THE RELATIONSHIP BETWEEN SOCIAL CAPITAL AND SCHOOL-RELATED

OUTCOMES FOR YOUTH WITH DISABILITIES

by

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A DISSERTATION

DISSERTATION ABSTRACT

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June 2013

Title: The Relationship Between Social Capital and School-Related Outcomes for Youth
With Disabilities

This study evaluates a model of social capital where support from parents, peers, teachers, and mentors (SOS) was hypothesized to mediate the link between students' abilities to mobilize support (MOS) and four school-related outcomes: academic, behavioral, emotional, and career outcome expectations. Survey data from 206 high school students with disabilities and 16 special education teachers in six school districts across three states were collected. Results from structural equation modeling, with bootstrap tests of indirect effects, indicated that SOS mediated the links between MOS and two of the four outcomes: emotional well-being and career outcome expectations. Invariance testing revealed significant differences for boys and girls. Implications for research and practice are discussed, including the need to distinguish between social capital and the process of capital formation, and the need to consider the role of students with disabilities in the process of social capital formation.

ACKNOWLEDGMENTS

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CHAPTER I

INTRODUCTION

Students with disabilities are more likely than those without disabilities to drop out of

school, earn lower wages, experience unemployment, be involved with the criminal

justice system and have lower self-reported life satisfaction (Blackorby & Wagner, 1996;

Newman, Wagner, Cameto, & Knokey, 2009). According to the National Center for

Education Statistics (NCES; 2011), 92% of 14-year-olds and 95% of 15-year-olds served

under the Individuals with Disabilities Education Act (IDEA) dropped out of school

Contribution to Research and Practice

The distinction between *structure* and *agency* is valuable for future intervention studies because it addresses the question of whether high achieving students with disabilities actively mobilize support to meet their needs, or if their success is facilitated by existing structures at home, in school, and in communities (Gonzales, 2010). A substantial body of research has provided empirical support for the association between adolescents' social capital and school-related outcomes, but few studies have examined the mechanisms through which social capital exerts its influence on school-related outcomes. Mediators transmit effects of an independent variable (IV) to a dependent variable (DV; MacKinnon, 2008). A major reason to assess the mediation process is that the nesiaap ceneponiedtsMa caes ned

which are linked to possession of a durable network of more or less institutionalized

relationships of mutual acquaintance and recognition" (p. 248). According to Bourdieu,

social capital has the following elements: (a) it is cumulative, (b) it includes both actual

and potential resources, (c) it is made up of a network of connections, and (d) this

network of connections is a product of investment strategies. Bourdieu (1986) argues that

these investment strategies have a multiplier effect – capital begets capital. The volume

Singh, 2002). Researchers have found Coleman's definition of social capital difficult to

measure because the outcome is placed within the definition (e.g., Edwards & Foley,

1997; Matous & Ozawa, 2010). Coleman defines social capital by its function, so the

difference between the cause and the effect is difficult to distinguish. For instance, Dika

that include factors of trust, communication, and alienation. The process of social capital

formation is operationalized by measures of mobilization of support (MOS).

Mobilization of support. Both Coleman and Bourdieu emphasize the importance

of social networks as resources that endow an advantage to those who possess them. Only

Bourdieu recognizes the possibility that potential social capital can be stored, and stored

level of effort exerted on a given task and how long this effort will be sustained in the face of obstacles. When an individual believes that his or her actions can produce desired outcomes, he or she is highly motivated to act or to persevere in the face of difficulties (Bandura, 1986, 1995). The importance of self-efficacy has been demonstrated on numerous positive outcomes, such as career choice (Lent, Brown, & Larkin, 1987), achievement in writing and mathematics (Pajares, 2003, 2005), and life satisfaction (Bandura, Caprara, Barbaranelli, Regalia, & Scabini, 2011).

   Help-seeking behaviors

CHAPTER II

LITERATURE REVIEW

Dika and Singh (2002) reviewed 35 studies that examined social capital as an

explanatory variable in educational research between 1986 (when Bourdieu proposed his

Social Capital in Educational Research, 1986 – 2001

        Research designs. Dika and Singh (2002) reviewed 35 studies: one was a mixed methods (Stanton-Salazar & Dornbusch, 1995), six were qualitative (e.g., Fritch, 1999a; Lareau & Horvat, 1999), and 28 were survey designs. Of the 28 survey designs, 26 employed secondary analyses of large-scale national surveys not originally created to measure social capital. For example, 17 studies use

1999a, 1999b; Israel, Beaulieu, & Hartless, 2001; Pribesh & Downey, 1999; Sun, 1999),

the number of close friends attending the same school (Morgan & Sorensen, 1999), peer

group values and influence (Muller & Ellison, 2001;

the existing literature and the gaps to be filled. Lastly, I present my research questions and hypotheses.

Social Capital in Educational Research, 2001 – 2012

Social capital research in education has not changed significantly since 1986. Many studies still focus on family-based social capital in the tradition of Coleman (e.g., Kao & Rutherford, 2007; Valadez, 2002). The use of crude measures of social capital, such as counts of intergenerational closure (Kao & Rutherford, 2007) and parental involvement in parent-teacher association (Valadez, 2002) is still popular. Researchers continue to use items from extant national, large-s

general education who dropped out of high school. Prado (2008) interviewed three students from immigrant and low-income families. Gonzales (2010) collected in-depth life histories of 78 undocumented Latino youths. Greenhow and Burton (2011) conducted semi-structured interviews with 11 students who used Facebook.

A new trend in evaluating multiple sources of social capital, such as parents, teachers, friends, and neighborhoods, also emerged (e.g., Garcia-Reid, 2007; Garcia-Reid, Reid, & Peterson, 2005; Woolley, Kol, & Bowen, 2008). These studies examined the quality of students' relationships with family, peers, school, and neighborhood and their impact on school outcomes. The use of social support measures as indicators of

Family sources of social capital.

Parental support. The quality of parent-child relationship is a widely cited protective factor, even in cases of significant adversities (Brookmeyer, Henrich, & Schwab-Stone, 2005). Developmental theorists have long established the link between the family environment and adolescents' perceptions of the social world, which in turn, yield important behavioral consequences (e.g., Cicchetti, Ackerman, & Izard, 1995).

Existing indicators of parental social capital can be categorized as follows: parent-parent relation, parent-child relation, parent-peer relation, and parent-school relation. Many of the relationships between family social capital and students' school outcomes are significant in the positive direction. Kao and Rutherford (2007) assessed effects of intergenerational closure and parent school involvement on GPA and combined scores on standardized mathematics and reading for minority and immigrant students. Using items from NELS:88, the researchers assessed intergenerational closure with questions asking parents to name their children's five closest friends and if they knew those children's parents. Parent involvement was measured by four parent-report items about school involvement. Their findings revealed that effects of these two indicators were greatest when students were in grade 8 and less obvious by grade 12 (Kao & Rutherford, 2007). The authors also found a differential return from social capital by race (black and white) and immigrant status (first, second, or third generation). In another study, Martinez et al. (2004) found that when parents encouraged youth to succeed academically, homework frequency increased, which in turn affected students' academic performance.

Sibling support. Few studies have investigated protective aspects of sibling relationships as they have done for parent-child relationships (Gass, Jenkins, & Dunn,

2007). Drewry et al. (2010) interviewed five students who dropped out of high school and found that siblings of three of the five subjects had dropped out as well. Azmitia, Cooper, and Brown (2009) interviewed 31 Latino youth in elementary and junior high schools to investigate the correlation between support from parents, siblings, friends, and teachers and adolescents' grades in mathematics. The researchers measured emotional support by asking youth how often they had supportive conversations about personal and academic topics and received help with homework from family, friends, and teachers. They assessed educational guidance by asking youth if they have had conversations with someone about their future academic and career plan

their effort to succeed in school. Teacher-student

adolescent health, social adjustment, and educational outcomes (Bryan et al. 2012).

Catalano, Haggerty, Oesterle, Fleming, and Hawkins (2004) found that school bonding

correlated with reduced problem behaviors and incre

were key sources of emotional support and educational guidance. I found no study that

examined the differential effect between friends (as close confidantes) and peers (as

community welfare, and democratic vigor (Putnam, 1995, 2000; Schwadel & Stout, 2012). However, community social capital in the US has been declining since 1972 (Schwadel & Stout, 2012).

Mentor support

Parental involvement. Test and Cease-Cook (2012) define parental involvement

social skills and post-school outcomes for students with and without disabilities, using data from a follow-along study conducted in Oregon and Nevada. They found that students who exited school with high social skills were more likely to be competitively employed ($r = .43$). They also found that parent-child agreement about post-school employment, students' personal responsibilities, and social relationships were not significantly correlated with post-school employment.

Community experiences. Community experiences, which resemble the concept of community social capital, are operationalized as community-based training in non-school environments that teach students skills related to transportation, mobility, recreational, leisure, and employment (Test & Cease-Cook, 2012). Test et al. (2009) found one exploratory study (White & Weiner, 2004) that provided evidence of the association between community experiences and post-school employment ($r = .39$).

Self-determination. Self-determination encompasses an array of skills, including problem-solving, decision-making, goal-attainment, self-regulation, self-awareness, and self-efficacy (Test & Cease-Cook, 2012). Manio

Gaps and Limitations

The literature on social capital in educational research from 2001 to 2012 addresses some but not all of the limitations that Dika and Singh (2002) had identified in their review. Despite the significant increase in the number of studies examining multiple sources of social capital, many researchers continued to focus on parental indicators. Coleman's conceptualization of social capital remained widely used despite having significant limitations. Researchers continued to use large-scale longitudinal data collected from surveys not originally designed to measure social capital and loosely combined indicators to approximate social capital. Many researchers began to evaluate the quality of student relationships with individuals in their social ecology as a proxy of social capital, which was an improvement on the use of crude quantitative indicators such as the number of parents per household and the number of times a family had moved.

Adolescents' Role in Acquiring Social Capital

Tierney and Venegas (2006) argued that the "Colemanesque" fixture on parental social capital is highly deterministic: a child born in poverty would be expected to remain there for life. If social capital plays a crucial role in advancing equitable educational outcomes, they believed that researchers should examine the role of student agency in shaping his or her own outcomes. Thus, the most notable change in the literature between 2001 and 2012 was the focus on adolescents as the primary architects of their social support network. For example, Stanton-Salazar (2001) found that some working-class ethnic minority youth were able to overcome institutional limitations by developing relationships with individuals who provided them with important resources.

records of students' most recent GPA), (b) problem behaviors (as rated by teachers), (c) emotional well-being (student self-report), and (d) career outcome expectations (student self-report).

The primary research question was: Do students with disabilities actively mobilize support to meet their needs, or is their success facilitated by existing structures at home, in school, and in communities? Secondary r

The final hypothesis requires further justification. Theories, not data, determine the direction of the mediating variable (Kenny, 2007). One could present a compelling theory for why MOS should be the mediating variable instead of SOS. As such, the directionality of the proposed model warrants theoretical justification.

In the field of developmental psychology, Sameroff (2010) proposes a unified theory of human development that integrates the ecological system theory (Bronfenbrenner, 1977), the stage-environment fit theory (Eccles et al., 1993), and the transactional regulation theory (Sameroff & Fiese, 2000). The ecological system theory proposes that human development, from childhood to adulthood, is influenced by a variety of social settings and institutions, both d

Figure 2. Arnold Sameroff's unified theory of development (2010).

The appeal of this theory is its capture of the life stage of adolescence within the

entire trajectory of human development. As development proceeds, our biology and

study is to determine whether the model is invariant across sex (boys and girls), race/ethnicity (white and non-white), grade level (9-10 and 11-12), and disability (learning disabilities (LD) and all others). I added disability to account for the unique needs of this study's targeted population. I will use a multi-group SEM approach to examine model invariance across these groups. This analysis is entirely exploratory due to the lack of a sufficient empirical base in the literature; thus, no hypotheses are proposed.

CHAPTER III

METHODOLOGY

Target participants for this study were high school students with disabilities and their teachers. The sample was selected in several steps. First, I conducted power analysis to determine the necessary sample size for recruitment. Next, I acquired approvals of the University of Oregon Institutional Review Board (UOIRB) and subsequently, the school districts review boards to recruit participants. Then, I invited school principals and special education teachers via email, phone, and face-to-face meetings to participate in this study. Participation is voluntary. No identifying information was collected.

Power Analysis

G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) was used to conduct a priori estimation of the sample size for a desired statistical power ($1 - \beta$), significance level (α), and the to-be-detected population effect size. The proposed model was fundamentally regression-based, so the linear regression test (size of slope) in G*Power was selected. A sample size of 82 students was deemed necessary to conduct the analyses with .8 statistical power to detect an effect of .30; α was fixed at .05. These numbers were consistent with Cohen's (1988) recommendation that a medium effect for regression or correlation is around .30. According to Cohen (1990), a sample size of 85 was sufficient to detect an effect with .8 statistical power when using the two-tailed significance level of .05 (Cohen, 1990). Power of .8 is considered adequate by convention (Cohen, 1990).

In addition to the regression-based power analysis, I also conducted a SEM-based power analysis to determine the appropriate sample size. There is no consensus in the literature in SEM or mediation analysis on how to determine the necessary sample size to

achieve adequate power (Kaplan, 1995; Fritz & MacKinnon, 2007). Fritz and MacKinnon

(2007) found that approximately 80% of the 166 psychological studies that tested

mediation processes published between 2000 and 2003 had fewer than 400 participants

(range = 20 to 16,466; median = 187). Kline (2011) and Tanaka (1987) recommended 20

participants per estimated parameter. Some methodologists, including Kline (2011), have

considered the 20 to 1 ratio to be unrealistically high (Kenny, 2012), and have suggested

that a 10 to 1 ratio of sample size to estimated parameters is more realistic. Bentler and

Chou (1987) recommended a 5 to 1 ratio of participants to estimated parameters. Given

that the measurement model in this study consists of 33 free parameters (15 path

coefficients plus 18 variances, see Figure 3), a sample size of 165 (for a 5:1 ratio) to 330

(for a 10:1 ratio) would be adequate.
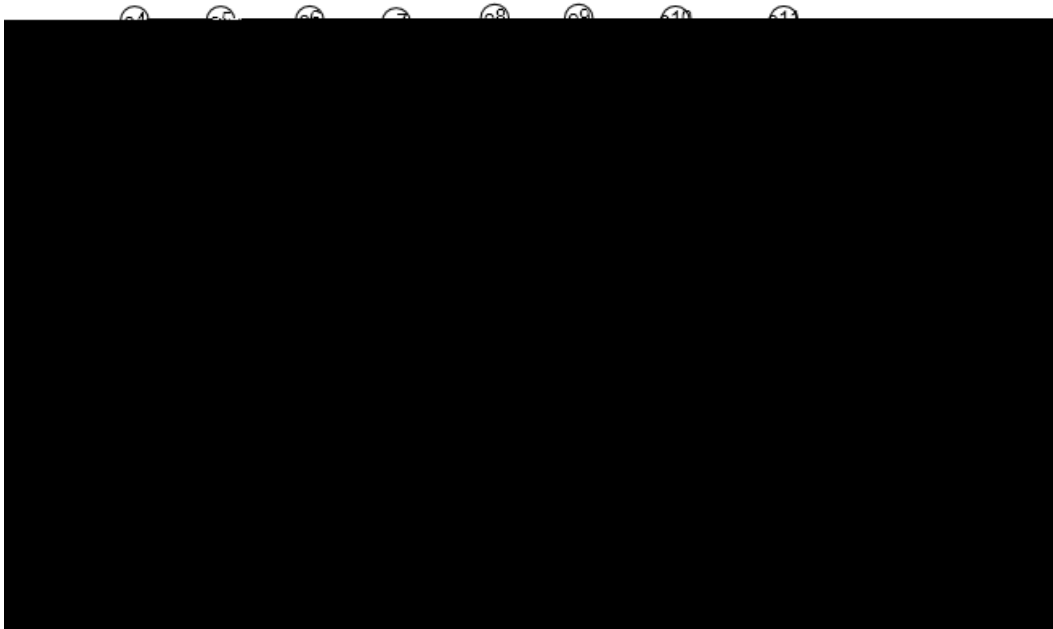
Figure 3. The full a priori model. MOS = mobilization of support; SOS = social support;

NOS = network orientation scale; EFFI = self-efficacy for enlisting support; SEEK =

help-seeking behaviors. *e* = errors or residuals. Variances are not drawn.

Participant Recruitment

  The UOIRB granted approval for study procedures contingent on local districts' approval. Consequently, I applied to conduct research in 16 districts. Four were not accepting research proposals. Of the remaining 12 districts, two never responded despite three follow-up phone calls and emails. Three districts denied my request, even though I have had verbal support from their principals and teachers. One of those districts gave no reason for the denial, one said that schools were already overwhelmed with testing, and one district said that my study has no direct benefits to teachers and students. One district

Response rate. Four response rates were considered: (a) the district, (b) the

principal, (c) the teacher, and (d) the student. Six out of 12 districts approved my research

proposal, yielding a 50% response rate. The principal response rate varied from 17% in

one district to 100% in another ($M = 53.33\%$). I was unable to calculate the teacher

response rate due to the use of snowball sampling. Teachers were asked to keep a record

of how many students had a chance to learn about this study and how many actually

participated. The student response rate, calculated by dividing the number of students

who participated by the total number recruited, ranged from 35% to 100% ($M = 79\%$).

Table 2

Characteristics of Schools Based on 2011 Official Records (n = 9)

		Percentage of Student Subgroup			
School	S:T Ratio	F/RLP	White	Black	Hispanics
1	24:1	29.0	79.0	4.0	9.0
2	13:1	30.0	97.0	1.0	0.5
3	18:1	44.0	76.0	12.0	12.0
4	19:1	35.0	80.0	2.0	12.0
5	21:1	24.0	76.0	6.0	8.0
6	13:1	67.0	20.0	60.0	13.0
7	24:1	29.0	88.0	1.0	7.0
8	18:1	44.0	17.0	6.0	72.0
9	16:1	39.0	16.0	2.0	78.0

Note. S:T = student to teacher ratio. F/RLP = percentage of students receiving

free/reduced lunch prices.

Sample

Sixteen special education teachers and 206 high school students with disabilities

participated in this study (13:1 student to teacher ratio).

Students. Participants' ages ranged from 13 to 19 years ($M = 16.20$, $SD = 1.4$).

Eleven percent ($n = 23$) reported to be employed and were working on

hours per week ($SD = 10$). Thirty percent ($n = 62$) reported to be "Not at all religious,"

47% ($n = 97$) were "Somewhat religious," 13% ($n = 27$) were "Quite religious," and 8%

($n = 16$) were "Extremely religious." Forty-eight percent ($n = 98$) indicated that they

definitely wanted to attend college, 42% ($n = 86$) reported "Maybe," 5% ($n = 10$) did not

plan on attending college after high school, 5% ($n = 11$) planned to join the military, and

0.5% ($n = 1$) said that she would not graduate from high school.

than females receiving special education services in the population: 66.6% in 2001 and

85.8% in 2009 (NLTS2, 2013).

Table 3

Characteristics of Students (N = 206)

Characteristic	*n*	Percentage
Sex		
Male	132	64.0
Female	74	36.0
Grade level		
9th	58	28.0
10th	40	19.0
11th	50	24.0
12th	58	28.0
Race/Ethnicity		
White	115	56.0
Latino	39	19.0
Mixed	16	8.0

were equally likely to be ranked low, average, or high achievers. The relationship

between these variables was not significant, χ^2 (2, $N = 206$) = 5.28, p

Table 5

Teachers' Connectedness to Others

Connectedness	*M*	*SD*	*Min.*	*Max*
Students	4.43	0.85	2	5
Other teachers	3.29	0.91	2	5
Immediate supervisor	3.14	1.23	1	5
Administrators	3.00	1.18	1	5
Professionals in the field	2.93	1.14	1	5

Measures

After selecting the appropriate measures and checking for issues related to format, item wordings and scales, and clarity of directions, I piloted the surveys with five high school students with and without disabilities and one special education teacher. I used their feedback to revise the surveys prior to distributing them to research participants.

Pilot. First, I administered the student survey to a white, male, general education student in grade 9. He completed the survey in 23 minutes and provided feedback on the wording of items, survey format, clarity of directions, and the likelihood of survey fatigue. I also solicited feedback from him regarding the ordering of each measure, if the switching of scales (from agree/disagree to often/not often) from one measure to the next was confusing, and how he would feel about completing the t we( )-0.479431-at nfe( )-0.479431-at nf5

in a separate location. Students completed the survey in 31 to 46 minutes ($M = 39$). I asked these four students the following questions: Did you understand the purpose of the survey? Overall, did you find the survey easy to understand? Did you feel comfortable answering the questions? Were any words confusing, upsetting, or embarrassing? How did you feel about the length of the survey? How did you feel about completing items about your relationship with your teachers? Would you feel more comfortable if the researcher instead of your teacher was giving the survey? Were the answer choices reasonable? Did any item require you to think too long? Which part of the survey stood out to you? Students reported that the survey was easy to understand and was relatively shorter compared to what they have to take in school. They felt as if they were doing an exercise to prepare for a job interview. Students provided specific suggestions for certain wordings of some items, such as the item "I feel alone or apart when I am with my friends." Students said that the word "apart" was confusing and suggested changing it to "lonely." Students also mentioned that their school did not use grade point averages and suggested an item that allows them to report letter grades.

  Demographics. Students provided information about their age, sex, grade,

Network orientation. The Network Orientation Scale (NOS; Vaux et al., 1986) is

a single-dimension scale designed to assess one's e

undergraduate college students revealed satisfactory reliability. Cronbach's alphas were

.63 for the SE-SR and .79 for the SE-PC (Choi et al., 2001). Authors of the MSPSE

provided anchors only for the odd-numbered scales, so only 1, 3, 5, 7 were defined (i.e., 1

=

SOS measures. SOS was measured using students' self-report of the quality of their relationships with parents, friends, teachers, school, siblings, peers, neighborhood, and mentors.

Parent and friend support. Students assessed the quality of relationships with parents and friends using the 24-item short version (Nada Raja, McGee, & Stanton, 1992) of the original 53-item Inventory of Parent and Peer Attachment (IPPA: Armsden & Greenberg, 1987). Although this measure uses "peer" in its title, all items on the peer subscales were about individuals whom students considered to be good "friends." To maintain the distinction between friendship and peer relationship in this study, I will use "friend" to refer to this particular measure's peer subscales. The IPPA was developed based on attachment theory (Bowlby, 1977) to assess adolescents' perceptions of the affective and cognitive dimensions of relationships with parents and close friends. Nada

et al. (2010) found that parental relationship was a strong predictor of internalizing and externalizing behaviors whereas friendship predicted only internalizing behaviors. For this study's sample, Cronbach's alphas were .86 for the brief IPPA parent scale (12 items), .76 for the trust factor, .70 for the communication factor, and .79 for the alienation factor. For the brief IPPA friend scale, Cronbach's alphas from this study's sample were .86 for the entire scale (12 items), .69 for trust, .86 for communication, and .78 for alienation. Factor-based total scores were calculated by averaging the total of all items in each factor.

connectedness to siblings, peers, and neighborhoods. Students who have no siblings were

instructed to skip these items. Students rated these items on a 5-point Likert scale ranging

from 1 (*not at all true*) to 5 (*very true*). Each subscale had one reverse-scored item to

ranged from .89 to .91. Other studies that used the inspiration subscale reported internal

consistency alphas of .87 (Nauta, Saucier, & Woodard, 2001) and .91 (Quimbly &

DeSantis, 2006). Evidence of construct validity was supported with measures of general

social support, occupational information, career indecision, career certainty, and social

desirability (Nauta & Kokaly, 2001). For this study's sample, Cronbach's alphas were .81

for the entire scale, .77 for the guidance factor, and .66 for the inspiration factor. Factor-

based total scores were calculated by averaging the total of all items in each factor.

School bonding. School bonding was measured with seven items such as "I look

forward to going to school," and "I like to take part in class discussion and activities"

(Murray & Greenberg, 2001). Students rated these items on a 4-point Likert scale ranging

from 1 (*almost never or never true*) to 4 (*almost always or always true*). Murray and

Greenberg (2001) found significant correlations between this measure of school bonding

and measures of school competence ($r = .33$ to .50) on a sample of students in grades 5

and 6 with ($n = 96$) and without disabilities ($n = 193$). The researchers reported an

internal consistency of .82 for the entire scale. The Cronbach's alpha from this study's

sample was .85. Total scores were calculated by averaging the sum of all items.

School-related outcomes. Four school-related outcomes were examined:

academic, behavioral, emotional, and career.

Academic outcome. Students' grade point averages (GPA) over the most recent

grading period, which teachers collected from students' official records, were used as

indicators of students' academic performance.

Behavioral outcome. Thirty items on the problem behaviors subscale of the

Social Skills Improvement System-Teacher Rating Scale (SSIS; Gresham & Elliott,

student's first initial." During survey implementation, teachers were reminded to "Address any questions that students may have." After survey implementation, teachers were asked to "Seal student surveys in the provided envelopes." All surveys were available both online via Qualtrics and in paper-and-pencil formats. Participants chose the survey format most suitable to their needs. Students and teachers were instructed to complete the surveys outside of regular classroom hours, such as before or after school, in order to minimize interference with regular instruction. The student questionnaire took approximately 30 to 40 minutes to complete. Teachers completed a two-page questionnaire about themselves and a four-page rating for each student, which took approximately 5 to 10 minutes.

Model Identification

SEM models can be under-identified (fewer known than unknown parameters), identified (same number of known and unknown parameters), or over-identified (more known than unknown parameters). Only over-identified models allow for the exploration of parameter estimates to determine if the model is indeed a reasonable representation of the phenomenon in question. According to the modified model (Figure 3), the number of parameters to be estimated was 30 (14 regression weights plus 16 variances). The degrees of freedom were 75 (105 minus 30), yielding an over-identified model.

Data Analysis

Rationale for SEM. SEM accounts for measurement errors, allows for the simultaneous examination of multiple variables, and allows variables to correlate. As such, there is no need to control for other variables in order to examine a particular relationship between a specific predictor and criterion variable.

SEM is theory-driven rather than data-driven because it tests models that are conceptually derived a priori (Kline, 2011). As such, it is an appropriate technique for analyzing non-experimental data. However, "a priori does not mean exclusively confirmatory" (Kline, 2011, p. 8). In a strictly confirmatory application, researchers test only one model and reject or accept that sole model based on data. In a less restrictive application, researchers can use SEM to test alternative models or to generate models. Model generation is most commonly used and is the route that I have chosen. Model generation begins with an initial model that might not fit, which is subsequently modified and tested again with the same data (Jöreskog, 1993). The goal is to arrive at a model that: (a) makes theoretical sense, (b) is reasonably parsimonious, and (c) has acceptable fit to the data (Kline, 2011).

Data preparation. Descriptive analysis was conducted using SPSS 20.

Missing data occurred only on the student surveys. Five students (2.4%) missed entire

sections of the survey, so I contacted their teachers and asked if those students could

complete those sections, which they did. Nine students (4.4%) had missing demographics

such as age and primary language spoken at home, so I contacted their teachers to acquire

this information. Another nine students skipped items on the survey. The number of items

skipped ranged from one to five out of a total of 147 items (0.68% to 3.40%), thus, the

amount of data loss was ignorable. I used the FIML option in Amos to impute the

maximum likelihood based values for these missing data.

Outliers. I used Mahalanobis distances results in Amos to determine which

observations were contributing to the sample's departure from multivariate normality.

Mahalanobis distances revealed six significant multivariate outliers. I checked each of

these six students' surveys to make sure that there were no data entry errors. I found that

these students could reasonably belong to the intended sample, so I decided to keep them.

Assumption of normality. Research has found that maximum likelihood (ML)

normality is violated. Inspection of bivariate scatterplots, P-P plots, and histograms revealed no significant departures from univariate normality, linearity, or homoscedasticity. As shown in Table 7, the skewnesses and kurtoses of distributions of the outcome variables are within the acceptable range of –2.0 to +2.0 (Muthén & Kaplan, 1985).

Table 7

Assessment of Normality

Variable	Skewness	*SE* of Skewness	Kurtosis	*SE* of Kurtosis
Academic	-0.33	0.17	-0.17	0.34
Behavioral	1.27	0.17	1.58	0.34
Emotional	-0.56	0.17	-0.00	0.34
Career	-0.09	0.17	-0.14	0.34

Multicollinearity. There is no consensus on what constitutes "too high" of a correlation between variables: .80 is often cited as the guideline, but problems can also occur at a moderate .40 (Morrow-Howell, 1994). Zero-order correlations between all independent variables in this study ranged from .24 to .59 (see Table 9). Kline (2011) recommends using a regression diagnostics procedure which involves calculating the squared multiple correlation (R^2) between each variable and all of the rest. If R^2 was greater than .90 for a variable analyzed as the criterion, he suggests eliminating that variable on the basis of redundancy. Following his recommendation, I ran several multiple regressions, each with a different variable as the criterion and the rest as predictors. R^2 ranged from .09 to .46, so all variables were retained.

Assessment of fit. Four goodness-of-fit indices were used to assess ho

be identified with CFAs (Jackson, Gillaspy, Jr., & Purc-Stephenson, 2009; Schreiber, Stage, King, Nora, & Barlow, 2006; Thompson, 2004). As part of this process, I examined factor loadings, unique variances, modification indices, and fit indices to ensure that measured indicators factored as hypothesized onto their respective latent variables. Indicators with non-significant or low loadings ($\beta < .50$) were removed and Hu and Bentler's (1999) recommended fit indices were a15789(r12.53536(t)-2.53536(h)-10.1969.4986(<).15789

e50]TJ -2(1 300 57.24 Tm [(5)-0.95641434.4 67(0]T

Table 8

Standardized Parameter Estimates from CFA

Variable	Standardized factor loadings (β)			R^2	δ
	MOS	SOS	Outcome		
NOS	.27			.08	.92
SE-SR	.44***			.19	.81
SE-PC	.56***			.31	.69
Parent help-seeking	.80***			.63	.37
Peer help-seeking	.64***			.41	.59
Teacher help-seeking	.82***			.67	.33
Parent trust		.60***		.36	.64
Parent communication		.57***		.32	.68
Parent alienation		-.25***		.06	.94
Friend trust		.37***		.13	.87
Friend communication		.43***		.18	.82
Friend alienation		-.04		.002	.998
Teacher trust		.71***		.50	.50
Teacher communication		.68***		.47	.53
Teacher alienation		-.14		.02	.98
Mentor guidance		.65***		.43	.57
Mentor inspiration		.46***		.21	.79
Peer connectedness		.69***		.48	.52
Neighbor connectedness		.45***		.20	.80
School bonding		.66***		.43	.57
Academic			.16	.02	.98
Behavioral			-.18	.03	.97
Emotional			.72	.52	.48
Career			.47	.22	.78
Factor Correlations					
MOS	1				
SOS	.84	1			
Outcome	.72	.89	1		
Fit indices of a priori measurement models					
p (χ^2)	< .001	< .001	.19		
CFI	.84	.53	.96		
SRMR	.08	.14	.04		
RMSEA	.14	.18	.06		
Fit indices of final measurement models					
p (χ^2)	.761	.551			
CFI	1.00	1.00			
SRMR	.01	.01			
RMSEA	< .001	< .001			

Note. R^2 = squared multiple correlation. δ = error variance; *** p < .001.

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CHAPTER IV

RESULTS

Do students with disabilities actively mobilize support to meet their needs, or is their success facilitated by existing structures at home, in school, and in communities? This study addressed these questions by examining the direct and indirect relationships between MOS and SOS on four outcomes: academic, behavioral, emotional, and career. Data analyses in this section progress in three stages. First, I examine the descriptive statistics of the predictor and outcome variables. Second, I perform SEM to examine the model fit and to test the posited meditational paths. Finally, I use multi-group analyses to test for invariance in the full model across subgroups of sex, race/ethnicity, disability, and grade level.

Descriptive Statistics

Correlations. Correlations among study variables are displayed in Table 9. All four MOS variables were correlated significantly with emotional outcomes, three were associated with career outcomes, and two were associated with behavioral outcomes. None of the MOS variables were correlated significantly with academic outcomes. Also shown in Table 9, all four SOS variables were significantly associated with emotional and career outcomes, and only the mentor and peer SOS factors were correlated with the behavioral outcome. None were correlated significantly with academic outcomes.

Means and standard deviations. Table 10 summarizes means and standard deviations for all variables across sex, race/ethnicity, disability, and grade level.

Table 10

Mean and Standard Deviation of Measured Variables By Groups (Sample Size)

Sample sizes for subgroups are displayed in Table 10. Distributions of all measur

The magnitude of the loadings of indicators on the latent construct MOS varied across support sources, where students' help-seeking behaviors towards teachers formed the strongest indicator of MOS ($\beta = 0.84$) followed by their help-seeking behaviors towards parents ($\beta = 0.78$), then peers ($\beta = 0.63$). The magnitude of the loadings of indicators on the latent construct SOS remained relatively stable across support sources, with βs ranging from 0.61 for parent support to 0.67 for teacher support.

Mediation analyses. Mediation analyses were tested using the bootstrap method with bias-corrected confidence estimates. The 95% confidence intervals of indirect effects were obtained with 1000 bootstrap resamples (Preacher & Hayes, 2008).

Table 11

Standardized Indirect, Direct, and Total Effects

Effect	MOS	SOS
Indirect		
SOS		
Academic	0.03	
Behavioral	-0.15	
Emotional	0.60**	
Career	0.43*	
Direct		
SOS	0.81**	
Academic	0.06	0.03
Behavioral	-0.03	-0.19
Emotional	-0.17	0.75**
Career	-0.10	0.53*
Total		
SOS	0.81**	
Academic	0.09	0.03
Behavioral	-0.18*	-0.19
Emotional	0.43**	0.75**
Career	0.32**	0.53*

$*p < .05, **p < .01, ***p < .001.$

To recap, Baron and Kenny's (1986) criteria for determining the presence of a mediator are: (a) the direct effect of the IV on the presumed mediator is significant (path

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chi-square from the unconstrained model (all parameters allowed to be unequal across groups) was compared to the chi-square from the constrained model (factor loadings were constrained to be equal across groups). The mediated paths appeared to be invariant (equal weights) across race/ethnicity ($\Delta\chi^2(15) = 13.60$, $p = .556$), disability ($\Delta\chi^2(15) = 13.60$, $p = .556$), and grade level (($\Delta\chi^2(15) = 13.60$, $p = .556$). Model differences (not invariant) were detected for sex, $\Delta\chi^2(15) = 28.73$, $p = .02$. As shown in Table 12, indirect effects of SOS on the links between MOS and career and MOS and emotional outcomes were significant for boys, but not for girls. SOS fully mediated the relationships between MOS and those two outcomes for boys. Fit indices for both the unconstrained model ($p <$ .001, CFI = .88, SRMR = .07, RMSEA = .07) and constrained model ($p < .001$, CFI = .86, SRMR = .08, RMSEA = .07) for sex demonstrated poor to adequate fit. Extreme caution is warranted when comparing these results due to the lack of good fit and lack of cross-validation. Standardized parameter estimates are displayed in Figures 7 and 8.

Table 12

Standardized Parameter Estimates for Boys and Girls (Unconstrained Model)

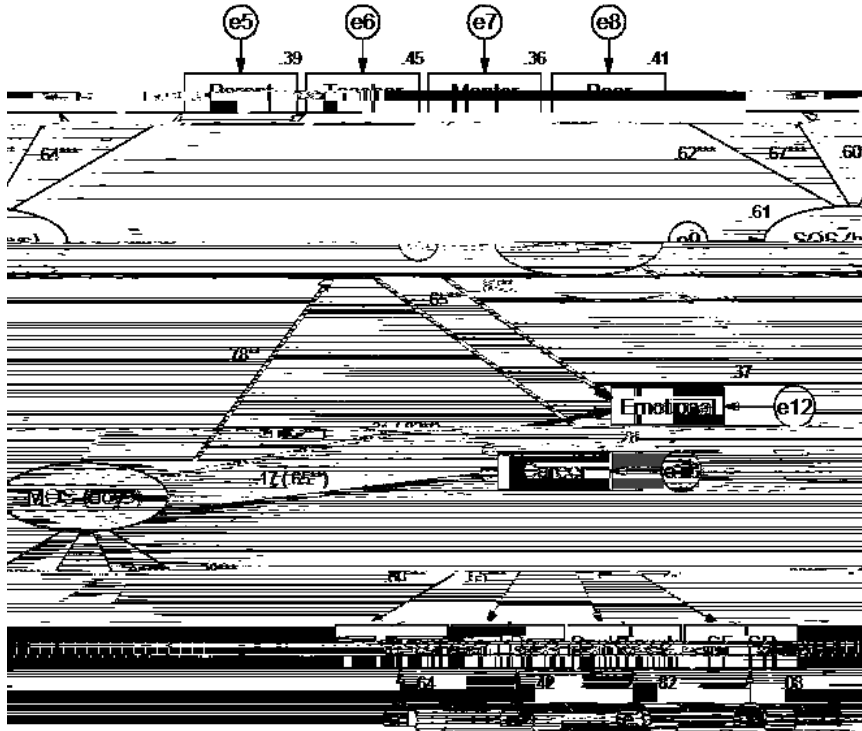| Effect	Boys (*n* = 132)		Girls (*n* = 74)	
	MOS	SOS	MOS	SOS
Indirect				
SOS				
Emotional	.64**		.42	
Career	.51**		.34	
Direct				
SOS	.78**		.89**	
Emotional	-.31	.82**	.24	.47
Career	-.17	.65**	.04	.38
Total				
SOS	.78**		.89**	
Emotional	.32**	.82**	.66**	.47
Career	.34**	.65**	.31	.38

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

Figure 7. The unconstrained model for boys. **p < .01.

Figure 8. The unconstrained model for girls. **p < .01.

Results From Measurement Models

Prior research suggests that it is important to fully construct measurement models prior to conducting SEM (Jackson et al., 2009; Schreiber et al., 2006; Thompson, 2004). In the current study, I conducted a series of CFAs to ensure that measurement models had good fit to the data prior to testing the structural model. These analyses resulted in several important changes between the hypothesized models and the final measurement models.

First, MOS was initially hypothesized to include three components: (a) students' attitudes towards accepting help from others (network orientation), (b) self-efficacy for enlisting social support, and (c) help-seeking behaviors. Factor loadings from the initial CFA revealed that help-seeking behaviors had the strongest linear relationships with MOS, followed by self-efficacy for enlisting support. Network orientation was not a significant factor of MOS. In other words, students' help-seeking behaviors and self-efficacy for enlisting support, not their attitudes about accepting help from others, were predictive of their abilities to mobilize support from parents, teachers, and peers.

The finding that network orientation did not load significantly on MOS was unexpected and should be interpreted with caution. First, what I considered to be MOS in this study could just be one dimension of actual mobilization of support. Given that this study is an exploratory correlational study, additional research is needed to explore the underlying factors of this construct. Second, adolescent network orientation has been treated as a homogenous construct (Barone, Iscoe, Trickett, & Schmid, 1998; Vaux et al., 1986). However, Barone et al. (1998) found that adolescent network orientation differs as a function of network reference groups (family, nonfamily adults, and peers). They

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created a three-factor network orientation scale th

indicators are not appropriate for this model, and a model that captures effects of negative social capital is a worthy endeavor for future investigations.

Another unexpected result was the low factor loading of friend support compared to peer support measures. While this finding validates the original hypothesis that friendships and peer relationships are not analogous constructs, this difference could result from multicollinearity between the friend support and the peer support measures. Unfortunately, the literature on friendships and peer relationships has not made a clear distinction between the two groups, thus, does not offer any explanation for this finding. Therefore, I will treat the peer support factor as indicative of both friendships and peer relationships for the remainder of this discussion. Future research should consider distinguishing between friendship (defined by proximity and intimacy) and acquaintance groups to determine whether and why these types of relationships have different impacts on students' school-related outcomes.

Another surprising finding was that teacher support had the strongest relationship with SOS, followed by peer, then mentor, and lastly parent. These results suggest that relationships with individuals outside of the family (teachers, peers, mentors) had a stronger influence on students with disabilities' social support network than relationships with those at home. These findings are inconsistent with prior research that found adolescents' relationships with parents have a strong influence on their social interactions (Brown, Mounts, Lamborn, & Steinberg, 1993; Cicchetti et al., 1995; Steinberg & Morris, 2001). For example, Panacek and Dunlap (2003) found that students with disabilities identified family members to be the most important people in their lives, followed by home-based friends, then school-based friends. Research on adolescents

without disabilities also found that those with close friends, and those with

authoritative parents are more influenced by family than peer relationships

(Bogenschneider, Wu, Raffaelli, & Tsay, 1998; Gauze, Bukowski, Aquan-Assee, &

Sippola, 1996). Additional research is needed to determine if findings from this study

would repeat with a different sample of students with disabilities. Lastly, the sibling

variable was dropped due to a large number of single child participants. Future research

found that parent-school involvement was positively related to GPA and standardized test scores for a national sample of students in grade 8 but not for students in grade 12. The researchers concluded that social capital mattered for younger students. Kao and Rutherford (2007) also used parents' responses to items about their involvement at school from NELS:88 as a measure of parent social capital. Perhaps the assessment of SOS in this study, which was based on students' perceptions of support, might not be indicative of actual resources that individuals in a student's social support network possess or actions that those individuals would take on behalf of the student.

The non-significant relationship between SOS and behavioral outcomes was inconsistent with the literature reviewed. Research in the field of developmental science has shown that social support is a strong predictor of positive behavioral development (Eccles & Roeser, 2009; Lerner et al., 2009; Monti et al., 2010). However, research also shows that students' perceptions of support diminished as they advanced through middle and high schools (Barber & Olsen, 2004; De et al., 2011). Cross-validation of this model with a younger sample of students with disabilities would clarify the significance, or lack thereof, of the link between SOS and behavioral outcomes.

Results from Invariance Testing

The literature reviewed in this study suggests that there were sex, race/ethnicity, and grade level differences in adolescents' social capital. Therefore, I conducted follow-up comparisons of these group differences on the significant mediated paths (emotional and career). I also tested for moderation variance on students' disabilities (LD

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entirely exploratory and results should be interpreted with extreme caution due to the lack

of good fit and the lack of cross-validation with a different sample.

Contrary to prior research, results from these analyses indicated that the mediated

paths between MOS, SOS, and emotional and career outcomes were invariant for

and more balanced sample size of students with LD and all other disabilities is needed to validate this finding.

Although this study found no significant differences among students with LD and all other disabilities, it does not discount prior research showing significant differences in the social capital of students with and without disabilities. Barone, Schmid, Leone, and Trickett (1990) found that students with disabilities reported that non-family adults made up 38% of people in their social network from whom they would seek emotional support compared to 10% reported by students without disabilities. Panacek and Dunlap (2003) found that students with emotional behavioral disorders had very restricted social networks in school, which were dominated by peers and adults affiliated with special education, relative to a matched comparison group in general education. Findings from the present study and prior research underscore the importance of attending to both the individual factors (students' ability to recruit support from different sources) and environmental factors (availability of support in different contexts) in supporting students with disabilities to develop social capital.

Grade level. Grade level differences were expected based on school experience and maturation. Specifically, students with disabilities in grades 11 and 12 were expected to display higher levels of emotional maturity, social adaptation, self-actualization, and career confidence than students in grades 9 and 10. Most studies of differences across grade levels focused on elementary and middle school students (e.g., Roeser, Eccles, & Sameroff, 2000), and detected significant changes students' perceptions of self-esteem, self-confidence in mat47.072 -27.6 Td [(s)-1.7465(658(e)3.15789( )-0.479431(s)-1.7465(c)-6.86-2.5

Reuman, & Midgley, 1991). Similar patterns of differences across grade levels were expected of students in high school.

Contrary to expectations, results from this study did not reveal any significant differences among students in grades 9 through 12. Interpretation of this finding should take into account past research that found grade level effects to be nonlinear. For example, Martin (2009) assessed age effects in a sample of 3,684 high school students

First, Powell and Luzzo (1998) sampled 235 students (125 girls, 127 boys) in grades 10, 11, and 12 from four urban high schools and found that boys believed that they had more control over their career decision-making than did girls. Career decision-making represents the cognitive dimension of career maturity (Crites, 1971). Those who possess high levels of career maturity are more likely to think about alternative careers, relate present behaviors to future goals, set realistic occupational aspirations and expectations, and have greater internal locus of control (Luzzo, 1995; Powell & Luzzo, 1998). Perhaps boys' sense of control and self-efficacy of career decision-making is linked to goal-oriented actions that lead to optimistic career outcome expectations and overall emotional well-being.

Second, prior research has shown that patterns of social interactions are different for boys and girls. For example, there is sufficient evidence showing that boys, from pre-school age to adolescence, have more integrated social networks (their friends were more likely to be friends with one another) than girls (Rose, 2002). Boys' pattern of social interaction is more consistent with Bourdieu's (1986) definition of social capital (i.e., "aggregate of the actual and potential resources which are linked to possession of a durable network of more or less institutionalized relationships"). Sex differences in patterns of social interactions might have accounted for the observed sex differences in this study. Future studies should take into account different structural patterns (frequency, duration, and content of interactions) of social interaction between boys and girls with disabilities. Finally, sex differences found in this study should be interpreted with caution, because the invariance test was conducted with a severely limited sample size (boys = 132, girls = 74), thus violating the N = 200 rule-of-thumb in SEM.

Implications for Research

At present, three conceptual confusions exist in the social capital literature: (a) the distinction between actual and potential resources, (b) the difference between social capital and the process of capital formation, and (c) the distinction between the network orientation of resource-seekers and willingness of resource-givers (Lee, 2010). Findings from the present study contribute to improving social capital research in education by helping to clarify two of these conceptual confusions.

First, findings from this study support the notion that potential resources should be treated as "accessible but un-utilized sources of social capital" (Lee, 2010, p. 781). Although it is unclear from this study if students actually utilized resources from their network reference groups to attain positive emotional and career outcomes, the significant effects of SOS on these outcomes are consistent with network analysts' conception of social capital as resources purposively mobilized from social relations. The significant indirect effects lend evidence to support the claim that potential resources can be activated (via MOS), at some point, to become actual resources (via SOS).

Second, the process of capital formation (MOS) is and should be treated differently from actual social capital (SOS). Portes (1998) proposes the separation of social capital resources from an individual's ability to obtain them. He cautions against the growing consensus in the literature that "social capital stands for the ability of actors to secure benefits" (p. 6) Evidence from this study concurs with Portes' suggestion to separate one's ability in forming social capital (MOS) from social capital itself (SOS). MOS depends on individual students' social skills, ability, and motivation. Students may have mobilization skills to acquire support but may lack access to a positive support

network, perhaps due to living in resource-deprived environments. On the other hand, students may have access to successful parents, mentors, peers, and teachers but lack the ability or motivation to utilize these resources.

Finally, although this study did not measure the willingness of resource-givers to support students (resource-seekers), it did provide some distinctions among various network reference groups. Specifically, findings from this study revealed that teachers had the strongest influence on students' MOS and SOS, while parents contributed the least to forming students' SOS. Future research should consider investigating not only the willingness of resource-givers, but also their ability to provide important support.

Experimental and longitudinal studies are necessary to provide the requisite degree of analytical validity of distinctions between (a) actual and potential resources, (b) social capital and the process of capital formation, and (c) the willingness of resource-seekers and resource-givers. Only when we can observe the transformation of potential resources into actual resources, and the willingness of resource-givers to take the desired actions at a future time can these distinctions be made clear. This investigation is beyond the scope of this study, but should be considered in future research.

Implications for Practice

Adults working with students with disabilities also assume the role of resource-givers, and thus, should be aware that students' social capital is simultaneously influenced by their ability to mobilize support and by resource-givers' ability to provide the necessary support. This understanding has significant implications for students' overall emotional well-being and career outcome expectations.

Importance of career outcome expectations. The findings that MOS and SOS significantly predict career outcome expectations are consistent with prior research. Research in the field of career counseling found that support from parents, peers, and teachers significantly predict career aspirations, perceptions of opportunity and school outcomes, perceptions of barriers, and self-efficacy for adolescents (Ali, McWhirter, &

satisfaction of three innate psychological needs are all pivotal for human growth:

autonomy, relatedness, and competence. Career outcome expectations are indicative of

students' vocational aspirations and success in school.

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