards and for schools to demonstrate adequate yearly progress, the negative outcomes of students with ED may become more prominent.

No Child Left Behind (NCLB) was enacted to guarantee that students with disadvantages are provided with an appropriate education that ensures proficiency on academic standards in math and reading-language arts (U.S. Department of Education, 2008b). NCLB requires the disaggregation of data by subgroups, to include disability status. Accountability and related assessments have raised the expectations of all students, including those classified in specific subgroups (Goertz, 2005; Hursch, 2005, Nagle, Yunker, & Malmgren, 2006). Within accountability measures, disaggregated data is publicly reported, making disparities in student achievement more visible; thus the inclusion of the subgroup accountability provision in NCLB has amplified attention for students in special education (Goertz, 2005).

No longer is the success of students in special education contained within individualized education plans (IEPs). While the individual goal setting requirement in the Individual's with Disabilities Education Act (IDEA) may contradict NCLB's implication that all students will progress at the same rate and pass standardized accountability measures (Brigham, Gustashaw, Wiley, & Brigham, 2004), the reauthorization of IDEA results in alignment with NCLB (Turnbull III, 2005; U.S. Department of Education, 2007). This alignment was based on the notion that students in special education will benefit instructionally, resulting in higher expectations (Defur,

2002) and improved outcomes (Ysseldyke et al., 2004). In general, the presence of accountability measures in states has been beneficial, and has positively impacted student performance (Hanushek & Raymond, 2005). Further, students with disabilities perform better academically since the implementation of NCLB, though positive change appears to dissipate by the 8th grade (National Council on Disability, 2008).

It is generally unknown how students with ED perform on statewide assessment, and whether or not they benefit from accountability measures (Shriner & Wehby, 2004). Increased concern is directed towards educational programming for students with ED (Lane, Gresham, & O'Shaughnessy, 2002), and educators experience increased pressure to effectively serve students whose progress has been problematic, while providing special education services and accountability for their advancement (Lashley, 2002). A concern is that students with ED are not prepared to participate (Shriner & Wehby, 2004) or meet academic standards (Wehby, Lane, & Falk, 2003), in large scales assessments.

Although researchers recognize a need to address academic achievement and outcomes of students with ED (Mooney, Denny, & Gunter, 2004), minimal performance data is available for students in special education on statewide assessments (Thurlow, Langenfield, Nelson, Shin, & Coleman, 1998), and definitive statements on the successful participation of students with emotional or behavioral disorders in high-stakes assessments cannot be made (Shriner & Wehby, 2004). Goertz (2005) stated that provisions in NCLB that apply to students with special needs are probably the most contentious and controversial within the policy. Thus, it is important to study the impact

of accountability measures on students in special education as well as the impact on students in specific disability categories (Vannest, Madahaven, Mason, & Temple-Harvey, in press). In fact, a major benefit to the current study is determining the participation and performance status of students with ED to help guide educators and policy makers alike in reform efforts as they respond to students with ED who have historically had poor school outcomes.

Participation in Statewide Assessments

State policies on the participation of students in special education focus on inclusion of students with disabilities (Thurlow, House, Scott, & Ysseldyke, 2000), and continue to evolve in response to legislation (Thurlow, Lazarus, Thompson, & Morse, 2005). Research indicates that states have improved in the collection of data for students with disabilities (Elliot, Erickson, Thurlow, & Shriner, 2000), and in the reporting on students with disabilities to include the reporting of disaggregated data (Thurlow & Wiley, 2006). However, in reporting data, states generally provide count data as opposed to rates of participation (Thurlow & Wiley, 2006), making it difficult to determine the actual extent of participation. Of the states, only 13 provided clear participation rates, and only 6 had rates above the 95% criteria level mandated by NCLB (Thurlow & Wiley, 2006). Increased reporting of participation rates in statewide assessments for students in special education is recommended (Elliot et al., 2000; Thurlow & Wiley, 2006).

Legislation on the participation of students in special education has evolved from exclusion, to participation in alternative assessments, to participation in the regular

assessment. Decisions on whether or not a student with a disability participates in a statewide assessment, has often been the decision of IEP teams (Elliot et al., 2000; Thurlow et al., 2000, Thurlow et al., 2005), and based on course content or curricular validity (Thurlow et al., 2000; Thurlow et al., 2005), parent involvement, and non-pursuit of a standard diploma or general education (Thurlow et al., 2005). In consideration of current policy mandating full inclusion, the decision to participate may be less of a committee decision, though merely requiring participation does not necessarily guarantee success.

Performance on Statewide Assessments

In reviewing the performance of students in special education on statewide assessments, researchers found a large range in the percentage of students who were proficient (Thurlow & Wiley, 2006), with varying levels of proficiency in math (Malmgren, McLaughlin, & Nolet, 2005). Unfortunately, there has been little research conducted on variables that influence performance. In determining factors predictive of performance for students in special education, Malmgren and colleagues (2005) found across schools, grade levels, and content areas, the variable most predictive of performance of students in special education was the performance of their peer counterparts in general education. That is, if students in general education performed well so did students in special education. Conversely, if they did poorly, so did the students in special education.

Research including demographic variables as moderators to performance in statewide assessments is minimal. Existing research found ethnicity and income related

to student performance; specifically, students of minority or low income status exhibited lower levels of achievement on statewide assessments (Abbott & Joireman, 2001).

However, it is believed ethnicity was indirectly related to performance, with ethnicity relating to low income and low income to achievement. As noted by Hanushek and Raymond (2005), accountability has resulted in overall achievement gains, though there is some variability when ethnicity is considered. Specifically, Hispanic students generally gain more than their African American counterparts with respect to accountability measures. In another study focused on the predictive value of demographic factors on student performance in reading, it was found that girls, high-income students, and students of White or East Asian ancestry were more likely to pass the statewide assessment (Uyeno, Zhang, & Chin-Chance, 2006). Moreover, Thurlow and Wiley (2006) found that students with disabilities were less proficient on statewide assessments across states than nondisabled peers during assessments in the 2001-2002 school year. For criterion-referenced assessments in reading, 32% of states providing data had less than 20% of students meeting proficiency at the elementary level, and 93% of states providing data had less than 20% of students reaching proficiency at the high school level. A similar pattern was reported for math.

Performance of Students with an Emotional Disturbance

Much of the available work focuses on special education students as a homogeneous group, and little has been done to disaggregate data per eligibility category (i.e students with ED are qualitatively different than students with Orthopedic Impairments, Deaf Blind, etc.). Research is limited regarding the participation and

performance of students on statewide assessments by disability. In a study of students with learning disabilities, Schulte, Villwock, Whichard, and Stallings, (2001) found that the percentage of students meeting proficiency on a reading assessment rose over a five year period. Another study (Gronna, Jenkins, & Chin-Chance, 1998) focused on the performance of students in special education on the statewide assessment (Stanford 8) used in Hawaii for reading and math. These researchers found that students with mild mental retardation, a specific learning disability, or an emotional impairment scored below the national normative group, and below students without disabilities in math and reading at all grade levels tested. Furthermore, Helwig, Anderson, and Tindal (2002) found that general education students performed better than students with IEPs on a math statewide assessment and on related predictive measures, with math problems more difficult for students in special education.

It is clear that additional work needs to be completed in the interest of students in special education and their participation and performance on statewide assessments. Research is also needed to evaluate the value of inclusion for students with emotional or behavioral disorders in accountability and assessment systems (Shriner & Wehby, 2004). It is imperative that data be collected for use as a baseline measure in order to gauge progress in terms of participation and performance, particularly as educators within schools respond to education reforms outlined in policy. A response to reform within schools has been increased inclusion (Bradley, Henderson, & Monfore, 2004; Christenson, Decker, Triezenberg, Ysseldyke, & Reschly, 2007).

Instructional Setting

Students in special education are increasingly being placed in inclusive settings, with this trend expected to continue (Simpson, 2004). This move has been attributed to a combination of the following: (a) high-stakes accountability driven reforms (Bradley et al., 2004; Brigham et al., 2004); (b) the input of IDEA, and the reduction of classes due to pressures to align resources and curriculum with state and district-wide assessments (Brigham et al., 2004); and (c) the belief that inclusion is more effective than restrictive settings, though a literature review on the effectiveness of inclusion provided no definitive evidence on whether or not inclusion is significantly more effective for students in special education (Geoff, 2007).

Despite an increase in inclusion, students with ED continue to be educated in more restricted settings (Bradley et al., 2004; Sitlington & Neubert, 2004). Bradley and colleagues (2004) report approximately one-third of students with ED receive instruction in a general education school, though not in general education classes. Research considering the performance of students with ED on statewide assessments based on instructional setting is minimal. Thus it is important to determine how students demonstrate progress in the general curriculum on statewide assessments (Lashley, 2002), particularly since state assessments are being used as a tool to demonstrate proficiency. There generally remains no understanding of the academic abilities of students with ED in general education, resource, or self-contained settings (Trout et al., 2003).

Reid and colleagues (2004) conducted a meta-analysis on research conducted between 1961 and 2000 to determine if the academic status of students with emotional or behavioral disorders showed differences between demographic variables, content areas, and placement settings. They found that students with emotional and behavioral disorders scored significantly below peers in all academic subject areas, and no significant differences in academic performance was found across general education, resource room, self-contained, and special school settings. Lane, Barton-Arwood, Nelson, and Wehby (2008) found that students with emotional or behavior disorders, or those with behavior problems educated in a self-contained school exhibited sub-average performance across subject areas, with secondary students having increased problems in math. The authors also found this group of students to have below average social skills, poor school adjustment, and behavior problems. Further, Lane et al., (2005a) found that students with emotional or behavioral disorders or students with behavior concerns educated in a self-contained school had more academic skills than students in a self-contained school, though competence was viewed as similar by teachers. This same group of researchers found limited academic improvement for students with emotional or behavioral disorders or those with behavior problems instructed in a self-contained school or classroom with no significant differences in academic performance in reading or math (Lane, Wehby, Little, & Cooley 2005b).

In a study of math instruction across educational settings (general education, resource, or self-contained) for students with ED, Jackson and Neel (2006) found that students receiving instruction in special education settings did not have access to

standards-based curricula and instruction. Bottage, Heinrichs, Dee Mehta, and Hung (2002) reported that while previous research found students in special education to benefit from remedial classes with a general and special education teacher, students in special education did not receive needed attention from their special education teacher.

Present Study

Research suggests that students with ED exhibit academic deficits across content areas and instructional settings. Research however has not focused on the academic performance of students with ED based on participation and performance on statewide assessments. Malmgren et al., (2005) expressed the need to study individual student factors to include placement, as it relates to student performance on accountability measures. Additional researchers also suggest examining patterns of participation in the general curriculum and in assessment (Jackson & Neel, 2006; Shriner & Wehby, 2004). Research should focus on academic instruction and achievement (Wehby et al., 2003), academic performance in subject areas, and the relationship between placements (Reid et al., 2004). Research should also be conducted that includes demographic information such as gender, race, and age groups to provide for the disaggregation of data between subgroups (Reid et al., 2004).

The purpose of this study is to determine the extent of participation and performance of students with ED on a regular statewide accountability assessment in math. The study will also seek to determine if student and school level factors are predictive of student participation and performance on the regular statewide accountability assessment in math. Student level factors are grade level, gender,

ethnicity, and intelligence, and school level variables are school-wide socioeconomic status and instructional setting for math.

Methodology

The study was conducted in a suburban school district in Southeast Texas with a population of approximately 50,000 students. The demographic make-up of the district was 9% African-American, 28% Hispanic, 53% White, and 9% Asian-Pacific/Islander. Approximately 9% of students in the district met eligibility criteria for special education and of these 8% met eligibility criteria for an Emotional Disturbance (ED).

Participants

Participants were students with ED in grades 3 through 12 required to take either the regular statewide assessment in math or an alternate assessment. Students identified as ED in kindergarten, first, or second grades were not included because students in these grades do not participate in the statewide assessment. This is generally true for twelfth graders, although twelfth graders who did not meet standards prior to their twelfth grade year are required to take the exit-level assessment administered to eleventh graders.

Initially, 307 students were identified as ED in the participating district. Of the 307, 44 were excluded from the study due to (a) 36 students enrolled in grades not assessed, (b) 2 students lacking information, (c) 1 student entered into the district database twice, and (d) 5 students found to not be ED. Additionally, five students not in the original database were identified as ED during the data collection process and included in the study. In total, 268 students with ED in grades 3-12 were identified and

included as subjects. ED was the primary disability for 91% (243), the secondary disability for 8% (22), and the tertiary disability for 1% (3) of the subjects. This study considered the sample of students (a) scheduled to participate in the 2006-2007 administration of the statewide assessment in math (participation sample) and (b) the performance results of students with ED who participated (performance sample).

Participation sample. The total number of participants was 268, though due to missing data (exclusion of two Asian students and missing intelligence data) logistic regression analysis was conducted on a sample of 259 students. The sample was representative across grade levels, gender, ethnicity, socioeconomic status, intellectual functioning, and instructional settings. Of the 259 students, 75% (195) were male and 25% (64) female. The sample was 71% (183) White, 15% (40) Hispanic, and 14% (36) African-American. Subjects also represented a range of cognitive functioning, with 37% (97) having IQs within the extremely low, borderline, and low average ranges combined, 51% (132) having IQs in the average range, and 12% (30) having IQs within the high average, superior, and very superior ranges combined, based on the Wechsler classification ranges (Sattler, 2001).

Fifty-seven percent (148) were enrolled in schools where less than 35% of the students were classified as economically disadvantaged, and 43% (111) were in schools where at least 35% of the students were classified as economically disadvantaged. Of the subjects, 7% (17) were in 3rd grade, 11% (29) in 4th grade, 9% (24) in 5th grade, 13.5% (35) in 6th grade, 8% (21) in 7th grade, 13% (33) in 8th grade, 17% (43) in 9th grade, 13.5% (35) in 10th grade, and 8% (22) in 11th and 12th grades combined. Subjects

received math instruction across settings, with 8% (21) receiving instruction in a self-contained setting, 27% (69) in a resource setting, 32% (83) in general education with in-class support, and 33% (86) in general education without a specified time of in-class support. Of the students in the self-contained setting, 6 elementary students were instructed in a campus based adaptive behavior program, 13 secondary students were in an off campus behavioral support program for students with significant emotional or behavioral disorders, 1 secondary student was in an adaptive behavior room, and 1 secondary student was in a life skills classroom.

Performance sample. The sample of students who took the regular state-wide assessment in math consisted of 143 students with an Emotional Disturbance, though analysis was conducted on 138 students (exclusion of one Asian student and missing IQ data). The performance sample was 75% (103) male and 25% (35) female, of which 8% (11) were African American, 12% (17) Hispanic, and 80% (110) White. Subjects within the sample represented a range of cognitive functioning. None of the students with IQs in the extremely low range participated, 17% (23) had IQs in the borderline and low average ranges combined, 64% (89) had IQs in the average range, and 19% (26) had IQs in the high average, superior, and very superior ranges combined, based on the Wechsler classification system (Sattler, 2001).

Of the students in the sample, 61% (84) were enrolled in schools where less than 35% of the students were classified as economically disadvantage, and 39% (54) were in schools where at least 35% of the students were classified as economically disadvantaged. The grade distribution of students in the sample was as follows: 7% (10)

were in 3rd grade, 12% (16) in 4th grade, 9% (12) in 5th grade, 16% (22) in 6th grade, 8% (11) in 7th grade, 14% (19) in 8th grade, 14% (19) in 9th grade, 10% (14) in 10th grade, and 11% (15) in 11th and 12th grades combined. Within the sample, 3% (4) received math instruction in a self-contained setting, 3% (4) in the resource setting, 35% (49) in the general education setting with in-class support, and 59% (81) in general education with no designation of in-class support. Of the students in the self-contained setting two were elementary students receiving instruction in a campus-based adaptive behavior room and two were secondary students receiving instruction in an off campus behavioral support program for students with significant emotional or behavioral disorders.

Dependent Variable

The dependent measure is student participation in the regular Texas Assessment of Knowledge and Skills (TAKS) statewide assessment in math. The dependent variable (participation or nonparticipation) is dichotomous reflecting whether or not a student with ED was scheduled to participate in the regular statewide assessment in math during the spring 2006-2007 administration.

The math TAKS assessment, administered to students in grades 3-11 measures student learning on defined knowledge and skills at assessed grade levels (Texas Education Agency, 2008a). Reliability measures of internal consistency are in the high .80s to low .90s, with reliabilities for TAKS assessments ranging from .83 to .93 (Texas Education Agency, 2008b). Validity measures include content validity (alignment to academic standards), concurrent validity (correlation with national testing program),

criterion-related validity (compared to college preparedness assessments, and grade correlation (Texas Education Agency, 2008c).

TAKS was developed to be aligned with objectives outlined in the Texas Essentials of Knowledge and Skills (TEKS). The alignment of the TAKS to the TEKS to establish content validity was established by incorporating input from Texas educators across grade levels and subject areas (Texas Education Agency, 2008c). The TAKS assessment was developed through a sequential process of item development, item review, and internal reviews of items resulting in the improvement or elimination of items providing evidence for content validity (Texas Education Agency, 2008c).

In addition to content validity, concurrent validity has been established. A study was conducted in 2004-2005 during which student performance on the exit level TAKS was correlated with student performance on national testing programs (Texas Education Agency, 2008c). Additionally, criterion-related validity was found when the TAKS was compared to college preparedness assessments. The TAKS was correlated to the American College Test (ACT), Texas Academic Skills Program (TASP), and Scholastic Achievement Test 1 (SAT 1). Results indicated that TAKS scores (meeting standard performance) predicted ACT scores of approximately 20 in math; TAKS scores (commended performance) predicted ACT scores of approximately 27 in math (Texas Education Agency, 2008c). Also, the correlation of the TAKS with the SAT resulted in TAKS scores (meeting standard performance) predictive of an approximate score of 470 in math on the SAT, and scores (commended performance) predictive of an approximate score of 620 in math (Texas Education Agency, 2008c). A Grade Correlation Study was

also conducted, and students who passed classes were likely to also pass the TAKS assessment in the related area (Texas Education Agency, 2008c).

Independent Variables

Six independent variables were included as factors in this study. Variables were at the individual student or school level.

Student level factors. Four of the six variables identified to account for differences in participation were considered student level factors and are grade level, gender, ethnicity, and intellectual functioning. Independent variables are categorized as follows: (a) grade level (3-12), (b) gender (male or female), (c) ethnicity (African-American, Hispanic, White, and Asian-Pacific Islander), and (d) level of intellectual functioning (extremely low, 69 and below; borderline, 70 – 79; low average, 80 -89; average, 90 – 109; high average, 110 – 119; superior, 120 – 129; and very superior, 130 and above). Scores were classified using the Wechsler classification system (Sattler, 2001).

School level factors. Two of the six factors were considered school-level variables, and were school-wide socioeconomic status and instructional setting for math. Factors are categorized as such: (a) socioeconomic status (schools with less than 35% of students classified as economically disadvantaged, and schools with at least 35% of students classified as economically disadvantaged), and (b) instructional setting (self-contained, resource, general education with in-class support, and general education without in-class support). School socio-economic data was collected from reports generated by the state education agency. Actual percentages were collected and

categorized into schools below 35% and schools at or above 35%. The 35% cut-off was used due to a local education agency being able to designate schools eligible for Title 1 funds if at least 35% of the students in a school are from low-income families (Texas Education Agency, 2004). Fund allocation, requires schools to first allocate funds to schools exceeding 75% poverty (Texas Education Agency, 2004), though in the district under study no schools exceeded 75% poverty); therefore the 35% rate was used. The socioeconomic status of students in an adaptive behavior classroom was configured using their enrolled school.

Instructional setting refers to where a student receives instruction for math. Settings are general education, general education with in-class support, resource, or self-contained. Level of restrictiveness is considered from general education, general education with in-class support, resource, and self-contained. Students in general education did not have a specified amount of time of in-class support, whereas students receiving in-class support received 10 to 90 minutes of in-class support daily from either a helping teacher (intermittent support) or co-teacher (daily support). Students educated in the resource classroom receive instruction from a special education teacher based on modified objectives in the state curriculum. Students educated in the self-contained setting receive instruction outside of the general education or resource class settings. The self-contained setting comprises an off-campus behavioral support program, adaptive behavior program on a general education campus, an off campus nonpublic day school facility, and a life skills classroom.

Procedures

Data was collected from district maintained data-bases, and computer or paper-based individual student special education files. Data collection was completed by two researchers with experience and knowledge in special education. Both data collectors were completing doctoral degrees in educational psychology with an emphasis on special education and had a combined 25 years school experience.

Initially, a report identifying students with ED was generated to reflect enrollment on the Monday of the week of formal assessment. The initial report identified students with ED, attending school, and grade level. Following the identification of students with ED, data was collected from individual special education folders housed in a web-based program. From this web-based program demographic information (grade level, gender, and ethnicity), area of disability, level of cognitive functioning (IQ), scheduled participation status on the statewide assessment in math, and instructional setting for math was collected. Individual Education Plans (IEPs) for the 2006-2007 school year were reviewed, and if students had more than one IEP meeting during the year, the IEP completed closest to the time of assessment, but prior to, was utilized to best reflect information at the time of assessment. If needed, previous IEP records or deliberations were reviewed for clarification. Information not available through the web-based program was collected from individual student folders on campuses; IQ scores not obtainable from the web-based program were collected by personal contact with campus diagnosticians or from individual student folders.

Following the initial stage of data collection, a second district maintained data base was assessed. From the second data base, gender, ethnicity, and participation status was cross-referenced to verify initial data. Additionally, this data-base reflected whether or not a student *actually* participated in the statewide assessment in math by providing scores and passing status. During this stage of data collection, five discrepancies were identified in which the student's special education file was in disagreement with actual participation status. Specifically, special education files indicated participation in the regular grade level assessment when students actually participated in an alternate assessment. Identified discrepancies were re-verified by reviewing both the student's special education file and district maintained database. In all five cases, participation status was corrected to reflect actual participation status and students coded as nonparticipants.

Student performance on the math statewide assessment was determined by collecting student scores on the regular statewide assessment in math from a district maintained data-base. Actual scores were collected and then coded to represent whether the student met proficiency standards (1) or did not meet proficiency standards (0).

Reliability

Data was verified for 22% of the participants. Data was initially verified for 9 elementary school, 12 junior high school, and 11 high school students during the data input stage; original data input was accurate. In order to obtain a reliability measure that included at least 20% of the subjects, additional subjects were randomly selected from the elementary, junior high, and high school subject pool. In total, 60 records were

verified (20 from each level of elementary, junior high school, and high school). In total 22% of participant data was verified, and reliability was determined to be 97%.

Analysis

Data analysis was employed for two distinct samples to determine the extent of participation on the regular statewide accountability assessment in math, and to determine how participating students performed. The dependent variables are dichotomous and not continuous, representing whether or not a student was scheduled to participate in the regular statewide assessment (not scheduled to participate = 0, scheduled to participate = 1), and whether or not at least minimum proficiency standards were met (did not meet proficiency = 0, met proficiency = 1). Due to the dichotomous nature of the dependent variables, the employed statistical analysis was logistic regression (Cohen, Cohen, West, & Aiken, 2003; Pampel, 2000).

Prior to running the logistic regression analysis, descriptive statistics were employed to summarize data and provide descriptive assertions about the traits and attributes of the population (Babbie, 1998). Cross-tabulation was also conducted to examine the association between combinations of variables, by the generation of contingency tables (Gaur & Gaur, 2007). The contingency table was used to examine the association between students and school level factors and participation and performance. Chi-square analysis formulated from contingency tables determined which student or school level factors associated with participation or performance (Chapters II and III).

Logistic regression analysis was conducted for a sample of 259 subjects in the participation group, and 138 in the performance group. Independent variables were

categorized, with the highest level used as the reference category. Reference categories were (a) grade level - junior high grade level (6, 7, 8) combined, (b) gender - male, (c) ethnicity – White students, (d) intelligence – average level of intelligence, (e) socioeconomic status – less than 35% of students classified as economically disadvantaged, and (f) instructional setting – general education without in-class support. To test for the statistical significance of the model and odds ratios, the Homer-Lemeshow goodness-of-fit test was employed. Confidence intervals were established at 95%, and the level of significance was set at .05 which is standard in the social sciences (Gaur & Gaur, 2007), to evaluate the relationship between predictor variables and student participation and performance. Logistic regression provides the researcher with the opportunity to explore the relationship of each predictor variable while controlling for covariates (Garson, 2008c).

Results

Participants were 268 students with ED in grades 3 through 12 with an emotional disturbance required to participate in the regular statewide accountability assessment in math or an alternate assessment. Of the 268 students, 54.5% (146) were scheduled to participate in the regular statewide accountability assessment in math, and 45.5% (122) were scheduled to take an alternative assessment against grade level or alternate achievement standards. Of the 146 students scheduled to participate, 143 actually participated in the assessment (three students were not in attendance). Sixty four percent (92) met at least minimum proficiency standards. Hence, of the total sample (268) of

students with ED, only 34% took and met proficiency standards on the statewide assessment in math.

While the total sample was 268 for participation and 143 for performance, the number of subjects was reduced by 9 for analysis purposes (exclusion of 2 Asian students due to poor representation and 7 subjects with missing IQ classifications), resulting in a sample of 259 for participation, and a sample of 138 for performance. Student level factors investigated were grade level, gender, ethnicity, and range of intellectual functioning. School level factors investigated were school-wide socioeconomic status and instructional setting for math.

Participation

Logistic regression was employed to determine if factors of grade level, gender, ethnicity, intelligence, school-wide socioeconomic status, or instructional setting for math predicted whether or not a student with an emotional disturbance was scheduled for participation in the regular statewide accountability assessment in math. The Hosmer and Lemeshow test resulted in a nonsignificant chi-square, suggesting the model accurately fits the data. Specifically, the model accurately predicted 84% of cases, correctly identifying 82% of students not scheduled for participation, and 85% of students scheduled for participation.

Two variables, level of intelligence and instructional setting for math, were significant predictors of participation on the regular statewide accountability assessment in math. Grade level, gender, ethnicity, and socioeconomic status did not impact student participation (see Table 15). However it should be noted that there was marginal

association within the area of ethnicity (ethnicity, $p = .075$; African-American, $p = .056$), particularly for African-American students, indicating that African-American students had lower odds of participating than White students (though this was not at the level of .05 significance).

Level of intelligence was identified as a significant predictor of participation ($p = .001$). Amongst the three levels of intelligence (lower than average, average, higher than average), students with higher than average IQs were not statistically different than students with IQs in the average range ($p = .215$). Students with IQs less than average had lower odds of participation than students with IQs in the average range (OR = .272, $df = 2$, $p = .002$, 95% CI = .121, .613).

Instructional setting was also identified as a significant predictor of participation status for students with ED ($p < .01$). Students educated in self-contained or resource classes, or in general education with in-class support were statistically different than students in the general education setting ($p < .01$ for all variables). Students instructed in the general education setting with in-class support had lower odds of participation than students in the general education setting without in-class support (OR = .111, $df = 2$, $p < .01$, 95% CI = .038, .321). Students instructed in the resource and self-contained settings (combined) had lower odds of participation than students in the general education setting without in-class support (OR = .008, $df = 2$, $p < .01$, 95% CI = .002, .027).

Table 15.

Logistic Regression for Student and School Level Factors Predictive of Participation on the Statewide Assessment in Math

Student and School Level Factors	Regression Coefficient (B)	Wald Statistic	Level of Significance*	Odds Ratio Exp(B)	95% CI for EXP (B)
Grade Level					
Elementary	.346	.503	.478	1.413	.543, 3.674
Junior High**		1.090	.580		
High School	-.171	.137	.711	.843	.341, 2.082
Gender					
Female	-.317	.518	.472	.729	.308, 1.725
Ethnicity					
African-American	-1.114	3.658	.056	.328	.105, 1.028
Hispanic	.493	.843	.359	1.637	.572, 4.684
White**		5.170	.075		
Level of Intellectual Functioning					
Less than Average	-1.303	9.855	.002	.272	.121, .613
Average **		13.509	.001		
More than Average	.963	1.535	.215	2.619	.571, 12.013

Table 15 Continued.

Student and School Level Factors	Regression Coefficient (B)	Wald Statistic	Level of Significance*	Odds Ratio Exp(B)	95% CI for EXP (B)
Socioeconomic Status					
At least 35% students economically disadvantaged	-.165	.174	.677	.848	.390, 1.844
Instructional Level					
Resource-Self Contained	-4.845	59.209	.000	.008	.002, .027
General Education (in-class support)	-2.201	16.386	.000	.111	.038, .321
General Education**		62.066	.000		

*Significance Level: $P < .05$;

** Reference Category

Performance

Logistical regression was employed to determine if factors of grade level, gender, ethnicity, intelligence, school-wide socioeconomic status, or instructional setting were predictive of student performance on the regular statewide accountability assessment in math (see Table 16). The Hosmer and Lemeshow test resulted in a nonsignificant chi-square suggesting the model accurately fits the data. Specifically, the model accurately predicted 73% of cases, including 39% of students not meeting proficiency standards, and 91% of students meeting proficiency.

Grade level, gender, ethnicity, school-wide socioeconomic status, and instructional setting did not predict whether or not a student met proficiency standards on a statewide assessment in math. However, while not at the level of significance, grade level showed some association ($p = .092$). Level of intelligence was the only variable significantly predictive of performance ($p = .006$). Students with IQs lower than average had lower odds of meeting proficiency standards than students with IQs in the average range ($OR = .344$, $df = 2$, $p = .053$, $95\% CI = .116, 1.016$) Students with IQs higher than average had higher odds of meeting proficiency standards than students with IQs in the average range ($OR = 4.547$, $df = 2$, $p = .027$, $95\% CI = 1.191, 17.369$).

Table 16.

Logistic Regression for Student and School Level Factors Predictive of Performance on the Statewide Assessment in Math

Student and School Level Factors	Regression Coefficient (B)	Wald Statistic	Level of Significance*	Odds Ratio Exp(B)	95% CI for EXP (B)
Grade Level					
Elementary	.749	1.916	.166	2.115	.732, 6.111
Junior High**		4.774	.092		
High School	-.478	1.018	.313	.620	.245, 1.569
Gender					
Female	.457	.928	.336	1.580	.623, 4.005
Ethnicity					
African-American	-.581	.609	.435	.559	.130, 2.407
Hispanic	-.805	1.605	.205	.447	.129, 1.553
White**		1.981	.371		
Level of Intellectual Functioning					
Less than Average	-1.068	3.732	.053	.344	.116, 1.016
Average **		10.109	.006		
More than Average	1.515	4.906	.027	4.547	1.191, 17.369

Table 16 Continued.

Student and School Level Factors	Regression Coefficient (B)	Wald Statistic	Level of Significance*	Odds Ratio Exp(B)	95% CI for EXP (B)
Socioeconomic Status					
At least 35% students economically disadvantaged	.391	.858	.354	1.478	.647, 3.378
Instructional Level					
Resource-Self Contained	-.049	.002	.962	.952	.129, 7.017
General Education (in-class support)	-.443	1.108	.293	.642	.282, 1.465
General Education**		1.120	.571		

*Significance Level: $P < .05$;

** Reference Category

Discussion

The purpose of this study was to determine if school and student level variables predicted the participation and performance of students with an emotional disturbance (ED) on the regular statewide accountability assessment in math. Initial analysis (descriptive statistics and chi-square analysis) conducted (Chapter II) indicate that ethnicity, intellectual functioning, and instructional setting impact participation, with the strongest association found between (a) instructional setting and participation, and (b)

level of intellectual functioning and participation. The employment of logistic regression, a more stringent statistical technique, which controls for effects of covariates, identified level of intelligence and instructional setting as predictor variables to student participation. The effects of ethnicity were minimized, and no longer represented at the level of significance, indicating that ethnicity is not a significant moderator towards participation. However, in the interest of minority students, in comparison to other covariates, ethnicity continued to show some association (ethnicity, $p = .075$; African-American, $p = .056$), particularly for African-American students. Descriptive statistics indicate that minority students are educated in restrictive settings and represented in categories of less than average intelligence than their nonminority counterparts. When these variables are controlled ethnicity was not identified as a significant moderator to participation.

Initial analysis (descriptive statistics and chi-square analysis) conducted (Chapter III) indicate grade level, ethnicity, and intelligence were associated with student performance, with weak associations identified for grade level and ethnicity. The employment of logistic regression, controlling for covariates, removed the effects of grade level and ethnicity, though a slight association continued to exist for grade level ($p = .092$), though the association remained small. The strongest association was found between level of intelligence and performance.

Participation and Performance

Instructional setting. A primary finding of this study is the prediction of participation on the statewide accountability assessment for math by instructional

setting. The finding that instructional setting is associated with participation on the statewide assessment is consistent with previous research that indicates that course content or curricular validity (Thurlow et al., 2000; Thurlow et al., 2005) and instruction in the general curriculum (Thurlow et al., 2005) influences participation. From this, the assumption is made that when a student's IEP committee makes assessment decisions (Elliot et al., 2000; Thurlow et al., 2000, Thurlow et al., 2005), instructional setting is considered. Students instructed in restrictive settings, such as students with ED (Bradley et al., 2005; Hosp & Reschley, 2002; Sitlington & Neubert, 2004) are less likely to be exposed to curriculum (Bradley et al., 2004), and this may influence participation decisions. Minnema et al. (2004) found that students exempt from participation in the regular statewide assessments were students who would not be able to exhibit knowledge of content standards. Students not exhibiting content standards are likely those students who have been excluded from exposure to the curriculum, or those who have academic deficits, such as students with ED. A concern is that African-American students were less likely to participate than the majority, and descriptive statistics reveal that African-American students are educated in restrictive settings at a higher rate than White students. However, African American students pass at a rate commensurate to White students. This may be attributed to selection procedures resulting in the inclusion of students in the regular statewide assessment who were deemed capable of meeting proficiency standards.

The results of this study suggested that instructional setting was not predictive of student performance on the regular statewide accountability assessment in math, though

this finding is limited due to the exclusion of students instructed in the self-contained and resource settings. Future research is needed to further explore the relationship between instructional setting and student performance on statewide accountability assessments.

Grade level. Grade level was not found significant when other variables were controlled for, though there was a small association between grade level and performance. A review of data analysis suggests that students at the high school level were less likely to meet proficiency in math. This finding is consistent with previous research. Nelson et al. (2004) reported that students with ED exhibit deficits in math, with pronounced deficits with increasing age.

Level of intellectual functioning. Level of intellectual functioning was the one variable found predictive of both participation and performance. Students with IQs lower than average were less likely to participate, and less likely to meet proficiency standards than students with average levels of intelligence or higher. Prior to the enactment of NCLB and the 2004 reauthorization of IDEA, students with disabilities were given the option to take an alternative assessment if the regular assessment was deemed inappropriate for students with disabilities (Lashley, 2002). The finding that students with low cognitive functioning may be excluded from statewide assessments is indicated in research. Thurlow et al. (2000) found that state participation policies, even prior to IDEA (1997), were geared towards inclusiveness of students with disabilities, though testing options such as alternate assessments (8 out of 40 states) designed for students in specific subgroups such as those with significant cognitive disabilities were available.

Research specific to level of intellectual functioning and participation on statewide assessments for students with ED was not found, though research was available on the relationship between intelligence and achievement.

The finding that level of intelligence is a predictor variable to performance on the statewide assessment in math is consistent with previous research findings that intelligence is predictive of achievement. Ramsay and Reynolds (2004) found intelligence tests to be moderately correlated with achievement. Watkins, Lei, and Canivez (2007) conducted a longitudinal study which included students in special education, and determined that intelligence is related to future achievement. Additionally, Deary, Strand, Smith, and Fernandes (2007) found that cognitive ability predicts academic achievement, with the highest correlation to math.

Demographic factors of gender, ethnicity, and socioeconomic status were not found to impact student participation and performance to a significant degree, though some association was indicated for ethnicity and participation, and grade level and performance. Research on the academic status of students with ED based on demographic variables is minimal, despite the recommendation of such (Reid et al., 2004; Trout et al., 2003). Research available both correlates with and contradicts present findings.

Gender. Gender was not found to impact participation or performance status on the regular statewide accountability assessment in math. This is consistent with previous research that found no significant differences between boys and girls regarding academic deficits (Nelson et al., 2004). Uyeno, Zhang, and Chin-Chance (2005), however, found

that girls outperformed boys on a statewide assessment in reading, and while performance in math was not presented, there is some indication of student performance relative to a statewide assessment. Lee, Grigg, and Dion (2007) report that results of the National Assessment of Educational Progress (NAEP) in the area of math for 4th and 8th graders indicate that both boys and girls demonstrated academic gains between the years 1990 and 2007, though boys scored higher than girls.

Ethnicity. Ethnicity, overall, was not found to be predictive of student performance on a statewide assessment in math, although there is indication of a weak association between ethnicity and participation, particularly for African American students. African American students are less likely to participate, and this suggests that African American students with ED may have even larger gaps to close in terms of participation and performance. Lee and colleagues (2007) found that students in ethnic subgroups of African-American, Hispanic, and White demonstrated gains, with the achievement gap narrowing between African-American and White students.

Additionally, Uyeno, Zhang, and Chin-Chance (2006) found that student performance on a statewide reading test resulted in more favorable outcomes for White or East Asian students. Conversely, Malmgren et al., (2005) found no significant differences between student performance and ethnicity on a statewide assessment across schools, grade levels, and content areas. Research conducted by Abbott and Joireman, (2001) found that ethnicity impacts performance on statewide assessments though the relationship was reported to be indirect, with variance primarily related to income status.

School-wide socioeconomic status. In the present study, school wide socioeconomic status was not found related to student participation or performance on the regular statewide accountability assessment in math for students with ED. This contradicts with findings that students from low socioeconomic schools (percentage of students on free or reduced lunch) performed worse than students in schools with a higher level of socioeconomic status (Abbott, & Joireman, 2001; Uyeno et al., 2006). The NAEP math assessment, documenting progress from 1990-2007, also found that students receiving free or reduced price lunch while improving in the area of math, continued to score below students not on free or reduced price lunch (Lee et al., 2007). Findings of this study are consistent with research conducted by Malmgren and colleagues (2005), who did not find differences in performance due to socioeconomic status (percentage of students on free or reduced lunch).

Limitations

Research on the participation and performance of students with ED on statewide accountability assessments is virtually nonexistent. This study, examining factors that impact participation and performance, is essentially the first in the field. Thus, while there are limitations, this study will provide a benchmark for future studies, add to the existing knowledge base on the academic achievement of students with ED, and provide information to educators and policy makers to assist in the decision-making process in response to education reforms.

The data was collected from a single school district, limiting generalization. However, the district is large with approximately 50,000 students. Collecting data from a

single school district provided the researchers with the opportunity to collect individual student level data, which has been recommended as a need by current researchers who have studied the participation of students in special education on statewide assessments (Malmgren et al., 2005). While collecting data on state performance is valuable, researchers recommend collecting individual student level data (Malmgren et al., 2005). Providing individual demographic information, such as IQ and instructional processes, was also reported to be a limitation in a study concerning the progress of students with learning disabilities and high stakes testing, and providing such information was reported as necessary, particularly to help boost generalization (Schulte et al., 2001). Thus, while collecting information from one district is a limitation, there is also strength in having the ability to present individual student data.

A second limitation is formulating conclusions based on the statewide assessment in math administered in the state of Texas, thus limiting generalization across states or tests administered. Positively, however, Texas has been identified by researchers as being demographically diverse, and has having a history of implementing standards-based reform (Malmgren et al., 2005). Furthermore, while it is recognized that there are variations amongst states concerning accountability policies, school policies, and population characteristics (Hanushek, & Raymond, 2005), the need to study student achievement with assessments aligned with curriculum has been recommended (Nelson et al., 2004), and the Texas state assessment is aligned with curriculum (Texas Education Agency, 2008c).

A third limitation is the small sample size for students participating that receiving their instruction in the self-contained or resource settings. Additional research in this area is needed, particularly as instructional changes are being made in response to accountability assessments within education reform policy.

As educators respond to reform efforts, these results provide a good starting point to evaluate the current status of students with ED on statewide accountability assessments. Findings should provide information to help guide educators in making sound changes within school environments particularly in regards to instructional changes and the provision of targeted interventions for students with low levels of intellectual functioning. It is the hope that this research will provide the groundwork for future research, and be a catalyst to positive changes within schools and districts, as well as in the formation of policy or amendments to policy, particularly for students with ED.

Implications

The results of this study provide information on the participation and performance of students with ED on a statewide accountability assessments, an area in need of study. This study considered the effects of student level (grade level, gender, ethnicity, intelligence) and school level (school-wide socioeconomic status and instructional setting) on the participation and performance of students with ED in a statewide assessment in the area of math.

The first implication is that instructional setting impacts participation. Students with ED instructed in restrictive settings are less likely to participate, and this includes those students instructed in general education with in-class support. Concerning is that

African American students are less likely to participate than their peers. Based on nonparticipation, students with ED may not be prepared to meet standards as they participate in regular statewide assessments as now mandated by policy (NCLB and IDEA). This may be particularly true when considering participation is related to students receiving instruction in the course or content being evaluated (Thurlow et al., 2000; Thurlow et al., 2005), and in the present study minority students were more often educated in restrictive settings than nonminority students. Furthermore, Minnema et al., (2004) found that students taking out-of-level assessments are students who could not meet grade level standards.

This study also found some evidence that students fail to meet proficiency standards with advancing grade levels, specifically at high school, in the areas of math. This is consistent with research conducted by Nelson et al. (2004), who stated that academic deficits in math at the high school level may be the exclusion of students with ED in higher level math classes. Receiving appropriate instruction on content based standards is necessary if the goal is to have all students reach proficiency.

This study also indicates that a student's level of intelligence affects their participation status and their performance on a statewide assessment in math, at least for students with ED. This further emphasizes the need to provide effective instruction to this group of students. While effective interventions should be provided to students with ED, consideration should also be given to cognitive deficits. Students with cognitive deficits may require classroom accommodations such as extended time for learning material (Frisby, 2008). This group of students would also likely benefit from research

based interventions, though research on math instruction has failed to include students with cognitive disabilities (Browder, Spooner, Ahlgrim-DeLzell, Harris, & Wakeman, 2008), which is a gap in the research field, particularly in consideration of the higher expectations now put into place for students in special education, including students with ED and those with cognitive deficits.

Providing an appropriate education to all students, even those at a disadvantage, so that all students can meet proficiency, is the underpinnings of NCLB. A purpose of assessment and accountability is to improve the educational outcomes of all students, a goal that should be pursued for students with ED, who traditionally experience poor school and life outcomes. Therefore, it is important to continue to monitor and assess the participation and performance of students with ED on statewide accountability assessments.

Conclusion

Notably, this is one of the first studies for students with ED and their participation and performance within statewide assessment programs. The disaggregation of student and school level data provide needed information as educators target interventions and develop programs for students with academic deficits or for those that fail to measure up to performance standards. It is the desire of this researcher that additional studies be completed across subject areas and disabilities so that the research field will have sound data to contribute to the use of effective educational practices within schools.

CHAPTER V

SUMMARY AND CONCLUSIONS

Educational policy, particularly NCLB and IDEA has resulted in education reform across the nation. Policy has been established to ensure that all students learn and are able to meet proficiency standards on statewide performance assessments. Most notable is the No Child Left Behind (NCLB) Act, mandating stronger accountability, use of proven education methods, more freedom for states and communities, and increased parental choice (U.S. Department of Education, 2004). The Individuals with Disabilities Act is aligned with NCLB (Turnbull III, 2005; U.S. Department of Education, 2007). Therefore the expectations of students in special education are the same as students in the general population; under NCLB most students with disabilities are held to the same proficiency standards as other students, with scores disaggregated and publically reported, making visible student disparities in achievement (Goertz, 2005).

A tenet within NCLB is Adequate Yearly Progress (AYP) the process by which student participation and performance is monitored and assessed. Specifically, AYP requires the participation of 95% of students, as well as 95% of students within subgroups (U.S. Department of Education, 2003) with the demonstration of progress towards 100% of students meeting proficiency on achievement standards (U.S. Department of Education, 2008b). Statewide assessments and related accountability is for all students even those classified in specific subgroups (Goertz, 2005; Hursch, 2005; Nagle, Yunker, & Malmgren, 2006),

Inclusion of Students with Disabilities in Accountability Systems

The “promise” that all students will learn and succeed is grounded in IDEA and NCLB (Rosenberg, Sindelar, & Hardman, 2004). The intent of policy reform is improved outcomes, and research suggests that the introduction of accountability programs into states has been positive (Hanushek & Raymond, 2005; Ysseldyke et al., 2004). Accountability programs have resulted in increased participation in assessment programs, higher expectations and standards, improved instruction, and improved performance for students in special education (Ysseldyke et al., 2004). Additional data suggests that students with disabilities are doing better academically since the implementation of NCLB, though there is indication that positive change dissipates by the 8th grade (National Council on Disability, 2008).

Data suggests that students with disabilities benefit from accountability measures, though it is unknown how students perform based on area of disability. For instance, students with ED have academic deficits across subjects (Nelson, Benner, Lane, & Smith, 2004; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004) and have poor school outcomes (Bradley, Henderson, & Monfore, 2004), and therefore may not fare well within accountability programs. Thus, the participation and performance of students with ED may negatively contribute to accountability ratings, though most importantly poor participation and performance may result in continued negative outcomes for this group of students.

Students with Emotional Disturbance

Students with Emotional or Behavioral Disorders have historically demonstrated academic deficits (Trout, Nordness, Pierce, & Epstein, 2003), and perform below expectations academically (Epstein, Kinder, and Bursuck, 1989; Nelson et al., 2004; Reid et al., 2004). Poor academic achievement of students with ED spans across age groups (Nelson et al., 2004; Reid et al., 2004), content areas (Nelson et al., 2004; Reid et al., 2004; Trout et al. 2003), and settings (Reid et al., 2004). While academic deficits span across subject areas, deficits are pronounced in math (Reid et al., 2004), with deficits in math increasing with age (Nelson et al., 2004). The knowledge that students with ED may be ill prepared to meet standards coupled with the demands of IDEA and NCLB have resulted in increased interest in their academic performance (Wehby, Lane, & Falk, 2003). The need for students who have had problematic progress, to demonstrate progress, has been problematic, and increases the pressure teachers experience to effectively serve these students (Lashley, 2002).

Instructional Placement

Academic deficits of students with ED are apparent across settings (Reid et al., 2004), and in order to address the poor school outcomes of students with ED, Hayling, Cook, Gresham, State, and Kern (2008) report that students with ED are educated in a range of educational settings. Students with ED are often educated in restrictive environments (Bradley, Henderson, & Monfore, 2004; Hosp & Reschley, 2002; Simpson, 2004; Sitlington & Neubert, 2004), though increased inclusion is also occurring for students in special education including students classified as ED (Simpson,

2004). Increased inclusion is related to high stakes accountability reforms (Bradley et al., 2004; Christensen et al., 2004), social policy (Simpson, 2004), and requirements within IDEA encouraging inclusion and access to the general curriculum, coupled with a reduction in the number of classes in schools due to alignment of resources and curriculum to state and district-wide assessments (Brigham et al., 2004). As educators respond to reform efforts, it becomes imperative to study the educational outcomes of students based on academic settings, particularly if an intervention for students with ED is inclusion.

Academic Achievement per Instructional Setting

Research addressing academic outcomes and placement for students with ED is minimal, and research in this area is recommended (Hayling et al., 2008; Lane Wehby, Little, & Cooley, 2005a b; Reid et al., 2004; Trout et al., 2003). Studies should be conducted comparing the academic performance of students with emotional or behavioral disorders in inclusion and non-inclusion programs (Simpson, 2004), performance differences amongst settings (i.e. self-contained and general education) (Lane et al., 2005a b), and settings on the general education campus, such as self-contained, resource, and general education classes (Trout et al., 2003). Research on placement and achievement is lacking and unclear for students with disabilities in special education especially for students with ED. Research that is available suggests that students with ED do not demonstrate significant differences in academic performance across general education, resource, self-contained, and special school settings (Reid et al., 2004), though these assessments are not based on statewide

assessment measures, but rather measures of a standardized test (i.e. WJ, WRAT) across subject areas.

In light of NCLB and IDEA based policy changes, research needs to examine the performance of students with ED across instructional settings (general and special education classes) to determine how policy and curricular demands affect their performance and that of other students (Brigham et al., 2004). Examining patterns of participation between general education and assessment for students in special education is recommended (Jackson & Neel, 2006), as is the need to study placement, as it relates to student performance on accountability measures (Malmgren, McLaughlin, & Nolet, 2005). The question of how many students with ED, in particular, participate and meet proficiency standards in statewide assessment programs is unanswered.

Participation in Statewide Assessments

Students in special education have not always been included in statewide assessments (Elliot, Erickson, Thurlow, & Shriner, 2000), though policy changes have resulted in increased participation (Thompson & Thurlow, 2001; Thurlow et al., 2000; Ysseldyke et al., 2003). All states have policies in place regarding the participation of students in special education on statewide assessments (Thurlow et al. 2005), though improvement in the reporting of disaggregated data and the provision of participation rates for students with disabilities is recommended (Thurlow & Wiley, 2006). Without accurate reporting of data, it is difficult to determine the true extent of participation. Data that is available suggests that even though participation has increased, few states meet NCLB's requirement of 95% participation (Thurlow & Wiley, 2006).

Performance of Students with Disabilities on Statewide Assessments

Research concerning the performance of students with disabilities on statewide assessments is minimal (Thurlow, Langenfield, Nelson, Shin, & Coleman, 1998), though existing data indicates students with disabilities benefit from high-stakes assessments (Hanushek & Raymond, 2005; Ysseldyke et al., 2004). Researchers have found that across schools, grade levels, and content areas, a consistent predictor variable of performance was the performance of students in general education; in schools where general education students are successful, students with disabilities are also likely to be successful (Malmgren et al., 2005). These same researchers also determined that socioeconomic status (percentage of students receiving free and reduced price meals) was not a predictive variable of performance, and varying levels of math proficiency was found. In a study examining a statewide assessment in reading (Stanford 8), it was determined that students of White or East Asian descent, girls, or those from high-income families, had higher levels of performance (Uyeno, Zhang, & Chin-Chance, 2006). Only one study was found that targeted students in different eligibility categories. In this study, Gronna, Jenkins, and Chin-Chance, (1998) found students with an emotional impairment scored below the national normative group and below students without disabilities at all tested grade levels on the administered statewide assessment (Stanford 8).

The mandate to utilize statewide assessments to determine student and school success makes it imperative to determine how students are doing in response to reform efforts (Thompson, Thurlow, & Staples, 2001). Since student performance and progress

is measured by statewide assessments it is important to monitor performance based on these assessments (Lashley, 2002). The introduction of accountability assessments has resulted in alignment of individual education plans to standards and assessments (Ysseldyke et al., 2004), therefore, statewide assessments may serve as a measure of curriculum based on classroom learning. Measuring performance on statewide assessments will also provide increased data on the academic status of students with ED, an area in need of additional research (Nelson et al., 2004; Reid et al., 2004).

The academic status of students in special education, especially students with ED, within accountability programs is unknown. The field is deplete of literature that examines the academic status of students with ED based on demographic variables. The characteristics of students with ED, such as race, gender, and socioeconomic status are not readily present in research studies (Reid et al., 2004; Trout et al., 2003) and could be moderators towards the academic status of students (Reid et al., 2004). Collecting such data becomes even more important when considering that tenets of NCLB require disaggregation of data by components of disability, economic disadvantage, and race-ethnicity (U.S. Department of Education, 2003).

Purpose of Study

The purpose of this research was to determine the extent that students with ED participate in the regular statewide accountability assessment in math, and to determine the extent that students with ED meet at least minimum proficiency standards. This study was also conducted to examine the association of student and school level factors to participation and performance, and to determine if student or school level factors

predict the participation or performance of students with ED on a statewide accountability assessment in math. Student level factors investigated were grade level, gender, ethnicity, and level of intellectual functioning. School level factors were school-wide socioeconomic status, and instructional setting for math.

This study examined the participation and performance of students with ED in a large suburban school district in Southeast Texas. Participants were 268 students with ED in grades 3-12 required to participate in the regular statewide assessment in math or an alternate assessment. Of the 268 subjects 146 were scheduled to participate in the regular statewide assessment, and 143 actually participated (3 were in nonattendance). Data sources for this study were individual student special education files and district maintained databases. Research was presented within three manuscripts represented in Chapters II, III, and IV.

Participation of Students with ED, Chapter II

Chapter II first examined the extent that students with ED participated in the regular statewide accountability assessment in math. Chapter II then examined the extent that student and school level factors associated with participation status.

In regards to participation, slightly more than half (54.5%) of the students with ED were scheduled to participate in the regular statewide assessment in math. By default nearly half of the students with ED participated in an alternate assessment, and were not held to grade level achievement standards on the regular statewide assessment in math, but rather to standards of an alternate assessment.

Descriptive statistics, cross-tabulation, and chi-square analysis regarding the participation of students with ED yielded findings that both student and school level factors were possible predictor variables to participation. Factors impacting participation status were ethnicity, intellectual functioning, and instructional setting for math. Student grade level and gender were not considered significant moderators of participation status, nor was socioeconomic status.

Of the three variables found to impact participation (ethnicity, intellectual functioning, and instructional setting), ethnicity had the weakest association to participation status ($X^2 = 13.697$, $df = 2$, $p = .001$, $\eta^2 = .227$). Results of descriptive statistics and cross-tabulation indicate that minority students were less likely to participate than the majority. The gap was particularly evident for African-American students; 29% of African American students participated compared to 61% of White students with ED. Nearly half (49%) of the Hispanic students participated.

A student's level of intellectual functioning was found to have a moderate association with participation status ($X^2 = 54.296$, $df = 2$, $p = .000$, $\eta^2 = .456$). Results of descriptive statistics and cross-tabulation suggest that as level of intelligence increases the rate of participation also increases. None of the students with IQs lower than 70 participated, and all of the students with IQs above 119 participated. There is also a notable change in rate of participation between students with low average IQs (36%) and average IQs (69%).

Instructional setting for math, or *where* a student receives math instruction, demonstrated the largest association to participation status ($X^2 = 128.578$, $df = 3$, $p =$

.000, $\chi^2 = .693$). Results of descriptive statistics and cross-tabulation indicate that as level of restrictiveness increases, participation rates decrease, although more students in the self-contained setting (22%) participated than in the resource setting (7%), and this may be due to students placed in the self-contained setting based on emotional or behavior concerns and not ability. For students instructed in general education, those receiving in-class support were less likely to participate than students without specified support. Thus, even students exposed to the curriculum were less likely to participate than peers in the same classes when in-class support was provided.

Performance of Students with ED, Chapter III

Chapter III first examined the extent that students with ED met at least minimum proficiency standards on the regular statewide accountability assessment in math. Chapter III then examined the extent that student and school level factors associated with student performance on the regular statewide accountability assessment in math.

Of the 146 students scheduled to participate in the regular statewide assessment in math, 143 students actually participated (3 were in nonattendance). Of the participating students, 64% met at least minimum proficiency on the regular statewide assessment in math. Taken into consideration with the total number (268) of students with ED participating in an assessment in math (regular or alternative), only 34% participated in the regular statewide accountability assessment and met standards.

Descriptive statistics, cross-tabulation, and chi-square analysis conducted in regards to the performance of students with ED yielded findings suggesting that student level factors were possible predictor variables to student performance. Student level

factors were grade level, ethnicity, and intelligence. When considering the level of significance grade level and ethnicity were slightly above .05 (grade level, $p = .058$, and ethnicity, $p = .056$), and while not at the 5% level of significance, a marginal association was observed.

Grade level was found to have a small association with performance ($X^2 = 5.705$, $df = 2$, $p = .058$, $\eta^2 = .200$). Descriptive statistics and cross-tabulation suggest that as grade level increases the rate of students meeting proficiency decreases.

Ethnicity was also found to have a small association with performance ($X^2 = 5.774$, $df = 2$, $p = .056$, $\eta^2 = .202$). Results of descriptive statistics and cross-tabulation indicate that African-American students met proficiency at a rate commensurate to White students, 64% to 68% respectively. Hispanic students, however, passed at a lower rate (39%). Thus, while Hispanic students participated at a higher rate, they were less likely to meet standards on the statewide assessment in math at a rate commensurate to their peers of White or African-American descent.

Intelligence was found to have a moderate association with student performance ($X^2 = 14.219$, $df = 2$, $p = .001$, $\eta^2 = .320$). Results of descriptive statistics and cross-tabulation suggest that as level of intelligence increases the rate of students meeting proficiency on the statewide assessment in math also increases.

Participation and Performance of Students with ED, Chapter IV

The association between student and school level factors to student participation and performance was further explored in Chapter IV to determine the predictive value of student and school level factors. In Chapter IV, logistic regression was employed taking

into consideration the affects covariates on participation and performance regarding student and school level factors. In regards to participation, logistic regression identified level of intelligence and instructional setting as predictor variables. Students with IQs lower than average had lower odds of participating than students with IQs in the average range. In regards to instructional setting, students instructed in the general education setting with in-class support had lower odds of participating than students in general education without in-class support. Also, students instructed in the resource and self-contained settings (combined) had lower odds of participating than students in the general education setting without in-class support. Controlling for the affects of covariates minimized the association between ethnicity and participation as observed in initial analysis (Chapter II), though marginal association remained, particularly for African American students ($p = .056$), though not at the 5% significance level.

In considering performance, logistic regression identified level of intelligence as a predictor variable. Students with IQs in the average range had higher odds of meeting proficiency than students with IQs less than average, and students with IQs higher than average had higher odds of meeting proficiency than students with average IQs. Controlling for the affects of covariates removed the effects of grade level and ethnicity towards student performance as observed in the initial analysis (Chapter III). However, a slight association continued for grade level ($p = .092$), though not at the 5% significant level.

Summary

This study indicates that students with ED are largely excluded from the regular statewide accountability assessment in math. When considering that NCLB mandates 95% participation, students with ED fall below policy mandates. Also, for students who do participate, only 64% met proficiency. Therefore, only 34% of students with ED in the district studied participated and met proficiency standards. This indicates that students with ED have large gains to make in terms of both participation and performance.

The intention of policy is to help students who have poor outcomes succeed in school. It is therefore imperative that educators study indicators of success and failure in order to respond to student needs in the most efficient and effective manner, and this includes studying data related to student participation and performance. Disaggregating data for specific subgroups is becoming even more important due to NCLB's requirement to present performance data by subgroups (students with disabilities, economically disadvantaged, race-ethnicity). Disaggregation of data also provides the opportunity to study the data, and for improvement to occur, a picture of all students must be visible (Minnema et al., 2004).

A main focus of this study was examining student participation and performance on a regular statewide accountability assessment in math based on student and school level factors. In regards to participation, ethnicity, intelligence, and instructional setting for math were found to associate with participation, with level of intelligence and instructional setting identified as predictor variables. In regards to performance, grade

level, ethnicity, and intellectual functioning were found to associate with performance, with instructional setting identified as a predictor variable.

Considered collectively, level of intellectual functioning was the one variable found predictive of both participation and performance on the regular statewide accountability assessment in math. Analysis indicates that students with IQs less than average were less likely to participate and less likely to meet proficiency standards than peers with IQs within the average range or higher. In response, educators need to identify and respond to the needs of students with low cognitive abilities, so that instructional provisions (i.e. accommodations and modifications to curriculum) can be provided. For instance, this group of students may require extended time for learning material (Frisby, 2008).

Findings also suggest that instructional setting, or where a student receives math instruction, is predictive of student participation. This study also found that students failed to meet proficiency at a higher rate at the high school level. This is consistent with previous research that found increased deficits for students in special education from 8th grade forward (National Council on Disability, 2008), with deficits increasing with age (Nelson et al., 2004). Thus, there may be a need for targeted interventions and extra support for secondary students, at least in the area of math. Nelson and colleagues report that difficulties in high school may be apparent due to students with ED not instructed in higher level courses. Additionally, O'Neill (2001) states that students in high school may fail high stakes assessments due to the limited amount of time and lack of notice to prepare for such tests.

Ethnicity was also found to impact participation and performance, though the association was weak, and effects minimized when covariates were controlled. Data indicates that African-American students were less likely to participate in the statewide assessment in math, though for those participating, proficiency was commensurate to peers in the majority. Hispanic students, on-the-other hand, participate at a higher rate, though failed to meet proficiency to the same degree as White and African American students.

Conclusion

This study, focused on the participation and performance of students with ED on a statewide assessment, is the first known to the author. The information is relevant in consideration of current policy mandates requiring that all students participate and demonstrate proficiency on regular statewide accountability assessments. In order for educators and policy makers to respond effectively and efficiently in the wake of policy reform, it is important to determine current student progress and moderators towards success or failure.

This study provides the first glimpse into how students with ED fit into accountability and assessment programs. Data indicates that over 50% of students with ED failed to meet both participation and performance standards, resulting in continued academic failure, and poor school outcomes. The study also identified factors found to associate with student participation and performance, and this data can be used in schools to structure programs to best meet the needs of students with ED. Findings will add to the existing research base for students with ED, and can be used by educators as a

guide to help best prepare students with ED for inclusion and success in statewide accountability programs.

REFERENCES

- Abbott, M. L., & Joireman, J. (2001). *The relationships among achievement, low income, and ethnicity across six groups of Washington state students: Washington School Research Center*. Retrieved July 27, 2008, from <http://www.spu.edu/orgs/research/WSRC-TechnicalReport-1-CorrectedFinal.pdf>
- Babbie, E. (1998). *Survey research methods*. Belmont, CA: Wadsworth Publishing Company.
- Bielinski, J., & Ysseldyke, J. E. (2000). *Interpreting trends in the performance of special education students* (Technical Report 27). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. Retrieved August 8, 2008, from the World Wide Web: <http://education.umn.edu/NCEO/OnlinePubs/TechReport27.htm>
- Bottage, B. A., Heinrichs, M., Dee Mehta, Z., & Hung, Y. H. (2002). Weighing the benefits of anchored math instruction for students with disabilities in general education classes. *The Journal of Special Education, 35*, 186-200.
- Bradley, R., Henderson, K., & Monfore, D. A. (2004). A national perspective on children with Emotional Disorders. *Behavioral Disorders, 3*, 211-223.
- Brigham, F. J., Gustashaw, W. E., Wiley, A. L., & Brigham, M. S. P. (2004). Research in the wake of the No Child Left Behind Act: Why the controversies will continue and some suggestions for controversial research. *Behavioral Disorders, 29*, 300-310.

- Bullis, M., & Yovanoff, P. (2006). Idle hands: Community experiences of formerly incarcerated youths. *Journal of Emotional and Behavioral Disorders, 2*, 71-85.
- Cartledge, G., Singh, A., & Gibson, L. (2008). Practical behavior-management techniques to close the accessibility gap for students who are culturally and linguistically diverse. *Preventing School Failure, 52*, 29-38.
- Christenson, S. L., Decker, D. M., Triezenberg, H. L., Ysseldyke, J. E., and Reschly, A. (2007). Consequences of high-stakes assessment for student with and without disabilities. *Educational Policy, 21*, 662-690.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Deary, I. J., Strand, S., Smith, P., & Fernandes, C. (2007). Intelligence and educational achievement. *Intelligence, 35*, 13-21.
- DeCesare, D. (2002). How high are the stakes in high-stakes testing? *Principal, 81*, 10-12.
- Defur, S. H. (2002). Education reform, high-stakes assessments, and students with disabilities: One state's approach. *Remedial and Special Education, 23*, 3-11.

- DeNavas-Walt, C., Proctor, B. D., Smith, J. (2007). Income, poverty, and health insurance coverage in the United States: 2006: Current population reports: United States Census. Retrieved October 9, 2008, from <http://www.census.gov/prod/2007pubs/p60-233.pdf>
- Elliott, J. L., Erickson, R. N., Thurlow, M. L., & Shriner, J. G. (2000). State-level accountability for the performance of students with disabilities: Five years of change? *The Journal of Special Education, 34*, 39-47.
- Epstein, M. H., Kinder, D., & Bursuck, B. (1989). The academic status of adolescents with behavioral disorders. *Behavioral Disorders, 14*, 157-65.
- Frisby, C. L. (2008). Academic achievement testing for culturally diverse groups. In *Handbook of multicultural assessment: Clinical, psychological, and educational applications* (3rd ed.). San Francisco, CA: Jossey-Bass.
- Garson, G. D. (2008a). *Chi-square significance tests*. Retrieved August 8, 2008 from <http://www2.chass.ncsu.edu/garson/pa765/chisq.htm#assume>
- Garson, G. D. (2008b). *Nominal Association: Phi, Contingency Coefficient, Tschuprow's T, Cramer's V, Lambda, Uncertainty Coefficient*. Retrieved August 13, 2008, from <http://www2.chass.ncsu.edu/garson/pa765/assocnominal.htm>
- Garson, G. D. (2008c). Logistic regression. Retrieved August 1, 2008, from <http://www2.chass.ncsu.edu/garson/PA765/logistic.htm>
- Gaur, A. S., & Gaur, S. S. (2007). *Statistical Methods for Practice and Research*. Thousand Oaks, CA: Sage Publications.

- Geoff, L. (2007). Annual review: Educational psychology and the effectiveness of inclusive education/mainstreaming. *British Journal of Educational Psychology*, 77, 1-24.
- Goertz, M. E. (2005). Implementing the No Child Left Behind Act: Challenges for the states. *The Peabody Journal of Education*, 80, 73-79.
- Grant, P. A. (2005). Restrictiveness and race in special education: Educating all learners. *Learning Disabilities: A Contemporary Journal*, 3, 70-74.
- Gronna, S. S., Jenkins, A. A., & Chin-Chance, S. A. (1998). The performance of students with disabilities in a norm-referenced, statewide standardized testing program. *Journal of Learning Disabilities*, 31, 482-493.
- Hanushek, E. A., & Raymond, M. E. (2005). Does school accountability lead to improved student performance? *Journal of Policy Analysis and Management*, 24, 297-327.
- Harris, D. N. (2007). High-flying schools, student disadvantages and the logic of NCLB. *American Journal of Education*, 113, 367-394.
- Hatcher, L. (2003). *Step by step basic statistics using SAS: Student guide*. Cary, NC: SAS Institute.
- Hayling, C. C., Cook, C., Gresham, F. M., State, T., Kern, L. (2008). An analysis of the status and stability of the behaviors of students with emotional and behavioral difficulties. *Journal of Behavioral Education*, 17, 24-42.

- Helwig, R., Anderson, L., & Tindal, G. (2002). Using a concept-grounded, curriculum-based measure in mathematics to predict statewide test scores for middle school students with LD. *The Journal of Special Education, 36*, 102-112.
- Hinkle, D. E., Wiersma, W., & Jurs, S. G. (1998). *Applied statistics for the behavioral sciences* (4th ed.). New York: Houghton Mifflin Company.
- Hosp, J. L., & Reschly, D. J. (2002). Predictors of restrictiveness of placement for African-American and Caucasian students. *Exceptional Children, 68*, 225-238.
- Huck, W. W., & Cormier, W. H. (1996). *Reading statistics and research* (2nd ed.). New York, NY: HarperCollins.
- Hursch, D. (2005). The growth of high-stakes testing in USA: Accountability, markets, and the decline in educational equality. *British Educational Research Journal, 31*, 605-622.
- Jackson, H. G., & Neel, R. S. (2006). Observing mathematics: Do students with ED have access to standards-based mathematics instruction? *Education and Treatment of Children, 29*, 593-614.
- Lane, K. L., Barton-Arwood, S. M., Nelson, J. R., & Wehby, J. (2008). Academic performance of students with emotional and behavioral disorders served in a self-contained setting. *Journal of Behavioral Education, 17*, 43-62.
- Lane, K. L., Gresham, F. M., & O'Shaughnessy, T. (2002). Identifying, assessing, and intervening with children with or at risk for behavior disorders: A look to the future. In K. L. Lane, F. M. Gresham, & T. E. O'Shaughnessy (Eds.),

Interventions for children with or at risk for emotional and behavioral disorders.
(pp. 317-326). Boston: Allyn & Bacon.

Lane, K. L., Wehby, J. H., Little, M. A., & Cooley, C (2005a). Academic, social, and behavioral profiles of students with emotional and behavioral disorders educated in self-contained classrooms and self-contained schools: Part 1-are they more alike or different? *Behavioral Disorders, 30*, 349-361.

Lane, K. L., Wehby, J. H., Little, M. A., & Cooley, C (2005b). Behavioral disorders: Students educated in self-contained classrooms and self-contained schools: Part II- how do they progress over time? *Behavioral Disorders, 30*, 363-374.

Lashley, C. (2002). Participation of students with disabilities in statewide assessments and the general education curriculum: Implications for administrative practice. *Journal of Special Education Leadership, 15*, 10-16.

Lee, J., Grigg, W. S., Dion, G. S. (2007). *National Assessment of Educational Progress: The nation's report card*. Retrieved July 29, 2008 from
<http://nces.ed.gov/nationsreportcard/pubs/main2007/2007494.asp>

Lewis, T. J., Hudson, S., Richter, M., & Johnson, N. (2004). Scientifically supported practices in emotional and behavioral disorders: A proposed approach and brief review of current practices. *Behavioral Disorders, 29*, 247-259.

Maag, J.W., & Katsiyannis, A. (1998). Challenges facing successful transition for youths with E/BD. *Behavioral Disorders, 23*, 209-221.

- Malmgren, K. W., McLaughlin, M. J., & Nolet, V. (2005). Accounting for the performance of students with disabilities on statewide assessments. *The Journal of Special Education, 39*, 86-96.
- Minnema, J. E., Thurlow, M., & VanGetson, G. R. (2004). *Educator's opinions about out-of-level testing: Moving beyond perceptions. Out-of-level testing project report 15*. Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. Retrieved November 19, 2008, from <http://education.umn.edu/NCEO/OnlinePubs/OOLT15.html>
- Mooney, P., Denny, R. K., & Gunter, P. L. (2004). The impact of NCLB and the reauthorization of IDEA on academic instruction of students with emotional or behavioral disorders. *Behavioral Disorders, 29*, 237-246.
- Morgan, G. A., Leech, N. L., Gloeckner, G. W., & Barrett, K. C. (2004). *SPSS for introductory statistics* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Nagle, K., Yunker, C. & Malmgren, K. W. (2006). Students with disabilities and accountability reform. *Journal of Disability Policy Studies, 17*, 28-39.
- National Council on Disability (2008). *The No Child Left Behind Act and the Individuals with Disabilities Education Act: A progress report*. Retrieved July 30, 2008 from http://www.ncd.gov/newsroom/publications/2008/pdf/NoChildLeftBehind_IDEA_Progress_Report.pdf
- Nelson, J. R., Benner, G. J., Lane, K., & Smith, B. W. (2004). Academic achievement of K-12 students with emotional and behavioral disorders. *Exceptional Children, 71*, 59-73.

- O'Neill, P. T. (2001). Special education and high stakes testing for high school graduation: An analysis of current law and policy. *Journal of Law & Education, 30*, 185-222.
- Pampel, F. C. (2000). *Logistic regression: A primer*. Thousand Oaks, CA: Sage Publications, Inc.
- Ramsay, M. C., & Reynolds, C. R. (2004). Relationship between intelligence and achievement tests. In G. Goldstein & S. R. Beers (Eds.), *Comprehensive handbook of psychological assessment, 1*, 25-50. New York: John-Wiley.
- Reid, R., Gonzalez, J., Nordness, P. D., Trout, A., & Epstein, M. H. (2004). A meta-analysis of the academic status of students with Emotional/Behavioral Disturbance. *The Journal of Special Education, 38*, 130-143.
- Rosenberg, S., Sindelar, P. T., & Hardman, M. L. (2004). Preparing highly qualified teachers for students with emotional or behavioral disorders: The impact of NCLB and IDEA. *Behavioral Disorders, 29*, 266-278.
- Rosnell, R. L., & Rosenthal, R. (1989). Statistical procedures and the justification of knowledge in psychological science, *American Psychologist, 44*, 1276 –1284.
- Sattler, J. M. (2001). *Assessment of children: Cognitive applications* (4th ed.). La Mesa, CA: Jerome M. Sattler.
- Schulte, A. C., Villwock, D. N., Whichard, M., & Stallings, C. F. (2001). High stakes testing and expected progress standards for students with learning disabilities: A five-year study of one district. *The School Psychology Review, 30*, 487-506.

- Shriner, G. S., & Wehby, J. H. (2004). Accountability and assessment for students with emotional and behavioral disorders. In S. R. Mathurs, M. M. Quinn, & R. B. Rutherford, Jr. (Eds.), *Handbook of research in emotional and behavioral Disorders*. New York, NY: Guilford Press.
- Simpson, R. L. (2004). Inclusion of students with behavior disorders in general education settings: Research and measurement issues. *Behavioral Disorders*, 30, 19-31.
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75, 417-452.
- Sitlington, P. L. & Neubert, D. A. (2004). Preparing youths with emotional or behavioral disorders to adult life: Can it be done within the standards-based reform movement? *Behavioral Disorders*, 29, 279-288.
- Sutherland, K. S., Lewis-Palmer, T., Stichter, J., & Morgan, P. L. (2008). Examining the influence of teacher behavior and classroom context on the behavioral and academic outcomes for students with emotional or behavioral disorders. *The Journal of Special Education*, 41, 223-233.
- Texas Education Agency (2004). *Financial accountability system resource guide update 12.0*. Retrieved August 8, 2008, from <http://www.tea.state.tx.us/school.finance/audit/resguide12/far/far-299.html>

- Texas Education Agency (2007) *Texas Education Agency: Division of performance reporting: Academic Excellence Indicator System, 2006-2007 state performance report*. Retrieved June 17, 2008, from <http://www.tea.state.tx.us/perfreport/aeis/2007/state.html>
- Texas Education Agency (2008a). *Technical digest 2006-2007: Chapter 2: Texas Assessment of Knowledge and Skills (TAKS)*. Retrieved August 10, 2008, from <http://www.tea.state.tx.us/student.assessment/resources/techdig07/Chapters/Chapter2-TexasAssessmentofKnowledgeandSkills.pdf>
- Texas Education Agency (2008b). *Technical digest 2006-2007: Chapter 16: Reliability*. Retrieved August 8, 2008, from <http://www.tea.state.tx.us/student.assessment/resources/techdig07/Chapters/Chapter16-Reliability.pdf>
- Texas Education Agency (2008c). *Technical digest 2006-2007: Chapter 17: Validity*. Retrieved August 8, 2008, from <http://www.tea.state.tx.us/student.assessment/resources/techdig07/Chapters/Chapter17-Validity.pdf>
- Thompson, S. J., & Thurlow, M. L. (2001). Participation of students with disabilities in state assessment systems. *Assessment for Effective Intervention, 26*, 5-8.
- Thompson, S., Thurlow, M., Staples, L. (2001). *State level awareness of the participation and performance of students with disabilities on district assessments*. Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. Retrieved November 19, 2008, from

http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1a/6d/f6.pdf

- Thurlow, M., Altman, J., Cormier, D., & Moen, R. (2008). *Annual performance reporting: 2005-2006 state assessment data*. Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. Retrieved August 7, 2008, from <http://cehd.umn.edu/NCEO/OnlinePubs/APRreport2005-2006.pdf>
- Thurlow, M. L., House, A. L., Scott, D. L., & Ysseldyke, J. E. (2000). Students with disabilities in large-scale assessments: State participation and accommodation policies. *Journal of Special Education, 34*, 154-163.
- Thurlow, M. L., & Johnson, D. R. (2000). High-stakes testing of students with disabilities. *Journal of Teacher Education, 51*, 305-314.
- Thurlow, M. L., Langenfield, K. L., Nelson, J. R., Shin, H., & Coleman, J. E. (1998). *State accountability reports: What are states saying about students with disabilities? (Technical Report 20)*. Minneapolis, MN, University of Minnesota, National Center on Educational Outcomes. Retrieved November 19, 2008, from <http://education.umn.edu/NCEO/OnlinePubs/Technical20.htm>
- Thurlow, M. L., Lazarus, S. S., Thompson, S. J., & Morse, A. B. (2005). State policies on assessment participation and accommodations for students with disabilities. *The Journal of Special Education, 38*, 232-240.
- Thurlow, M. L., & Wiley, H. I. (2006). A baseline perspective on disability subgroup reporting. *The Journal of Special Education, 39*, 246-254.

- Thurlow, M., Wiley, H. I., & Bielinski, J. (2003). *Going public: What 2000-2001 reports tell us about the performance of students with disabilities (Technical Report 35)*. Minneapolis, MN, University of Minnesota, National Center on Educational Outcomes. Retrieved August 1, 2008, from <http://education.umn.edu/NCEO/OnlinePubs/Technical35.htm>
- Trout, A. L., Nordness, P. D., Pierce, C. D., & Epstein, M. H. (2003). Research on the academic status of children with Emotional and Behavioral Disorders: A review of literature from 1961-2000. *Journal of Emotional and Behavioral Disorders, 11*, 198-210.
- Turnbull III, H. R. (2005). Individuals with Disabilities Act Reauthorization: Accountability and personal responsibility, *Remedial and Special Education, 26*, 320-326.
- U.S. Department of Education (2003). *No Child Left Behind: Accountability and Adequate Yearly Progress (2003)*. National Title I directors' conference 2003. Retrieved July 23, 2008, from <http://www.ed.gov/admins/lead/account/ayp2003/edlite-index.html>
- U.S. Department of Education (2004). *NCLB: Overview*. Retrieved March 2, 2008, from <http://www.ed.gov/nclb/overview/intro/4pillars.html>
- U.S. Department of Education (2005). *Stronger accountability: How No Child Left Behind benefits African Americans*. Retrieved July 31, 2008, from <http://www.ed.gov/nclb/accountability/achieve/nclb-aa.html>

- U.S. Department of Education (2007). *Building the legacy: IDEA 2004: Topic: Alignment with the No Child Left Behind Act*. Retrieved July 23, 2008, from <http://idea.ed.gov/explore/view/p/%2Croot%2Cdynamic%2CTopicalBrief%2C3%2C>
- U.S. Department of Education (2008a). *Lead and manage my schools: State standards and assessment update*. Retrieved July 23, 2008, from <http://www.ed.gov/admins/lead/account/statesystems.html>
- U.S. Department of Education (2008b). *Adequate Yearly Progress*. Retrieved July 23, 2008, from http://answers.ed.gov/cgi-bin/education.cfg/php/enduser/std_adp.php?p_faqid=6&p_created
- Uyeno, R., Zhang, S., & Chin-Chance, S. (2006). The role of demographic factors in predicting student performance on a state reading test. Paper presented at the Annual Meeting of the American Educational Research Association: San Francisco.
- Vannest, K. J., Mahadevan, L., Mason, B., Temple-Harvey, K. K. (in-press). Educator perceptions of the impact of No Child Left Behind on special populations. *Remedial and Special Education*.
- Vannest, K. J., Parker, R., Harvey, K., & Ramsey, L. (accepted with revision). Evidence for practice, effective academic interventions for students with emotional and behavioral disorders and their magnitude of effect size. *School Psychology Quarterly*.

- Wagner, M., & Cameto, R. (2004). *The characteristics, experiences, and outcomes of youth with emotional disturbances: A report from the National Longitudinal Transition Study 2, Volume 3, Issue 2*. Minneapolis, MN, University of Minnesota: National Center on Secondary Education and Transition.
- Wanker, W. P., & Christie, K. (2005). State implementation of the No Child Left Behind Act. *Peabody Journal of Education, 80*, 57-72.
- Watkins, M. W., Lei, P-W., Canivez, G. L. (2007). Psychometric intelligence and achievement: A cross-lagged panel analysis. *Intelligence, 35*, 59-68.
- Wehby, J. H., Lane, K. L., & Falk, K. B. (2003). Academic instruction for students with emotional and behavioral disorders. *Journal of Emotional and Behavioral Disorders, 11*, 194-197.
- Wood, N. B., Lawrenz, F., Huffman, D., & Schultz, M. (2006). Viewing the school environment through multiple lenses: In search of school-level variables tied to student achievement. *Journal of Research in Science Teaching, 43*, 237-254.
- Ysseldyke, J., Nelson, J. R., Christenson, S., Johnson, D. R., Dennison, A., Triezenberg, H., Sharpe, M., & Hawes, M. (2004). What we know and need to know about the consequences of high-stakes testing for students disabilities. *Exceptional Children, 71*, 75-96.

Ysseldyke, J., Dennison, A., Nelson, J. R. (2003). *Large-scale assessment and accountability systems: Positive consequences for students with disabilities*. Minneapolis, MN, University of Minnesota. Retrieved August 1, 2008, from <http://education.umn.edu/NCEO/OnlinePubs/Synthesis51.html>
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