ABSTRACT

Title of Dissertation: WHAT IS THE RELATIONSHIP BETWEEN
SOCIAL SUPPORT AND ACHIEVEMENT
FOR STUDENTS WITH AND
WITHOUTHOUT LEARNING DISABILITIES
FROM BLACK AND LATINO
BACKGROUNDS?

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The purpose of this study was to explore the relationship between social support sources (i.e., Parents, Teachers, Classmates, and A Close Friend) and subtypes (i.e. Emotional, Instrumental, Appraisal, and Informational) on academic success. Specifically, social support perceptions and achievement outcomes of adolescents with and without learning disabilities were examined. Adolescents in 6th through 8th grade participated by completing a survey, the *Child and Adolescent Social Support Scale* (*CASSS*; Malecki, Demaray, & Elliott, 2000). Moreover, following survey administration student achievement was assessed through mathematics and English Language Arts (ELA) scores on the *Massachusetts Comprehensive Assessment System* (*MCAS*). The results from the investigation suggest that students with and without learning disabilities are similar in the area of support and achievement. Furthermore, negative and positive effects resulted in the areas of classmate and parent support. Based on these findings, implications and future directions for research are discussed.

WHAT IS THE RELATIONSHIP BETWEEN SOCIAL SUPPORT AND

ACHIEVEMENT FOR STUDENTS WITH AND WITHOUTHOUT LEARNING

DISABILITIES FROM BLACK AND LATINO BACKGROUNDS?

By

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Dedication

I dedicate this dissertation to my loving parents, family, and friends who provided me with encouragement, support, and prayers throughout this entire process. There is no way that I would have had the determination to begin and complete this dissertation without your constant cheering and reassurance during the ups and downs.

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CHAPTER I

Introduction to the Problem

Statement of the Problem

Each year as students enter middle school they are at risk for academic decline
and failure as a consequence of emotional, physical, and cognitive transformations
(Simmons & Blythe, 1987). Adolescence is categorized by physical changes such as the
development of sexual organs and increases in height, and weight (Newman et al., 2008).
Simmons and Blythe (1987) indicate that physical changes experienced by adolescents
are accompanied by emotional shifts that can cause negative feelings in the areas of self-
image and self-esteem. Moreover, adolescent achievement also becomes problematic in
middle school and frequently receives attention from researchers and educators
(Alspaugh, 1998; Anderman, 1998; Eccles et al., 1993).

Achievement concerns for adolescents are well founded given that academic
performance steadily deteriorates during the transition from elementary to middle school
(Alspaugh, 2001; Anderman, 1998; Chung, Elias, & Schneider, 1998; Eccles et al.,
1993). Investigators found that gender (Chung et al., 1998; Simmons, Black, & Zhou,
1991) and race (Simmons et al, 1991) impact the degree of achievement decline.
Specifically, males are at greater risk than females for achievement decreases (Chung et
al., 1998; Simmons et al., 1998) and Black students are more vulnerable to academic
failure than their White counterparts (Simmons et al., 1991). Although Black students
are among the most at-risk during this tumultuous period, they are frequently overlooked
in the middle school achievement and transition literature (Simmons et al., 1991).

To counter negative effects of middle school, researchers examine ways to support young boys and girls within the general education population (Simmons & Blyth, 1987). Eccles and colleagues (1993) hypothesized that students struggle emotionally and academically in middle school due to a mismatch between the middle school social environment and students' self-concept and motivational needs. As a solution to middle school difficulties authors explore the relationship between social influences, such as support and achievement outcomes. Findings with representative (Rosenfeld, Richman, & Bowen, 2000), Black, and Latino (Gutman & Midgley, 2000; Lee & Smith, 1999; Malecki & Demaray, 2006) populations indicate that high levels of perceived support from family, peers, and/or teachers correlate with increased academic success.

Although the relationship between social support and academic achievement is well researched for adolescents within the general education population (Gutman & Midgley, 2000; Lee & Smith, 1999; Malecki & Demaray, 2006; Richman et al., 1998a, 1998b; Rosenfeld et al., 2000), there are few investigations that include samples of students with learning disabilities (Flemming, Cook, & Stone, 2002). This is particularly surprising given that adolescents with disabilities frequently encounter greater academic (i.e., math and science) decline during the middle school transition when compared to their general education peers (Anderman, 1998). In addition to increased academic difficulties during the middle school experience, students with learning disabilities are at greater risk for dropping out of high school (Mitchell, 1997; Wagner, 1991). When racial and socioeconomic factors and considered, students of color with learning disabilities from lower socioeconomic backgrounds are among the least likely to graduate (Orfield, Losen, Wald, & Swanson, 2004).

Due to the discouraging graduation rates among students with learning disabilities social support research with this group of students should be prioritized. Particularly, investigations that include students of color from lower socioeconomic backgrounds are necessary. However, students of color are over-represented in special education, which makes the student classification "learning disability" less reliable (Donovan, Cross, & Department of Education, 2002). There is a large body of literature that indicates Black males (Harry & Anderson, 1994) and students of color from economically disadvantaged backgrounds (O'Connor & Fernandez, 2006) are more likely to be given an inappropriate disability classification. These incorrect labels lead to student removal from the general education classroom, inadequate services, and social difficulties.

Hence, the experiences of students with learning disabilities often differ from that of their general education peers. Specifically, students with learning disabilities report peer rejection at higher levels than their general education peers (Wentz-Gross & Siperstein, 1996). The unique social experiences of students with learning disabilities indicate that differences among the populations exist. Therefore, despite inconsistencies and issues with the special education placement system, investigations that include students labeled as "learning disabled" will add to the current literature by showing the perceptions of this group.

Moreover, due to the educational and social challenges that exist for adolescents with learning disabilities researchers have explored how these youth successfully transition from adolescence into adulthood (Goldberg, Higgins, Raskind, & Herman, 2003; Murray & Naranjo, 2008). Qualitative researchers found that graduating African American high school seniors (Murray & Naranjo, 2008) and thriving adults (Goldberg et

al., 2003) with learning disabilities cite social support as a key component of their

success. Based on the reports from successful graduates and adults with disabilities,

there is a need for additional explorations of perceived social support in relation to

academic outcomes for students with learning difficulties. Currently, there is a limited

body of literature in this area of scholarship that includes Black and Latino students from

lower socioeconomic backgrounds (Flemming et al., 2002).

Background

The background for investigations on support and achievement comes from the

mental health literature. Several authors working with general education populations use

the buffering theory as their conceptual framework (Gutman & Midgley, 2000; Malecki

& Demaray, 2006). The buffering theory of social support suggests that the way an

individual perceives support from others impacts his or her mental health (Vaux, 1988).

Specifically, people who perceive high levels of support do not have high levels of

distress despite the occurrence of negative or stressful events such as job termination,

birth, injury, sickness, and grieving (Cobb, 1976; Wilcox, 1981). Social support is cited

as a buffer or preventative factor against two negative outcomes, stress (Cassell, 1974;

Cutrona & Russell, 1990; House, 1981; Lin & Ensel, 1989) and depression (Alloway &

Bebbington, 1987; Fiore, Coppel, Becker, & Cox, 1986), because it helps the recipient

cope when difficult life events occur.

The theoretical literature surrounding the buffering theory of social support is

founded on investigations with adults, yet the theory is also applicable to adolescents.

Research shows that while adults experience stress from sources such as jobs (Cobb,

1976); adolescent stress frequently results from school issues, dating, parental disputes,

and expectations surrounding achievement (Eccles et al., 1993; Elias, 1989, 1992; Elkind, 1984). Of the existing stressors experienced by adolescents, academics and school related issues reoccur in the literature as a major source of pressure.

Moreover, academic pressure and stress is frequently exacerbated for adolescents who are members of stigmatized groups (Good, Aronson, Inzlicht, 2003). Steele and Aronson (1995) conducted research on "stereotype threat" and found that students who identified with a stereotyped group (e.g., minorities, females, low-income backgrounds) experienced higher levels of academic distress because they felt pressure to disconfirm stereotypes. The authors found that Black participants perform worse than their White participants on tests presented as a measure of their intellectual abilities. However, test scores of Black participants improved drastically when the assessment was presented as a laboratory problem-solving task. The researchers determined that the "stereotype-threat" effect was related to student apprehension to confirm negative stereotypes about their group's intellectual abilities.

In addition to potential issues with stereotypes, adolescents who live in lower socioeconomic communities are likely to experience additional pressure from exposure to racism, neighborhood hassles, and poverty (Mincy, Sawhill, & Wolf, 1990). These likely stressors are reflected within the buffering theory of social support. The theory suggests that adults and adolescents benefit from support in multiple areas, such as adjustment (Demaray & Malecki, 2002), decreased stress (Nelson et al., 1988), increased academic success (Gutman & Midgley, 2000; Richman et al., 1998; Rosenfeld et al., 1998, 2000), and fewer problem behaviors such as drug use (Nelson et al., 1988; Windle, 1992).

This investigation seeks to build on the existing body of knowledge by considering the relationship between achievement and perceived support from family, peers, and teachers, which differs from examinations of actual social networks and friendships. Perceived social support is defined as personal views of support based on one's experiences (Vaux, 1988). In contrast, social networks and friendships are multidimensional constructs of the actual or existing ties between the students and others (Wasserman & Faust, 1994). Although perceptions of support are based on individuals in the social network, identifying the quantity or listing people in the network is not required to assess perceived support (Demaray & Malecki, 2002; Flemming et al., 2002; Gutman & Midgley, 2000; Lee & Smith, 1999; Martinez, 2006; Richman et al., 1998; Rosenfeld et al, 1998, 2000).

Like social networks and friendships, perceived social support is comprised of many facets. Tardy (1985) illustrated the multi-dimensionality of social support by posing a five-component model that lends itself to assessment. The model includes; (a) "direction, which is received or provided support, "(b) disposition," examines whether the support is available or used, (c) "description and evaluation," indicates either rating satisfaction of support or describing the support, (d) "content," illustrates subtypes of support (i.e., Informational, Emotional, Appraisal, and Instrumental) and, (e) "network," comprises people who the student considers part of his or her life.

These five components of social support have various short and long-term costs and benefits for the support provider and receiver (Schumaker & Brownell, 1984). Schumaker and Brownell (1984) explained that the type of support someone receives might start out as positive and effective, but cease to make an impact over time. Four

types of support that recur in the literature are Emotional (e.g., caring actions or behaviors), Appraisal (e.g., feedback or evaluation), Informational (e.g., advice to solve an issue or achieve a goal), and Instrumental (e.g., resources, time, or skills). The costs and benefits associated with each type of support vary. For instance, an individual receiving Emotional support may immediately experience higher levels of self-esteem, greater security, and confidence. However, overtime he or she may become dependent, over-confident, or anxious. Hence, the feelings of insecurity and dependence result in an "inferiority-superiority" relationship because the support recipient feels threatened (Fisher, Nadler, & Whitcher-Alagna, 1982). In response to this dynamic, the receiver may react negatively to assistance or refuse to seek necessary aide.

In addition, the support recipient's perception of the support provider influences whether he or she feels comfortable and therefore willing to engage in support exchanges or seek out necessary assistance. Specifically, positive and negative regard of support sources influence the recipient's views and reactions. Research findings suggest that different individuals in the support network are used for varying types of support (Furman & Buhrmester, 1985; Morrison, Laughlin, Miguel, & Wadmna, 1997; Richman et al., 1998; Rosenfeld et al., 1998; Malecki & Demaray, 2003; Wentz-Gross & Siperstein, 1997). Hence, differences of perceived or used support may also be attributed to naturally occurring variance among support sources.

Moreover, varying perceptions, costs, and benefits of support could be the result of differing cultural views. Given that the theoretical framework of social support comes from mental health investigations the availability and utilization of support may change based on cultural perceptions of mental illness. Specifically, Blacks (Sussman, Robins,

& Earls, 1987), Latinos (Hough, Landsverk, Kamo, Burnam, & Timbers, et al., 1978), and Asians (Lee, Juan, Martinez. Hsu, & Robinson, et al., 2009) are among the least likely to seek out assistance when depression occurs. Within the theoretical framework of social support, differences based on racial attitudes towards mental health are not frequently explored (Alloway & Bebbington, 1987; Lin & Ensel, 1989; Wilcox, 1981). Due to this gap, the buffering effect of social support on mental health and other outcomes may differ across populations depending on cultural beliefs. Therefore, it is important to examine stressors and support perceptions with students of color from a variety of socioeconomic backgrounds.

Overall, investigations on social support and achievement should acknowledge racial differences, costs, benefits, and multiple dimensions of support. However, based on these theoretical factors and previous investigations there are other constructs that could contribute to achievement that need to be carefully examined. According to authors, race (Flemming et al., 2002), SES (Malecki & Demaray, 2006), gender (Flemming et al., 2002), previous achievement (Gutman & Midgley, 2000; Lee & Smith, 1999), and grade level (Flemming et al., 2002; Martinez, 2006) are variables that should be considered. The current findings indicate that students frequently differ across the variables; therefore to ensure that results are a reflection of different levels of perceived support these potential confounding factors must be considered.

In addition to confounds, investigators must also think about the measurement tool selected to assess achievement and support. Current social support research conducted with students of color from lower socioeconomic backgrounds shows that scholars use achievement outcomes with varying levels of rigor such as GPA (Gutman &

Midgley, 2000, Malecki & Demaray, 2006) or standardized test scores (Lee & Smith, 1999). In addition, investigators also select instruments that examine multiple (Flemming et al., 2002; Lee & Smith, 1999; Malecki & Demaray, 2006) or single (Gutman & Midgley, 2000) sources of perceived support. Despite this existing scholarship additional investigations that examine specific sources and subtypes of social support with this group of students are necessary (Malecki & Demaray, 2006).

Instruments that assess specific subtypes of support may yield better results because various categories of supportive actions require a different process and level of commitment from the recipient and provider (House, 1981; Tardy, 1985). For example, giving a student lunch money (i.e., Instrumental support), requires a different level of commitment than tutoring a student in the area of mathematics during lunch everyday (i.e., Informational and Appraisal support). The cost and benefit of each support differs for the provider and recipient.

Therefore, delineating between types of support will provide a more detailed and accurate look into what specific mechanisms of support relate to participant outcomes (Cutrona & Russell, 1990; House, 1981; Tardy, 1985). Frequently general support or a single subtype from one or two sources is explored limiting the application of the results (Flemming et al., 2002; Gutman & Midgley, Lee & Smith, 1999; Martinez, 2006). Examinations of support sources and subtypes with special education students from varying ethnic and socioeconomic backgrounds are necessary based on the limited body of literature in this area of scholarship (Flemming et al., 2002).

Purpose

The purpose of this study was to address gaps in the current literature by evaluating the relationship between support and achievement for students of color with and without learning disabilities from lower socioeconomic backgrounds. Current findings on the support perceptions of students with and without disabilities are problematic due to conflicting results from instruments that assess different support subtypes (Flemming et al., 2002; Martinez, 2006; Wentz-Gross & Siperstein, 1997, 1998). In addition, investigations of social supports that include adolescents with and without disabilities frequently compare student perceptions without incorporating any achievement measures (Martinez, 2006; Wentz-Gross & Siperstein, 1997, 1998). Within studies that explore student achievement and social support, varying levels of rigor among the academic assessments make the findings difficult to compare (Lee & Smith, 1999; Malecki & Demaray, 2006; Richman et al., 1998; Rosenfeld et al., 1998, 2000).

However, with the exception of Flemming et al. (2002), the primary gap within the social support and achievement investigations is the exclusion of students with learning disabilities from diverse ethnic backgrounds. This investigation examines the construct of support with a sample of primarily Black and Latino adolescents in the general and special education population from lower socioeconomic backgrounds. The current study of social support subtypes and sources in relation to the mathematics and English Language Arts (ELA) achievement of students with and without learning disabilities may provide useful information about the population.

Significance of the Review and Potential Investigations

Information from this investigation on the relationship between disability status and achievement (i.e, mathematics and ELA) can be used to inform practitioners and

families. Specifically, adults working with students of color from lower socioeconomic background can better understand the significance of specific subtypes of support and disability status in relation to ELA and mathematics success. By examining support variation among adolescents with and without learning disabilities, unique student needs can be considered in place of a "one size fits all" approach. Based on the promise of social support sources and typologies several research questions are presented in the next section.

Research Questions

This study addresses whether overall support perceptions (i.e., sum across support sources), individual support sources, and support subtypes account for the relationship between annual statewide assessment scores (i.e., mathematics and ELA) among students with and without learning disabilities.

1. Research Question (RQ) 1: Does disability status moderate the effect of overall social support (i.e. sum of support from teachers, parents, peers, a close friend) perceptions in relation to academic outcomes (i.e., ELA and mathematics)?

2. Research Question (RQ) 2: Does disability status moderate the effect of support from parents, peers, a close friend, and/or teacher in relation to academic outcomes (i.e., mathematics and ELA)?

3. Research Question (RQ) 3: Does disability status moderate the effect of support subtypes (i.e., Informational, Appraisal, Emotional, and Instrumental) from different sources?

Definition of Terms

Achievement. Student academic attainment based on Grade Point Average (GPA) and/or standardized test scores in the area(s) of English Language Arts (ELA) or mathematics.

Adolescence. In this review the focus is on early adolescence, which is categorized as students in 5th through 8th grade. Students enrolled in these grades are within the range of early adolescence described by Newman et al. (2008).

Friendships. A multi-dimensional relationship that involves identifying any reciprocated or unilateral relationships, characteristics of individuals identified as "friends," and the quality of the associations (Hartup, 1996).

Learning disability. Students with an Individualized Education Plan (IEP) that indicates he or she has:

A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations (IDEA 2004, Section 602, Part A).

Reading disability. A student with an IEP that indicates he or she has difficulty with decoding or comprehension and therefore receives services in one or both areas.

Math disability. A student with an IEP that indicates he or she has difficulty with problem solving, calculation, or visual spatial components of math and therefore receives services in one or both areas.

Middle school. An educational institution for students enrolled in 6th through 8th grade or 7th through 9th grade. Students in k-8 schools are excluded from this definition due to the environmental differences within a k-8 setting (Alspaugh, 2001).

Middle school transition. A process evidenced by student matriculation from elementary to middle school. Depending on the school system this may be a linear middle school model (e.g., one elementary to one middle school to one high school) or a pyramid middle school model (e.g., several different elementary schools to fewer middle schools to fewer high schools) (Alspaugh, 2001).

Social support. How a student assesses the availability of Instrumental, Appraisal, Emotional, and Informational support and perceives positive interactions with available people in their in their social network such as parents, teachers, and peers (Malecki & Demaray, 2002, 2006). There are several types and sources of social support which include:

> **Academic support.** Anytime an individual provides encouragement, reinforcement, and motivation to engage in academic activities or behaviors (Flemming et al., 2002).

> **Appraisal support.** This support is characterized by feedback or evaluation given to a student in relation to an academic or social issue (Tardy, 1985).

Classmate support. Support from peers whom attend the same school and one or more classes with the student daily or weekly (Malecki et al., 2000).

A Close friend support. Support from a peer that attends the same school or lives in the same community as the respondent (Malecki et al., 2000).

Emotional support. This is evidenced by providing a student with comfort or encouragement during a time of need. This type of support is characterized by behaviors that show the student someone cares for him or her (Tardy, 1985; Wentz-Gross & Siperstein, 1997).

Informational support. This refers to giving a student assistance to solve a problem in an academic or social area of his or her life.

Instrumental support. Support characterized by giving another individual a tangible resource such as money, materials, or clothing (Tardy, 1985).

Parent support. Support from mothers, fathers, and legal guardians that act as the caregiver for the adolescent inside of the home.

Problem solving support; Informational support. When a student receives assistance or advice to solve an issue or locate an answer. This could be in relation to an academic or social issue (Tardy, 1985; Wentz-Gross & Siperstein, 1997).

CHAPTER II

Review of the Literature

This chapter reviews literature on the relationship between support and achievement for youth with and without learning disabilities. In addition, there is a discussion of the theoretical constructs in the area of social support. The topics are as follows, (a) theoretical background, (b) existing literature, and (c) discussion.

Succeeding academically in middle school can be challenging for adolescents who must deal with environmental, emotional, physical, and cognitive changes (Simmons & Blythe, 1987). In fact, many students experience a significant decline in their rate of achievement as they transition to middle school (Alspaugh, 1998; Anderman, 1998; Chung, Elias, & Schneider, 1998). Eccles and colleagues (1993) found that the middle school social environment is not aligned to students' self-concept and motivational needs. This is evident since the type of middle school in which students are enrolled frequently determines the degree of academic success (Alspaugh, 1998). Specifically, students moving from small elementary schools to larger middle schools are most at risk academically, while those who do not transition (i.e., children in K-8 schools) achieve at higher levels.

Although the causes of middle school difficulty are often discussed, the subsequent decrease in academic growth can begin a cycle of failure that leads to dropping out of school (Eccles, Lord, & Midgley, 1991; Eccles, Midgley, Wigfield, Buchman, Reuman, & Flanagan, 1993). Research shows that academic issues experienced during the transitional period are exasperated depending on the student's race and ethnicity (Simmons et al., 1998). Simmons and colleagues (1998) found that

Black males are the most vulnerable to academic failure during middle school in comparison to Black females and White students.

Despite the large area of scholarship on middle school transition for general education students, additional examinations of how students with learning disabilities (Forgan & Vaughn, 2000) and those from ethnic minority backgrounds (Simmons et al., 1998) fare academically during the period are necessary. With a representative sample, Anderman (1998) found that students with disabilities are chiefly at risk during adolescence due to higher rates of mathematics and science achievement decline when compared to their general education peers. In contrast, Forgan and Vaughn (2000) found that changes in ELA achievement were similar among students in the general and special education population. Although transition findings vary across studies, adolescents with learning disabilities are frequently considered an at-risk group because they are more likely to experience failure and drop out of high school (Mitchell, 1997; Wagner, 1991). Dropout data indicates that the rates of secondary discontinuation are greatly magnified when the student with the disability is African American or Latino from an economically disadvantaged background (i.e., 32% graduation rate) (Orfield et al., 2004). To reduce drop out rates among secondary students Kemp (2006) suggested providing early intervention services to at-risk students in middle school.

Social support is potentially an important component of efforts to increase middle and high school success based on accounts from individuals with learning disabilities who successfully matriculate from adolescence into adulthood. Murray & Naranjo (2008) interviewed African American high school seniors with learning disabilities and found that they credit their academic success to support from parents and teachers in

addition to their willingness to ask for assistance from adults. In a twenty-year longitudinal study, participants (i.e., average of 32.1 years) with learning disabilities also indicated that actively seeking and receiving support from family members, mentors, peers, and educational staff allowed them to become thriving adults (Goldberg et al., 2003). These student and adult experiences suggest that adolescent perceptions of social support should be further explored to identify whether perceived support and academic risk are related.

Currently, findings from several studies with general education students from representative (Rosenfeld et al., 1998, 2000; Richman et al., 1998), Black, and Latino (Gutman & Midgley, 2000; Malecki & Demaray, 2006) backgrounds indicate that there is a significant relationship between adolescent perceptions of helpful or encouraging adult actions and academic success. Based on what we know about general education students from varying backgrounds, social support investigations with adolescents receiving special education services should also be conducted. In addition, these studies should focus on students with disabilities from lower socioeconomic backgrounds because of high dropout rates among the population (Orfield et al., 2004). The data can be used to help families, communities, and practitioners better understand student perceptions of support in relation to academic attainment.

There are few social support studies that include Black and Latino students with learning disabilities (Flemming et al, 2002). However, social support investigations conducted with students of color must also acknowledge classification issues among the group. Specifically, Black students from lower socioeconomic backgrounds are over represented in special education (Donovan et al., 2002; Harry & Anderson, 1994;

O'Connor & Fernandez, 2006). Findings show that these populations are frequently assigned "judgmental" classifications, which rely heavily on teacher opinion (Hosp & Reschly, 2004; O'Connor & Fernandez, 2006). These decisions have historically been most evident in certain classifications such as emotional disturbance or mental retardation, however the learning disability label is also problematic (Harry & Anderson, 1994).

Overrepresentation of students of color continues to be an issue in special education. Children from minority backgrounds who are placed in special education have unique experiences that are relevant to their social and academic success (Harry & Anderson, 1994). After a child is labeled as "learning disabled," he or she is potentially removed from the general education classroom, and may receive services that are inappropriate or void of rigor. In addition, the social consequences are evident through daily peer and adult interactions, in which students are stigmatized and forced to adopt coping strategies (i.e., positive and/or negative). While the special education eligibility process is flawed, the subsequent experience of the students should be examined since it differs greatly from that of their general education peers. The relevance of social support for the students placed into special education requires further examination to identify how these students perceive support and whether it is related to achievement outcomes.

Theoretical Background

In past studies, perceived support (Grannis, 1992; Nelson, Farberow, and Litman, 1988), social networks (Falci & McNeely, 2009; Hansell 1985; Ueno 2005), and friendship (Stevens & Prinstein, 2005; Wentzell & Caldwell, 1997; Wentzell, Barry, & Caldwell, 2004) were examined in relation to depression, stress, and/or achievement.

The focus of this review is student perceptions of support sources (i.e., family, peers, and teachers) in relation to achievement. Perceived social support is a construct that differs from social networks and friendship.

Specifically, the definition, components, and measurement associated with each framework vary. Perceived social support is defined as the way that an individual assesses and views support from others (Vaux, 1988), while social networks are the actual or existing ties between the students and others (Wasserman & Faust, 1994). In contrast, Hartup (1996) defines friendship as a multi-dimensional framework that requires (a) identifying existing reciprocated or unilateral relationships, (b) characteristics of those individuals, and (c) the quality of the associations.

In addition to varying definitions between the constructs, assessment of perceived support is based on student self-report support (Demaray & Malecki, 2002; Flemming et al., 2002; Gutman & Midgley, 2000; Lee & Smith, 1999; Martinez, 2006; Richman et al., 1998; Rosenfeld et al.,1998, 2000), while network or friendship examinations include reports from the individual and confirmatory information from others (Wasserman & Faust, 1994). The definitions and measurement associated with friendship, social support, and social networks indicate that each construct has unique aspects and vary greatly when distinguished.

Defining social support. There are several descriptions of social support, however Vaux (1988) defined it as the assessment and perception of support from others. For the purpose of this review the operational definition of social support is how a student assesses and perceives the availability of positive interactions with parents, teachers, and peers in their social network (Malecki & Demaray, 2002, 2006). This

definition is founded in the theoretical framework and constructs of perceived support, which are reviewed next.

Buffering theory of social support. Authors that explore social support with adolescents use two types of theories; (a) student development as the result of environmental interactions (Flemming et al., 2002; Lee & Smith, 1999), or (b) social support as a buffer or protective factor (Gutman & Midgley, 2000; Malecki & Demaray, 2006; Richman et al, 1998; Rosenfeld et al., 1998, 2000). Examining the interactions between the student and environment is founded on the belief that for each individual there is "process- person- context," in which environmental or external dynamics influence personal development (Bronfenbrenner, 1988). Bronfenbrenner and Ceci (1994) attribute development to "reciprocal interaction," positing that individuals are the product of personal attributes and external factors. Although "process-person-context" is related to adolescent development, the theory that drove this project was the buffering theory of social support. The "process-person-context" theory is more exclusive to social emotional development, while the buffering theory is associated with prevention of social emotional issues or other negative outcomes.

Within the buffering theory of social support protective utility is synonymous with buffering and refers to the way that significant individuals in a person's life foster mental wellness in the recipient by mitigating stressful or difficult periods (Weiss, 1974). Often when challenging situations occur individuals seek out available support to lessen the stress of the situation (Vaux, 1988). Investigators hypothesized that these accessible social supports act as a buffer between challenging life events and mental health

difficulties such as depression (Alloway & Bebbington, 1987; Fiore et al., 1986) and

stress (Cassell, 1974; Cutrona & Russell, 1990; House, 1981; Lin & Ensel, 1989).

Durkheim (1951) was one of the first researchers to argue that ties to society

through familial, neighborhood, and faith-based connections prevent suicide. Weiss

(1974) expanded the original idea by concluding that individuals without support

experience feelings of societal isolation and loneliness.   The negative feelings are likely

to occur when adults lacking support experience mental distress from stressful transitions

such as job loss, aging, pregnancy or birth; difficult situations, which include grieving,

hospital confinement, and recovering from injury or sickness; and psychological illnesses

like depression (Cobb, 1976).

Investigators examining the buffering effect of social support acknowledge that

various dimensions of support exist (Tardy, 1985). Tardy posed a five-dimensional

model of social support, "direction," "disposition," "description and evaluation,"

"content," and "network." The first dimension, "direction" refers to whether the support

is given or received. This component highlights that the cost and benefit to the giver and

receiver should be considered (Schumaker & Brownell, 1984).   Next, "disposition"

requires the respondent to indicate if the support is available (i.e., quality and/or quantity)

or used. The third aspect, "description and evaluation" refers to how one describes the

support and/or the degree of satisfaction.

The fourth dimension "content," is one of the central themes of this review

because general assessment of the construct often leads to criticism from theorists

(House, 1981; Tardy, 1985). House (1981) initially recommended that investigators

explore conceptual subtypes of support known as Emotional (e.g., caring actions or

behaviors), Appraisal (e.g., feedback or evaluation), Informational (e.g., advice to solve an issue or achieve a goal), and Instrumental (e.g., resources, time, or skills) support. Tardy (1985) suggested using this typology to measure social support because it builds an understanding of the provided support characteristics. Although actions that fit into each subtype are supportive, the commitment and process associated with each kind of support differs greatly. For instance, giving someone Appraisal through a positive comment is very different than giving Instrumental support by lending them money.

The subtypes of support posed by Tardy (1985) have previously been used by scholars (Malecki & Demaray, 2003), however theorists also suggest alternative social support subtypes (Cohen & Wills, 1985; Cutrona & Russell, 1990; Fiore et al., 1983). For instance, Cohen and Wills (1985) recommended evaluating Material, Emotional, Advice, and Social Companionship. The Material support is synonymous to Instrumental support, and Advice is encompassed in Informational support. The construct Social Companionship is not highlighted by Tardy, but authors (Malecki & Demaray, 2003) frequently use information from his four subtypes to assess characteristics of peer support.

Overall, theoretical work on subtypes indicates that despite suggestions regarding different labels and kinds of support, many of the subtypes posed in the varying models are similar and overlap. In addition, all investigators agree on the importance of relationship ties and distinguishing among support subtypes in order to provide more information about the connection between support and relevant outcome variables (Cohen & Wills, 1985; Cutrona & Russell, 1990; House, 1981; Tardy, 1985). Finally, the fifth dimension, "network" is the identification of people who receive and/or give

different types of support. House decided to use the term "network" instead of "source" because the support perceptions are based on two-way exchanges.

In another evaluation of social support, Weiss (1974) originally suggested subtypes of support through a model founded on the idea that six types of societal relationships foster mental wellness. The relationships include; (a) "attachment," someone feels that they have a safe and secure place with their loved ones; (b) "social integration," an individual has concern for others and vice versa; (c) "opportunity for nurturance," an adult takes care of a child and subsequently feels needed; (d) "reassurance of worth," someone is assured by others that he or she is competent; (e) "reliable alliance," someone receives consistent support and assistance from family; and (f) "the obtaining of guidance," an individual feels that they can confide in and trust someone for advice during stressful situations. Following the development and assessment of these categories Weiss described how children sought out different types of support from varying sources.

In accordance with Weiss' work, authors examine adolescent and child perceptions to establish the support subtypes that are sought from each source. Research indicates that students perceive teachers, parents, and/or peers as sources of different support types (Furman & Buhrmester, 1985; Malecki & Demaray, 2003; Wentz-Gross & Siperstein, 1997). Adolescents view parents as sources of affection, instrumental assistance, reliable help, and appraisal to enhance feelings of value (Furman & Buhrmester, 1985); or Emotional and Informational support (Malecki & Demaray, 2003). In contrast, teachers are perceived as sources of guidance (Furman & Buhrmester, 1985) or Informational support (Malecki & Demaray, 2003). Finally, peers are viewed as

outlets for companionship (Furman & Buhrmester, 1985), or Emotional andsupport (Furman & Buhrmester, 1985). Of course these perceptions vary based on learning disability status (Wentz-Gross & Siperstein, 1997).

According to findings surrounding support subtypes and sources, investigators who evaluate multiple kinds of support are more likely to find gradation that may be overlooked by more general assessments (Cohen & Wills, 1985; House, 1981; Tardy, 1985). Cutrona and Russell (1990) suggested that support-based interventions could be improved through identification of specific subtypes of social support that are related to the dependent variable. Without delineation among support types and sources the data will not indicate whether specific supports are more strongly related to the outcomes of interest.

In addition to perceptions of support sources there are significant short and long-term costs and benefits for the support recipient and provider (Schumaker and Brownell, 1984). Schumaker and Brownell (1984) indicate that a supportive exchange between two individuals has potential positive and negative short and long-term outcomes for the support provider and recipient. For instance, a support may start out as positive and effective, but lose its utility over time or become a negative factor.

Schumaker and Brownell (1984) suggest that an individual receiving high levels of Emotional support may immediately feel more secure and valued or the contrast, smothered, controlled, and/or dependent over time. Similarly, the theorists indicate that someone receiving Appraisal support could feel more self-confident resulting in strong self-identity or immediately over-confident and then egotistical following an elapsed time period. Next, the receipt of Informational support might lessen feelings of helplessness

thus increasing personal strength or make someone feel inadequate and then anxious in the long-term. Finally, Instrumental support may help someone meet the demands of a current task thus increasing their self-esteem; or evoke feelings of embarrassment and indebtedness with long-term effects of resentfulness and dependence. Based on this information, theorists suggest that the negative short and long-term effects of provided or enacted support are frequently in the area of self-esteem (Schumaker and Brownell, 1984). However, additional investigations are necessary to identify other areas such as achievement that are related to these short and long-term effects.

In one review, Fisher, Nadler, and Whitcher-Alagna (1982) suggested that general support given to an individual might result in decreased self-esteem depending on how the support provider is viewed. Specifically, negative views cause "inferiority-superiority" relationships to result, thereby making the recipient feel immediately threatened and harbor long-term thoughts of insecurity and/or dependence. In these instances the receiver may react negatively to assistance or avoid seeking aid.

In contrast, Cutrona and Russell (1990) suggested that the support recipient benefited positively when the subtype of support matched the issue causing stress, while Coyne and his colleagues (1988) found that unobtrusive support resulted in more benefits than costs. Of course when the provider is perceived positively, the recipient may feel that he or she is cared for and therefore he or she is willing to engage in and seek out supportive exchanges. Based on the bi-directional relationship between the recipient and provider there are also consequences for the support giver (Coyne et al., 1988; Schumaker and Brownell, 1984).

Often providers may become emotionally strained, overextended, stressed, or vulnerable because of the resources being used during instances where a loved one is facing a difficult situation, such as chronic illness (Schumaker & Brownell, 1984). Furthermore, Coyne, et al. (1988) found that when the support provider is over-involved emotionally the support given often becomes ineffective, especially over an extended period of time. This occurs because the support provider may begin to resent the receiver or feel fatigued because of the consistent involvement. In turn, the recipient might feel dependent, guilty, or frustrated because of the ongoing assistance. The investigators concluded that increased levels of support are not synonymous with better support, particularly when stressed individual are involved and face long-term effects, such as chronic illness. Despite costs that exist for the support giver, there are also benefits and specific motivations that lead people to engage in supportive exchanges. After giving support the provider is positively affected by feelings of self-efficacy, increased coping strategies, and strengthened ties to others (Schumaker & Brownell, 1984).

Although literature highlights both costs and benefits of social support on mental health, these outcomes likely vary for individuals based on racial differences or cultural beliefs. Within the buffering theory of social support literature the ethnicity of participants is frequently not disclosed (Alloway & Bebbington, 1987; Lin & Ensel, 1989; Wilcox, 1981). This may be attributed to small samples of minorities included in the studies because of cultural beliefs that depression is insignificant (Hough, Landsverk, Kamo, Burnam, Timbers et al., 1978; Lee, Juan, Martinez, Hsu, & Robinson, et al., 2009; Sussman, Robins, & Earls, 1987). These views frequently lead Blacks (Sussman, Robins,

& Earls, 1987), Latinos (Hough et al., 1978), and Asians (Lee, Juan, Martinez, Hsu, & Robinson, et al., 2009) to ignore signs of depression and not seek assistance.

Currently there are trends among people of color that indicate symptoms of depression may be overlooked, thus preventing cultural differences from being reflected within the buffering theory of social support literature. Latinos, Blacks, and Asians are less likely to acknowledge and seek mental health assistance due to community stigmas surrounding mental illness (Hough, Landsverk, Kamo, Burnam, Timbers et al., 1978; Lee, Juan, Martinez, Hsu, & Robinson, et al., 2009; Sussman, Robins, & Earls, 1987). Particularly, when socioeconomic status is controlled Blacks and Latinos do not seek out mental health services as frequently as their White counterparts (Padgett, Patrick, Bums, & Schlesinger, 1994). Within the populations, older Blacks (Bogner, Dobransky, & Wittink, 2008), foreign-born Latino immigrants, and those who use Spanish as their primary language are least likely to seek out help from health professionals (Alegria, Mulvaney-Day, Torres, Goa, & Oddo, 2007). In addition, Asians view mental health problems as within their locus of control and therefore do not access assistance (Lee, et al., 2009).

Furthermore, social support investigations that include adults and adolescents must acknowledge both cultural and developmental differences. Research shows that generally adolescents experience stress from school (Elkind, 1984; Elias, 1989), dating, issues with parents, and expectations surrounding achievement (Eccles et al., 1993; Elias et al., 1992). However, students who identify with a stigmatized group (e.g., ethnic minorities, females, low income students) experience additional academic stress that is associated with "stereotype threat" (Good, Aronson, & Inzlicht, 2003; Steel & Aronson,

1995). Authors suggest that the gender and race gaps observed on standardized tests are due to achievement anxiety that results from pressure to disconfirm stereotypes about the group to which the student belongs (Steele & Aronson, 1995). In addition to specific stressors associated with group membership, the environment in which students live can also be a source of stress. Specifically, adolescents living in lower socioeconomic communities experience stress from exposure to racism, neighborhood hassles, limited resources, and poverty (Mincy, Sawhill, & Wolf, 1990).

Overall, research on stress and adolescence indicates that there are varying sources of anxiety among teenagers and adults. While adults are concerned with issues such as job loss, injury, and grieving (Cobb, 1976); adolescents from both ethnic majority and minority backgrounds are more likely to experience academic pressure (Eccles et al., 1993; Elias et al., 1992; Good, Aronson, & Inzlicht, 2003). Despite existing differences among adults and adolescents, research shows that social support does buffer against stressors encountered by each population (Lin & Ensel, 1989; Nelson et al., 1988; Windle, 1992), although studies with Black students from urban communities are less promising (Grannis, 1992).

In one investigation, Wilcox (1981) tested the buffering effect of social support by examining the connection between social support, stressful life events, and psychological wellness. The author hypothesized that social support would mediate the relationship between stressful events and mental distress. To test the hypothesis, Wilcox surveyed 320 adult participants on anxiety, tension, life events, and social support. The results confirmed the author's initial hypothesis; individuals with higher levels of social support had lower feelings of distress despite stressful life events that arose.

In another study with adults, Lin & Ensel (1989) examined the buffering effect of social resources (support) and psychological resources (coping skills) against psychological distress (symptoms of mental illness) and stressful life events. Participants were 639 individuals from New York who completed surveys and two interviews regarding individual psychological health and stressful situations. Findings indicated that social supports decreased both psychological distress and stressful life events. In contrast, coping skills only buffered against psychological distress.

Despite promising findings for the buffering theory of social support with populations of adults, less is known about the impact of social support on adolescents' mental health. Adult participants deal with different life events, supports, and stressors than those experienced by teenagers. In an investigation conducted with 465 parents of teenagers and 1,644 youth (i.e., 12-20 years of age), Nelson et al. (1988) examined the impact of social support on suicide. Although increased stress from family or relationships and drugs and/or alcohol use was related to higher rates of suicide, social support from family members and friends prevented adolescent suicide.

In a similar study, Windle (1992) examined the relationship between stress levels, problem behavior, and social support from friends and family with middle school students (N= 277) during a 6-month period. Problem behaviors included drinking alcohol, depression, and antisocial actions. Data analysis showed a significant gender effect for girls. Specifically, females who had lower level of family support were more likely to consume alcohol ($R= -.25$), participate in delinquent activities ($R= -.20$), and feel depressed ($R= -.17$) after the initial 6-months. Burton, Stice, and Seely (2004) examined the implications of this research by testing the relationship between stress,

negative events, and social support with a sample of 496 adolescent females from public and private schools. The regression analysis indicated that girls with lower levels of peer (*R= .24*) and parent (*R= .25*) support were more likely to experience symptoms of depression. Windle and Burton et al. show that girls are more likely to experience negative outcomes when support is low.

Finally, in one of the first studies to examine in-school stress factors, Grannis (1992) measured the relationship between school stressors, psychological wellness (distress), social support within the school environment, and achievement. Participants were 90 African American students in the 8th grade from an urban middle school. The data indicated that students experiencing a high frequency of stressful events had higher distress levels and lower GPA scores. In-school social support did not significantly correlate with distress or academic achievement. In addition, students who reported higher levels of distress also reported receiving more in-school support, suggesting that the support did not reduce distress. Although Grannis (1992) found that in-school social support alone does not protect adolescents from academic failure or distress, the findings may vary depending on support subtype and population.

Together the previous findings suggest that social support is related to depressive symptoms and suicide in adults (Lin & Ensel, 1989; Wilcox, 1981) and adolescents (Burton et al., 2004; Nelson et al., 1988; Windle, 1992). What is still unclear is whether perceptions of specific subtypes of support from individuals in the social networks protect adolescents from academic failure. Investigations examining the relationship between adolescent achievement and social support from parents, peers, and teachers are reviewed to determine the utility of social support. Moreover, due to increased risk for

academic decline and school dropout in populations of youth with disabilities from ethnic minority lower socioeconomic backgrounds (Orfield et al., 2004), research focused on this group of students is of particular interest. The following section reviews adolescent perceptions of social support, and the relationship between social support and achievement for students with and without disabilities.

Method

I conducted my search using the University of Maryland's database systems *PsychINFO, Education Research Complete (EBSCO), Academic Search Premier, and ERIC. The descriptors that resulted in multiple articles included: "middle school," "middle school transition," "adolescence," "Learning Disability" or "Learning Disabled child" and "social support," "protective factors" or "social networks" and "Learning Disabilities," "academic achievement" or "GPA" and "social support." Additionally, ancestral searches of each text produced multiple relevant studies. I found applicable articles in the following journals:* Exceptional Children, Child Development, Journal of Youth and Adolescence, Journal of Learning Disabilities, Journal of Early Adolescence, Psychology in Schools, American Educational Research Journal, School Psychology Quarterly, Journal of Educational Research, Journal of School Psychology, The Journal of educational Research, Learning Disabilities Research and Practice, Child and Adolescent Social Work Journal, American Education Research Journal.

Selection Criteria

All of the studies included in the review met specific selection criteria. I did not limit the search according to a specific date; however no studies prior to 1997 were located through ancestral or electronic searches. Second, each investigation had to

include participants with or without learning disabilities in 5th, 6th, 7th, and/or 8th grade to ensure that investigators focused on populations of adolescents. In studies conducted with samples comprised entirely of general education students or students with learning disabilities, a measure for academic achievement had to be included. Studies without measures of achievement that compared students with and without disabilities were included because of the interest in comparisons of perceptions across groups.

In addition, any studies that examined student friendships, social networks, and/or academic self-concept were excluded based on the focus of perceived support and achievement scores. As previously discussed, social networks, friendships, and support perceptions are not synonymous. Each construct is comprised of different dimensions that are evaluated through varying techniques. Finally, studies that included populations of students outside of the United States and students classified with a disability other than a learning disability were excluded. This was to ensure that only achievement and support perceptions of students with and without learning disabilities within the US educational system were explored.

Results. My initial journal and article search resulted in 57 potential studies. The initial 57 studies were further narrowed through the previously disclosed selection criteria. Following my initial search I conducted an ancestral search of six journals to locate relevant articles: *Journal of Learning Disabilities, Journal of Youth and Adolescence, Psychology in Schools, American Education Research Journal, Child Development, and Exceptional Children.* The search resulted in three articles regarding middle school achievement, six addressing middle school transition and achievement, 21

involving perceptions of social support for general education students, and 27 regarding perceptions of social support for students with disabilities.

Based on the exclusionary criteria the resulting literature review comprises ten studies. Overall, six studies that explore perceived social support and academic achievement of students without disabilities, three studies that compare social support perceptions of adolescents with and without disabilities, and one study that investigates social support perceptions and the academic achievement of adolescents with and without disabilities. An overview of the reviewed articles is available in Appendix A. The following review of literature is divided into three sections, a) Students Without Disabilities: Social Support and Achievement, b) Students With Disabilities: Social Support Perceptions, and c) Students With Disabilities: Social Support and Achievement.

<div align="center">**Content Review**</div>

Students Without Learning Disabilities

Social Support and Achievement. There are many authors that examine support perceptions of general education students in relation to adjustment, stress, or depression (Burton et al., 2004; Grannis, 1992; Nelson et al., 1988; Windle, 1992). However, this content review only includes studies that explore support and achievement among the general population. Rosenfeld et al. (2000) investigated varying combinations of social support with a nationally representative population of students (N= 1,815) from 93 public middle and high schools. Of the studies reviewed, they were the only investigators to include an ethnically representative population. The researchers examined the impact of social support from adults at home, teachers, and peers on the

academic and social function of middle and high school students through a large-scale survey.

To obtain information about social support and school outcomes, Rosenfeld and colleagues (1997) administered a questionnaire with high alpha reliability (*r* = .80 to .97) called the *School Success Profile* (*SSP;* Bowen & Richman, 1996). The validity was established using correlations to psychological well-being and adjustment. The instrument assesses eight support types through 20-items and a 3-point Likert scales (for example, during the past 30 days the adults in your home made you feel appreciated). The questions were categorized as listening support, reality confirmation, emotional challenge, technical appreciation, technical challenge, task challenge, tangible support, and personal assistance (Malecki & Demaray, 2003). In addition, student grades were based on self-report.

The results showed that students with a combination of teacher support and another perceived support had higher achievement levels than those with a single support or other support combinations. Specifically, a medium effect size of .27 resulted between achievement and combined support from a teacher and home or a teacher and friend. Researchers concluded that students with combinations of support from three sources (i.e., home, teacher, and friend) are more likely to have increased levels of academic achievement. The results also indicated that one social support could not effectively predict academic success. In the following section similar studies conducted with general education students from lower socioeconomic backgrounds are explored.

In a related investigation with middle school students from lower socioeconomic backgrounds, Richman et al. (1998a) explored the relationship between school outcomes

and support from home, teachers, and friends. Participants were 525 students at-risk for

school drop out from 17 middle and high schools in North Carolina and Florida. All

students in the sample were classified as at-risk for school dropout because of their

participation in the *Community In Schools (CIS)* program, which attempts to prevent

students from discontinuing their education.   Authors did not disclose the qualifying

criteria for participation in the CIS program, however demographic information and

results for middle school students are discussed. Of the sample, 296 were middle school

students in 6th through 8th grade and 70.1% received free and reduced lunch. The

respondents were identified as predominately Non-Hispanic White (39.3%) and African

American (49.3%).

Like the Rosenfeld et al. (2000) study, social support data was based on the

School Success Profile (*SSP,* Richman & Bowen, 1996) and student grades were obtained

from student self-reports of their most recent report card. In this investigation, the

authors did establish the validity of the self-reported grades by comparing student

accounts and permanent record grades of 87 students. Findings were a moderate

correlation of .42 (math) and .66 (reading) between student reports and actual GPA

scores.

Authors used Discriminant Analysis (DA) to find existing relationships among

support and middle school achievement. Results showed that listening support ($r = .62$)

was the only support significantly related to grades. Moreover, middle school students

only perceived peers as a source of listening support, indicating that perceived peer

support has the strongest association with academic outcomes.

In a follow-up study, Rosenfeld et al. (1998b) compared students at risk (N1= 278) for school failure to those unidentified for risk (N2= 255). All participants qualified for free and reduced lunch and authors used participation in the CIS program to categorize risk status. The racial composition of the at-risk and non-risk group differed because of varying proportions of African American, Hispanic, and Caucasian students, which may indicate that resulting differences are a reflection of race.

Findings showed that the at-risk students had no statistically significant levels of perceived peer or teacher support. In addition, caretaker support was related to the academic outcomes of the non-risk students, but not for the at-risk group. However, neither at-risk or non-risk students identified neighbors as significant sources of any support. This indicates that students who are at-risk for school drop out do not view peers and teachers as sources of support and do not benefit academically from caretaker support.

In another investigation social support was explored among 257 African American students from students from lower socio-economic backgrounds, Gutman and Midgley (2000) hypothesized that students would experience significant academic decline during the middle school transition from 5th to 6th grade, and speculated that social support would prevent academic failure. Authors collected data on several variables (i.e., school belonging, parent involvement, academic self-efficacy, perceived teacher support); however the only variable related to this review is perceived support from teachers.

Researchers gathered data from permanent school records of GPA scores and the scale of perceived teacher support from the *Classroom Environment Scale* (*CES;* Moos &

Trickett, 1987). The teacher support measure has moderately strong internal consistency based on an alpha score of .79. In addition, there is established discriminant validity (r = .30), which provides some information about the validity of the measure (Fisher & Fraser, 1983); however criterion related validity with another instrument would be useful. The Likert scale survey includes eight questions regarding positive and negative perceptions of teachers (e.g., can you count on your teacher? does your teacher criticize you?). Student responses ranged from 1 (i.e., none of them) to 5 (i.e., all of them).

The analyses showed that students experienced GPA decline during the transition to middle school, which is aligned with previous findings (Alspaugh, 2001; Anderman, 1998; Simmons et al., 1991). High levels of perceived teacher support (r = .22) did not significantly correlate to achievement. After controlling for previous achievement only 3% of the variance was accounted for by perceived teacher support and feelings of belonging. In addition, regression analysis with 6th grade GPA as the dependent variable showed that interactions between parental involvement by feelings of school belonging (ΔR^2= .09) and parental involvement by perceived teacher support (ΔR^2= .05) were statistically significant.

In another study that compared groups of students, Malecki and Demaray (2006) examined the protective utility of social support for adolescents from an urban community. Researchers hypothesized that social support from parents, classmates, teachers, and close friends would better protect students classified as having lower SES status from academic failure when compared to their higher SES peers. Of the 164 participants 65% were Latino and 19% were African American. The students were

enrolled in 6th through 8th grade and researchers categorized them as having lower or higher SES backgrounds based on free or reduced lunch rates.

Investigators used 60 questions (e.g., my parent(s) help me make decision) from a rating scale called the *Child and Adolescent Social Support Scale* (*CASSS*; Malecki, Demaray, & Elliott, 2000) to evaluate student perceived Emotional, Appraisal, Informational and Instrumental support. The five subtests of the CASSS, parent ($a= .93$), teacher ($a= .95$), close friend ($a= .95$), classmate ($a= .92$), and school ($a= .93$) support have strong internal consistency and a test-re-test reliability of .78. Student responses indicate how often the support occurs, and the resulting scores have strong convergent validity ranging from .55 to .56 in relation to the *Social Support Scale for Children* (*SSSC;* Harter, 1985) and the *Social Support Appraisals Scale* (*SSAS;* Dubow & Ullman, 1989). Finally, student achievement was measured through permanent school GPA records.

Results showed that the GPA in the area of ELA for students from lower SES backgrounds had moderate correlations to all social support variables, such as total support ($r = .48$), parent support($r = .36$), and teacher support ($r = .44$). In contrast, no significant correlations between GPA and the independent variables were identified for students from higher SES backgrounds. A post hoc analysis illustrated significant slope interactions of lower SES by support from parents and teachers. Specifically, students from lower SES backgrounds with high levels of parent or teacher support had higher GPA scores, which did not occur for students from higher SES backgrounds. The regression analysis with GPA as the dependent variable showed that parent support ($R^2=$ .102), teacher support ($R^2= .137$), classmate support ($R^2= .075$), close friend support ($R^2=$

.078), and school support (R^2 = .090) contributed to the model. However, only two significant interactions resulted, SES by parent support (ΔR^2 = .026) and SES by classmate support (ΔR^2 = .027).

These findings led researchers to confirm part of their initial hypothesis that social support from parents and classmates moderates the relationship between SES and academic success. Specifically, students from lower SES backgrounds with high classmate or parent support earn high GPA scores, while the effect does not occur for students from higher SES backgrounds. Despite teacher and parent effects, SES moderation did not occur for teacher, close friend, or school support therefore a similar conclusion could not be drawn. This data establishes a relationship between support (i.e., parent and/or classmates) and achievement outcomes that was only weakly supported in the previous studies (Gutman & Midgley, 2000; Rosenfeld et al., 2000).

In another study, Lee and Smith (1999) examined the impact of social support on academic achievement, but chose to include a measure of academic press. The authors defined academic press as the level of expectation from the school staff. The study was conducted with 28,318 Latino and Black students in 6th and 8th grade from 304 Chicago Public Elementary Schools. Of the students included in the sample, 82.6% were classified as low income, 55% Black and 29% Latino.

Academic press was measured through surveys distributed to teachers (e.g., my school sets high standards for academic performance) and students (e.g., my teacher encourages me to do extra work when I don't understand). The social support variable was assessed through four adapted questionnaires in the areas of teacher concern, parent assistance, peer respect, and neighbor trust. Authors did not report reliability or validity

scores for the academic press or social support measures. The dependent variable was measured through standardized mathematics and ELA scores from the Iowa Test of Basic Skills.

The HLM analysis revealed that social support is related to increases in math (.017 SD) and ELA (.21 SD) achievement confirming the hypothesis that support perceptions are connected to achievement. In addition, as hypothesized the strength of the relationship between social support and achievement varied depending on the level of academic press. Students with high support at high academic press schools learned more in math (1.1 SD) and ELA (.80 SD) when compared to the Chicago Public Schools (CPS) average yearly achievement gains. Students with high support at medium academic press schools did not differ from students with medium support at high academic press. These students gained .5 SD in math and .4 SD in ELA when compared to the CPS yearly average academic gains. Finally, students with low support at low academic press schools learned less and actually regressed in math (-.6 SD) and ELA (-.4 SD). Results indicate that academic press acts as a mediator between social support and achievement within urban schools.

Summary. All of the studies with the exception of Rosenfeld (2000) were primarily conducted with students of color from lower socioeconomic backgrounds. In addition, although both lower SES and ethnic minority students are often explored together they are not always associated. Specifically, each category is unique and relates to achievement in different ways. Together the investigations suggest SES, academic press, risk for school dropout, and assessment of social support must be considered when examining the relationship between support and academic achievement (Gutman &

Midgley, 2000; Lee & Smith, 1999; Malecki & Demaray, 2006; Richman et al., 1998; Rosenfeld et al., 1998, 2000). Overall, the body of literature on support and achievement among the general population provides a background for similar studies that include children with learning disabilities. In the next section, I will review studies that investigate social support by comparing students with learning disabilities to their general education peers. The literature is organized as follows, (a) social support perceptions, and (b) social support and achievement.

Students With and Without Learning Disabilities

  Social Support Perceptions. Examinations of social support perceptions frequently include gender, at-risk students, or SES as independent variables. However, there are fewer comparisons between students with and without disabilities. Wentz-Gross and Siperstein (1997) examined student adjustment in relation to perceptions of social support for students in the general and special education population. Although several variables were included only support comparisons between students with and without disabilities are discussed. Participants were 106 students from a Massachusetts elementary school in 4th- 6th grade, and 15% were "minority" students. Furthermore, there was an array of participant needs based on the wide range of student IQ scores, 53 to 109.

  Although several previously reviewed studies included questionnaires to measure social support, Wentz-Gross and Siperstein (1997) conducted two interviews to assess the variable. During the first interview the investigators probed each child about specific people in their support network using questions were from a modified version of the *My Family and Friends Interview* (Reid, Landesman, Treder, & Jaccard, 1989). Then, in a

follow up interview students were required to select three previously identified

individuals to whom a specific inquiry was applicable. Authors provided no reliability

data, however validity was established by asking students what information they used to

determine their responses. The analysis of the open-ended answers indicated that more

than 90% of the respondents had an acceptable understanding of Emotional support (e.g.,

who makes you feel better?), Problem-solving support (e.g., who helps you find

answers?), and Companionship (e.g., who do you have fun with?).

The investigators used ANOVA and regression analyses to analyze the data, but

only the ANOVA results will be discussed since achievement was not a dependent

variable in the regression analyses (i.e., depression and adjustment). Findings from the

group by gender by type of support ANOVA suggested that students with disabilities

turned to people at home more often for Emotional support and less often for Problem-

solving support than their general education peers [F (2,204) = 3.80, $p < .02$]. The

relevance of the means is not explained or placed on a scale therefore the significance of

the group differences is difficult to interpret. Despite this limitation, the authors

concluded that differences across the populations occurred because family members lack

the knowledge necessary to help students with learning disabilities complete schoolwork.

Additional results showed students with learning disabilities were more likely to

turn to outside adults for Emotional support [F (2,204) = 47.68, $p < .001$], and less often

for Problem- solving support in comparison to their general education classmates. Both

groups of students viewed peers as primary sources of companionship however students

with disabilities perceived lower levels of that support in comparison to the general

education participants [F (1, 102) = 5.92, $p < .02$]. The investigators believed that lower

levels of companionship might be due to problematic social skill commonalities among students with learning disabilities.

In a follow-up study, Wentz-Gross and Siperstein (1998) included 436 students with and without learning disabilities in 6th- 8th grade with IQ scores ranging from 55 to 116. The students were selected from three northeast communities and student stress, adjustment, and support perceptions were assessed. Authors measured social support using a modified version of the *Friends and Family Interview* (Reid et al., 1989) from their 1997 study. However, their one-way MANOVA analysis examined overall levels of support instead of subtypes (i.e., Emotional, Problem Solving, and Companionship). Findings showed that students with learning disabilities reported lower levels of home [F (1, 417) = .38 $p<$ .n.s] and peer [F (1, 417) = 4.79 $p<$ .03] support in comparison to general education students. Students with learning disabilities perceived higher levels of outside adult support than their classmates [F (1, 417) = 13.51 $p<$ .001]. Together the findings from both studies (Wentz-Gross & Siperstein, 1997, 1998) indicate that students with learning disabilities view different levels of social support and use support sources differently than their general education peers.

In a similar study, Martinez (2006) investigated variations of perceived social support with a sample of students with and without learning disabilities in an inclusive middle-school setting. The ethnically representative sample included 120 general and special education students in 6th through 8th grade from 14 middle schools in central Texas with IQ scores ranging from 85 to 115. Students with learning disabilities were identified through the IQ discrepancy model, and Individualized Education Plans were reviewed for disability classification. Participants were divided into three categories: no

learning disability, single learning disability defined as a disability in one academic domain, and multiple learning disabilities described as a disability in two or more academic domains.

The author (Martinez, 2006) used the 24-item *Social Support Scale for Children* (*SSSC;* Harter, 1985) questionnaire to measure social support, which assesses student regard of others as positive. Each question includes two contrasting statements and students are required to select the statement that is most applicable to their life and then decide if it is "really true" or "sort of true." Internal consistency ranges from .74 to .86 for subscales administered to middle school students. The social support sections of the measure have moderate to strong convergent validity with the global self-worth subscale; parent ($r = .46$), classmate ($r = .42$), teacher ($r = .49$), and friend ($r = .46$) support.

The results suggested that students with multiple disabilities perceived less support from parents, classmates, and close friends when compared to their general education peers. Moreover, the lowest perceptions of support came from 6th grade students with multiple learning disabilities in the area of friend support, 8th grade males with multiple learning disabilities on measures of parent support, and 6th grade males with reading disabilities on ratings of teacher support. The data on gender aligns with previous studies that conclude males have lower perceptions of support than females (Malecki & Demaray, 2006). Students with a combined reading and math disability had overall lower support perceptions when compared to their general education and single learning disability peers. Moreover, the students with single learning disabilities did not significantly differ from their general education peers.

Social Support and Achievement. In contrast to other studies conducted with students receiving special education services, Flemming et al. (2002) investigated academic achievement in relation to social support. The investigators examined school support, teacher academic support, parent climate, and peer climate. Parent climate was measured through academic support and attention to misbehavior. Furthermore, peer climate was assessed with a measure focused on peer misconduct. Participants were 3,294 Latino and African American students in 5th- 8th grade from 19 schools in Chicago. Of the sample, 91% were categorized as low income, and 131 of the participants had learning disabilities.

The social support summary results and academic data came from a large database. The previously developed social support questionnaire had high internal consistency ranging from .80 to .88 for teacher, home, and school support, but no validity data was dislosed. Each subtest contained 15 to 17 questions based on a 5-point Likert scale that required students to reflect on social support from school staff (e.g., how much do teachers care about you as a person), Academic teacher support (e.g., how many teachers spend time to help students do their best), and Academic home support (e.g., my parents help me with homework when I ask them to). The dependent variable was assessed through the total ELA score from the *Iowa Test of Basic Skills* (*ITBS*).

Results from the grade by Learning Disability (LD) MANCOVA indicated that students with and without learning disabilities had similar views of social support from the school staff and Academic support from teachers and home. However, grade level and race effects did occur. Similar to Martinez (2006), 8th grade adolescents reported

receiving less support than students in 5th- 7th grade. In addition, African American students reported higher levels of home support than their Latino classmates.

In accordance with previous findings the slope and intercept from the Hierarchical Linear Model and chi squared showed significant effects [166.08 (X^2 = 12010.77, df= 3,205, p< .001] and [1.10 (X^2 = 3419.11, df= 3,205, p< .0005]. Results from the Model indicated that disability status predicted both lower beginning ELA status and lower standardized test scores. However, students with and without disabilities increased their ELA ability at similar rates. Participants in both groups had similar perceptions of academic support from school and family contexts. This is similar to previous findings on disability status and middle school achievement (Forgan & Vaughn, 2000).   Yet, unlike previous studies, the HLM model showed that positive school by family support by LD status indicated higher initial ELA scores, but it was not positively related to growth. Specifically, when students with disabilities had high ratings of both school and family support they experienced ELA failure more frequently than their general education peers with the same amount of support.

These findings suggest that multiple positive contexts do not act as a protective factor against reading failure for adolescents with learning disabilities the way that it does for general education students.   These results are contrary to previous data on students without disabilities in which multiple social supports protected adolescents from academic failure (Malecki & Demaray, 2006; Lee & Smith, 1999; Rosenfeld et al., 2000). The contrasting outcomes indicate that unlike their general education peers, students with learning disabilities may not benefit from the protective utility of several sources of support.

Summary. These studies highlight valuable differences in perceived social support between students with and without disabilities. The issue is that most of the investigations conducted with populations of special education students do not include measures of achievement (Martinez, 2006; Wentz-Gross & Siperstein, 1997, 1998). In the one study that examined achievement and perceived family and school support for both populations, adolescents with disabilities did not benefit from high levels of support in the same way as their general education peers (Flemming et al., 2002). While multiple sources of support (i.e., family and school) are associated with greater reading growth for general education students, the perceived support did not have a positive impact for their classmates with learning disabilities. These current findings contribute to our understanding of perceived family and school support among students with and without disabilities. Yet, additional investigations that include students with disabilities and support subtypes (i.e., Informational, Appraisal, Emotional, and Instrumental) typically explored among general education populations could prove useful.

Discussion of Content

Based on the literature reviewed there are several limitations and gaps in the areas of sampling and measurement that should be addressed within future social support investigations. This study included instruments that assess support subtypes among students of color with and without disabilities from lower socioeconomic backgrounds. Based on the reviewed literature, the investigation was necessary to address and explain the naturally occurring and incidental variance of social support among general and special education students. The following topics are further discussed, (a) sample, (b) disability classification, (c) definition of achievement, and (d) potential confounds, (e)

social support measurement, (f) potential social support measures, and (g) achievement measurement.

Samples. First, the protective utility of social support for students of color from lower socioeconomic backgrounds has been thoroughly explored among general education students (Gutman & Midgley, 2000; Lee & Smith, 1999; Malecki & Demaray, 2006; Richman, et al., 1998; Rosenfeld et al., 1998). Most of the studies with students in the general population were conducted with individuals from primarily Latino or Black backgrounds from lower socioeconomic backgrounds (Gutman & Midgley, 2000; Malecki & Demaray, 2006; Rosenfeld et al., 1998; Lee & Smith, 2008). In contrast, there appears to be a greater representation of students from diverse racial and ethnic backgrounds among the learning disability literature.

In several studies both ethnic minority and lower SES are explored together (Flemming et al., 2002; Gutman & Midgley, 2000; Malecki & Demaray, 2006; Rosenfeld et al., 1998; Lee & Smith, 2008); however, they are not always associated with one another. Each category is distinct and interacts with achievement in different ways. Despite potential race and SES effects, an explanation for stronger associations between support and achievement across schools or communities may be varying levels of academic press (Lee & Smith, 1999), proportions of students at-risk for school dropout (Rosenfeld et al., 1998), and grade level (Flemming et al., 2002; Martinez, 2006). Two authors found that 6th and/or 8th grade students have different perceptions of social support (Flemming et al., 2002; Martinez, 2006). Investigators suggested that effects with 8th grade students occurred because adults feel that they don't need to provide as much support to older adolescents (Flemming et al., 2002). In comparison, lower

perceptions from 6th grade students could be attributed to their recent transition into middle school (Eccles et al., 1993).

Disability Classification. Of the studies that included populations of students with disabilities, only one specified the type of learning disability (Martinez, 2006), while others placed students under the general umbrella of learning disabled (Flemming et al., 2002; Wentz-Gross & Siperstein, 1997, 1998). As indicated by Martinez (2006) students are frequently placed into the broad category of learning disabled and within group differences are overlooked. Although there may be utility in sub-typing students with learning disabilities (i.e., reading, math, or combination), all studies that used the general learning disability classification found differences between students with and without disabilities (Flemming et al., 2002; Wentz-Gross & Siperstein, 1997, 1998). This indicates that it is possible to identify differences among the populations without specifying reading, math or combination disability status.

Of greater importance is the criteria used by authors to categorize students as having a learning disability. Most investigators reviewed student Individualized Education Plan (IEP) and disclosed placement data (Martinez, Wentz-Gross & Siperstein, 1997, 1998), while one relied on school records that classified students as LD or non- LD (Flemming et al., 2002). The authors that used IEPs noted that student placement was based on the IQ discrepancy model, however some schools have begun using Response to Intervention (RTI). This suggests that comparing students across studies may be difficult due to different classification methods. Despite potential classification differences, most authors disclosed student IQ scores (Wentz-Gross & Siperstein, 1997, 1998). To ensure

that the sample is thoroughly described investigators should disclose/obtain any available assessment scores or achievement data that resulted in placement.

Potential Confounds. Based on the literature there are potential confounds that should be considered to accurately measure social support. Investigations with groups of middle school students show that race (Flemming et al., 2002), SES (Malecki & Demaray, 2006), gender (Flemming et al., 2002), previous achievement (Gutman & Midgley, 2000; Lee & Smith, 1999), and grade level (Flemming et al., 2002; Martinez, 2006) are variables that can influence student outcomes. In addition, based on the dependent variable (i.e., achievement), academic motivation should also be held constant to disentangle the established relationship between support, motivation (Eccles, 2007), and achievement (Ahmed, Minnaert, Werf, & Kuyper, 2010).

Since the sample of interest comprises primarily Black and Latino students with and without learning disabilities from a title one school some controls are not necessary. First, since most students qualify for free and reduced lunch, SES does not require control and should instead be provided as a characteristic of the school. Second, because the comparison groups are individuals with and without learning disabilities, controlling previous achievement could remove naturally occurring achievement variance that is relevent to students across the populations.   However, a combination of the remaining controls (i.e., race, gender, grade level, and motivation) is relevent to this investigation to ensure that any findings reflect social support and other variables.

<center>**Methodological Review**</center>

Social Support Measurement

The social support measures used in the studies assessed several different sources (e.g., classroom and teachers) and subtypes (e.g., Emotional and Informational) of social support and ranged from high to low reliability and validity. Among the general education studies, some authors specified specific support subtpes (Malecki & Demaray, 2006; Richman et al., 1998; Rosenfeld et al., 1998, 2000), while others generally described the support (Gutman & Midgley, 2000; Lee & Smith, 1999). Therefore a large portion of the available data only highlights differences between support sources, while overlooking the variance among subtypes.

Overlooking subtypes is an important limitation given that student perceptions of support subtypes differ across the support sources (Malecki & Demaray, 2003; Richman et al., 1998; Rosenfeld et al., 1998). Consequently, these drawbacks may reflect conflicting findings regarding the significance of single and multiple sources of support (Gutman & Midgley, 2000; Lee & Smith, 1999; Malecki & Demaray, 2006; Richman et al., 1998; Rosenfeld, et al., 1998, 2000). Measures that include only one support subtype (Flemming et al., 2002; Gutman & Midgley, 2000) or source (Gutman & Midgley, 2000) may not illustrate as much variance as instruments that examine multiple subtypes and sources of support. Specifically, more detailed measures may detect significant single sources of support (Malecki & Demaray, 2006), while more general measures do not have the same capability.

Of the studies conducted with students who have disabilities, authors assessed positive regard (Martinez, 2006), Problem- solving, Emotional, Companionship (Wentz-Gross & Siperstein, 1997, 1998), and Academic support (Flemming et al., 2002). The results from these investigations suggest that students with disabilities perceive

Emotional, Problem-Solving, and Positive Regard differently than their general education peers. In contrast, findings for Companionship and Academic support indicate that students with disabilities either have similar views of the constructs. Together these findings provide some information about support subtypes and students with disabilities. However, it is still unclear how students with and without disabilities compare in the areas of Emotional, Appraisal, and Instrumental support. Examinations of these support dimensions are evident among general education students (Malecki & Demaray, 2006; Richman et al., 1998; Rosenfeld et al., 1998, 2000) but similar investigations with students who have disabilities have not been conducted.

Potential Social Support Measures

Of the measures used, the *Social Support Scale for Children* (*SSSC*; Harter, 1985) may be most appropriate with populations of adolescents who have learning disabilities based on findings from the Martinez (2006) study. The measure has established reliability ranging from .74 to .88 for middle school students and content validity. The primary limitation of the measure is the general classification of social support as "positive regard" instead of specifying the types of support being assessed. Tardy (1985) pointed out that one of the key methodological issues within social support measurement is the use of instruments that broadly assess one support type instead of thoroughly measuring each subtype.

Malecki, Demaray, and Elliott (2000) attempted to address subtype assessment limitations through the development of the *Child and Adolescent Social Support Scale* (*CASSS*). The scale evaluates four types of support, which include Informational, Appraisal, Instrumental, and Emotional. In addition to measuring multiple types of social

support, the measure also high reliability ranging from .93 to .96 and convergent validity with two social support measures (*SSSC, Social Support Scale for Children;* Harter, 1985; *SSAS, Social Support Appraisals Scale,* Dubow & Ullman, 1989) and the *Behavior Assessment Scale for Children Self Report of Personality (BASC;* Reynolds & Kamphaus, 1998). Based on the analysis, the CASSS has great utility as an assessment tool for future investigations.

Moreover, several investigators successfully used the CASSS within their investigations of adolescent support perceptions (Conners-Burrow, Johnson, Whiteside-Mansell, McKelvey, & Gargus, 2009; Davidson & Demaray, 2007; Demaray, Malecki, Reuger, Brown, & Summers, 2009; Flaspohler, Elfstrom, Vanderzee, Sink, Birchmeier, 2009; Malecki & Demaray, 2006; 2003). Results support the use of the CASSS in relation to self-concept (Demaray, et al., 2009), mental wellness (Conners-Burrow et al., 2009; Davidson & Demaray, 2007; Flaspohler et al., 2009; Malecki & Demaray, 2003), and achievement (Malecki & Demaray, 2006).

Davison and Demaray (2007) used the measure with Finnish and American students and found that high levels of perceived social support protect students from poor mental health (e.g., depression, anxiety). Similarly, studies conducted with groups of students experiencing bullying show that parent and teacher support buffer against negative mental health outcomes and/or quality of life (Flaspohler et al, 2009; Conners-Burrow et al., 2009; Malecki & Demaray, 2006). In relation to achievement, Malecki and Demaray (2006) found connections between single sources of support and achievement, indicating that the measure is a sensitive support detector in examinations that include academic outcomes.

Similar to the CASSS the *School Success Profile* (*SSP;* Bowen & Chapman, 1996) examines eight subtypes of social support categorized as Emotional, Appraisal and Instrumental support. The measure has high reliability (*r* = .80 to .97) and good face, construct, and content validity according to experts in the field who reviewed the assessment questions (Social Support Providers, 2009). Despite strengths, the SSP does not evaluate Informational support, an important component of investigations with youth (Flemming et al., 2002; Malecki & Demaray, 2006; Wentz-Gross & Siperstein, 1997, 1998)*.* Perceived Informational support highlights problem solving and advice to accomplish goals (Tardy, 1985) therefore results regarding achievement could be limited without this support subtype.

In comparison to survey studies, Wentz-Gross and Siperstein (1997) required students to name individuals in their social network and then select three people to whom each question applied using the *My Friends and Family Interview* (Reid et al., 1989). The problem with the interview is the potential "inappropriate assumption" based on the expectation that respondents have three people to whom each question applies, which could result in flawed data (Willis, 2005).   The SSSC and CASSS assessments probe more generally about support networks (i.e., parents, teachers, and peers) without requiring students to name a standard number of individuals.

Achievement Measurement

Three studies (Richman et al., 1998; Rosenfeld et al., 1998, 2000) student achievement on self-reported GPA scores, which may result in inaccurate data due to unreliable reports from participants (Kuncel, Credé, & Thomas, 2005; Willis, 2005). Self-reported grades often reflect social desirability, which causes a student to provide a

higher GPA score to prevent embarrassment because he or she is not doing well academically (Kuncel, Credé, & Thomas, 2005; Willis, 2005). In a meta-analysis, Kuncel, Credé, and Thomas (2005) reported that students with lower grades were less likely to accurately report their GPA scores.

In contrast, the remaining authors used permanent GPA records (Gutman & Midgley, 2000; Malecki & Demaray, 2006) or standardized test scores (Flemming et al., 1999; Lee & Smith, 1999).   Similar to self-reported GPA scores, student grades from permanent records may not have been adequate measures of achievement due to the presence of teacher bias within the grading system (Archer & McCarthy, 1988; Malouff, 2008). Therefore, the most reliable measure of achievement appears to be annual standardized test scores.

Moreover, standardized ELA results were the only academic assessment tool used in the sole study to examine achievement in relation to social support for students with and without disabilities (Flemming et al., 2002). Future investigations should include achievement assessments with high validity and reliability in the areas of mathematics and ELA to fill gaps in the current literature. Specifically, the inclusion of annual mathematics and ELA scores from statewide assessments could better inform where academic concerns exist in relation to social support.

Discussion of Methodological Review

Thus far the research has contributed to our general understanding of adolescent perceptions of social support however it has not highlighted how achievement and support relate to students with learning disabilities. Particularly, the achievement outcomes of students of color with disabilities from economically disadvantaged

backgrounds. At present the primary gap is the absence of studies on the relationship

between subtypes of social support from peers, parents, and teachers on the mathematics

and ELA achievement of adolescents receiving special education services.

Currently, data indicates that general education students benefit academically

from combined sources of support (Gutman & Midgley, 2000; Malecki & Demaray,

2006; Rosenfeld et al., 2000). Yet authors suggest that although students with and

without disabilities similarly perceive academic support from teachers and parents, both

groups do not reap the same educational rewards (Flemming et al., 2002). Despite such

conclusions it cannot be assumed that populations of adolescents do not differ in their

support perceptions due to conflicting evidence from measures assessing different

subtypes of social support (Wentz-Gross & Siperstein, 1997, 1998).

Additionally, in past social support investigations with general education students,

investigators have utilized statistical analyses to show whether SES (Malecki &

Demaray, 2006) and academic press (Lee & Smith, 1999) moderate academic outcomes.

However, the moderating effect of disability status has not been examined. Moderation

shows whether the association between a predictor (e.g., social support) and the

dependent variable (e.g., achievement) differs for a subset of participants in the sample

(e.g., students with learning disabilities). Therefore, the resulting information regarding

support in relation to annual statewide assessment of students with learning disabilities

could help practitioners develop a better understanding of adolescent needs.

Rationale for Study

Investigations that address gaps in the current literature will provide data that can

inform practitioners and families about existing similarities and differences between

adolescents with and without disabilities. As previously noted students with learning disabilities from ethnic minority, economically disadvantaged backgrounds are among the least likely to graduate from high school (Orfield et al., 2004). Interviews with successful graduates suggest that students cite social support as a key component of their success (Murray & Naranjo, 2008). Despite the promise of social support, investigations have not thoroughly explored multiple sources and subtypes of social support in relation to the achievement of students within the special education population. Therefore, correlations between achievement and social support sources and subtypes should be further examined among students with and without learning disabilities.

Research Questions and Hypotheses

This investigation addresses whether overall support perceptions (i.e., sum across support sources), individual support sources, and support subtypes account for the relationship between annual statewide assessment achievement (i.e., mathematics and ELA) for students with and without learning disabilities.

1. Research Question (RQ) 1: Does disability status moderate the effect of overall social support (i.e. sum of support from teachers, parents, peers, a close friend) perceptions in relation to academic outcomes (i.e., ELA and mathematics)?

2. Research Question (RQ) 2: Does disability status moderate the effect of support from parents, peers, a close friend, and/or teacher in relation to academic outcomes (i.e., mathematics and ELA)?

3. Research Question (RQ) 3: Does disability status moderate the effect of support subtypes (i.e., Informational, Appraisal, Emotional, and Instrumental) from different sources?

For RQ1-RQ3, disability status is expected to moderate the relationship between support and achievement. Specifically, a group by social support interaction is

anticipated because of the varying perceptions and needs of students with and without

disabilities. A resulting achievement effect would suggest that overall support (RQ1),

support source (RQ2), and support subtype (RQ3) are moderated by disability status.

The data analysis includes descriptive, correlational, and regression analyses to test the

following null and alternative hypotheses:

H_0: Disability status does not moderate the relationship between achievement and social support (i.e., there is no achievement effect for students with and without disabilities) $\Delta P^2 = 0$

H_A: Disability status moderates the relationship between achievement and social support (i.e., there is an achievement effect for students with and without disabilities) $\Delta P^2 \neq 0$

CHAPTER III

Method

Overview

In this chapter, methodology relevant to this study is discussed. The

methodological components are as follows; a) setting and participants; (b) recruitment

and student selection; c) procedures for data collection; d) independent and dependent

variables; and (e) design and data analysis. The chapter is concluded with a discussion of

the anticipated outcomes.

Setting and Participants

Sample

The participants were 120 students in grades 6 ($N= 38$), 7 ($N= 19$) and 8 ($N= 63$)

from a Title 1 pubic middle school in a Northeastern city. Descriptions of the school

district and participating school follow.

Setting

City. The participants attended a middle school located in a Northeastern city

with a population of roughly 600,000 people and a median income of $39,629 (US

Census Bureau, 2000). The census indicates that the city is also moderately diverse

racially.

Public schools in the city. In the Northeastern city, the public school system is

comprised of 135 schools. Students attending the institutions are from predominately

Black and Latino backgrounds, and most pupils qualify for free and reduced lunch (See

Table 1).

School Setting. The participating middle school enrolls 294 students in 6th

through 8th grade. In comparison to other middle schools, the mobility rate is the second

highest in the city. According to the demographic data, the participating middle school population is not representative of the students in the state or city school systems. Specifically, the school has a higher proportion of Black students, and a lower proportion of Asian and White students relative to the city in which it is located. There is also a large number of Verdean students enrolled in the school, which is reflected in the resulting sample (N=48, 36.5%). Moreover, many of the Cape Verdian and Latino students are also English Language learners, which comprised 33.9% of the sample.

Finally, compared to the state and city data, the selected school has a higher percentage of students in special education. Although the participating school is not representative of the students in the state or city, the priority was to study ethnic minority adolescents who are at-risk based on lower SES, low achievement scores, and/or disability status. Therefore the school was an ideal setting based on free and reduced lunch rates, annual statewide test scores, and a high percentage of students with disabilities. Additionally, there was administrative support for the project.

Table 1

Student Demographics for the City, Participating School, and Sample

Demographics	City School System (%) [a]	Selected Middle School (%) [b]	Sample
Gender	48	47	62
Female			
Race			
Black	37	68	67.5
Latino	39	26	31.7
White	13	2	--
Asian	9	1	--
Other	2	3	.8
Free and Reduced Lunch	74	88	N/A
Special Education students	21	27.8	11.9
Average Class Size	28	23	N/A

Note: Data obtained from [a] Mass DOE: Enrollment Data, 2009, [b] School Enrollment data, 2009-10

Special education services offered in the selected school. To accommodate students with disabilities, the school follows an inclusion model. In other words, the school does not offer separate educational tracks or classes to individuals with and without disabilities; therefore students in each grade level take the same core classes. Students enrolled in the *Learning Adaptive Behavior* (*LAB*) cluster are the exception to the inclusion services; this group receives their core instruction in a separate setting due to emotional and behavioral classifications.

Participant Permission

Parents and guardians of adolescents in 6th through 8th grade received an introductory letter (Appendix B) and a permission form to allow their child to participate (Appendices C**,** D, E). The introductory letter stated that their child would be asked to complete a survey on their views of adults and peers; and assessment data would be obtained from permanent records. All students both present and absent had two weeks from the date of initial distribution to return the completed forms. Reminder cards were distributed after three days to increase the return rate of permission forms (Appendix F). Prior to and following permission form distribution any staff, parent, and/or student questions that related to the study were answered on site, through email, or via telephone.

To encourage student participation and to maximize the sample size, participants were offered an incentive for returning a permission form with either a "yes" or "no" response and a parent signature. The permission form included several separate check boxes for granting student participation in a raffle, questionnaire, and/or interview. Therefore, even if parents did not allow students to participate in the study, they could grant their child permission to enter the raffle as long as the appropriate box was checked

and the form was signed and returned. Entrance into the raffle provided students the chance to win an ipod nano and a $20 itunes card. Each raffle ticket was stapled to the bottom of the permission forms. When the permission slip was signed and returned the attached raffle ticket was placed into an envelope for the prize drawing. The raffle ticket selection took place in the school's office and the principal notified the winner. The raffle incentive appeared to excite students and assist greatly in the recruitment effort. Several teachers indicated that students were eager to return their permission forms in order to become eligible to win the ipod nano.

Following the prize drawing, the investigator examined the school's main database and printed off spreadsheets that provided student data (i.e., grade, homeroom, and MCAS scores). Next, in collaboration with the special education coordinator, a comparison between the master registry of students with disabilities and list of students with project permission was completed. This facilitated the identification of all students with disabilities whose parents provided permission. Once these students were identified, the special education coordinator provided the first and most recent Individualized Education Plans (IEPs), which included placement data and required services.

Student Selection

Participants were selected from the 194 students who returned the permission forms, which was (65%) of the total school population. Although all 6th through 8th graders enrolled in the school were invited to participate via parental permission, all students were not invited to join the investigation. Every general education student with permission was retained in the sample unless he or she was enrolled in the bilingual education program and therefore needed the survey translated. All special education

students with learning disabilities were included in the study. Specifically, special education students with an IEP stating that he or she has a sole learning disability or a learning disability in conjunction with another classification such as attention deficit disorder were included. Nonetheless, students with emotional disturbances were excluded since they do not take their core classes within the inclusive environment. Specifically, the restricted social and learning environment prevents them from assessing the same middle school supports as their disabled peers in an inclusive environment. Finally, any student without a 2010 MCAS score was excluded from the sample, since that was the dependent variable of interest.

Learning disability status. The IEP indicates whether a student has a diagnosed learning disability. In the state, students qualify as learning disabled based on Response to Intervention (RTI) or IQ- achievement discrepancy data that establish the following (Massachusettes Department of Education: Learning Disability Criteria, 2007):

> The student is not able to demonstrate the necessary processing skills to achieve adequately for his/her age or to meet English Language Arts (ELA) or Mathematics Curriculum Framework standards when provided with appropriate learning experiences and instruction in one or more of the following areas: Oral Expression, Written Expression, Basic Reading Skills, Reading Comprehension, Reading Fluency Skills, Listening Comprehension, Mathematics Problem Solving, Mathematics Calculation [34 CFR 300.309(a)(1)].

Upon the receipt of permission forms, Individualized Education Plans (IEPs) were reviewed for relevant testing or placement data that indicated whether the student qualified as learning disabled. Based on the IEP data, students were classified according to the recorded disability; either 0 (No Learning Disability; NLD) or 1 (Learning Disability; LD).

Resulting Sample. According to the previously established selection criteria, 8 students were excluded from the sample based on an emotional or behavioral based disability classification and 49 English Language Learners because of interpretation requirements.   In addition, 1 student did not assent to take the survey, 1 student was hospitalized, and 2 students were chronically absent. Finally, after reviewing the 2010 state assessment data (i.e., dependent variable), 11 students did not have scores therefore their scores were dropped listwise. The resulting sample was 101 general education students and 19 with learning disabilities (N= 120).

Participants with Learning Disabilities. The IEPs of students in the sample indicated that each participating special education student had a Specific Learning Disability (SLD). Of those individuals, three had more specific classifications (i.e., reading disability, dyscalcula, and language-based learning disability). In addition, although the majority of students only had one disability classification, three participants have additional labels listed, a) SLD and ADHD b) SLD, PTSD, SLD, bipolar disorder, c) SLD and depression.

Based on data from the initial placement IEP, students qualified for special education services following academic, language, and/or cognitive testing. It should be noted that two participants did not have assessment documentation in their initial IEP, however the remaining 17 students in the sample had test scores (39%) and/or general assessment summaries (100%) to support placement. See Appendix G for a table that indicates how each student qualified for services. All students completed academic and/or cognitive assessments prior to special education placement; for example the Woodcock Johnson, or the Wechsler Individual Achievement Test. Examiners also

indicated student performance in other areas as evidence for special education placement, such as low performance on classroom benchmarks, annual statewide assessments, and grade repetition. Finally, 25% of students completed some form of language testing to qualify for speech and language services.

According to the most recent IEP data (Appendix H), on average students received special education services for approximately 4 years 6.7 months at the time of the project. Overall, 90% of students receive language arts services, 55% Math, 35% Speech, and 10% Behavioral/Social-Emotional. Closer examination of student needs also shows that 70% of students struggle in the area of comprehension, 30% decoding, 45% writing, 15% spelling, 25% social skills (e.g., following directions, engage in appropriate peer relationships, self-regulation), 35% expressive language, 25% math computation, 10% number sense, and 10% math reasoning.

Procedures

Test administration procedures

Tests were administrated during a 30- minute whole class session with two test administrators (i.e., primary investigator and community coordinator). The testing day and time were determined by teacher preference and if more than half the class consented the instrument was delivered in the classroom. In instances when less than half of the class consented, students took the exam in a small classroom filled with individual desks and chairs.

To ensure that students were willing to participate they listened to and silently read along with an assent script (see Appendices I and J) prior to beginning the questionnaire. After hearing the assent, students signed a printed version of the script to

indicate their willingness to participate. One student declined to take part in the project, and went to the library during test administration. The next day, the student was given the opportunity to take the exam and he declined a second time. Following the identification of willing participants, all assenting students provided demographic data on the first page of the questionnaire (i.e., race, gender, and grade level). In addition, all questionnaire items were read aloud to ensure that respondents with decoding issues understood the questions. Each statement on the questionnaire was repeated twice and once more upon student request. These administration guidelines were in accordance with previous investigations, in which the survey was read aloud to 10 to 12 students at a time (Malecki & Demaray, 2006).   In addition, due to student absences and teacher requests to test students during lunch, several participants took the survey in smaller groups of 3-6.

The Independent and Dependent Variables

The independent variables gathered for the investigation were perceived social support with academic achievement as the dependent variable. In this section, several covariates obtained from demographic data are discussed. An overview of the independent variables and dependent variables can be found in Appendix K.

Independent Variables

The independent variables in the study are indicators of social support. These indicators were obtained with a social support survey that was administered to all participants in the Spring of 2010. The survey, which was also used in the previously reviewed study conducted by Malecki and Demaray (2006), is the *Child and Adolescent Social Support Scale* (*CASSS*; Malecki et al., 2000; See Appendix L). The CASSS

(2000) measures both sources and subtypes of social support. The evaluated support

sources are Parents, Teachers, Classmates, and A Close Friend. The subtypes of social

support are Informational, Appraisal, Instrumental, and Emotional support. In this

section, the reliability and validity of the CASSS (2000) are discussed. The section is

organized as follows, (a) instrument overview; (b) The total frequency score; (c) support

source score; and (d) support subtype score.

CASSS (2000) Overview. Malecki, Demaray, Elliott, and Nolten (1999) created

the first version of the measure in an effort to address the needs of adolescents. As

mentioned in the previous chapter, the instrument is designed to align with Tardy's

(1985) five dimensional model of social support, a) direction, b) disposition, c)

description/evaluation, d) content, and e) network. In accordance with this framework,

the CASSS is intended to measure four subtypes (i.e., Informational, Instrumental,

Appraisal, and Emotional) of perceived support that are available to students. The

support sources measured on the test are those from classmates, a close friend, teachers,

parents, and school. However, the school support subtest was excluded because it was

not of interest in this investigation.

Each section of the questionnaire assesses perceptions of support subtypes nested

within each source. Students are required to respond to 12 statements using a 6-point

Likert scale, which measure frequency (i.e., how often a support occurs), and importance

(i.e., how important is this support). Based on the design of the measure, the resulting

scores are an overall support score (i.e., the sum of support from four sources), an

individual score for each support source, and a score for the support subtype within each

source. Finally, in addition to assessing perceptions of social support the cover page of the CASSS (2000) requires respondents to provide demographic information.

The psychometric analysis for the total score on the CASSS (2000) was conducted with three samples of middle school students who took the questionnaire. In social support literature it is typical to report criterion related validity, construct validity, test-retest reliability, and internal consistency. The first sample comprised 515 students in 6th through 8th grade from urban middle schools in Illinois. The second group included 263 students in 5th through 8th grade from public and/or private schools in Illinois and New York. Finally, the third sample consisted entirely of 8th grade students (N= 125) from an urban middle school in Illinois. The data from all three samples were combined to estimate reliability for the overall or total frequency score. Despite validity and reliability information for the CASSS total frequency score, no data regarding the importance scales were reported. Therefore only frequency scores for the total score and each source of support were used in this investigation.

The psychometric properties of each source and subtype are discussed in two sections, a) Psychometric properties from the manual and related studies, and b) Psychometric properties based on the current sample.

CASSS Psychometric Properties from the Manual and Related Studies

The total frequency score. For middle school students in 5th to 8th grade the total frequency score on the CASSS (2000) had moderate to strong test-retest reliability and strong internal consistency. The test-retest (8-10 week) reliability as measured by Malecki et al. (2000) was .78, which indicates score stability. Assessments of social support and adjustment typically report test-retest values of .71 to .76 (Dubow & Ullman,

1989; Reynolds & Kamphaus, 1998). In addition, the assessed social support components are similar according to high internal consistency of .96.

In the area of criterion-related validity, the total score of the CASSS also had low criterion-related validity of .56 with the *Social Support Scale for Children* (*SSSC;* Harter, 1985), and .55 with the *Survey of Children's Social Support* (*SOCSS;* Dubow & Ullman, 1989). Although the validity coefficients between the CASSS and other social support measures fell into a low range, a high correlation was not expected because the SSSC and SOCSS measure different social support dimensions (i.e., general support perceptions) than the CASSS. Wood, Garb, Lilenfeld, & Nezworski (2002) indicate that coefficients of .40 to .50 are acceptable when clinicians are obtaining self-report data. Furthermore, these coefficients appear acceptable since a high correlation would suggest that the tests are identical. The CASSS was designed to address current gaps with the social support measurement tools; therefore, a high correlation should not result since the criterion for comparison (i.e., SSSC and SOCSS) assesses more general aspects of social support.

Moreover, similar to the SOCSS (Dubow & Ullman, 1989) there were negative and positive correlations between the CASSS total score and other adjustment measures. Authors frequently seek to establish validity for social support measures by showing that support is inversely related to maladjustment based on the content of the measure (Dubow & Ullman, 1989). As expected, the SOCSS had negative correlations ($r = -.47$ to -.66) to loneliness and a positive correlation ($r = .49$ to .50) to social acceptance and self-worth. In comparison, a positive relationship was anticipated between social support and adjustment or self-perception measures. Findings show that similar correlations resulted between the CASSS total score and Clinical Maladjustment, Emotional

Symptoms Index, Personal Adjustment, and School Maladjustment subtest scores of the

Behavior Assessment Scale for Children- Self Report of Personality (*BASC-SRP;*

Reynolds & Kamphaus, 1998). See Table 2 for further information regarding the

reliability and validity of the CASSS frequency scores.

Table 2

Reliability and Validity Data for the CASSS From the manual and related study

Sources of support	Internal consistency	Test-retest reliability	Criterion-Related Validity Social Support Appraisals Score	Criterion-Related Validity Social Support Scale for Children	Critereon-Related Validity: BASC SRP
Overall or Total Frequency			.		
Total score	.96 [a]	.78 [a]	.56 [a]	.55 [a]	-.20 to .36 [a]
Parent Frequency					
Total score	.93 [b]	.58 to .74 [b]	.58 [b]	.56 [b]	.39 to .43 [b]
Subtypes	.73 to .82 [b]	.61 to .78 [b]	N/A	N/A	N/A
Teacher Frequency					
Total score	.92 [b]	.58 to .74 [b]	.55 [b]	.48 [b]	-.05 to .16 [b]
Subtypes	.81 to .82 [b]	.71 to .78 [b]	N/A	N/A	N/A
Classmates Frequency					
Total score	.92 [b]	.58 to .74 [b]	.41 [b]	.36 [b]	-.34 to .30 [b]
Subtypes	.80 to .87 [b]	.73 to .77 [b]	N/A	N/A	N/A
Close friend Frequency					
Total score	.95 [b]	.58 to .74 [b]	.54 [b]	.59 [b]	-.16 to .26 [b]
Subtypes	.83 to .88 [b]	.75 to .81 [b]	N/A	N/A	N/A

Note: Data obtained from; [a] CASSS Manual (2000), [b] Malecki & Demaray (2003)

CASSS Support Sources.   In this section, the reliability and criterion- related validity of the support sources (i.e., parents, teachers, classmates, and a close friend) are reviewed. The validity and reliability information for the source and total scores were collected from different samples. Specifically, the information for the source scores comes from a smaller subset of middle school students (N= 263) from public and/or private schools in Illinois and New York. In the following sections, the validity and reliability of social support source scores (i.e., parents, teachers, classmates, and a close friend) are discussed.

Overall, the support source scores had high internal consistency (a= .92). In addition, the test-retest reliability for the overall score, support sources, and subtypes was established by administering the survey after an 8-10 week period. The overall score had a moderately strong reliability of $r = .78$. However, the results for the source and subtype score were in the low to moderate range (.58 to .74) suggesting that the constructs were less stable over time. In this area of the literature a test-retest value of .71 or higher is acceptable (Dubow & Ullman, 1989; Reynolds & Kamphaus, 1998), therefore lower values could be problematic.

In addition, the parent, teacher, and peer source score resulted in low criterion- related validity with subtests of the *SSSC* (Harter, 1985).   Although these validity coefficients are in the low range (.36 to .56), all of the scores fall into the acceptable range provided by Wood et al. (2002) with the exception of the classmate subtest (i.e., .36). However, this does not appear problematic since the SSSC measures general social support. Unlike the SSSC, the CASSS measures specific subtypes of support. Therefore the data obtained from each instrument reveals different aspects of the social support

construct. A high validity coefficient would indicate that general social support and specific support subtypes are greatly alike, while the theoretical foundation states the contrary (House, 1981).

The majority of the criterion related validity coefficients with the *Clinical Maladjustment, Emotional Symptoms Index, School Maladjustment,* and *Personal Adjustment* subtests of the BASC-SRP (Reynolds & Kamphaus, 1998) were in a very low range. The correlation was conducted to ensure that as expected the coefficients go in a positive (i.e., *Emotional Symptoms Index,* and *Personal Adjustment*) or negative (*Clinical Maladjustment* and *School Maladjustment*) direction. Since all of the scores went in the expected direction the results provide evidence that the survey is appropriately assessing the support construct.

CASSS subtype scores. The discussion of support subtypes includes the test-retest reliability, content validity, and internal consistency of Instrumental, Appraisal, Informational, and Emotional support from each source (Malecki & Demaray, 2003). The test retest reliability for subtype scores vary by source; parents ($r = .61$ to $.78$), teachers ($r = .71$ to $.78$), classmates ($r = .73$ to $.77$), and a close friend ($r = .75$ to $.81$). In addition, the internal consistency ranged from moderate to high ($r = .73$ to $.88$) across the sources.

Moreover, there is evidence of construct validity for the Instrumental, Emotional, Informational, and Appraisal support. Malecki et al. (2003) asked five graduate students to categorize the four support types using one-sentence probes from the questionnaire. The authors calculated inter-rater reliability by identifying the percentage of support subtypes that were correctly placed into their intended category. Overall, the results

showed that 92% of the probes were correctly categorized. An examination of the specific subtypes showed an agreement of 87% with Emotional items, 99% Informational items, 100% Appraisal items, and 83% Instrumental items. It should be noted that the authors defined this process as content validity for the support subtypes included on the measure. However, this activity is more aligned with construct validity since there was no critique of the evaluated support domains from experts in the field.

CASSS Psychometric Properties With the Current Sample

  Factor Analysis. Construct validity of the CASSS for this sample was examined through factor analysis. Previous CASSS investigations included populations and outcome variables that differed from those incorporated in this study, therefore factor analysis was necessary. In addition, since summed scores are part of this investigation, the factor analysis is needed to establish construct validity. The data reduction was completed using the 4 subtype scores from each support source, making a total of 16 scores for the analysis**.**

  Review of the initial correlation matrix indicated that factorability was acceptable since each subtype score had a correlation of .61 or higher with one or more scores. The communalities table also showed that each item shared some variance since the extractions ranged from .68 to .84. Furthermore, the Kaiser-Meyer-Olkin (KMO, SPSS output) test resulted in a score of .85, which falls into the superb range (.80 to .90), and suggests that the correlations are compact enough to provide reliable factorial data (Hutcheson & Sofroniou, 1999).

  Exploratory Factor Analysis (EFA) was selected to meaningfully reduce the social support variables, examine the structure of the underlying latent constructs (factors), and

describe the resulting factors. Although there are several types of factor reduction methods, EFA was more ideal than Principal Component Analysis (PCA) because social support is an underlying construct that is not directly measured (Norris & Lecavalier, 2010). Authors also report that unlike PCA, Exploratory Factor Analysis takes common variance that may exist among the variables into account during analysis. Therefore, EFA was used to identify unbiased factors that do not reflect researcher assumptions regarding structure. According to the SPSS output, the social support variables created a four factor model.

Factor extraction using Maximum Likelihood (ML) was selected since an initial analysis showed that the included variables were normally distributed (Fabrigar, Wegener, MacCallum & Strahan, 1999). In addition, Fabrigar and collegues (1999) report that ML enables researchers to examine goodness of fit for the models, test the statistical significance of factor loadings, and calculate confidence intervals. Following extraction, a scree test was examined to determine how many factors to retain. The review of the scree test indicated that after the fourth factor the variables started to level off, therefore the first four factors were retained. Finally, a direct oblimin oblique rotation method was used on the retained factors to simplify the data structure for interpretation. Although promax oblique rotation was also an option authors indicate that it is more appropriate for large data sets (Pett, Lackey, & Sullivan, 2003). Therefore, direct oblimin oblique rotation was selected to enable correlation among factors during analysis. This is important given that the social support variables are likely correlated with one another. Each resulting factor loading output had multiple factors above .30 and

factor structure appeared interpretable (Costello & Osborne, 2005). Table 3 displays the quantitative item loadings for the factors that did and did not load.

Overall, the analysis of the factor loading matrix indicates that there is moderately strong to strong construct validity for the CASSS source scores with this sample. The factor labels provided by Malecki and Demaray (2000) were used since the resulting factors fell into the categories suggested by the authors. These values suggest that the instrument is appropriate for the students included in this study and the composite score for each support source represents the intended construct.

Previously established criterion-related validity results for the CASSS (Malecki & Demaray, 2000, 2003) provide some evidence of assessment unidimensionality based on the instruments relationship with other criterion or outcomes. In contrast, these Exploratory Factor Analysis results supply construct validity by revealing the pattern of the data with this sample of students. Overall, both previous criterion-related and current construct validity suggest that the use of a support source composite score is valid. However, additional validity evidence for the subtype composite scores is still necessary. In the next section the reliability of both the source and subtype composite scores are discussed.

Table 3

Exploratory Factor Analysis: Social Support Scores

Factor	1	2	3	4
Close Ins	.592	.656	.181	-.067
Close Inf	.582	.622	.226	-.015
Close Emo	.660	.518	.221	-.200
Close App	.676	.484	.156	-.174
Class Inst	.668	-.022	-.620	-.066
Class Emo	.618	-.058	-.578	-.107
Class App	.693	-.082	-.527	-.038
Class Inf	.669	.030	-.551	-.001
Parents App	.694	-.449	.329	-.206
Parents Ins	.638	-.469	.245	-.290
Parents Emo	.643	-.482	.264	-.176
Parents Inf	.653	-.312	.322	-.233
Teachers Emo	.646	-.039	.143	.648
Teachers App	.659	-.180	.032	.541
Teachers Inf	.595	-.136	.137	.579
Teachers Ins	.626	-.115	.123	.465
Eigenvalues	6.241	2.116	1.858	1.275
Percent of Variance	41.603	14.108	12.385	8.500

Cronbach's alpha. The reliability scores for overall ($a = .72$) parents ($a = .90$),

teachers ($a = .86$), classmates ($a = .90$), and a close friend ($a = .90$) support are in the

moderate to strong range. These are lower than the reliability values from the manual,

which were all strong ($\geq .96$). This suggests that the scores obtained from this sample

have less internal consistency. In addition, the internal consistency of the subtype scores

is available and falls into a moderate to strong range ($a= .73$ to .88) (Demaray &

Malecki, 2003).

CASSS Format and Scores

Each section of the CASSS questionnaire has 12 questions regarding

Informational (3 questions), Instrumental (3 questions), Emotional (3 questions), and

Appraisal (3 questions) support from each source (i.e., teachers, parents, classmates, and

a close friend). Students are required to respond to each statement with a 1 (Never) to 6 (Always), which indicates the perceived support frequency (i.e., how often a support occurs).

For this investigation, all resulting scores from the CASSS were summed, analyzed as raw data, and reported in the same format. Raw scores for the total frequency score on the CASSS range from 48 to 288 based on the 6-point Likert scale for each question. Following the total score calculation, the investigator computed raw scores for each support source, which ranged from 12 to 72. Finally, resulting scores for each support subtype were analyzed and raw scores are expected to sum 4 to 24.

Covariates

In addition to assessing social support, the CASSS also asks for demographic information on the cover page. A modified version of the cover page was created for this study to make the race options consistent with national definitions suggested by *The National Center For Educational Statistics*. The information collected from the cover page were included as covariates in the analyses based on previous research that showed that these factors are important in understanding the relationship between social support and achievement (Flemming et al., 2002; Malecki & Demaray, 2006; Martinez, 2006).

Race. For their race selection from the first page of their CASSS questionnaire, students were asked to identify as (1) Black, not Hispanic or Latino, (2) Asian, not Hispanic or Latino (3) Hispanic or Latino, of any race (4) White, not Hispanic or Latino, and (5) Multi-racial (i.e., two or more races) (National Center For Educational Statistics: Standard 1-5-3, 2008).

Gender. Student data was coded as male (0) or female (1) based on the gender selected on the first page of the CASSS.

Grade level. The 6th- 8th grade level enrollment was also determined through student data on the first page of the CASSS. Students wrote their grade level and it was recorded as grade 6, 7, or 8.

Motivation. After students completed the demographic information and CASSS, their motivation to succeed on the MCAS was assessed. This covariate is intended to account for how seriously students take the MCAS. The measure comprises four questions (e.g., When you take the MCAS how likely are you to try and get the best score that you can?) on a four-point Likert scale that ranges from "Not Likely" to "Very Likely." The questions are modified from those used in other studies that assessed academic motivation (Wentzel, 1993, 1997). The original motivation measure includes ten questions (e.g., "how often do you try to work hard to understand what you are studying?") that are rated on a "Never" to "Always" 5-point Likert scale.

Although four modified motivation questions were initially included in this investigation (Appendix M), only three were used during analysis. Following a Exploratory Factor Analysis (EFA) question 3 was eliminated due to problematic significance levels on the correlation matrix (.12 and .18) and low inverse correlation results (0.10 and 0.13). Once item 3 was eliminated, the component matrix for the remaining questions showed adequate loading indicating that the questions have acceptable construct validity. Also, the alpha reliability score for the questions is .67 indicating that the internal consistency is slightly below an adequate range.

Dependent Variables

The study design includes two subtests from the *Massachusetts Comprehensive Assessment System* (*MCAS*) to assess student achievement. The first subtest is the mathematics section, and the second is the English Language Arts (ELA) portion of the exam.

MCAS Overview. The *MCAS* is a state accountability assessment used to evaluate Annual Yearly Progress (AYP) of schools throughout the state. The test assesses whether students have attained or progressed toward proficiency in the areas of mathematics, ELA, and science. Although multiple subject areas are evaluated annually, only student scores in the areas of mathematics and ELA were used in this study since those emerged as essential academic areas following the review of literature.

Academic assessments with high levels of reliability (i.e., close to 1.0) are important to show that the resulting academic data consistently measures mathematics and ELA skills. The MCAS has an established split-half estimate of reliability, which is calculated by placing test items into two groups and then examining the correlation of students' scores on both parts of the test. If a high correlation exists than it is assumed that the test halves are measuring similar skills or knowledge. A strong split-half estimate of reliability of .89 (i.e., 6th grade) to .92 (i.e., 8th grade) resulted for the for the mathematics and ELA tests of the MCAS, which is based on assessments administered to roughly 220,000 students in 6th through 8th grade (MCAS Technical Report, 2010).

There is established content and criterion-related validity for the MCAS (MCAS technical reports, 2007, 2008). The available content validity indicates that there is a strong alignment between the MCAS and the statewide mathematics and ELA standards according to expert teachers serving on the MCAS *Assessment Development Committee*

(*ADCs*). Furthermore, the criterion-related validity resulted from a large representative sample of 8th graders that completed the ELA sections of the *National Assessment of Educational Progress* (*NAEP*) and MCAS. The results showed that participants scored similarly on both assessments, indicating that the tests are well aligned and measure ELA skills required for statewide and national standards (MCAS: NAEP Comparison, 2005). According to these findings, the MCAS is appropriate for this investigation based on the established reliability and validity.

MCAS Questions and Scores. The ELA standards section of the MCAS includes short and long passages followed by multiple choice (36) and open response (4) questions. An example of an open response question from the 7th grade ELA section of the 2010 MCAS is displayed in Appendix N. The common form of the MCAS mathematics assessment includes 29 multiple choice, 5 short answer, and 2 open response questions. In Appendix N, an example of a multiple choice question from the 7th grade 2010 mathematics section of the MCAS is available.

Scores for ELA and mathematics are reported from the state according to four performance levels, *advanced* (257-280 points), *proficient* (240-258 points), *needs improvement* (220-238 points), and *warning* (200- 218 points). Although scores for middle school students do not influence grade level promotion, in 10th grade the *warning* category is labeled as *failing* and a score below 220 prevents students from going to 11th grade (MCAS: Graduation Requirement, 2010). This indicates that scores in the *warning* category are equivalent to *failing.* In addition, elementary, middle, and high schools with large percentages of students receiving *warning* or *needs improvement* on the exam are

placed into improvement plans and required to meet annual growth targets in ELA and

mathematics achievement (MASS DOE: Adequate Yearly Progress, 2008).

The proficiency percentages for the mathematics and ELA standard score are also

available and based on all students who took the MCAS in 2010. These data illustrate

how most students performed in the state and whether resulting scores from students

enrolled in the selected school falls within the same range. Student scores are reported in

both raw and scaled format; however the categorical labels (e.g., *warning*, *proficient*) are

based on the scaled scores. The study will include scaled ELA and mathematics scores

ranging from 200 to 280.

In contrast to the state results, students at the public middle school included in this

study are achieving at lower levels. Table 4 provides a comparison of the MCAS test

results for the state (i.e., Columns 1-4) and participating school (i.e., Column 5). Due to

the low MCAS scores the school is in a restructuring phase (level 4), which means that

the administrators are dealing with district pressures to ensure that students pass the

MCAS or meet growth goals.

In the area of ELA the school must have 90.2% of students receive a score of

"Meets" or "Exceeds," however only 58.8% of students met the expectation in 2010

(BPS, Annual Yearly Progress Data, 2010). Similarly, the mathematics target was 84.3%

in the area of "Meets" or "Exceeds," but only 48.3% of students fit into the category.

Despite low scores, the school met their math target for 2010 since scores increased by

7%. However, the ELA targets were not obtained (i.e., only a 1.7% increase). Based on

these results the administration could lose funding or staff if targets are not met within

the next year.

Table 4

Means, Standard Deviation, and Reliability of the 2010 MCAS Mathematics and ELA

Subject Area	Number of Students Administered the MCAS	Reliability of Scores	Percentage (%) "Proficient" or "advanced" in the City	Percentage (%) "Proficient" or "advanced" at the school	Percentage (%) "Proficient" or "advanced" in the sample
Sixth Grade					
ELA	72,172	.89	44	26	24
Mathematics	72, 177	.92	38	29	29
Seventh Grade					
ELA	71,350	.90	52	17	37
Mathematics	71,452	.92	37	15	37
Eighth Grade					
ELA	72,237	.89	57	32	57
Mathematics	72,180	.92	34	17	29

MCAS- Alt. The MCAS- Alt is a portfolio version of the MCAS that is taken by students with "significant disabilities" and an IEP stating that they are exempt from completing standardized tests (MCAS Alt, 2008). Although students with learning disabilities can qualify to take the MCAS- Alt, the disability severity is likely much greater than a typical high incidence classification. Therefore, any students taking the MCAS- Alt will not be included in the sample because of different score reports and

varying needs between special education students taking the MCAS and MCAS-ALT. In addition, the MCAS- ALT scores will also be excluded because students are scored according to seven categorical labels instead of the standard four on the MCAS.

According to statewide data, only 1.5% of all enrolled students and 8.4% of students with disabilities (N= 8,199) take the MCAS- Alt. Of the students with disabilities who took the assessment in 2008 only 8.5% (N= 715) had "learning disability" as their primary classification. Based on the statewide data, the majority of students receiving special education services for a learning disability take the same test as the general education population.

Data Analysis

The data analysis includes descriptive statistics, correlations, and regression equations. The descriptive statistics indicate the means and standard deviations of social support perceptions and the achievement measures among adolescents as a group and by type of student. Next, the initial relations among all the measures by group are shown through bivariate correlations. Finally, regression analysis will illustrate how social support and disability status relate to achievement outcomes. The following section includes a discussion of potential statistical methodologies and the rationale for the regression models. In addition, various regression models that could answer the research questions guiding this study are reviewed. The section is organized as follows, (a) research questions and hypotheses; (b) potential statistical methodologies; (c) variables included in regression modeling; and (d) anticipated outcomes and long-range consequences.

Research Questions and Hypotheses

1. Research Question (RQ) 1: Does disability status moderate the effect of overall social support (i.e. sum of support from teachers, parents, peers, a close friend) perceptions in relation to academic outcomes (i.e., ELA and mathematics)?

2. Research Question (RQ) 2: Does disability status moderate the effect of support from parents, peers, a close friend, and/or teachers in relation to academic outcomes (i.e., mathematics and ELA)?

3. Research Question (RQ) 3: Does disability status moderate the effect of support subtypes (i.e., Informational, Appraisal, Emotional, and Instrumental) from different sources?

As previously noted, for each hypothesis associated with RQ1- RQ3 a group by social support interaction is anticipated based on the varying needs of students with and without disabilities. The null and alternative hypotheses are:

H_0: Disability status does not moderate the relationship between achievement and social support (i.e., there is no achievement effect for students with and without disabilities) $\Delta P^2 = 0$

H_A: Disability status moderates the relationship between achievement and social support (i.e., there is an achievement effect for students with and without disabilities) $\Delta P^2 \neq 0$

Potential Statistical Methodologies

Previous investigators that examined the relations between social support and achievement used several statistical techniques to address their hypotheses. Most authors either focus on Multiple Regression Analysis (MRA) (Malecki & Demaray, 2006) or Hierarchical Linear Modeling (HLM) (Flemming, Cook, & Stone, 2002; Lee & Smith, 1999) to measure achievement. It appears that MRA and HLM are standard techniques within this type of research. Furthermore, previous authors conducting social support studies have not used Structural Equation Modeling (SEM) analysis; however it could have utility in an investigation of this nature. In the following section the advantages and challenges of using each technique are discussed.

Multiple Regression Analysis (MRA). MRA is an appropriate statistical analysis for this study because it allows investigators to examine main effects of social support, group, and group by support interactions. Specifically, the main effects illustrate associations between the predictors and the dependent variable for the students in the sample. The interaction terms (i.e., by group) show whether the same effects exist for a subset of the participants. Based on the potential of interaction terms, MRA could be used in this investigation since there are enough participants to design regression equations that can encompass several predictors to detect effects.

However, if MRA is selected the issue of clustering must be accounted for during the analysis. Since clustering is the result of dependency or correlation among subsets of groups within a data set it could be problematic in this investigation. The participants were selected from many intact groups (i.e., the same community, school, and/or classroom) therefore it is likely that the residuals are highly correlated thus resulting in clustering error. To address the error one must acknowledge and make up for the clustered groups. Cohen, Cohen, West, and Aiken (2003) indicate that if there is a possible correlation amongst the individuals then OLS is not an appropriate method for analysis. Therefore using OLS could result in biased regression coefficients (e.g., standard error is too large or too small). To address the potential bias, robust standard errors should be used to adjust OLS estimates and account for clustering error.

There are three common approaches in OLS, a) disaggregated analysis; the clusters are ignored and alpha inflation results, b) aggregated analysis; a mean is calculated for the predictors and DV of every group to allow the groups to function as an individual component during analysis, and c) fixed effects regression analysis; dummy

codes are included in the analysis to identify existing mean differences among the groups

in relation to the dependent variable. Once error is accounted for, regression analysis is a

promising statistical methodology. Previous authors have used regression equations with

scores from the CASSS and identified significant effects (Malecki & Demaray, 2006).

Specifically, authors found that parents, classmates, a close friend, and teacher support

were related to achievement outcomes.

Hierarchical Linear Modeling (HLM). In the studies that focused on HLM,

authors often compare students across classrooms or schools. HLM is likely conducted

because it is most useful when investigators want to make comparisons within and across

groups. Unlike OLS regression analysis, several (e.g., 30) classrooms and schools are

required to effectively use HLM. Although student participants from this investigation

are nested in classrooms and across teachers, there are not enough level 2 units to make it

a statistically sound method with adequate power. However, using OLS is also flawed

because standard errors are evident in the analysis even after being addressed. In this

study, measurement error in the social support scores (i.e., independent variables) could

result in biased regression coefficients.

Structural Equation Modeling (SEM). Though not used in previous social

support research, another statistical method that could be used to address the research

questions in this study is SEM because latent (unobserved) and manifest (observed)

variables can be assessed in the same analysis. SEM allows investigators to explore

causal effects by identifying the "goodness-of-fit" between the data and the hypothesized

model. The analysis has great utility because it takes away error and is therefore a true

measure of a latent variable. The method is most effective with three to five latent

variables, and the model allows investigators to identify indicators that contribute to their understanding of the structure (Cohen et al., 2003).

SEM analysis continues to evolve and researchers are exploring ways to include several latent variable interactions in the models. In one investigation, Cudeck, Harring, & du Toit (2009) suggested using *numerical quadrature* to estimate the maximum likelihood of latent variable products. The process involves conditioning on a single latent variable (although several are included) and as a result interactions are reduced to one dimension. During analysis, the use of the dimension both decreases the complexity of the process and allows the maximum likelihood estimate to follow the same process as standard SEM. The outcome is a maximum likelihood estimate from latent variables that are not measured with error.

Finally, SEM analysis with latent variables is promising because the analysis is not affected by measurement error. However, it should be noted that SEM has limitations. Despite advances in SEM analysis, creating models with multiple latent variable interactions (i.e., more than three) is challenging. Therefore, SEM would not be appropriate in this study because with so many interaction terms the model is difficult to accurately estimate.

Selected Statistical Analyses

Following the examination of multiple statistical analyses (i.e., OLS, HLM, and SEM), OLS regression analysis was selected. Ordinary Least Squares (OLS) with robust standard error can be conducted with multiple predictors; therefore it is appropriate for this investigation. Specifically, a model comparison test is included to identify whether the inclusion of interaction terms significantly contributes to the model. The analysis will

include 6 models for each dependent variable (i.e., 6 Mathematics and 6 ELA scores),

which results in a total of 12 models. The relevant codes used during the statistical

analysis are listed in Table 5.

Table 5

Codes Included in Data Analysis

Variable	Gender	Disability Status	Grade Level
Code	*Male (0)*	*No LD (0)*	6
	Female (1)	*LD (1)*	7
			8

Variables Included in the Regression Modeling. The 12 (i.e., 6 mathematics

and 6 ELA) regression models have academic achievement as the outcome or dependent

variable for each equation. The independent variables in the model vary (See Table 6)

and each model includes a group by support interaction term. First (equation 1), the

overall support perceptions in relation to disability status are explored. Next (equation

2), social support perceptions among each individual source of support are analyzed.

Lastly (equation 3), subtypes of social support from each source of support are evaluated.

Within each equation, the initial step is the exploration of main effects of social support

on achievement. Following the identification of significant main effects, social supports

by disability status (i.e. group) interactions are examined. Results from the regression

equations are displayed in tables.

Table 6

Overview of the Variables Included in the Regression Full Models

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Model 1a (Overall Support)

X_1 = Overall support perceptions (sum of four support sources)

X_2 = Group (learner Status)

X_3 = Gender

X_4 = Grade Level

X_5 = Overall support perceptions x Group

Model 2a (Support Sources)

X_1 = Support from Parents (sum across four subtypes)

X_2 = Support from Peers (sum across four subtypes)

X_3 = Support from A Close Friend (sum across four subtypes)

X_4 = Support from Teachers (sum across four subtypes)

X_5 = Group (learner status)

X_6 = Gender

X_7 = Grade Level

X_8 = Support from Parents x Group

X_9 = Support from Peers x Group

X_{10} = Support from A Close Friend x Group

X_{11} = Support from Teachers x Group

Model 3.1a (Support Subtypes)

X_1 = Emotional from Parents

X_2 = Informational from Parents

X_3 = Appraisal from Parents

X_4 = Instrumental from Parents

X_5 = Group (learner status)

X_6 = Grade Level

X_7 = Gender

X_8 = Emotional from Parents x Group

X_9 = Informational from Parents x Group

X_{10} = Appraisal from Parents x Group

X_{11} = Instrumental from Parents x Group

---

* Y = academic achievement

The inclusion of main effects and interactions allow detection of whether there is a disability status by social support interaction on achievement. It is theorized that disability status moderates the social support and achievement relationship. According to Baron and Kenny (1986) a moderator is any variable that can affect in a systematic way the relationship between a predictor and outcome variable. Hence, if disability status by social support changes (i.e., strength and/or direction) the relationship between support and achievement then disability status has a moderating effect. For example, if the strength of the relationship is affected then the results could show that high levels of support are related to higher levels of achievement for students with learning disabilities.

Covariates. In addition to the independent variables, each model will also include two covariates (i.e., grade level and gender). The effects are being controlled based on previous conclusions that grade level (Flemming et al., 2002; Martinez, 2006) and gender (Flemming et al., 2002) related to varying social support perceptions and/or academic outcomes.

Furthermore, past investigations with general education students included a control for previous achievement (Gutman & Midgley, 2000; Lee & Smith, 1999). In these studies, changes across grade level were of interest, therefore it was necessary to control for previous achievement to accurately account for current academic standing. Authors who controlled previous achievement concluded that it was the greatest predictor of academic status. Despite these findings, the variable will not be controlled in this study since student growth across multiple grade levels is not of interest.

Additionally, although controlling achievement has utility, eliminating existing academic discrepancies between students with and without learning disabilities will result

in overlooking naturally occurring achievement variance between the groups that is

relevant to this investigation. This is also in accordance with previous authors who

examined achievement, support, and disability status without controlling for prior

academic standing (Flemming et al., 2002). As a result, several regression analyses were

conducted for the entire sample and each group to disentangle any potential correlations

between achievement and disability status.

Regression Models to Address Research Questions

> **Research Question (RQ) 1: Does disability status moderate the relationship between achievement and overall (i.e. sum of four sources) support perceptions?**

> **Equation 1:** The first equation examines whether there is an overall support

perception (i.e., sum of Parent, Classmate, Teacher, and A Close Friend support) by

group interaction on achievement. There are three predictors included in the regression

model. The equation addresses whether overall support accounts for adolescent

achievement, and the interaction term assesses whether there is an overall support by

group interaction on achievement outcomes. A model comparison test of a reduced and

full model will show whether an interaction results. If the ΔF statistic is significant it will

be concluded that disability status moderates the relationship between support and

achievement. Specifically, the interaction will provide evidence that overall support

associates differently to the achievement of students with disabilities in comparison to

their general education peers. The predictors for this model are displayed in Table 7 and

the equation is:

Reduced Model:
$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i}$$

Full Model:

$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i}$$

Where:

$X_{5i} = X_{1i} \cdot X_{2i}$ (X_{5i} is the interaction between overall support and learner status)

Hypotheses:

$H_0 : \Delta P^2 = 0$

$H_A : \Delta P^2 \neq 0$

Table 7

Overall Support Perceptions and Group Interaction (RQ 1Models)

Reduced Model Predictors (Model 1a)
X_1 = Overall Support Perceptions (sum of four support sources)
X_2 = Group (learner Status)
X_3 = Gender
X_4 = Grade Level
Full Model Predictors (Model 1b)
X_1 = Overall support perceptions (sum of four support sources)
X_2 = Group (learner Status)
X_3 = Gender
X_4 = Grade Level
X_5 = Overall Support Perceptions x Group

* Y = academic achievement

Research Question (RQ) 2: Does disability status moderate the relationship between achievement and support from parents, peers, a close friend, and teachers?

Equation 2. The second equation examines the variation within overall support by analyzing each support source (i.e., parents, classmates, a close friend, and teachers). Specifically, the equation assesses whether there is a source of social support by group interaction on achievement. Four of the predictors in the regression model evaluate the degree to which each source of social support accounts for adolescent achievement. Following the initial predictors, four interaction terms are included to assess whether there is a social support by group interaction on academic standing. Once the

investigator collectively tests the interactions she can identify which ones are significant.

A model comparison test with the ΔF statistic will show what levels of total support

results in an achievement effect for students with and without learning disabilities. If

interactions result, the data will show that the connection between specific support

sources and achievement are different for students with and without disabilities. The

predictors for the model are displayed in Table 8 and the equation is:

Reduced Model:

$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i}$$

Full Model:

$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_9 + \beta_{10} X_{10i} + \beta_{11} X_{11i}$$

Where:

$X_{8i} = X_{1i} \cdot X_{5i}$ (X_{8i} is the interaction between Parent Support and learner status)

$X_{9i} = X_{2i} \cdot X_{5i}$ (X_{9i} is the interaction between Classmate Support and learner status)

$X_{10i} = X_{3i} \cdot X_{5i}$ (X_{10i} is the interaction between a Close Friend Support and learner status)

$X_{11i} = X_{4i} \cdot X_{5i}$ (X_{11i} is the interaction between Teacher Support and learner status)

Hypotheses:

$H_0 : \Delta P^2 = 0$

$H_A : \Delta P^2 \neq 0$

Table 8

Support Sources and Group Interaction (RQ2 Models)

Reduced Model Predictors (Model 2a)
X_1 = Support from Parents (sum across four subtypes)
X_2 = Support from Peers (sum across four subtypes)
X_3 = Support from A Close Friend (sum across four subtypes)
X_4 = Support from Teachers (sum across four subtypes)
X_5 = Group (learner status)
X_6 = Gender
X_7 = Grade Level

Full Model Predictors (Model 2b)
X_1 = Support from Parents (sum across four subtypes)
X_2 = Support from Peers (sum across four subtypes)
X_3 = Support from A Close Friend (sum across four subtypes)
X_4 = Support from Teachers (sum across four subtypes)
X_5 = Group (learner status)
X_6 = Gender
X_7 = Grade Level
X_8 = Support from Parents x Group
X_9 = Support from Peers x Group
X_{10} = Support from A Close Friend x Group
X_{11} = Support from Teachers x Group

* Y = academic achievement

Research Question (RQ) 3: Does disability status moderate the relationship between achievement and support subtypes (i.e. Informational, Appraisal, Emotional, and Instrumental) from different sources?

Equations 3.1-3.4. There are four equations that address RQ3 by examining all support subtypes among each source of social support. The models (3.1-3.4) highlight whether the interaction between achievement and social support subtypes from a specific source varies as a function of disability status. For example, the predictors for model 3a are illustrated in Table 9. The first four terms show whether the subtypes of support account for the achievement of all adolescents in the sample. The subsequent terms (i.e.,

eight through eleven) identify group differences by assessing the interaction of support subtypes by disability status. All of the interactions are tested together and any that emerged as significant were examined individually. The data indicates whether varying levels of support subtypes from parents have an interactive effect on achievement among students with and without learning disabilities. Any resulting interactions indicate that there are different associations among support subtypes and achievement for students with and without disabilities. The predictors for 3a are:

Reduced Model:
$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i}$$

Full Model:
$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_9 + \beta_{10} X_{10i} + \beta_{11} X_{11i}$$

Where:
$X_{8i} = X_{1i} \cdot X_{5i}$ (X_{8i} is the interaction between Emotional Support and learner status)
$X_{9i} = X_{2i} \cdot X_{5i}$ (X_{9i} is the interaction between Informational Support and learner status)
$X_{10i} = X_{3i} \cdot X_{5i}$ (X_{10i} is the interaction between Appraisal Support and learner status)
$X_{11i} = X_{4i} \cdot X_{5i}$ (X_{11i} is the interaction between Instrumental Support and learner status)

Hypotheses:
$H_0 : \Delta P^2 = 0$
$H_A : \Delta P^2 \neq 0$

Table 9

Support Subtype from Parents and Group Interaction (RQ3.1Models)

Reduced Model Predictors (Model 3.1a)
X_1 = Informational from Parents
X_2 = Appraisal from Parents
X_3 = Emotional from Parents
X_4 = Instrumental from Parents
X_5 = Group (learner status)

Reduced Model Predictors (Model 3.1b)
X_1 = Informational from Parents
X_2 = Appraisal from Parents
X_3 = Emotional from Parents
X_4 = Instrumental from Parents
X_5 = Group (learner status)
X_6 = Grade Level
X_7 = Gender
X_8 = Informational from Parents x Group
X_9 = Appraisal from Parents x Group
X_{10} = Instrumental from Parents x Group
X_{11} = Emotional from Parents x Group

* Y = academic achievement

Equations 3.2, 3.3, and 3.4. Regression equations 3.2, 3.2, and 3.3 are identical to equation 3a except subtypes of support from peers (equation 3b), a close friend (equation 3c), and teachers (equation 3d) are assessed. These models also show whether subtypes of support from these sources account for group achievement and any group by support subtype interaction on achievement. Similar to 3a, if interactions occur among each source then it can be concluded that specific support subtypes from each source have different relationships to the achievement of students with and without disabilities.

Power analysis

Regression models 2 and 3 each include 7 tested predictors in the reduced model and 11 in the full model (i.e., interactions). In previous investigations, regression analyses with social support as the predictor and achievement as the outcome resulted in R^2 values ranging from .075 to .137, and ΔR^2 of .026 to .027 (Malecki & Demaray, 2006). However, the authors used five regression models with two terms, a support source (e.g. parents) and a source by SES interaction. The regression models in this investigation are larger with seven terms in each model therefore smaller effect sizes may result. Despite the inclusion of nine terms in each model, the variables (i.e., support source and subtype), moderator (i.e., disability status), and achievement measures (i.e., annual statewide assessment) in this study have not been previously explored together, therefore small or large effects cannot be assumed.

Examinations of previous effect sizes and regression models must be conducted to determine potential effect sizes for the population in this study. Effect size conformity is required to accurately compare previous results and potential outcomes in this investigation. Conformity is attained by adjusting the R^2 (i.e., .075 and .137) to Cohen's f^2. According to Cohen and Collegues (2003), f^2 is the percentage variance in the dependent variable that is accounted for by a specific set of variables. Thus, the f^2 value indicates the importance of the variables and allows the investigator to test whether it significantly adds to the regression model for a specific population. To obtain the value of f^2, a calculation of $R^2 \backslash 1 - R^2$ must be computed. Therefore, an R^2 of .075 and .137 is equivalent to an f^2 of .081 and .158. These are low and moderate effects according to previous regression analyses conducted with social support scores (Demaray & Malecki ,

2003, Malecki & Demaray, 2006). Together the studies suggest small to large effects ranging from .075 to .30.

In addition to estimated effect sizes, the range of power and error for varying sample sizes highlights whether effects are likely to be accurately detected. See Table 10 for information regarding the power analysis. To complete the power analysis for this investigation information regarding predictors, alpha error rate, and effect sizes are necessary. First, the "number of tested predictors" is equivalent to the sum of predictors in the reduced model (i.e., the interaction terms), and the "total number of predictors" equals the quantity of terms in full model (G Power User Guide Version 3.1.0, 2009). Following the information regarding predictors, the alpha error probability (.05), power (.80), and sample size (120) are set. According to the quantity of predictors, alpha error rate, and power, with a sample of 120 a medium f^2 effect of .06 to .10 can be detected (See Figures 1 and 2).

Table 10

Linear Multiple Regression: Fixed Model, R^2 Increase (RQ1)

Subject	Value (RQ1)	Value (RQ2 and RQ3)
Total sample size	120	120
Number of tested predictors	4	7
Total number of predictors	5	11
Effect size: f^2	0.067	0.103
Effect size: R^2	0.063	.094
α error probability (err prob)	0.05	0.05
Power (1-β err prob)	0.80	0.80
Noncentrality parameter δ	7.98	12.47
Critical f	3.92	2.46
Numerator DF	1	4
Denomenator DF	114	108

Note: Data obtained from G-Power (2009)

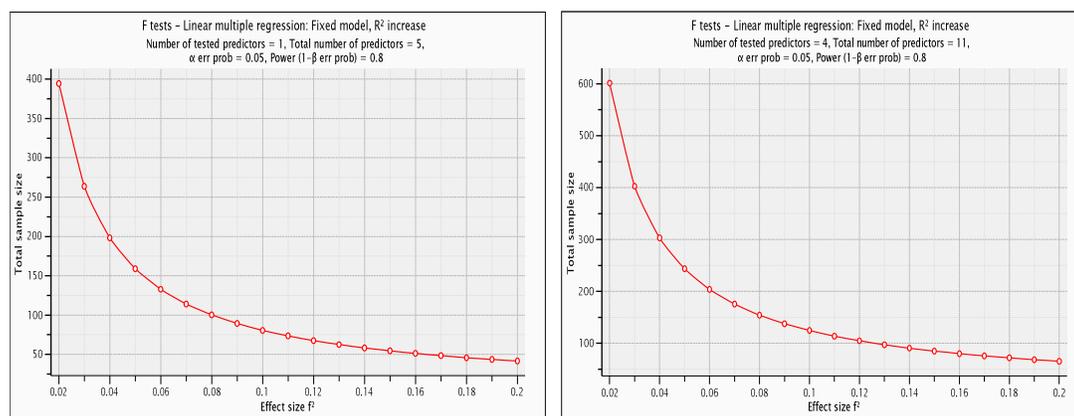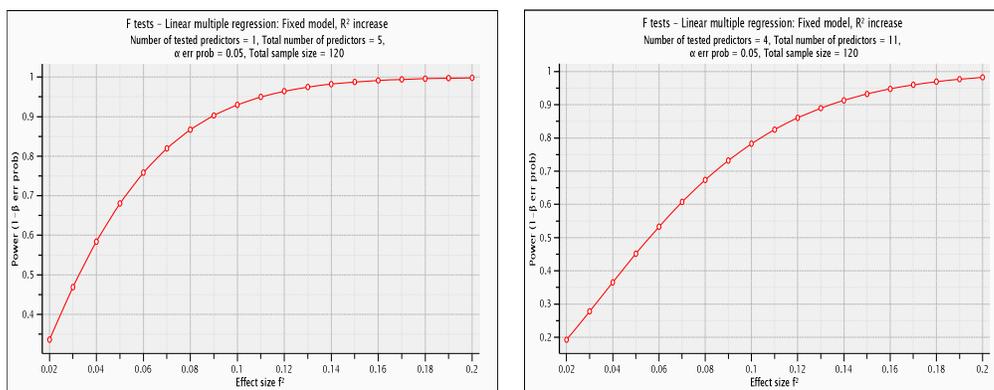Figure 1. Effect size for regression models (RQ1 and RQ2/RQ3)

Figure 2. Power for regression models (RQ1 and RQ2/RQ3)

Additional Regression Considerations

As previously noted, past investigators used regression analysis to examine social support by group interactions on achievement (Malecki & Demaray, 2006) and found significant effects.   In addition, the authors addressed issues that arise naturally in regression models by centering the quantitative predictors. Aiken and West (1991) caution investigators using interactions against multicollinearity since a high correlation among the interaction terms and independent variables from which they were derived frequently results.   Creating "centered" predictors from the variable mean by changing the original variable into a deviation score counters correlation issues. The resulting deviation scores are then placed into the interaction terms and minimize any potential nonessential multicollinearity. Based on the utility of adjusting the model, the social support variables were centered to create meaningful terms and ensure that any scaling effects are not present in the data. After centering the predictors all that remains is the essential correlation between social support subtypes. That is, correlation that is not due to the scaling of the variables.

Anticipated Outcomes

This study contributes to the current literature by identifying relationships between specific support sources (i.e., parents, classmates, a close friend, and teachers), subtypes (i.e., Informational, Instrumental, Appraisal, and Emotional) and achievement (i.e., mathematics and ELA) of students with and without disabilities. Within the current research, investigators report a relationship between social support and the academic achievement of general education students (Gutman & Midgley, 2000; Lee & Smith, 1999; Malecki & Demaray, 2006; Rosenfeld et al., 2000). Despite findings for general education students, gaps in the research exist for students with learning disabilities. This is surprising, given that these students are particularly at risk. Therefore, investigators and practitioners should attempt to fully understand constructs that potentially relate to their achievement.

Furthermore, this investigation is unique because it includes interactions between multiple kinds of social support (i.e, overall support, sources, and subtypes) and group (i.e., learner status) on achievement scores. If various sources and types of social support are not thoroughly investigated we may fail to identify relationships between the different types of support and how they relate to achievement. Additional investigations of support with populations of students with and without learning disabilities may yield new and useful results.

This study will provide initial evidence of whether disability status moderates the relationship between support and achievement. However, it is also necessary to cautiously interpret results since the findings will provide a snap shot of support in a middle school setting and causal effects cannot be suggested. Hence, the subsequent data

may inform practitioners about unique student needs. Specifically, those invested in adolescents can use the findings to better understand what sources and types of support are related to academic achievement and as a result better consider their educational success.

CHAPTER IV

Results

Overview

This chapter presents the results of the data analysis conducted to assess the independent (i.e., social support) and dependent variables (i.e., ELA and mathematics achievement) of this study. The findings of the investigation are organized into two sections. First, descriptive statistics (i.e., means and standard deviations) of the raw scores for social support and achievement are presented. Then, a summary of the ordinary least squares regression analyses employed for each research question (i.e., questions 1, 2, and 3) is provided.

Descriptive Statistics for Support Scores, Motivation, and Achievement

Independent Variable: Social Support. The CASSS Questionnaire assesses four subtypes (i.e., Emotional, Informational, Appraisal, and Instrumental) of social support from four support sources: parents, teachers, classmates, and a close friend on a 5-point Likert scale. Therefore, a student will obtain a composite score for every support source (12 to 72) and each support subtype (4 to 24) that is nested within each support source. Students also receive a total social support score (48 to 288), which is the combined value of support from parents, teachers, classmates, and a close friend (i.e., sum of four sources).

The means and standard deviations for the social support scores are provided in Table 11. The values are displayed for the total sample and each group (i.e, students with LD, students without LD). Among all students, the support source means ranged from 37.65 (13.89) to 56.71(12.04) and the support subtype means fell between 47.55 (9.12) to

53.77 (9.62). These initial values suggest that respondents used the lower response values less frequently (e.g., 1= Never) and higher response categories more frequently (e.g., 5= Always).   In addition, the total score mean was 205.83 (37.30) for the entire sample. However, students with learning disabilities had a slightly lower mean of total support (M= 200.30, SD= 32.90) in comparison to students without learning disabilities (M= 206.83, SD= 38.09).

Finally, to identify whether the social support data was normally distributed the skewness statistic and histogram of the academic and support scores were examined. Lomax (1998) indicates that +/- 2.0 is an acceptable benchmark to assess score skewness. Based on that criterion the skewness of the social support data is not problematic and no outliers were identified. In addition, almost all of the kurtosis statistics were in a normal range (+/- 1) indicating that distribution was relatively normal. The exceptions were the kurtosis values for Classmate Informational (-1.02) and Close Friend Emotional (-1.33) support.

Table 11

Means and Standard Deviations for Social Support Subtypes

Support Type	Emotional	Informational	Appraisal	Instrumental	Total Score
Parent Support					
Total Sample	13.91 (3.38)	14.08 (3.40)	13.63 (3.61)	12.82 (3.62)	54.45 (12.25)
Without LD	13.83(3.44)	14.14 (3.37)	13.74 (3.48)	12.97 (3.47)	54.69 (11.94)
With LD	14.35 (3.13)	13.75 (3.64)	13.00 (4.33)	12.00 (4.35)	53.10 (14.14)
Teacher Support					
Total Sample	13.15 (3.55)	14.91 (2.81)	13.35 (3.46)	12.97 (3.54)	54.38 (11.25)
Without LD	12.99 (3.72)	14.94 (2.85)	13.29 (3.59)	12.98 (3.67)	54.20 (11.80)
With LD	14.05 (2.28)	14.75 (2.65)	13.70 (2.62)	12.90 (2.81)	55.40 (7.67)
Classmate Support					
Total Sample	10.45 (3.72)	10.37 (4.21)	8.94 (4.10)	10.91 (4.29)	40.68 (14.36)
Without LD	10.59 (3.72)	10.46 (4.24)	9.03 (4.11)	11.14 (4.24)	41.23 (14.43)
With LD	9.65 (3.75)	9.90 (4.11)	8.50 (4.14)	9.60 (4.44)	37.65 (13.89)
Close Friend Support					
Total Sample	14.62 (3.62)	14.10 (3.46)	13.10 (3.85)	14.50 (3.19)	56.32 (12.39)
Without LD	14.63 (3.61)	14.23 (3.35)	13.23 (3.85)	14.61 (3.08)	56.71 (12.04)
With LD	14.55 (3.72)	13.35 (4.02)	12.35 (3.88)	13.90 (3.81)	54.15 (14.31)
Total Support Score					
Total sample	N/A	N/A	N/A	N/A	205.83 (37.30)
Without LD	N/A	N/A	N/A	N/A	206.83 (38.09)
With LD	N/A	N/A	N/A	N/A	200.30 (32.90)

Covariate: Motivation. The three questions regarding motivation to succeed or

do well on the MCAS were assessed through a four-point Likert scale (1= Not Likely) to

(4= Very Likely). Therefore, the total possible score for motivation ranged from 3 to 12.

Once survey results were obtained an initial review of score distribution (Skew= -.65,

Kurtosis= -.48) confirmed adequate normality of the responses and no outliers were

present. The resulting survey scores showed that students with disabilities had a similar

mean level of motivation 10.60 (1.39) in comparison to their non-disabled peers 10.32

(1.58). Furthermore, the average for the entire group was 10.36 (1.55). This suggests

that students with and without disabilities report similar levels of motivation to succeed

on the MCAS.

      Dependent Variable: Achievement. Student outcomes on the MCAS fall into

one of four performance levels, *advanced* (257-280 points), *proficient* (240-258 points),

needs improvement (220-238 points), and *warning* (200- 218 points). For the entire

sample, the MCAS ELA and mathematic means ranged from 228.97 (15.74) to 233.70

(14.25). Students with learning disabilities had similar means of both ELA (M= 225.05,

SD= 14.70) and mathematics (M= 230.74, SD= 13.15) achievement scores in comparison

to their general education peers. Specifically, the achievement scores for students

without disabilities were, ELA (M= 229.70, SD= 15.89) and mathematics (M= 234.26,

SD= 14.44). In addition, the examination of gender and grade level results showed that

6th and 7th grade girls had a higher mean ELA score and a lower mathematics score in

comparison to their male peers (see Table 12). For 8th grade girls the mathematics and

ELA means were higher than 8th grade boys' means

Table 12

MCAS ELA and Mathematics Scores by Gender and Grade

Grade level	ELA	Mathematics
6th Grade		
Male	225.89 (16.89)	231.67 (17.56)
Female	226.70 (15.17)	224.10 (14.96)
7th Grade		
Male	234.25 (11.18)	232.91 (13.71)
Female	235.75 (9.69)	227.64 (9.63)
8th Grade		
Male	233.06 (12.47)	227.38 (16.31)
Female	243.55 (10.59)	231.33 (16.76)
Total	233.70 (14.25)	229.06 (15.78)

Moreover, in comparison to the entire school population, 7th and 8th grade participants in this study had higher levels of "proficient" and "advanced." These data also indicate that 6th graders in the sample were academically representative of the school. See Table 13 for a comparison of proficiency levels between the state, city, and school. Finally, an examination of the skewness statistic and histogram showed that the ELA (Skew= -.099, Kurtosis= -1.153) and mathematics (Skew= .659, Kurtosis= -.816) achievement scores are normally distributed and no outliers are present.

Table 13

Proficiency scores for MCAS ELA and Mathematics Scores

Percent (%)"Proficient" or "Advanced	Statewide	Citywide	School wide	Sample
English Language Arts (ELA)				
6th grade	69	44	26	24
7th grade	72	52	17	37
8th grade	78	57	32	57
Mathematics				
6th grade	59	38	29	29
7th grade	53	37	15	37
8th grade	51	34	17	29

Note: Data Obtained from Massachusetts DOE 2009-2010 Profiles

Correlations of all variables. Findings show that several significant correlations exist among the social support variables. The associations ranged from low (.01) to strong (.91). The highest correlations were among individual subtype scores and the total support source scores. For example, the correlation between total parent support and subtypes of parent support (i.e., Emotional, Informational, Appraisal, and Instrumental) ranged from .84 to .91. This is expected given that the subtype scores are combined to make each total source score. Similarly, the associations among the overall score (i.e., sum of all total source scores) and each total support source score were moderate ranging from .70 to .77. Once again, this correlation was anticipated since the source scores are summed to comprise the total score.

Furthermore, the individual subtype scores among each source had low moderate (.60) to strong correlations (.91) with one another. This indicates that there is some variance amongst the subtypes that are nested within each source of support. This variance is expected based on the theoretical foundation that indicates each subtype of

support is perceived differently by support recipients (House, 1981). Previous literature on the CASSS does not provide correlations among sources or subtype; therefore whether these figures are comparable to previous literature is not clear.

Finally, low and moderate positive correlations resulted between the covariate motivation and the other predictors. The scores most closely related to motivation were total close friend support (.61) and total social support (.69). This suggests that motivation has a stronger relationship to combined total scores than individual subtype scores. Therefore the analysis results could vary based on the types of social support scores included (i.e., subtype vs. total score).

Regression Analyses

Prior to completing the regression analyses all of the variables were centered to counter potential issues with multicollinearity. Then, gender and grade level were controlled in each equation based on findings from the review of literature. Specifically, authors indicate that gender impacts math gains (Lee & Smith, 1999) and initial 5th grade ELA status (Flemming et al., 2002). However, based on preliminary regression analysis, race, socioeconomic status, and motivation were dropped from the models. In addition, eliminating three variables from each model increased the power of the regression equations.

Furthermore, SPSS was used to investigate the relevant independent and dependent variables associated with each research question to create the regression models. As indicated in Chapter 3, the cases with missing achievement scores were dropped listwise from the analysis (n = 11). Since there were two dependent variables of interest in this investigation, separate models were conducted for mathematics and ELA

outcomes. In the next section the results obtained from each regression equation (RQ1-

RQ3) are reported. The reduced model is reported first and then the interaction terms are

added to the full model. Following the addition of the interaction terms, a model

comparison test is used to identify whether the interaction terms in the full model (1b)

significantly contribute to ELA outcomes above what is added by the reduced model (1a).

The resulting F statistic is examined to determine whether the reduced and full models

are significantly different. The ELA and mathematics models are labeled as a, b, c, or d

(ELA reduced model= a; ELA full model= b; Mathematics reduced model= c;

Mathematics full model= d).

Research Question (RQ) 1: Does disability status moderate the effect of Overall Social Support (i.e. sum of support from teachers, parents, peers, a close friend) perceptions in relation to academic outcomes (i.e., ELA and mathematics)?

Reduced Model (1a and 1c):
$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i}$$

Full Model (1b and 1d):
$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i}$$
Where:
$X_{5i} = X_{1i} \cdot X_{2i}$ (X_{5i} is the interaction between Overall Support and Group)

Hypotheses:
$H_0: \Delta P^2 = 0$
$H_A: \Delta P^2 \neq 0$
Where:
The null hypothesis (H0) states that disability status does not moderate the relationship between achievement and social support (i.e., there is no disability status effect on support and achievement) $\Delta P^2 = 0$. The alternative hypothesis (H_A) states that an interaction does occur, which would indicate a moderating effect exists ($H_A: \Delta P^2 \neq 0$).

Models 1a and 1b: Overall Social Support and ELA Outcomes. The F

statistic showed that the addition of an interaction term (i.e., overall social support by

group) in model 1b did not add to equation ($F_{5, 114} = 1.134, p = .289$). Therefore, model 1a

was selected to address this research question because it was the most parsimonious

model.   Table 14 shows the comparison of the reduced model 1a and full model 1b,

which differed by one degree of freedom (i.e., 4 versus 5 predictors).

Furthermore, overall social support (β = -.042, p = .197) was not a significant

variable in model 1a indicating that it is not associated with ELA outcomes controlling

for gender and grade level.   Only, gender (β = 5.444, p = .000) and grade level (β =

5.883, p = .000) made significant contributions to the model (See Table 16).   According

to the R^2 effect size for model 1a, the included variables accounted for 20% of the

variance in ELA achievement, which is a medium effect based on previous literature

(Demaray & Malecki, 2003; Malecki & Demaray, 2006).   Based on the resulting effects

and significant contributors to the model, the null hypothesis was retained for this

research question ($H_0 : \Delta P^2 = 0$).   Learner status does not moderate the effect of overall

support perceptions in relation to ELA scores.

Table 14

Model Comparison, ELA Outcomes (Models 1a and 1b)

Model	F Change	P value
1a	7.208	.000**
1b	1.134	.289

*Note. *$p \leq$* .05, ***$p \leq$*.01, ****$p \leq$*.001*

Table 15

Regression Table, ELA Outcomes (Models 1a and 1b)

Variable	β	t	Significance		β	t	Significance
	Reduced Model (1a)				*Full Model (1b)*		
Intercept	189.199	19.068	.000		188.022	18.844	.000
Total Social Support	-.042	-1.441	.152		-.028*	-.076	.411
Group (learner Status)	-4.328	-1.305	.195		-4.800	-.824	.938
Gender	5.883	4.319	.000***		5.273	2.174	.952
Grade	5.444	2.249	.026*		6.057	4.418	.932
Total SS x Group					-.105	-1.065	.289

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Models 1c and 1d: Overall Social Support and Mathematics Outcomes. The regression analysis indicated that the reduced ($F_{4, 115} = .589$, $p = .671$) and full ($F_{5, 114} = .541$, $p = .745$) mathematics models were not statistically significant. Specifically, there were no variables that contributed to mathematics outcomes. Therefore, learner status does not moderate the relationship between overall support perceptions and mathematics achievement (See Tables 17, 18).

Table 16

Model Comparison, Mathematics Outcomes (Models 1c and 1d)

Model	F Change	P value
1c	.589	.671
1d	.362	.549

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Table 17

Regression Table, Mathematics Outcomes (Model 1c and 1d)

Variable	β	t	Significance		β	t	Significance
	Reduced Model (1c)				Full Model (1d)		
Intercept	225.510	18.409	.000		221.510	18.166	.000
Total Social Support	.010	.260	.795		.020	.461	.645
Group (learner Status)	-5.458	-1.345	.181		-5.789	-1.410	.161
Gender	-2.054	-.696	.488		-2.169	-.731	.466
Grade	1.184	.712	.478		1.309	.779	.438
Total SS x Group					-.073	-.602	.549

Note. *p≤ .05, **p≤.01, ***p≤.001

Research Question (RQ) 2: Does disability status moderate the effect of support from parents, peers, a close friend, and/or teacher in relation to academic outcomes (i.e., mathematics and ELA)?

Reduced Model (2a and 2c):
$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i}$$

Full Model (2b and 2d):
$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_9 + \beta_{10} X_{10i} + \beta_{11} X_{11i}$$

Where:
$X_{8i} = X_{1i} \cdot X_{5i}$ (X_{8i} is the interaction between Parent Support and Group)
$X_{9i} = X_{2i} \cdot X_{5i}$ (X_{9i} is the interaction between Peer Support and Group)
$X_{10i} = X_{3i} \cdot X_{5i}$ (X_{10i} is the interaction between Close Friend Support and Group)
$X_{11i} = X_{4i} \cdot X_{5i}$ (X_{11i} is the interaction between Teacher Support and Group)

Hypotheses:
$H_0: \Delta P^2 = 0$
$H_A: \Delta P^2 \neq 0$
Where:
The null hypothesis (H0) states that disability status does not moderate the relationship between achievement and social support (i.e., there is no disability status effect on

support and achievement) $\Delta P^2 = 0$. The alternative hypothesis (H_A) states that an interaction does occur, which would indicate a moderating effect exists ($H_A : \Delta P^2 \neq 0$).

Models 2a and 2b: Social Support Sources and ELA Outcomes. The comparison of models 2a ($F_{7, 112} = 4.444$, $p = .000$) and 2b ($F_{11, 108} = 3.739$, $p = .076$) revealed that the additional interaction coefficients in model 2b did not contribute significantly to ELA outcomes controlling for grade level and gender (See Table 18). Therefore, model 2a was retained for this question since it had the best fit. Table 20 shows that grade level ($\beta = 6.203$, $p = .000$) was the only significant contributor in model 2a. The R^2 effect size for model 2a was in the low range, with a value of .07 (Demaray & Malecki, 2003; Malecki & Demaray, 2006). Since model 2b did not reach a level of significance the null hypothesis was retained for question 2. However, an examination of the interaction coefficients in model 2b showed that close friend support by LD status was significant ($\beta = -.734$, $p = .010$). This suggests that the null findings may be the result of a small sample size. These results suggest that students in the general and special education population do not differ in relation to parent, teacher, classmate and a close friend support with ELA outcomes.

Table 18

Model Comparison, ELA Outcomes (Models 2a and 2b)

Model	*F* Change	*P* value
2a	4.444	.000***
2b	2.177	.076

*Note. *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$*

Table 19

Regression Table, ELA Outcomes (Models 2a and 2b)

Variable	β	T	Significance		β	t	Significance
	Reduced Model				*Full Model*		
Intercept	187.394	18.648	.000		187.302	18.918	.000
Total Parent SS	-.214	-1.844	.068		-.213	-1.629	.106
Total Teacher SS	.041	.305	.761		.032	.228	.820
Total Classmate SS	.000	-.006	.995		-.089	-.801	.425
Total Close Friend SS	.016	.140	.889		.196	1.462	.147
Group (learner Status)	-4.596	-.121	.168		-6.644	-1.800	.075
Gender	4.596	1.818	.072		4.169	1.630	.106
Grade	6.240	4.478	=.000***		6.240	4.575	.000***
Total Parent x Group					-.266	-.937	.351
Total Teacher x Group					.565	.943	.348
Total Classmate x Group					.273	1.013	.313
Total Close Friend x Group					-.734	-2.637	.010**

*Note. *$p \le .05$, **$p \le .01$, ***$p \le .001$*

Models 2c and 2d: Social Support Sources and Mathematics Outcomes.

Models 2c ($F_{7, 112} = 1.190$, $p = .314$) and 2d ($F_{11, 108} = 1.190$, $p = .429$) were not statistically

significant. These findings indicate that sources of social support (i.e., parents, teachers,

classmates, and a close friend), grade level, group (learner status), and gender are not

significantly related to mathematics outcomes (See Table 20, 21).

Table 20

Model Comparison, Mathematics Outcomes (Models 2c and 2d)

Model	*F* Change	*P* value
2c	1.190	.314
2d	.966	.429

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Table 21

Regression Table, Mathematics Outcomes (Models 2c and 2d)

Variable	β	T	Significance		β	T	Significance
	Reduced Model				*Full Model*		
Intercept	218.776	18.090	.000		218.499	17.964	.000
Total Parent Support	-.256	-1.818	.072		-.224	-1.380	.171
Total Teacher Support	.191	1.162	.248		.149	.865	.389
Total Classmate Support	-.040	-.329	.743		-.090	-.657	.513
Total Close Friend Support	.211	1.520	.131		.315	1.902	.060
Group (learner Status)	-6.484	-1.585	.116		-9.035	-1.988	.049*
Gender	-3.813	-1.260	.210		-3.539	-1.133	.260
Grade	1.834	1.095	.276		1.843	1.095	.276
Total Parent x Group					-.337	-.963	.338
Total Teacher x Group					.952	1.292	.199
Total Classmate x Group					.147	.442	.659
Total Close Friend x Group					-.580	-1.694	.093

*Note. *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$*

Research Question (RQ) 3: Does disability status moderate the effect of support subtypes (i.e. Emotional, Informational, Appraisal, and Instrumental) from different sources?

To address Research Question 3 (RQ3) four ELA equations and four mathematics

equations were included. Since the subtypes of social support (i.e. Emotional,

Informational, Appraisal, and Instrumental) are nested within each source (i.e., Parents,

Classmates, A Close Friend, and Teachers) multiple equations were required. The

subsequent section is discussed as follows, subtypes of support from parents (RQ3.1),

classmates (RQ3.2), a close friend (RQ3.3), and teachers (RQ3.4).

Reduced Models (3.1a-3.4a and 3.1c-3.4c):
$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i}$$

Full Model (3.1b-3.4b and 3.1d-3.4d)
$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_9 + \beta_{10} X_{10i} + \beta_{11} X_{11i}$$
Where:
$X_{8i} = X_{1i} \cdot X_{5i}$ (X_{8i} is the interaction between Emotional Support and Group)
$X_{9i} = X_{2i} \cdot X_{5i}$ (X_{9i} is the interaction between Informational Support and Group)
$X_{10i} = X_{3i} \cdot X_{5i}$ (X_{10i} is the interaction between Appraisal Support and Group)
$X_{11i} = X_{4i} \cdot X_{5i}$ (X_{11i} is the interaction between Instrumental Support and Group)

Hypotheses:
$$H_0 : \Delta P^2 = 0$$
$$H_A : \Delta P^2 \neq 0$$
Where: The null hypothesis (H0) states that disability status does not moderate the
relationship between achievement and social support (i.e., there is no disability status
effect on support and achievement) $\Delta P^2 = 0$. The alternative hypothesis states that an
interaction does occur, which would indicate a moderating effect exists ($H_A : \Delta P^2 \neq 0$).

      Models 3.1a and 3.1b: Parent support and ELA Outcomes. The comparison of

model 3.1a ($F_{7, 112} = 5.229$, $p = .001$) and 3.1b ($F_{11, 108} = 4.012$, $p = .163$) indicated that the

F statistic was not significant controlling for gender and grade level (See Table 22).

Therefore, model 3.1a was selected to address this research question since it was the most

efficient and well fit model. Table 23 shows that the statistically significant regression

coefficients in model 3.1a were Appraisal support ($\beta = -1.517$, $p = .008$), gender ($\beta =$

4.893, $p= .046$), and grade level ($\beta = 5.883$, $p= .000$). This indicates that high levels of

Appraisal from parents are related to lower academic ELA outcomes for students with

and without learning disabilities when controlling for everything else in the model.

For example, a 7th grade male student with an average Appraisal score of 10.04 would be predicted to earn an ELA achievement score of 228.04, which is in the "need improvement" category. However, a student with similar characteristics and a support score two standard deviations above the average (17.48) would be predicted to score 10.95 points lower. The resulting score would be 217.09, which is in the "warning" category. This finding was surprising given that higher levels of support were expected to relate to higher achievement scores.

In addition, grade level and gender were also significant contributors to the model. The R^2 effect size indicated that together the variables in the model accounted for 25% of the variance in ELA achievement. This is a large effect size according to previous studies (Demaray & Malecki, 2003; Malecki & Demaray, 2006) suggesting that .35 is a large effect. As previously stated, model 3.1b ($F_{4,108} = 1.67$, $p = 0.163$) did not reach a level of statistical significance. This suggests that learner status does not have a moderating effect on the relationship between achievement and specific subtypes of parent support. Yet, it should be noted that informational parent support by LD status was significant in the full model ($\beta = 3.871$, $p = .035$). Therefore, the null findings for model 3.1b may be the result of a small sample size.

Table 22

Model Comparison, ELA Outcomes (Models 3.1a and 3.1b)

Model	*F* Change	*P* value
3.1a	5.229	.000***
3.1b	1.667	.163

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Table 23

Regression Table, ELA Outcomes (Model 3.1a and 3.1b)

Variable	β	t	Significance		β	t	Significance
	Reduced Model				*Full Model*		
Intercept	189.561	19.461	.000		185.179	18.748	.000
Emotional Parent Support	.357	.635	.527		.622	1.027	.307
Informational Parent Support	-.293	-.578	.565		-.570	-1.087	.279
Appraisal Parent Support	-1.517	-2.317	.022*		-1.413	-1.962	.052
Instrumental Parent Support	.755	1.293	.199		.689	1.087	.280
Group (learner Status)	-5.003	-1.501	.136		-2.916	-.821	.413
Gender	4.893	2.015	.046*		4.348	1.767	.080
Grade	5.883	4.418	.000***		6.550	4.835	.000*
Emotional Support x Group					-.744	-.426	.671
Informational Support x Group					3.871	2.132	.035*
Appraisal Parent x Group					-.744	-.426	.671
Instrumental Support x Group					-.472	-.288	.774

*Note. *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$*

Models 3.1c and 3.1d: Parent Support and Mathematics Outcomes. Similar to the previous mathematics equations, model 3.1c ($F_{7, 112} = .799$, $p = .590$) and 3.1d ($F_{11,108} = .849$, $p = .497$) did not have any significant contributors (See Tables 25,26).

Learner status does not have a moderating effect on subtypes of parent support and

mathematics achievement.

Table 24

Model Comparison, Mathematics Outcomes (Models 3.1c and 3.1d)

Model	F Change	P value
3c	.799	.590
3d	.849	.497

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Table 25

Regression Table, ELA Outcomes (Models 3.1c and 3.1d)

Variable	β	t	Significance		β	t	Significance
	Reduced Model				*Full Model*		
Intercept	225.075	18.818	.000		224.222	18.157	.000
Parent Emotional	.737	1.055	.294		1.109	1.454	.149
Informational Parent Support	-.030	-.047	.963		.085	.128	.899
Parent Appraisal	-1.097	-1.338	.184		-1.494	-1.631	.106
Instrumental Parent Support	-.009	-.012	.990		.045	.057	.955
Group	-6.702	-1.619	.108		-4.236	-.948	.345
Gender	-1.795	-.597	.552		-1.947	-.630	.530
Grade	.682	.414	.680		.965	.568	.571
Emotional Support x Group					-3.131	-1.397	.165
Informational Support x Group					-.939	-.410	.682
Appraisal Support x Group					2.746	1.246	.216
Instrumental Support x Group					-.469	-.228	.820

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Models 3.2a and 3.2b: Classmate support and ELA Outcomes. The

comparison of models 3.2a ($F_{7, 112}$ = 5.639, p = .000) and 3.2b ($F_{11, 108}$ = .607, p= .658)

indicated that the interaction terms in the full model did not contribute to ELA outcomes

controlling for gender and grade level (See Table 26). Since there were no significant

interaction terms in model 3.2b, learner status does not moderate the relationship between

ELA scores and subtypes of support from classmates. Although there was no group

(learner status) effect, the examination of the coefficients in model 3.2a suggested that

Informational support (β = -1.194, p = .009), gender (β = 7.117, p = .004), and grade

level (β = 4.454, p = .003) were significant contributors to the equation (See Table 27).

Additionally, the coefficient for Emotional support (β = .983, p = .056) was only

slightly higher (.056) than the level of significance set in this study and used

conventionally in education research (.05). Together the variables accounted for an R^2

effect size of .26, which is a large effect according to previous literature (Demaray &

Malecki, 2003; Malecki & Demaray, 2006).

Overall, these results suggest that Informational support from classmates is

connected to lower ELA scores, while Emotional support is connected to higher

academic outcomes for all students in the sample. For instance, a 7th grade male student

with a low level of Emotional support (6.73) would be expected to receive an ELA score

of 236.55, which is classified as "need improvement." However, the same student with a

high level of Emotional support (14.17) would be expected to score 243.84, which is 7.29

points higher and in the "proficient" category. In contrast, this student would be

expected to have 10.02 ELA points less (245.35 to 235.33) if levels of Informational

support went from low (6.16) to high (14.58). The result for Informational support was

unexpected since higher support levels were predicted to relate to higher academic outcomes for the general population. Finally, there was no learner status effect on classmate support. It appears that students with and without learning disabilities are similar in the area of classmate support perceptions and ELA outcomes.

Table 26

Model Comparison, ELA Outcomes (3.2a and 3.2b)

Model	*F* Change	*P* value
3.2a	5.639	.000***
3.2b	.607	.658

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Table 27

Regression Table, ELA Outcomes (3.2a and 3.2b)

Variable	β	t	Significance		β	t	Significance
	Reduced Model				*Full Model*		
Intercept	198.211	19.029	.000		200.838	18.520	.000
Emotional Classmate Support	.983	1.930	.056		1.307	2.257	.026*
Informational Classmate Support	-1.194	-2.667	.009**		-1.345	-2.738	.007**
Appraisal Classmate Support	-.599	-1.261	.210		-.719	-1.415	.160
Instrumental Classmate Support	.588	1.172	.244		.462	.780	.437
Group (Learner Status)	-1.904	3.076	.569		-2.074	-.584	.560
Gender	7.117	2.916	.004**		6.911	2.797	.006**
Grade	4.454	3.076	.003**		4.103	.258	.008**
Emotional Support x Group					-1.371	-1.131	.260
Informational Support x Group					.828	.681	.497
Appraisal Classmate x Group					.646	.388	.699
Instrumental Support x Group					.376	.294	.769

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Models 3.2c and 3.2d: Classmate support and Mathematics Outcomes.

Model 3.2c ($F_{7, 112}$ = 1.656, p = .127) and 3.2d ($F_{11,108}$ = .379, p = .823) were not

statistically significant. Emotional, Informational, Appraisal, and Instrumental social support from classmates do not differ among populations of students in the general and special education population in relation to mathematics outcomes (See Tables 29, 30).

Table 28

Model Comparison, Mathematics Outcomes (Models 3.2c and 3.2d)

Model	*F* Change	*P* value
3.2c	1.656	.127
3.2d	.379	.823

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Table 29

Regression Table, Mathematics Outcomes (Models 3.2c and 3.2d)

Variable	β	t	Significance		β	t	Significance
	Reduced Model				*Full Model*		
Intercept	233.447	18.408	.000		232.177	17.485	.000
Emotional Classmate Support	.883	-1.630	.158		.951	1.345	.181
Informational Classmate Support	-1.131	-2.067	.041*		-1.412	-2.343	.021*
Appraisal Classmate Support	-.955	-1.630	.106		-1.016	-1.615	.109
Instrumental Classmate Support	1.157	1.905	.059		1.440	2.010	.047*
Group (Learner Status)	-2.581	-.633	.528		-3.744	-.859	.392
Gender	.029	.010	.992		-.241	-.080	.937
Grade	-.556	-.633	.750		-.378	-.204	.839
Emotional Classmate x Group					-.719	-.484	.630
Informational Classmate x Group					1.349	.903	.368
Appraisal Classmate x Group					.330	.161	.872
Instrumental Classmate x Group					-.964	-.616	-.539

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Models 3.3a and 3.3b: Close Friend support and ELA Outcomes. The model comparison results indicated that the interaction terms in the full model 3.3b ($F_{11,108} =$ 2.110, *p*= .084) did not contribute to ELA scores controlling for gender and grade level.

Therefore, model 3.3a ($F_{7, 112} = 4.229$, $p = .000$) was selected since it was the best fit (See Table 30). The R^2 effect size was .21, which is a moderate effect (Demaray & Malecki, 2003; Malecki & Demaray, 2006) indicating that the variables in the model account for 21% of the variance in ELA achievement. In addition, the examination of the coefficients indicated that gender ($\beta = -1.194$, $p = .009$) and grade level ($\beta = -1.194$, $p = .009$) were significant contributors (See Table 32). Based on these findings, learner status does not act as a moderator between academic outcomes and subtypes of support from a close friend. Therefore, the relationship among achievement and close friend support is similar for students in the special and general education population.

Table 30

Model Comparison, ELA Outcomes (Models 3.3a and 3.3b)

Model	*F* Change	*P* value
3.3a	4.229	.000***
3.3b	2.110	.084

*Note. *p≤ .05, **p≤.01, ***p≤.001*

Table 31

Regression Table, ELA Outcomes, Models 3.3a and 3.3b

Variable	β	t	Significance		β	t	Significance
	Reduced Model				Full Model		
Intercept	190.131	18.762	.000		191.563	19.072	.000
Cl. Friend Emotional	-.919	-1.524	.130		-1.263	-1.903	.060
Cl. Friend Informational	-.288	-.522	.602		.182	.311	.756
Cl. Friend Appraisal	.258	.541	.589		.585	1.134	.259
Cl. Friend Instrumental	.762	1.162	.248		.750	1.093	.277
Group (Learner Status)	-3.563	-1.052	.295		-5.250	-1.542	.126
Gender	5.794	2.293	.024*		5.589	2.186	.031*
Grade	5.709	4.083	.000***		5.512	3.956	.000***
Emotional Support x Group					1.171	.582	.562
Informational Support x Group					-2.450	-1.354	.178
Appraisal Support x Group					-1.709	-1.007	.316
Instrumental Support x Group					1.146	.123	.618

*Note. *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$*

Models 3.3c and 3.3d: Close Friend support and Mathematics Outcomes.

Model 3.3c ($F_{7,112} = 0.93$, $p = .479$) and 3.3d ($F_{11,108} = 0.93$, $p = .479$) were not statistically

significant (See Tables 33, 34). Disability status does not have an effect on subtypes of

close friend social support in relation to mathematics outcomes.

Table 32

Model Comparison, Mathematics Outcomes (Models 3.3c and 3.3d)

Model	*F* Change	*P* value
3.3c	.939	.479
3.3d	.661	.620

Note. *p≤ .05, **p≤.01, ***p≤.001

Table 33

Regression Table, Mathematics Outcomes (Models 3.3c and 3.3d)

Variable	*β*	*t*	*Significance*		*β*	*t*	*Significance*
	Reduced Model				*Full Model*		
Intercept	220.498	18.035	.000		221.802	17.833	.000
Close Fr. Emotional	-.221	-.306	.760		-.550	-.674	.502
Close Fr. Informational	-.296	-.404	.687		.065	.090	.928
Close Fr. Appraisal	1.020	1.772	.079		1.299	2.035	.044*
Close Fr. Instrumental	.007	.009	.993		-.134	-.160	.873
Group	-5.065	-1.240	.218		-6.146	-1.458	.148
Gender	-2.487	-.819	.414		-2.354	-.748	.456
Grade	1.471	-1.240	.218		1.272	.735	.464
Emotional x Group					1.255	.504	.616
Informational x Group					-2.083	-.930	.355
Appraisal x Group					-1.268	-.603	.548
Instrument x Group					1.481	.522	.603

Note. *p≤ .05, **p≤.01, ***p≤.001

Models 3.4a and 3.4b: Teacher support and ELA Outcomes. The comparison

of models 3.4a ($F_{7, 112}$= 4.009, *p*= .001) and 3.4b ($F_{11, 108}$= 2.110, *p*= .084) indicated that

3.4a was the most efficient equation to address this question (See Table 34). Although

the interaction term instrumental teacher support by LD status ($\beta = -2.544$, $p= .045$) was statistically significant in model 3.4b, the overall model did not reach a level of significance. The R^2 effect size was .20, which is in the medium range according to previous literature (Demaray & Malecki, 2003; Malecki & Demaray, 2006). Furthermore, grade level ($\beta = 5.712$, $p= .000$) was the only statistically significant variable in model 3.4a (See Table 35). Subtypes of social support from teachers were not significantly related to the academic outcomes of students with and without learning disabilities. There is no learner status effect on the relationship between subtypes of teacher support and achievement outcomes.

Table 34

Model Comparison, ELA Outcomes (Models 3.4a and 3.4b)

Model	*F* Change	*P* value
3.4a	.4.009	.001***
3.4b	1.664	.164

*Note. *$p \leq .05$, ***$p \leq .01$, ****$p \leq .001$

Table 35

Regression Table, ELA Outcomes (Models 3.4a and 3.4b)

Variable	β	t	Significance		β	t	Significance
	Reduced Model				*Full Model*		
Intercept	190.989	17.909	.000		189.372	17.737	.000
Teacher Emotional	.384	.623	.534		.169	.255	.799
Informational Teacher	-.044	-.071	.944		.190	.281	.779
Appraisal Teacher	-.093	-.179	.858		-.442	-.811	.419
Instrumental Teacher	-.551	-1.155	.250		-.079	-.153	.879
Group (Learner Status)	-4.653	-1.337	.184		-6.685	-1.721	.088
Gender	4.313	1.625	.107		4.242	1.602	.112
Grade	5.712	3.956	.000***		5.940	4.096	.000***
Emotional x Group					.875	.481	.631
Informational x Group					-1.483	-.926	.356
Appraisal x Group					2.625	1.539	.127
Instrumental x Group					-2.544	-2.030	.045*

Note. *p≤ .05, **p≤.01, ***p≤.001

Models 3.4c and 3.4d: Teacher support and Mathematics Outcomes. Models

3.4c ($F_{7,112}$= 1.291, *p*= .261) and 3.4d ($F_{11, 108}$= .651, *p*= .627) were not statistically

significant (See Tables 37, 38). Subtypes of teacher support do not contribute to

mathematics outcomes of students with and without learning disabilities.   There are not

different associations between subtypes of teacher support and standardized mathematics
outcomes for students in the general and special education population.

Table 36

Regression Table, Mathematics Outcomes (Model 3.4c and 3.4d)

Variable	β	t	Significance		β	t	Significance
	Reduced Model				*Full Model*		
Intercept	230.193	18.143	.000		233.110	18.022	.000
Emotional Teacher Support	1.003	1.554	.123		1.250	1.562	.121
Informational Teacher Support	-.849	-1.160	.249		-.879	-1.080	.283
Appraisal Teacher Support	.979	1.554	.123		.745	1.101	.273
Instrumental Teacher Support	-1.060	-1.848	.067		-1.209	-1.914	.058
Group (Learner Status)	-7.612	-1.840	.068		-7.762	-1.652	.101
Gender	-4.624	-1.467	.145		-4.075	-1.273	.206
Grade	.302	.175	.861		-.147	-.083	.934
Emotional x Group					-1.257	-.571	.569
Informational x Group					-.992	-.513	.609
Appraisal x Group					2.720	1.315	.191
Instrumental x Group					1.265	.833	.407

Note. *p≤ .05, **p≤.01, ***p≤.001

Summary of Results

The relationship between social support (i.e., overall, sources, and subtypes) and academic outcomes (i.e., ELA and mathematics) were similar for students with and without learning disabilities. This finding is based on the model comparison outcomes, which did not show any statistically significant interaction terms (i.e., group by social support). Thus, where main effects of sources of social support were identified, they were applicable to all participating students. Specifically, Appraisal support from parents, and Emotional and Informational support from classmates had an effect on ELA outcomes. Appraisal and Informational support had a negative relationship to ELA achievement, and Emotional support had a positive association.

The covariates gender and grade level emerged as significant contributors to ELA achievement in RQ1 (Overall Support), RQ3.1 (Parent Support), RQ3.2 (Classmate Support), and RQ3.3 (Close Friend Support). Grade level was the only significant contributor in two of the models, RQ2 (Support Sources) and RQ3.4 (Teacher Support). These outcomes suggest that both gender and grade level had a statistically significant effect on ELA outcomes.

Finally, there were no effects of social support sources on mathematics outcomes. Perceived support from peers and adults, gender, and grade level were not related to the mathematics scores of students with and without learning disabilities. Together the results from this study suggest that learner status does not moderate the effect of social support (i.e., overall, sources, and subtypes) perceptions in relation to academic outcomes (i.e., ELA and mathematics). Relationships between achievement and social support were similar for students in the general and special education population.

CHAPTER V

Discussion

Overview

The primary purpose of this investigation was to examine the relationship between multiple subtypes of perceived support and the achievement of students with and without learning disabilities. A social support survey was used to assess student perceptions of overall support (i.e., sum of all support scores), sources of support (i.e., parents, classmates, a close friend, and teachers), and support subtypes (i.e., Informational, Emotional, Appraisal, and Instrumental). Students also reported their grade level and gender on the first page of the survey. In accordance with previous literature, the covariates (grade level and/or gender) were significantly related to academic outcomes (Chung et al., 1998; Flemming et al., 2002; Lee & Smith, 1999; Simmons et al., 1998). Student scores on English Language Arts (ELA) and mathematics standardized tests were used as indicators of student achievement.

The findings for this study suggest that students with and without learning disabilities are similar in the relationship between social support and academic achievement. Three subtypes of support (i.e., Appraisal from parents; Emotional and Informational from classmates) were associated with ELA scores for students in the general and special education population. However, no subtypes of support were related to mathematics outcomes. Results also showed that support sources and overall support were not associated with ELA or mathematics scores. These findings differ from previous studies on overall and sources of support, and extend the literature on subtypes of social support.

Currently, there is little research on the association of perceived support and achievement for individuals receiving special education services (Flemming et al., 2002). Authors who examine support perceptions among students with and without learning disabilities frequently only compare views among the groups and no achievement outcomes (Wentz-Gross & Sipperstein, 1997). In one special education study conducted by Flemming and colleagues (2002) the authors found that while support was related to higher achievement among general education students, the same was not true for adolescents with learning disabilities. The findings from this investigation likely differ from Flemming et al. because of the selected social support measurement tools. Specifically, multiple subtypes of support (i.e., Emotional, Informational, Appraisal, and Instrumental) from adults and peers were assessed in the present study. Flemming et al. only evaluated Academic support from home and school, and did not include subtypes of support that researchers of students in general education have found to be positively associated with achievement (Malecki & Demaray, 2006; Richman et al., 1998a, 1998b).

In the general education literature, authors report that support from sources, such as parents, classmates, a close friend, neighbors, and/or teachers are related to academic outcomes (Lee & Smith, 1999; Malecki & Demaray, 2006; Rosenfeld et al., 2000). No sources of support were associated with achievement in the current investigation. This difference is likely the result of academic assessment differences (i.e., GPA versus standardized assessment). Although support sources such as parents and classmates are the focus of many social support studies (Malecki & Demaray, 2006; Rosenfeld et al., 2000), there are few general and special education investigations that examine the support source construct in greater detail (Richman et al., 1998a, 1998b).

Authors often focus on support sources and achievement without examining the extent to which subtypes of support (i.e., Emotional, Informational, Appraisal, and Instrumental) contribute to academic standing (Malecki & Demaray, 2006). In two general education studies, Richman and colleagues (1998a, 1998b) assessed eight subtypes of social support from family, school, friends, and neighbors. The findings suggested that listening support from classmates was related to achievement. Therefore, it is possible that one subtype of support plays a bigger role than another. For instance, a different relationship may exist between achievement and academic or nonacademic support.

This investigation addressed gaps in the current literature by exploring both broad (overall support, support sources) and narrow (support subtypes) constructs of support in relation to standardized test scores. The results from the current investigation contribute to social support scholarship by showing whether previously identified indicators of support apply to a more diverse sample of students. In terms of disability status, prior authors did not examine special education students (Malecki & Demaray, 2006; Richman et al., 1998a, 1998b; Rosenfeld et al., 2000; Lee & Smith, 1999) or included relatively few special education students (Flemming et al., 2000). For example, in the study by Flemming et al. (2002), adolescents with learning disabilities comprised only 4% of the sample. In this investigation, 15.8% of participants had a learning disability classification.

The following discussion is presented as follows: (a) summary and significance, (b) results for ELA equations, (c) results for mathematics equations, (d) limitations, and (e) future research.

Summary and Significance

The association between perceived social support (i.e., overall, sources, and subtypes) and achievement was the same for students with and without learning disabilities, no group differences were identified. The initial descriptive analysis also showed that few achievement differences exist between LD and non LD students in the sample, which was not expected. However, the sample selected was from a title I at-risk school based on low achievement scores. Hence, there may be fewer gaps between students with and without learning disabilities because of overall low school performance.

Based on previous literature, gender and grade level were also examined and either one or both emerged as significantly related to ELA outcomes. Both mathematics and ELA scores were explored; however, only ELA related to gender, grade level, and/or social support constructs. Finally, although no group differences were found, parent Appraisal support, and classmate Emotional and Informational support were contributors to the ELA scores of student with and without disabilities.

Results for English Language Arts (ELA)

Overall Social Support. The overall support score was the summed value of four social support sources (i.e., parents, classmates, teachers, and a close friend) and four subtypes (i.e., Emotional, Informational, Appraisal, and Instrumental) of support. This undifferentiated combined score was analyzed before the individual contributions of each support source and subtype were assessed. The results for overall social support suggest that the construct is not related to ELA outcomes, which differs from previous literature (Lee & Smith, 1999).

Previous researchers have examined an overall support score in relation to the standardized achievement (i.e., ELA and mathematics) of general education students and found significant results (Lee & Smith, 1999). However, the authors used a different social support survey, which combined peer, parent, teacher, and community support to create a total score. Therefore, the findings in the current study may vary because the included social support survey combined four support sources that differed from those identified in the previous investigation. Creating an overall support score using combinations of different support sources may yield varying outcomes. Survey questions frequently differ among the social support assessments, therefore the support domains evaluated across studies vary.

The findings for overall support in this study were not surprising given that it is a broad score and specific support sources are likely differentially related to outcomes. Explorations of individual social support sources may have more utility by providing specific information about student perceptions and achievement. Very few authors examine support as a combined score; investigators more frequently compare levels of peer, parent, and/or teacher support in relation to academic or social outcomes (Malecki & Demaray, 2006; Richman, Rosenfeld, & Bowen, 1998; Rosenfeld, Richman, & Bowen, 1998, 2000; Wentz-Gross & Sipperstein, 1997, 1998). Together the results from this study and previous investigations suggest that total support scores may not have utility since positive and negative views of each source are overlooked. The analysis of specific support sources are discussed in the next section.

Social Support Sources. The four social support sources examined in this study were parents, teachers, classmates, and a close friend. No sources of support were

significantly related to ELA outcomes. These findings differ from previous studies conducted with general and special education populations (Flemming et al., 1999; Malecki & Demaray, 2006).

In a general education study that included the same social support survey used in this investigation, the authors found that social support from every source (i.e., parents, classmates, teachers, a close friend, and school) contributed significantly to GPA scores (Malecki & Demaray, 2006). Similar outcomes were expected in the current investigation since the means for social support sources in the previous and present study only differed by two (i.e., parent support) to seven points (i.e., close friend support) with similar Standard Deviations (SD). In the special education literature, Flemming et al. (2002) found that parent climate (i.e., academic support and attention to misbehavior) was significantly related to the standardized ELA test scores of adolescents. Group differences were also identified, suggesting that high levels of parent climate and school support (i.e., Emotional) were not positively connected to academic outcomes for students with disabilities, while their general education peers did benefit.

Possible reasons for differences between this investigation and previous social support studies are related to sample demographics, social support measurement, and academic assessment. First, Malecki and Demaray (2006) included a primarily Latino sample, while the students in this study were both Black and Latino. In addition, the authors used a cumulative GPA score to measure achievement. The GPA scores were created by averaging ELA, mathematics, social studies, and science grades obtained from four quarters during the academic year. As indicated in Chapter 3, teacher based grades can be problematic because grading systems can reflect teacher bias (Archer &

McCarthy, 1988; Malouff, 2008). Standardized test scores are often shown to be more reliable based on the available data, while the reliability of GPA scores may not be as robust. Despite limitations with GPA scores, a cumulative GPA value comprised of multiple academic areas is perhaps a more global measure of academic skill. Therefore, assessing adolescents in multiple academic domains instead of solely ELA or Math warrants additional consideration.

Although achievement measurement is an area to carefully consider, social support assessment is equally important. Flemming et al. (2002) included standardized test scores in their investigation of students with and without disabilities and found differences among the groups and general effects for family climate (i.e., home academic support and parental attention to misbehavior). The distinction between the Flemming et al. investigation and the current study is the social support measurement tool. The survey used in the present analysis did not include attention to misbehavior or solely focus on one subtype of support (i.e., Emotional) from school staff. Instead, four subtypes of support (i.e., Emotional, Informational, Appraisal, and Instrumental) were combined to make up each social support source score.

The findings from previous studies and the current investigation suggest that there are several additional areas of perceived support from adults and peers that should be explored further. In this investigation the score for each source of support was comprised of four support subtypes. Instead of focusing on four subtypes among a source, future investigations could highlight two kinds of support through targeted survey questions and/or qualitative data. This type of analysis is similar to the approach taken in Flemming et al. (2002), where parent attention to misbehavior and academic support

were combined in analysis and effects were found. In addition, the authors focused on

Emotional support when examining perceptions of school. Perhaps the more in-depth

measurement of certain support subtypes from adults and peers may better show how

each source of support is related to achievement.   However, the subtypes of support that

are most important should be examined to identify which kinds of support should be

privileged above others. In the next section, results for subtypes of support (i.e.,

Emotional, Informational, Appraisal, and Instrumental) from each source are discussed.

    Social Support Subtypes.   Emotional, Informational, Appraisal, and

Instrumental support from four sources (i.e., parents, classmates, a close friend, and

teachers) were examined. Three subtypes of support emerged as significant contributors

to achievement. Specifically, Informational and Emotional support from classmates, and

Appraisal support from parents were related to ELA outcomes. There were no kinds of

support from a close friend or teachers that emerged as significantly related to reading

achievement.

    In a previous investigation with special education students, Wentz-Gross &

Sipperstein (1997) found that students with learning disabilities use their support

subtypes (i.e., Emotional, Problem Solving, and Companionship) differently than their

general education peers. However, the authors did not include academic outcomes in

their analysis. There are currently no special education studies that examine the

individual contribution of multiple support subtypes (i.e., Emotional, Informational,

Appraisal, and Instrumental) on academic outcomes. Data on specific subtypes of

support with students in the general and special education population is necessary to

identify whether one subtype of support is more closely related to achievement than

another. The results for parent and classmate support are discussed in greater detail since significant subtypes of support emerged among those sources.

   Parent support. Findings suggested that high levels of Appraisal support from parents are connected to lower academic outcomes for students with and without learning disabilities. The other assessed subtypes of support (i.e., Informational, Emotional, and Instrumental) did not have a significant relationship to ELA achievement. Overall, the parent support findings are aligned with previous investigations conducted with general education students, and contribute new information about students with and without learning disabilities.

   Similar to this study, the results from the Richman et al. (1998a, 1998b) investigation indicated that Emotional, Informational, and Instrumental subtypes of family support were not related to academic outcomes. It should be noted that Appraisal support was not examined in the Richman et al. (1998) investigation. Yet, given the current findings suggesting a negative relationship between Appraisal and ELA scores this area merits additional investigation. Although social support is often viewed as a positive construct, the theoretical background explains that there are both costs and benefits to support.

   The negative relationship between parent Appraisal and reading is, at first glance, counterintuitive. However, Shumaker and Brownell (1984) suggest that there are both positive and negative associations for students receiving high levels of Appraisal support. Theorists report that adolescents seek Appraisal support from parents to enhance feelings of value (Furman & Buhrmester, 1985). The resulting Appraisal support can be positive by making a student feel more self-confident resulting in a stronger self-identity or

negative by making him or her over-confident and then egotistical. If a student feels overconfident and/or egotistical he or she may not seek academic assistance or positively respond to constructive feedback when it is provided. This suggests that a high level of Appraisal support could be negatively related to academic outcomes.

It appears that additional examinations of parent praise and reinforcements may be necessary to explain negative associations with achievement. The three questions for Appraisal support on the survey were, my parents "tell me I did a good job when I do something well," "nicely tell me when I make a mistake," "reward me when I've done something well." Therefore, more qualitative analysis may be needed to address this subject, such as using a more in depth survey or interviews to capture this construct. For example, exploring specific situations that parents tell students they have done well or when they provide rewards could reveal several important contributing factors. The findings could show whether positive or negative associations result based on whether parent Appraisal is granted for academic, extracurricular, or home-based activities. Additional investigation of Appraisal support should be conducted to reveal how different types of praise and validation from parents are related to achievement.

Classmate support. For all students in the sample, Emotional support from classmates was marginally related to higher academic outcomes, while Informational support was significantly associated with lower ELA scores. The findings regarding Emotional and Informational support from classmates are not aligned with previous investigations.

Richman and colleagues (1998a, 1998b) did not find a connection among the support subtypes (i.e., Emotional, Informational, and Instrumental) from classmates and

achievement. As previously discussed the differences may be attributed to the inclusion of varying social support surveys and academic measurement. Richman et al. used self-reported GPA scores and a survey that assessed eight subtypes of social support. Considering the contradictory findings between this study and the prior investigations further research needs to be conducted for classmate support. This appears to be an important next step given the positive and negative associations that resulted in the current study.

According to the theoretical foundation, Informational and Emotional support are related to positive feelings such as safety and confidence; or negative outcomes of helplessness, anxiousness, and inadequacy (Schumaker & Brownell, 1984).   Therefore a student receiving high levels of Informational or Emotional support may feel that he or she cannot do well academically without assistance. The student's dependence on others and/or feeling of inferiority could result in lower academic outcomes along with social emotional consequences.

The current results suggest that students receiving Informational support from peers are less likely to score highly on ELA assessments could reflect that students with lower ELA scores are more likely to rely on peer support for academic assistance. Further exploration of the kinds of peer-based activities used in classrooms and student interactions could help to explain this finding. Specifically, examining what types of classmate behaviors and interactions during academic activities are related positively and negatively to achievement outcomes may provide valuable information.

The questions for Informational and Emotional support in this investigation were, my classmates "give me ideas when I don't know what to do," "give me information so I

can learn new things," "give me good advice," "treat me nicely," "like most of my ideas and opinions," and "pay attention to me."   A qualitative interview or modified in-depth survey analysis of Informational and Emotional support could help explain why the negative and positive effects resulted. This could include additional questions regarding peer tutoring and collaboration, inclusion in group activities, and encouragement from friends during challenging work.

Summary of Social Support Subtypes. More attention should be focused on classmate and parent support for students with and without learning disabilities. Qualitative interview and observation methods may show why perceptions of specific subtypes of classmate (i.e., Informational and Emotional) and teacher (i.e, Appraisal) support are related to academic outcomes. Specifically, the reason for negative and positive associations warrants further investigation. Although teacher and close friend support were not related to reading outcomes, continuing to explore new subtypes of support from these sources using more in-depth methods and larger samples is also necessary. For instance, assessing the kinds of academic supports that teachers provide in a classroom may have more utility than looking at the four subtypes of support included in this study.

Finally, since findings show that social support is associated with both costs and benefits student perceptions and relevant outcomes require additional investigation. Social support is not a monolithic concept and not all support is positive (Shumaker and Brownell, 1984). Perhaps students with perceptions of very low or high levels of support have negative outcomes, while kids with moderate support do best.   To thoroughly examine low and high levels of specific support domains additional factors about the

sample may help interpret findings. For instance, whether students are from single or two parent families may be important to future studies (i.e., Modified measure of parental support).

Results for Mathematics

Social support (i.e., overall, sources, and subtypes), gender, and grade level were not related to mathematics outcomes in this study. This finding differs from the results in previous social support investigations. Of the previously reviewed literature, only Lee & Smith (1999) included mathematics scores. The authors found that overall social support was significantly related to standardized mathematics outcomes. However, most social support and achievement studies solely include GPA or standardized ELA scores (Flemming et al., 2002; Malecki & Demaray, 2006; Richman, Rosenfeld, & Bowen, 1998; Rosenfeld, Richman, & Bowen, 1998, 2000).

This study extends the literature by exploring several subtypes of support (i.e., Emotional, Informational, Appraisal, and Instrumental) from adults and peers in relation to both mathematics and ELA outcomes. The data suggesting that social support (i.e., overall, sources, subtypes), gender, and grade level did not contribute to mathematics outcomes is peculiar. It is particularly surprising given that all the ELA equations had at least one significant variable. The mean and SD for mathematics scores indicated that in comparison to ELA achievement students in the sample scored about four points lower on the mathematics test. Perhaps there was less variance in the mathematics outcomes due to more failing scores in that academic domain. Based on these findings and the previous literature, social support studies with mathematics outcomes need additional examination.

Limitations

This investigation has several limitations that should be discussed. These factors may have contributed to the Multiple Regression Analysis (MRA) findings suggesting that students with and without disabilities are similar. These areas include the sample, academic assessment, social support assessment, and statistical analysis.

Sample. Students were selected from a low performing school, which placed them into an academically at-risk category. Although a high percentage of students with disabilities attended the middle school, few achievement differences resulted between the LD and non LD students in the sample. Given that achievement was the dependent variable, the similarities among groups may have prevented significant results from being detected during the regression analysis. Furthermore, although some negative and positive associations were found in this investigation there were fewer than those reported in previous studies (Malecki & Demaray, 2006). Perhaps prior social support studies with effects included samples of students with higher achievement means.

Furthermore, the sample size was small given that only students from a single school were recruited for the study. Therefore, inclusion of one academic institution restricts the generalizability of the results. Also, the available assessment data used to substantiate student placement in special education varied (See Appendices G and H). Although the school recognized specific students as learning disabled there was not a standard method used to classify each participant.

Academic Assessment. Although, there is established reliability and validity evidence for the MCAS, a statewide test may not be the best metric to assess middle school achievement. Specifically, since students with and without disabilities scored

similarly the assessment may not have been sensitive enough to capture variation among the groups. In addition, authors suggest that students of color experience stereotype threat when taking standardized academic assessment, which reduces their success (Steele& Aronson, 1995). Therefore, the interaction between the selected assessment and sample may have attributed to the null findings.

Social Support Assessment. The coefficient alpha for overall and sources of support scores ranged from .72 to .90 with the current sample. These are lower than the internal consistency alpha values from the manual (Malecki & Demaray, 2000), which were all strong ($\geq$ .92). These differences suggest that more error exists within the current scores in comparison to past investigations. Further development of the instrument with special education students from diverse ethnic and socioeconomic backgrounds is necessary since the previous analyses were conducted with general education populations.

In addition, the results reflect one collection point during the academic year without taking into account potential changes that occur throughout the school year. Including more data collection points for achievement and support could better represent student development and progression. The test-retest reliability (8-10 weeks) for the support source scores ranges from .58 to .74 with middle school students indicating that responses may change with time.

Statistical Analysis. Given the small sample the null findings could be the result of a power issue since there was low power. In addition, the control variables accounted for a large portion of the variance, which may explain why effects did not result. Overall, additional regression models with larger samples or fewer variables should be explored.

Future Research

1. Future designs should include larger samples of adolescents with and without learning disabilities from varying racial and socioeconomic backgrounds.

2. Alternative social support measures that assess support subtypes in greater depth should be examined.

3. Social support perceptions and achievement should be examined more than one time per year in subsequent investigations. Multiple data collection waves throughout one or more academic years could alter the outcomes by showing varying support and achievement associations during the middle school experience.

4. Multiple kinds of academic assessment (e.g., GPA, standardized assessment, and curriculum based measurement) should be collected. The results could reveal which achievement measures are most sensitive, efficient, and accurate in relation to the social support perceptions of middle school students.

5. Once data collection is complete, using SEM analysis could be a promising methodology to utilize for analysis. Since social support is an underlying construct, it could be measured through latent variables. Specifically, if additional measures of social support are explored, the combined scores for each subtype or source of support can be used in SEM analysis.

Conclusion. Based on the findings from this study it appears that students with and without learning disabilities are similar in the relationship between social support and academic achievement. Additional investigations with larger and more representative samples of students from the general and special education population may yield different results. However, Flemming et al. (2002) had a large sample and only found a slight

difference among students with and without learning disabilities. Perhaps we need new ways to investigate support and achievement among the groups.

Thus far we have examined social support using a general education lens and not considered the additional supports that students with disabilities receive. Student perceptions of special education support sources such as speech-language pathologists, counselors, and "resource" teachers should be assessed. This could include specific subtypes of support such as Informational support from an inclusion teacher or Instrumental accommodation support (e.g., visual aids, calculators) provided by a general educator to better capture the views of students with disabilities. These unique supports are intended to increase the achievement of students in the special education population. Therefore, in addition to examining supports available to all students, highlighting constructs exclusively intended for individuals in the special education population may be a more appropriate approach.

In addition, the similarities between support and achievement among students with and without disabilities in a previous study (Flemming et al., 2002) and the current investigation suggest that new dependent variables should also be explored. Future comparisons of general and special education students should include outcomes such as quality of peer interactions, involvement in positive activities, and future goals. Exploring an array of variables that are related to success instead of just GPA or test scores could expand knowledge of the relations between social support and student success. For example, the results could show whether students with specific levels and types of support are more likely to attend college, participate in extra-curricular activities, or assist peers during difficult tasks.

Given the demands of middle school, especially for at-risk adolescents with disabilities, examinations of various social supports and relevant student outcomes warrants further exploration. Students of color with learning disabilities from economically disadvantaged backgrounds are among the least likely to receive high school diplomas (Orfield et al., 2004). Since successful individuals with learning disabilities frequently cite support as a key part of their success (Goldber et al., 2003; Murray & Naranjo, 2008), it is an area that needs additional attention.

The literature thus far has shown that various types of adult and peer support are related to academic outcomes among the general population. Yet, there are few that examine the same constructs among students receiving special education services. Therefore, this study is an initial step in an important direction. The results can inform practitioners and families about both broad and narrow social support in relation to academic outcomes among adolescents general and special education students. Based on the results from the current study the costs and benefits of social support warrant additional exploration. The findings could reveal information that is essential to the educational trajectory and success rates of students with and without learning disabilities.

APPENDIX A: SCOPE AND SUMMARY OF REVIEWED STUDIES

Study Limitation	Participants	Independent Variables	Dependent Variables	Statistical Method	Research Questions	Relevant Findings	Limitations
Rosenfeld, Richman, & Bowen (2000)	1815 Students in 6th - 8th grade 54.7% Free and Reduced Lunch Ethnically representative sample	Social support from parents, teachers, and peers, and neighborhood	Student conduct, attendance, Grade Point Average (GPA), and self-efficacy	Analysis of Variance (ANOVA)	Do different combinations of high and low support from teachers and parents relate differently to behavior, school affect, and school academic performance?	Students who have combinations of support are more likely to have positive social skills and higher academic achievement (f= .27) One social support alone cannot effectively predict social and academic success	No validation of self-reported grades. Therefore the data may be unreliable. No measurement of "instrumental" support
Richman, Rosenfeld, & Bowen (1998)	525 middle and high school students	Social support from parents, teachers, and peers, and neighborhood	Student conduct, attendance, Grade Point Average (GPA), and self-efficacy	Discriminant Analysis	Whom do students identify (i.e., neighborhood, school, friends, and family) as providers of Informational, Emotional, and Instrumental support? How do student views relate to	Adult are sources of Appraisal, Emotional, and Instrumental support. Peers are sought for Emotional and Appraisal support. Teachers are only	Classification of at-risk was not thoroughly described (i.e., criteria to participate in the CIS program). No measurement of Informationa

						school outcomes (i.e., attendance, behavior, grades, self-efficacy, and school satisfaction)?	significantly related to Emotional support.	l support
							Neighborhood is perceived as a source of Instrumental support.	
							Only Emotional support from peers was related to academic outcomes.	
Rosenfeld, Richman, & Bowen (1998)	At- risk for school failure (N1= 278); unidentified for risk (N2= 255). .	Social support from parents, teachers, and peers, and neighborhood	Student conduct, attendance, Grade Point Average (GPA), and self-efficacy	Discriminant Analysis	Who do at-risk and unidentified for risk students perceive as (i.e., neighborhood, school, friends, and family) as providers of Informational, Emotional, and Instrumental support?	As-risk students view adults as sources of Emotional, Appraisal, and Instrumental support. In contrast, students who were not at-risk did not view adults as high sources of each Emotional supports.	No validation of self-reported grades
					Is the relationship between social support and school outcomes (i.e., attendance, behavior, grades, self-efficacy, and school satisfaction) similar for at-risk	Students at-risk had no statistically significant levels of perceived peer or teacher	Racial composition of the groups differed. Classification of at-risk was not thoroughly described (i.e., criteria to participate in the CIS program). No measuremen t of

					and unidentified for risk students?	support, while their peers did. There were no support subtypes related to the grades of at-risk students, while associations existed for their peers.	"instrumental" support
Gutman & Midgly (2000)	218 Students in 5th- 6th grade from 62 Families 84% Free and Reduced Lunch 100% African American	Protective factors: Self-efficacy in the area of academics, reported parent involvement, feelings of school connectedness/ belonging, and perceived support from teachers	Grade Point Average (GPA)	Descriptive statistics, correlations, and Analysis of Variance (ANOVA), and Hierarchical Regression Analysis	What are the main effects of protective factors on the GPA of students during the middle school transition? What are the interactive effects between psychological and family factors? What are the interactive effects between psychological and social support factors? What are the interactive effects between school and family factors?	GPA decline occurred during the transition to middle school Perceived teacher support alone did not have a significant correlation to fifth ($r = .23$) or 6th grade GPA ($r = .22$) After controlling for previous achievement only 11% of the variance was accounted for, perceived teacher support and feelings of belonging explained 3%.	General measurement of social support: Subtypes weren't specified (i.e., positive and negative perceptions of teachers) 15% attrition rate

| | | | | | | Regression analysis with 6th grade GPA as the dependent variable showed that interactions between parental involvement by feelings of school belonging ($\Delta R^2 = .09$) and parental involvement by perceived teacher support ($\Delta R^2 = .05$) were statistically significant. | |
| Malecki & Demaray (2006) | 164 students in 6th- 8th grade 68% Free and Reduced Lunch 18.9% African American, 1.2% Asian American, 64.6% Latino, 7.9% White, and 7.3% Other | Social support, gender, and Socioeconomic Status (SES) | Grade Point Average (GPA) | Means (M) and Standard Deviations (SD), correlations, Hiererchical Regression and post hoc analyses | What is the relationship between achievement and social support for students from higher and lower SES backgrounds? | Students from lower SES backgrounds' GPA in the area of ELA had a moderate correlation to all social support variables Correlations were also identified between lower SES students' total parent support with | The individual who administered the measures was not disclosed |

ELA, social studies, and total GPA scores

No significant correlations between GPA and the independent variables were identified for students from higher SES backgrounds.

The regression analysis with GPA as the dependent variable showed that parent support (R^2= .102), teacher support (R^2= .137), classmate support (R^2= .075), close friend support (R^2= .078), and school support (R^2= .090) contributed to the model.

Only two significant interactions resulted, SES by parent

						support ($\Delta R^2 =$ .026) and SES by classmate support ($\Delta R^2 =$ .027).	
Lee & Smith (1999)	28,318 students in 6th and 8th grade from 304 Chicago Public Elementary Schools (CPS)

82.6% low income

55.1% Black, 29.1% Hispanic, 3.4% Asian, and 12.4% White | Race, gender, Socioeconomic Status (SES), age, level of social support (i.e., parent, teachers, peers, and community members), grade level, previous achievement, school academic press, school structure, and school composition | Mathematics and ELA achievement based on the *Iowa Test of Basic Skills* (*ITBS*) | Descriptive statistics, two-way Multivariate Analysis of Variance (MANOVA), and Hierarchical Linear Modeling (HLM) | Do students who perceive higher levels of support from teachers, peers, parents, and community have greater academic gains during the year?

Do students enrolled in schools with higher levels of academic press have greater academic gains during the year?

Is there an association between social support, achievement, and academic press? | 26.4% of students reported low levels of support

49.1% of students reported medium levels of support

24.4% of students reported high levels of support

The HLM analysis revealed that social support is related to mathematics (*B= .021*) and ELA (*B= .017*) achievement confirming the first hypothis that support perceptions are connected to achievement. | No reliability or validity for social support measures

All information came from a large data base, no information on survey distribution or procedures |

Academic press is also related to mathematics (*B*= .036) and ELA (*B*= .033) achievement.

High support and high academic press= students learn more (in mathematics 1.1 SD, .80 SD in ELA above the CPS average yearly achievement gains)

High support and medium academic press; medium support and high academic press= students gain .5 SD in mathematics and .4 SD in ELA

Low support and low academic press= students learn less (regress in mathematics their -.6 SD and

						-.4 SD below in ELA the CPS average yearly achievement)	
Wentz-Gross & Siperstein (1997)	106 students in 4th- 6th grade 100% LD	Adult support within and outside of home, peer support, social networks, classroom environment, and friendship quality	Adjustment	One way Multivariate Analysis of Variance (MANOVA), Means (M) and Standard Deviations (SD), and multiple regression	What is the relationship between social networks, social support, and quality of friendship for students with and without learning disabilities?	Students without learning disabilities turned to individuals at home for Emotional (M= 2.95) and Problem-solving support (M= 5.24). Students with disabilities turned to people at home more often for Emotional support (M= 3.33) and less often for Problem-solving support (M= 2.88) Students with learning disabilities were more likely to turn to outside adults for Emotional (M=2.05) support than	The measure used to assess social networks and social support did not have any reliability or validity data No scale for the means therefore it was difficult to interpret the significance

their peers
(M=1.67).

Students with
disabilities used
outside adults
less often for
Problem-
solving (M=
1.93) than their
peers (M=
2.03).

Students with
(M= 2.05) and
without
(M=2.05)
disabilities were
least likely to
turn to
individuals in
the home for
friendship.

Both groups of
students viewed
peers as
primary sources
of
companionship
however
students with
disabilities
perceived lower
levels (M=
2.88) of that
support in
comparison to
the general
education

						participants (M=3.29).	
Wentz-Gross & Siperstein (1998)	436 Students in 6th- 8th grade 15% minority 100% LD	Adult support within and outside of home, peer support, and stress	Adjustment	Multiple regression, One-way Multivariate Analysis of Variance (MANOVA), Means (M) and Standard Deviations (SD)	What is the relationship between stress, adjustment, and social support for students with and without learning disabilities?	Students with learning disabilities reported lower levels of home support (M= 9.87) and peer support (M= 11.45) in comparison to general education students (home, M= 10.37; peer, M= 13.44). Students with learning disabilities view higher levels of outside adult support (M=4.63) than their classmates (2.57).	No scale for the means therefore it was difficult to interpret the significance 15% of sample is labeled as minority, but it's unclear what specific ethnicities "minority" represents

Martinez (2006)	120 students in 6th- 8th grade from 14 schools Ethnically representative sample of Central Texas 100% LD	Disability status defined as multiple LD, single LD, No LD	Perceptions of social support from friends, teachers, classmates, and parents	Descriptive statistics, Multivariate Analysis of Variance (MANOVA), Means and Standard Deviations (SD)	What are perceptions of social support for students with (i.e., ELA, mathematics, and combination) and without learning disabilities?	Students with a combined ELA and math disability have overall lower perceptions of support when compared to their general education and single LD peers Students with single learning disabilities do not significantly differ from their general education peers in perceptions of support	Unclear whether the administration of the assessments was oral or written General measurement of social support; subtypes weren't specified
Flemming, Cook, & Stone (2002)	3,294 students 5th- 8th grade students from 19 schools 80.3% African American and 19.7% Latino 131 LD 91% low income	Disability status, social support from school staff, academic teacher support, academic home support, peer group climate, gender, race, parent education, parent work status, and family composition	ELA achievement based on the *Iowa Test of Basic Skills* (*ITBS*)	Descriptive statistics, Hierarchical Linear Modeling (HLM), Means (M) and Standard Deviations (SD)	How do perceptions of school, peer, and family contexts differ for students with and without learning disabilities in 5th through 8th grade? How do social factors impact annual changes in achievement for students with and without learning disabilities?	Students with and without learning disabilities had similar views of social support from the school staff and academic support from teachers and home. 8th grade adolescents who reported receiving less support than	No details about who administered the "context" questionnaires during each spring No validity data for the social support measure Only perceived academic support is

Are single and combinations of social factors related to the ELA achievement of students with and without Learning Disabilities?	students in 5th-7th grade.	evaluated

Are single and combinations of social factors related to the ELA achievement of students with and without Learning Disabilities?

students in 5th-7th grade.

African American students reported higher levels of home support than their Latino classmates.

Girls had higher initial ELA achievement when compared to boys ($b=$ 2.19) although both groups progressed at similar rates ($b= -.32$)

Disability status predicted both lower beginning ELA status and lower standardized test scores ($b= -15.78$).

Students with learning disabilities began at lower ELA levels, but all students increased their ELA ability at

evaluated

similar rates ($b=$ .45).

Positive school by family support by LD status ($b=$ 1.04) indicated higher initial ELA scores, but it was not positively related to growth ($b=$ -1.51)

APPENDIX B: LETTER OF INFORMATION TO FAMILIES

January 2010

Dear Families,

I am writing to inform you of the opportunity for your child to participate in a study I am conducting in conjunction with my advisor, Dr. Rebecca Silverman. My name is Dawn Jacobs and I am a doctoral student at the University of Maryland. I am investigating the views of middle school students and examining how they relate to achievement.   I am a former public school teacher from the District of Columbia and I am very interested in how social support impacts the lives of adolescents. I would like to conduct this project with students from a Boston Public School because I am originally from the area and I would love the opportunity to work with adolescents from my community.

The purpose of the study we are conducting is to examine the relationship between academic achievement and student perceptions of the support they receive from their parents, teachers, and peers. The project will require your child to complete a questionnaire within a small group for no more than 30 minutes. I will be working with the school staff to identify the best times for questionnaire administration to take place. After the survey a few students will also be asked to take part in a 45-minute interview.

There is no cost to participate and your child's participation is strictly voluntary. Your child will not be penalized in any way for non-participation. Parents of all students enrolled in sixth though eighth grade are being invited to give their child permission to participate. In addition, all students who bring back a signed permission form with a "yes" or "no" response will receive a raffle ticket to enter into a contest for an ipod nano and $25 itunes gift card.

Please complete the attached form, indicate whether you would like your child to participate, and return it to your child's teacher. Also, please feel free to call either of us if you have any questions or you would like to discuss the project further.

Sincerely,

Dawn Jacobs
Doctoral student, University of Maryland
Cell phone: 617-312-6449
Email: djacobs3@umd.edu

Dr. Rebecca Silverman
Professor of Education, University of Maryland
Office phone: 301-405-6465
Email: rdsilver@umd.edu

APPENDIX C: PERMISSION FORM (SIXTH GRADE)

Parental Permission Form: Interviews and Assessment

Project Title	**Exploring Adolescent Supports**
Why is this research being done?	This is a research project being conducted by Dr. Rebecca Silverman and Dawn Jacobs at the University of Maryland, College Park. We are inviting Sixth grade students at your child's school to participate and we would like to include your child in our study. The purpose of this research project is to identify how adolescents perceive support from peers, teachers, parents, and community members.
What will my child be asked to do?	If you allow your child to participate, he/she will be given a 30-minute questionnaire to identify how your child views social support provided by others. S/he may also be asked to participate in a 45-minute audio-recorded interview session. This interview is in addition to the 30-minute questionnaire.
What information will be obtained from the school?	If your child participates in the study we will look at his or her permanent records to find Grade Point Average (GPA), Massachusetts Comprehensive Assessment Test (MCAS) scores, and if applicable his or her Individualized Education Plan (IEP).
What about confidentiality?	We will make every effort to keep your child's personal information confidential. To help protect you and your child's confidentiality, we will assign a code to each child and take names off the test forms once the numbers and names have been verified as a match. All tests, GPA scores, MCAS scores, audiotapes, and IEP data will be stored in a locked office and destroyed at the end of the project. Dawn Jacobs will keep the master file that links numbers to names in her locked office and an electronic file will be password protected. Only Dawn Jacobs and Dr. Rebecca Silverman will have access to the documents and audiotapes. If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.
What are the risks of this research?	There may be some risks to participating in this research study. Your child may miss 30 minutes of classroom instructional time for the questionnaire and 45 minutes for the audio-recorded interview. Students may get fatigued during the survey and/or interview. To address this issue, following 15-20 minutes of the survey or interview session students will be given a 2-minute stretch break. We will minimize loss of instructional time by coordinating schedules with your child's teacher.
What are the benefits of this research?	This research is not designed to help you or your child personally, but the results may help us learn more about adolescent perceptions of support. We will share our findings with the teachers and administrative staff. This will benefit the school because the staff can better understand how their students perceive them.
What if I have questions?	This research is being conducted by Dawn Jacobs and Dr. Rebecca Silverman at the University of Maryland, College Park. If you have any questions about the research study itself, please contact Dawn Jacobs at 617-312-6449 or djacobs3@umd.edu. If you have questions about your rights as a research participant or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; (e-mail) irb@deans.umd.edu; (telephone) 301-405-0678 This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.

Statement of Age of Subject and Consent	Your signature indicates that: - you are at least 18 years of age; - the research has been explained to you; - your questions have been fully answered; and - you freely and voluntarily choose to participate in this research project
	MY CHILD CAN ENTER THE RAFFLE ____ **Yes** _____**No**
	MY CHILD CAN PARTICIPATE IN THE QUESTIONNAIRE STUDY ____ **Yes** _____**No**
	MY CHILD CAN PARTICIPATE IN THE AUDIO RECORDED INTERVIEW ____ **Yes** _____**No**
	NAME OF PARENT (PRINT)
	PARENT SIGNATURE (SIGNATURE)
	NAME OF CHILD (PRINT)
	DATE:

APPENDIX D: PERMISSION FORM (SEVENTH GRADE)

Parental Permission Form: Interviews and Assessment

Project Title	**Exploring Adolescent Supports**
Why is this research being done?	This is a research project being conducted by Dr. Rebecca Silverman and Dawn Jacobs at the University of Maryland, College Park. We are inviting Seventh grade students at your child's school to participate and we would like to include your child in our study. The purpose of this research project is to identify how adolescents perceive support from peers, teachers, parents, and community members.
What will my child be asked to do?	If you allow your child to participate, he/she will be given a 30-minute questionnaire to identify how your child views social support provided by others. S/he may also be asked to participate in a 45-minute audio-recorded interview session. This interview is in addition to the 30-minute questionnaire.
What information will be obtained from the school?	If your child participates in the study we will look at his or her permanent records to find Grade Point Average (GPA), Massachusetts Comprehensive Assessment Test (MCAS) scores, and if applicable his or her Individualized Education Plan (IEP).
What about confidentiality?	We will make every effort to keep your child's personal information confidential. To help protect you and your child's confidentiality, we will assign a code to each child and take names off the test forms once the numbers and names have been verified as a match. All tests, GPA scores, MCAS scores, audiotapes, and IEP data will be stored in a locked office and destroyed at the end of the project. Dawn Jacobs will keep the master file that links numbers to names in her locked office and an electronic file will be password protected. Only Dawn Jacobs and Dr. Rebecca Silverman will have access to the documents and audiotapes. If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.
What are the risks of this research?	There may be some risks to participating in this research study. Your child may miss 30 minutes of classroom instructional time for the questionnaire and 45 minutes for the audio-recorded interview. Students may get fatigued during the survey and/or interview. To address this issue, following 15-20 minutes of the survey or interview session students will be given a 2-minute stretch break. We will minimize loss of instructional time by coordinating schedules with your child's teacher.
What are the benefits of this research?	This research is not designed to help you or your child personally, but the results may help us learn more about adolescent perceptions of support. We will share our findings with the teachers and administrative staff. This will benefit the school because the staff can better understand how their students perceive them.
What if I have questions?	This research is being conducted by Dawn Jacobs and Dr. Rebecca Silverman at the University of Maryland, College Park. If you have any questions about the research study itself, please contact Dawn Jacobs at 617-312-6449 or djacobs3@umd.edu. If you have questions about your rights as a research participant or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; (e-mail) irb@deans.umd.edu; (telephone) 301-405-0678 This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.

Statement of Age of Subject and Consent	Your signature indicates that: - you are at least 18 years of age; - the research has been explained to you; - your questions have been fully answered; and - you freely and voluntarily choose to participate in this research project
	MY CHILD CAN ENTER THE RAFFLE ____ **Yes** _____**No**
	MY CHILD CAN PARTICIPATE IN THE QUESTIONNAIRE STUDY ____ **Yes** _____**No**
	MY CHILD CAN PARTICIPATE IN THE AUDIO RECORDED INTERVIEW ____ **Yes** _____**No**
	NAME OF PARENT (PRINT)
	PARENT SIGNATURE (SIGNATURE)
	NAME OF CHILD (PRINT)
	DATE:

APPENDIX E: PERMISSION FORM (EIGHTH GRADE)

Parental Permission Form: Interviews and Assessment

Project Title	Exploring Adolescent Supports
Why is this research being done?	This is a research project being conducted by Dr. Rebecca Silverman and Dawn Jacobs at the University of Maryland, College Park. We are inviting Eighth grade students at your child's school to participate and we would like to include your child in our study. The purpose of this research project is to identify how adolescents perceive support from peers, teachers, parents, and community members.
What will my child be asked to do?	If you allow your child to participate, he/she will be given a 30-minute questionnaire to identify how your child views social support provided by others. S/he may also be asked to participate in a 45-minute audio-recorded interview session. This interview is in addition to the 30-minute questionnaire.
What information will be obtained from the school?	If your child participates in the study we will look at his or her permanent records to find Grade Point Average (GPA), Massachusetts Comprehensive Assessment Test (MCAS) scores, and if applicable his or her Individualized Education Plan (IEP).
What about confidentiality?	We will make every effort to keep your child's personal information confidential. To help protect you and your child's confidentiality, we will assign a code to each child and take names off the test forms once the numbers and names have been verified as a match. All tests, GPA scores, MCAS scores, audiotapes, and IEP data will be stored in a locked office and destroyed at the end of the project. Dawn Jacobs will keep the master file that links numbers to names in her locked office and an electronic file will be password protected. Only Dawn Jacobs and Dr. Rebecca Silverman will have access to the documents and audiotapes. If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.
What are the risks of this research?	There may be some risks to participating in this research study. Your child may miss 30 minutes of classroom instructional time for the questionnaire and 45 minutes for the audio-recorded interview. Students may get fatigued during the survey and/or interview. To address this issue, following 15-20 minutes of the survey or interview session students will be given a 2-minute stretch break. We will minimize loss of instructional time by coordinating schedules with your child's teacher.
What are the benefits of this research?	This research is not designed to help you or your child personally, but the results may help us learn more about adolescent perceptions of support. We will share our findings with the teachers and administrative staff. This will benefit the school because the staff can better understand how their students perceive them.
What if I have questions?	This research is being conducted by Dawn Jacobs and Dr. Rebecca Silverman at the University of Maryland, College Park. If you have any questions about the research study itself, please contact Dawn Jacobs at 617-312-6449 or djacobs3@umd.edu. If you have questions about your rights as a research participant or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; (e-mail) irb@deans.umd.edu; (telephone) 301-405-0678 This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.

Statement of Age of Subject and Consent	Your signature indicates that: - you are at least 18 years of age; - the research has been explained to you; - your questions have been fully answered; and - you freely and voluntarily choose to participate in this research project
	MY CHILD CAN ENTER THE RAFFLE ____ **Yes** _____**No**
	MY CHILD CAN PARTICIPATE IN THE QUESTIONNAIRE STUDY ____ **Yes** _____**No**
	MY CHILD CAN PARTICIPATE IN THE AUDIO RECORDED INTERVIEW ____ **Yes** _____**No**
	NAME OF PARENT (PRINT)
	PARENT SIGNATURE (SIGNATURE)
	NAME OF CHILD (PRINT)
	DATE:

APPENDIX F: REMINDER SLIP

REMEMBER... IF YOU WOULD LIKE A CHANCE TO BE PART OF OUR STUDY ON THE VIEWS OF MIDDLE SCHOOL STUDENTS OR JUST ENTERED TO BE IN THE RAFFLE BRING YOUR SIGNED PERMISSION SLIPS BACK BY **MONDAY FEBRUARY 1st**	*REMEMBER...* IF YOU WOULD LIKE A CHANCE TO BE PART OF OUR STUDY ON THE VIEWS OF MIDDLE SCHOOL STUDENTS OR JUST ENTERED TO BE IN THE RAFFLE BRING YOUR SIGNED PERMISSION SLIPS BACK BY **MONDAY FEBRUARY 1st**
REMEMBER... IF YOU WOULD LIKE A CHANCE TO BE PART OF OUR STUDY ON THE VIEWS OF MIDDLE SCHOOL STUDENTS OR JUST ENTERED TO BE IN THE RAFFLE BRING YOUR SIGNED PERMISSION SLIPS BACK BY **MONDAY FEBRUARY 1st**	*REMEMBER...* IF YOU WOULD LIKE A CHANCE TO BE PART OF OUR STUDY ON THE VIEWS OF MIDDLE SCHOOL STUDENTS OR JUST ENTERED TO BE IN THE RAFFLE BRING YOUR SIGNED PERMISSION SLIPS BACK BY **MONDAY FEBRUARY 1st**

APPENDIX G: INITIAL SPECIAL EDUCATION PLACEMENT DATA

Initials	Assessment Data from Initial Placement and/or updated testing	Classification(s) From Most Recent IEP
J.B.	• Developmental Reading Assessment (DRA): 2nd grade level in 4th grade • Also receives services for Mathematics and Speech: No supporting Data	Specific Learning Disability
L.F.	• Developmental Reading Assessment (DRA): 30 • Math midyear and final (test Unspecified): Level 1 • Wechsler Individual Achievement Test (WIAT): reading comp (<0.1%ile), Math Reasoning (1%ile) • Woodcock Johnson (Version Unspecified): Verbal 1st %ile and nonverbal (15th %ile) • Writing Prompts (Test unspecified): Level 1	Specific Learning Disability
J.F.	• Clinical Evaluation of Language Fundementals (CELF): Receptive measures showed delays in language processing (no scores specified) • Wechsler Individual Achievement Test (WIAT-II): Supported WJ data indicating reading and math delay (no scores specified) • Woodcock Johnson (Version Unspecified): Delays in broad reading and math reasoning • Wechsler Intelligence Scale for Children (WISC- IV): Verbal reasoning at the 10th %ile and nonverbal at the 61 %ile	Specific Learning Disability
B.G.	• Brigance inventory: on grade level in all areas • Developmental Reading Assessment (DRA): 10 (1st grade level in 1st grade) • Kaufman Assessment Battery for Children: cognitive function in low average range- mild difficulty with retention of verbal cues, Moderate to severe speech delay	Specific Learning Disability
R.G.	• Language Evaluation (Test not specified): Moderate to severe expressive and receptive Language Delays (3-4 years below) • Wechsler Intelligence Scale for Children (WISC-IV): reasoning and working memory are borderline, the perceptual reasoning and processing speed were in the low average range.	Specific Learning Disability
L.E.	• Cognitive Testing (Test not specified): Based on results the areas of concern are visual processing speed of symbol relationships, integrating written language, and understanding of word relationships)	Specific Learning Disability
S.H.	• Clinical Evaluation of Language Fundementals (CELF): Scored below average • Wechsler Intelligence Scale for Children (WISC-IV): Overall thinking and reasoning abilities in the extremely low range (1st %ile in comparison to same age peers). Working	Specific Learning Disability

memory, processing speed indexes are also in the extremely low range, and extremely low scores on the verbal comprehension index.

M.H.	• No assessment data indicated on first IEP • Latest IEP showed grade level performance • Woodcock Johnson (WJ-III): academic fluency (7.8) is average, math calculation (8.3)	Specific LD, Bipolar Disorder, ADHD, PTSD
E.L.	• No assessment data indicated on first IEP • Recent IEP indicates academic and language results • Language subtests (Test not specified): fell into the average/above average range • Academic Assessment (Test not specified):Grade level scores for math and below level for fluency (4.5), spelling (3.8), Writing (3.9), passage comprehension (3.4)	Reading Disability, ADHD
P.P.	• Math benchmarks: Scored a 1 • Reading benchmarks: Scored a 1, oral reading benchmark (31 out of 110), 69 out of 96 on the reading benchmark • Woodcock Johnson (Version not specified): Low range on word ID, picture vocab, oral comp, and math fluency. Low average in broad math and calculation. Very low in broad reading. • Wechsler Intelligence Scale for Children (WISC-IV): Borderline cognitive abilities at the 5th percentile. Verbal and non-verbal abilities are also in the borderline range with working memory and processing speed in the low average range.	Specific Learning Disability
A.R.	• Met all third grade reading bench marks • Wechsler Intelligence Scale for Children (WISC-IV): Results range from the superior range (perceptual reasoning) to the average range (working memory, processing speed, verbal comprehension). • Projective testing shows he's depressed.	Specific Learning Disability, Depression
R.R.	• Cognitive Assessment (Test not specified): showed abilities in the low average to borderline range • Scholastic Reading Inventory (SRI): 435 in fall an 275 in winter (the examiner believed it indicated decreased effort)	Specific Learning Disability
J.R.	• Massachussettes Comprehensive Assessment System (MCAS): Reading (level 1), Math (level 1) • Reading Level (Program name unspecified): Level M, which correlated to 3rd grade • Stanford 9: level 1	Specific Learning Disability
J.F.	• Academic Assessment (Test not specified): Reading and math skills fell within the	Specific Learning

	average range, reading comprehension was below average, math achievement was in the extremely low range (calculation was more difficult than reasoning skills)	Disability
E.R.	• Brigance Inventory of Basic skills: Comprehension skills are strong. • Additional Assessment (Test not specified): showed weak decoding and encoding. However, mathematical reasoning was above average but calculation was much lower.	Dyscalcula
S.S.	• Massachussettes Comprehensive Assessment System (MCAS): grade 4 (Warning) and Math (needs improvement) • Repeated grade 4 • Scholastic Reading Investory (SRI): Lexile: 240/600 • Wechsler Individual Achievement Test (WIAT-II) and Woodcock Johnson (Version not specified: showed significant delays reading • Wechsler Intelligence Scale for Children (WISC-IV): showed a discrepancy between verbal and non-verbal reasoning in favor of nonverbal	Language Based Learning Disability
A.S.	• Cognitive Assessment (Test not specified): Overall thinking and reasoning skills are within the average range of intellectual functioning. Verbal comprehension, perceptual reasoning, and working memory are in the average range. The processing speed scores are in the borderline range based on his graphomotor skills and mental speed • Repeated third grade.	Specific Learning Disability
T.S.	• Woodcock Johnson (WJ-III): tests of achievement showed that support in reading comprehension, writing, and math are warranted	Specific Learning Disability
T.T.	• Academic Assessment (Test not specified): Functioning at an upper first grade level in second grade • Cognitive Assessment (Test not specified): inconsistent sequencing skills, depressed visual-motor integration skills (4 years below chronological age) • Language Assessment (Test not specified): language delays and confusion • Repeated first grade.	Specific Learning Disability
J.T.	• Scholastic Reading Inventory (SRI): Lexile was 265 in 4th grade (minimum in 4th grade is 600) • Wechsler Individual Achievement Test (WIAT-II) and Woodcock Johnson (Version not specified): Indicate average skills in math with significant delays in reading, phoneme/grapheme knowledge, and spelling • Weschler Intelligence Scales for Children (Version not specified): yielded a discrepancy	Specific Learning Disability

between verbal and nonverbal reasoning with average abilities in processing speed, working memory, and perceptual reasoning:

UPDATED SCORES:

- Cognitive Assessment (Test not specified): cognitive functioning (average range- 47th %ile), numerical operations (average range- 47th %ile), math reasoning (average- 30th %ile), reading comp (average- 45th %ile), word reading (low range- 13th %ile), spelling (borderline- 5th %ile), 15 point diff between verbal and perceptual reading scores

Summary	1 IEP did not indicate math and language data although the student receives those services 1 IEP did not indicate any academic data that resulted in placement although services were provided (discussed more behavioral concerns) Unspecified Cognitive test= 25% WISC= 35% Kaufman Assessment Battery for Children= 5% Unspecified Academic assessment= 15% WJ (III or a version)- 35% SRI- 15% DRA= 20% WIAT- 15% (achievement test) Brigance inventory= 10% Benchmarks or class assessment= 20% MCAS= 10% Grade level repeat= 15% Unspecified Language Assessment= 15% CELF= 10%	All students have a SLD. Of those students three have more specific classifications (i.e. reading disability, dyscalcula, and language-based learning disability) Three students have a combination of classifications, a) SLD and ADHD b) SLD, PTSD, SLD, bipolar disorder, c) SLD and depression

APPENDIX F: CURRENT IEP DATA

Initials	Years in SpEd at time of testing	Subject Areas for Services	Hours of Services Per Week	IEP Goal Areas
J.B	4 years 1 month	Language Arts, Math, Speech	4.92	Comprehending (drawing conclusions), writing, math problems (computation), language (producing lengthy and complex sentences)
L.F.	4 years 8 months	Language Arts	Hours unspecified on IEP	Comprehending (reading), decoding, Writing, Spelling,
J.F.	4 years 10 months	Language Arts	3.75	Comprehending (legnthy sentences), producing (legnthy sentences)
B.G	5 years 9 months	Language Arts, Math, Language Beh/Soc-Emotional	19.92 (Elementary School IEP)	Comprehending (vocabulary, story retell, following oral information), Number sense (e.g. place value, fractions), Communication (use more complex and detailed language, and discuss events from her personal experiences), Emotional (regulate emotions when feeling overwhelmed.
R.G.	5 Years	Language Arts, Math	7.5	Comprehending (1st IEP, Reading) Listening Comprehension, Spelling, Math (computation)
L.H	5 years 4 months	Language Arts, Speech, Beh/Soc-Emotional	9.25	Understanding written directions, engaging in appropriate peer relationships, *completing timed tasks*

S.H.	5 years 10 months	Language Arts, Math	7.5	Comprehending, overall thinking and reasoning skills
M.H.	4 years 3 months	Language Arts	3.75	Writing (Topic development, details, organization)
E.L.	4 years 11 months	Language Arts	3.75	Comprehending (Recall/Retell stories), Writing (plan/organize written tasks, perform written assignments) answer when called upon, engage in appropriate peer relationships, *complete time tasks*
			7.5	Comprehending (Information recall)
P.P.	2 years 10 months	Language Arts, Math		
A.R.	2 years 1 months	All subjects (mainstreamed for Language Arts)	18.75	Writing (organizing, planning, editing), concentrating, asking for assistance, following directions
R.R.	3 years 8 months	Language Arts, Math, Speech	8.17	Comprehending (lengthy and complex sentences), drawing conclusions, written assignments, reading and understanding math word problems, producing (lengthy and complex sentences)
J.R.	4 years 4 months	Language Arts, Math	7.5	Decoding, word identification, mathematics (number sense, simple computation)
J.F.	6 years 8 months	Language Arts, Math	7.5	Comprehending (Reading), calculation skills, and math reasoning,

E.R.	3 years	Math	3.75	Basic math facts and computation
S.S.	4 years 4 months	Language Arts, Math, Speech	8	Comprehending (reading), oral and written expression, language processing (utilizing vocabulary)
A.S.	5 years	Language Arts Speech	7.5	Phonemic awareness, Expressing ideas (in a narrative)
T.S.	4 years 11 months	Language Arts	3.75	Comprehending (Drawing conclusions, inference, analyzing plot), decoding, writing (prompts, mechanics), producing lengthy and complex sentences, volunteering information, following oral directions
J.T.	3 years 3 months	Language Arts, Math	3.75	word reading, Spelling
Summary	4 years 6.7 months	90% Language Arts, 55% Math, 35% Speech, 10% Beh/Soc-Emotional	7.013 hours	70% Comprehension, 30% Decoding, 45% Writing, 15% Spelling, 25% Social Skills (e.g. following directions, engage in appropriate peer relationships, self-regulation), 35% expressive language, 25% math computation, 10% number sense, 10% math reasoning

APPENDIX I: ASSENT SCRIPT FOR THE QUESTIONNNAIRE

(SCRIPT TO BE READ TO CHILD)

Project Title: The Protective Utility of Social Supports for Students With and Without Disabilities

Project Investigators: Dawn Jacobs, University of Maryland;

Rebecca Silverman, Ph.D, University of Maryland

Hi (insert child's name),

My name is _____.

My friends and I are studying how social support from teachers, parents, and classmates help middle school students and we would like you to be part of our study. Your parents have told us that it is OK for you to do this. If you say yes, we will ask you to answer some questions about social support, and it will take about 30 minutes.

You don't have to be part of this study on social support. If you say yes now, you can say no later.

You might get tired during the testing and may miss some instruction in the classroom. We will help you by giving you breaks if you need them and talking to your teacher about the best time to work with you and your classmates.

Your tests will not be shown to anyone besides Dr. Silverman from the University of Maryland and myself. When we share this information with other people your name will be removed from your test, so no one will know that they are your answers.

After finishing this questionnaire you may be asked to participate in an interview, but if you prefer not to you don't have to be part of the interview.

This project will help the researchers learn more about the way that social support from different people help students in middle school. Apart from the raffle ticket that you already received you won't get anything by answering these questions.

Do you have any questions?
Are you willing to work with us?

Child's response: yes   no

Examiner signature_____

Date_____

APPENDIX J: ASSENT SCRIPT FOR THE AUDIO RECORDED INTERVIEW

(SCRIPT TO BE READ TO CHILD)

Project Title: The Protective Utility of Social Supports for Students With and Without Disabilities

Project Investigators: Dawn Jacobs, University of Maryland;

Rebecca Silverman, Ph.D, University of Maryland

Hi (insert child's name),

My name is _____.

      My friends and I are studying how social support from teachers, parents, and classmates help middle school students and we would like you to be part of our study. Your parents have told us that it is OK for you to do this, and you already took our questionnaire. If you say yes, we will ask you to answer more questions about social support, and it will take about 45 minutes.

      You don't have to be part of this study on social support. If you say yes now, you can say no later.

      You might get tired during the testing and may miss some instruction in the classroom. We will help you by giving you breaks if you need them and talking to your teacher about the best time to work with you and your classmates.

      Your answers will not be shown to anyone besides Dr. Silverman from the University of Maryland and myself. Your responses will be audio recorded so that I can listen to them later. When we share this information with other people your name will not be used, so no one will know that they are your answers.

      This project will help the researchers learn more about the way that social support from different people help students in middle school. Apart from the raffle ticket that you already received you won't get anything by answering these questions.

Do you have any questions?
Are you willing to work with us?

Child's response: yes   no

Examiner signature_____

Date_____

APPENDIX K: INDEPENDENT AND DEPENDENT VARIABLES

Variable	Measure	Description
THE INDEPENDENT VARIABLES		
Social Support	CASSS (2000, Child and Adolescent Social Support Scale)	
	Parent social support Subtest	12-item social support assessment with a 6-point Likert scale to assess Emotional, Instrumental, Appraisal, and Informational support from a parent.
	Teacher social support Subtest	12-item social support assessment with a 6-point Likert scale to assess Emotional, Instrumental, Appraisal, and Informational support from a teacher.
	Classmate support Subtest	12-item social support assessment with a 6-point Likert scale to assess Emotional, Instrumental, Appraisal, and Informational support from a classmate.
	Close Friend social support Subtest	12-item social support assessment with a 6-point Likert scale to assess Emotional, Instrumental, Appraisal, and Informational support from a close friend.
THE DEPENDENT VARIABLE		
Academic achievement	Massachusetts Comprehensive Assessment System (MCAS)	Standardized assessment in the areas of English Language Arts (ELA) and Mathematics based on state standards. Score range from 200 to 280 with categorical labels of "advanced," "proficient," "needs improvement," "warning."
	Mathematics and ELA Grade Point Average (according to school records)	Grades of A (4.0) to F (0.0) obtained from permanent school records.

APPENDIX L: MOTIVATION QUESTION

A Survey About Your Learning

1. When you take the MCAS how likely are you to try and do better than your classmates?

Not Likely	A Little Likely	Likely	Very Likely

2. When you take the MCAS how likely are you to try and get the best score that you can?

Not Likely	A Little Likely	Likely	Very Likely

3. *When you take the MCAS how likely are you to show how much you know about math and reading?

Not Likely	*A Little Likely*	*Likely*	*Very Likely*

4. When you take the MCAS how likely are you pay careful attention to the directions and questions?

Not Likely	A Little Likely	Likely	Very Likely

* Question 3 was eliminated from the statistical analysis

APPENDIX M: EXAMPLES OF QUESTIONS FROM THE 2010 MCAS

Construct	Type of Question	Sample Item
Seventh Grade English Language Arts		
	Open response question	*Imagine you had the opportunity to live anywhere in the world for a year. Where would you live? Why would you choose this place to live? What would you hope to learn there?*
	After a long passage about scorpions, a multiple-choice question is;	*Which quotation from the excerpt **best** states the main idea?(A). "Say scorpion to most people, and they will picture a small desert-dwelling animal, its curved tail tipped with a deadly stinger." (B) "Overall, scorpions are far more varied and much less dangerous than people imagine."(C) "As a result, in many cultures the scorpion is a symbol of evil and death." (D) "Growing numbers of biologists have become fascinated with scorpions."*
Seventh Grade Mathematics		
	Multiple choice question	*Donnie has a spool that contains 18 yards of wire. What is the total number of inches of wire that the spool contains?* *A. 162* *B. 216* *C. 540* *D. 648*
	Short answer question	*Madison plans to sew one button and one ribbon on a clown costume. She has one each of the following colors of buttons in her pocket:* *• black; green; red; white* *All the buttons are the same size and shape.* *Madison will select one button from her pocket without looking.* *What is the probability that she will select a red button? Show or explain how you got your answer.*

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