# School Engagement and Support for the Transition to High School for Students with Learning Disabilities

By

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For Mac and Rad, the world's best collaborators, and for Scott, just the best in the world.

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# CHAPTER 1

## INTRODUCTION

Research suggests that the transition from middle to high school is a critical juncture in students' academic, social, and emotional development. For some students, this pivotal moment is marked by a decline in attendance and grade point average (GPA) and accompanied by an increase in disruptive behavior and depressive symptoms. For others, this transition initiates increases in confidence, independence, and social opportunities (Benner, 2011; Benner & Wang, 2014; Isakson & Jarvis, 1999; Neild, 2009; Seidman et al., 1996). Many schools undertake efforts to ease this transition and promote positive outcomes for incoming high school students, yet the impacts of these programs are infrequently studied, particularly in regards to their relation with school engagement.

### Transition to High School

One framework for understanding the transition from middle to high school is life course theory (LCT), which focuses on the interaction of an individual's physical and cognitive development, social relationships, and ecological context as the primary factors shaping the trajectory of their life (Benner, 2011; Elder, 1998). Seen through this perspective, the transition to high school is a pivot point at which individual trajectories can be altered for better or worse, depending on the individual's internal resources and external influences (Elder, 1998; Benner, 2011). At this moment in students' lives, shifting contexts can alter students' patterns of attendance, academic achievement, social interactions, and behavior (Neild, 2009). If the proper

support is in place, students may flourish in high school, building new skills and relationships. However, if support is lacking, students may begin a downward spiral of isolation, academic disappointment, and behavioral disruptions (Benner, 2011).

Even school transitions that occur as a matter of course (i.e., from elementary to middle school) create disjunctions in students' lives, often leading to lower levels of attendance (Benner & Wang, 2014; Reyes et al., 1994) and school engagement (e.g., Benner, 2011, Benner & Wang, 2014; Isakson & Jarvis, 1998; Neild, 2009; Reyes et al., 1994; Seidman et al, 1996), decreases in GPA (Benner & Graham, 2009; Isakson & Jarvis, 1999; Reyes et al., 1994; Seidman et al, 1996), and increases in disruptive behavior (Roderick, 2003). Multiple school transitions are associated with lower grades, more delinquent behavior, and higher rates of dropout (Alspaugh, 1998; Weiss & Baker-Smith, 2011). These studies highlight the fundamentally disruptive and often risky nature of transitioning between schools.

For most American students, the move from middle to high school means a new building and a new community of adults and peers, with severed connections to familiar and possibly supportive middle school adults (Barber & Olsen, 2004; Reyes, 1994; Seidman, et al., 1998), along with changes in peer relationships (Almeida & Wong, 2009; Benner, 2011; Neild, 2009). These disruptions may account for the increase in loneliness many students report after the transition to high school (Benner, Boyle, & Bakhtiari, 2017; Benner & Graham, 2009) and in depression some researchers have reported (Barber & Olsen, 2004; Benner et al., 2017). While findings about the effects of disruptions to peer networks following the transition to high school are mixed (Benner, 2011), changes to students' peer groups during a time when peer relationships are increasingly valued introduces an opportunity for new positive or negative social pressure on students' school engagement.

High school requires that students assume new levels of independence and responsibility, providing students with less structure and supervision than do middle schools while increasing students' autonomy. Students move between classes, manage their time, and monitor their own overall academic progress, activities that are often overseen by adults in prior grades (Neild, 2009). School work typically becomes more challenging for students at the high school level, with increased homework expectations and less academic oversight (Akos & Galassi, 2004; Newman, Meyers, Newman, Lohman, & Smith, 2000). Simultaneously, families may reduce their supervision of students at this juncture (Falbo, Lein, & Amador, 2001; Schiller, 1999; Simon, 2004), particularly those of low-SES and minority students who are at particular risk for school disengagement (Simon, 2004, Reyes et al., 1994). Families are also less likely to be involved with schools as students age (Mac Iver et al., 2015). This loss of supervision and support from adults at school and at home may be partially responsible for attendance and academic declines and increases in risky behavior often observed during this transition (Neild, 2009; Weiss & Bearman, 2007).

There is evidence that these changes can be especially challenging for students with learning disabilities (LD). For students who are already struggling academically, the higher expectations for independence and increased academic work load in high school can present a particular difficulty (Letrello & Miles, 2003). In a small study of high school students with and without LD, Letrello & Miles (2003) found that students with LD were more likely to depend on help from teachers and peers to be academically successful in high school, precisely the types of connections that can be harder for students to establish or maintain in the transition to the secondary level (e.g., Almeida & Wong, 2009; Barber & Olsen, 2004). Further, interviewees in the study indicated that participation in extracurricular activities were an important buffer against

the stressors of high school, but interviewed students with LD were less likely to participate in these types of activities than students without LD (Letrello & Miles, 2003).

Students with LD drop out of high school at a rate of 26.8%, higher than students in any other disability category, with the exception of students with emotional and behavioral disabilities (U.S. Department of Education, 2010). This rate of school failure may be a driving force behind the attenuated life outcomes of many individuals with LD, who are less likely than their peers to attend college, earn a living wage, or be employed (Newman et al., 2011). Beyond economic effects, students with disabilities (SWD) who dropout are less likely than SWD who graduate to vote or hold a driver's license, and less likely than typically developing students (TDS) who dropout to earn a GED or attend a post-secondary institution (Rossi, Herting, & Wolman, 1997; Wagner, Newman, Cameto, Garza, & Levine, 2005).

Despite these disparities, there is limited disability-specific research regarding predictors of transition outcomes, school engagement and school completion (e.g., Benner, 2011; Fall & Roberts, 2012; Frank, Kohler, Peal, & Bose, 2017; Kindermann, McCollam, & Gibson, 1996; Sinclair, Christenson, Evelo, & Hurley, 1998; Smith, 1997; Stormshak, Fosco, & Dishion, 2010). Even research that aims to examine outcomes for SWD has seldom focused on students within a particular disability category, or used stringent methods to ensure that students included in the sample were accurately identified (Ahrens et al., 2010; Powers et al., 2016). When researchers have considered disability as a factor in school completion, they have often identified differences between students diagnosed with different disabilities (Dunn, Chambers, & Rabren, 2004; Reschly & Christenson, 2006; Zablocki & Krezmien, 2012).

Studies have shown that the transition to high school is a time of possibility and risk for students, a critical moment in a young person's development when positive or negative

trajectories can be initiated that can shape students' high school careers and influence distal outcomes. Schools can help to shape this transition and its effect on students through programming and outreach.

## Transition Support

Many schools take steps to support the transition to high school, but research into the effects of these efforts has been largely non-experimental. Heck and Mahoe (2006) found that students enrolled in schools with any program to support the transition to high school were 59% (odds ratio = 1.59) more likely to make normal academic progress toward graduation than students in schools without such programs. The authors did not evaluate the relation of specific program components to student outcomes.

Several authors have researched specific types of transition support. Smith (1997) investigated the importance of outreach to different stakeholders in a student's transition, finding that programs targeting teachers and parents as well as students were more strongly related to successful transitions than programs incorporating only one or two of those groups. Findings of other studies in this area support the importance of transition programming that goes beyond contacting middle school students. In a study of schools enrolled in a network promoting family and community involvement, Mac Iver and colleagues (2015) found that schools reporting high levels and quality of outreach to parents during the transition to high school had a lower proportion of students struggling in ninth grade than schools which did not make these efforts or rated them as being implemented poorly. In a randomized control trial, Reyes and colleagues (1994) investigated the effects of a program that paired eighth-grade students with a ninth-grade mentor, opportunities to visit the high school building, and the chance to meet their new teachers.

The effects of this program were not significant, suggesting this program may not have been sufficiently comprehensive to have a measurable effect on student outcomes.

Several authors have investigated malleable risk and protective factors for successful transition. In a 2017 study, Benner and Boyle examined protective factors for students in the transition to high school, but did not include school programs to support transition in their analyses. The authors found that stable or increasing levels of peer support and strong teacher relationships buffered the negative effects of transition, including depression and loneliness. Negative trends in students' perceptions of their relationships with peers and teachers were linked to declines in school engagement. The authors did not find a significant relation between changes in parent support and outcomes for students after transition (Benner, Boyle, & Bakhtiari, 2017).

These findings counter those of Isakson and Jarvis (1999), who found that students who perceived their parents as more supportive were likely to have a smoother transition to high school, while those reporting higher levels of peer support were likely to have lower GPAs in ninth grade. These divergent results suggest that differences in the type of support offered by parents and peers may be pertinent to student outcomes, or that differences in samples and measures may be relevant to interpreting results.

These studies indicate that transition support can be effective in improving outcomes for rising ninth graders, and that more comprehensive programs of support may be more effective than more limited programs. These findings are consistent with LCT, which highlights the importance of the interlinked systems of support and influence in a student's life, and the ways in which disruptions in one area can have impacts across an individual's school, home, and social lives. While these results indicate that high schools' efforts to support the transition of incoming

ninth graders are warranted, the limited literature related to the efficacy of different types of transition support leaves open the question of what types of support are most effective.

## Measuring Transition Outcomes

There are many ways of conceptualizing a "successful" transition to high school, reflected in research measures of academics, behavior, stress, depression, isolation, risk-taking behavior, attendance, and many other indices of well-being and orientation toward future success (Benner, 2011; Benner & Graham, 2009; Benner & Wang, 2014; Heck & Mahoe, 2006; Isakson & Jarvis, 1999; Mac Iver et al., 2015; Reyes et al., 1994; Seidman et al., 1996; Smith, 1997). Among the range of measures used as markers of transition outcomes, the most commonly studied are academic performance and school engagement (Benner, 2011). Both measures are commonly found to decline across the transition (Barone et al., 1991; Barber & Olsen, 2004; Benner & Graham, 2009; Gillock & Reyes, 1996; Isakson & Jarvis, 1999; Reyes et al., 1994; Seidman et al., 1996), and serve as important indicators of school persistence and completion.

### GPA

One important indication that a student has made a successful transition to high school is academic performance. Students who earn good grades following a transition can be assumed to be meeting the academic requirements of their new setting. As well as suggesting that a student has adjusted to new academic demands, strong academic performance in ninth grade is predictive of long-term academic success. Students with high GPAs in ninth grade were more than twice as likely to make normal progress toward graduation as they progress through school (Heck & Mahoe 2006). GPA is also important as a direct indicator of whether students are likely to receive academic credit for their classes and thus be promoted to the next grade.

**School Engagement**

School engagement, a meta-construct reflecting students' commitment to and investment in school, is a strong predictor of school completion for students across the economic, social, and cognitive spectrum (Appleton et al., 2008; Finn, 2006; Reschly & Christenson, 2006; Zablocki & Krezmien, 2013). Research suggests that the transition from middle to high school is a critical moment in students' school engagement, marked by a decline in attendance and an increase in disruptive behavior and depressive symptoms (Benner, 2011; Benner & Wang, 2014; Isakson & Jarvis, 1999; Neild, 2009; Seidman et al., 1996).

Although there is a strong association between school engagement and students' academic outcomes, the variability in the way researchers conceptualize and operationalize the construct makes it difficult to generalize study results (Appleton et al., 2008; Skinner & Pitzer, 2011; Wang et al., 2017). Early conceptualizations of school engagement were based largely on Finn's seminal (1989) *participation-identification model*, which focused primarily on student participation in and identification with school. Conceptualization of the construct in more recent research has recognized greater complexity in the area, recontextualizing "school engagement" as a meta-construct containing multiple sub-constructs representing different types of engagement. Appleton et al. (2008) and Reschly and Christenson (2012) identified four components of the meta-construct of school engagement commonly appearing in the literature: behavioral, academic, affective, and cognitive engagement.

*Behavioral engagement* typically refers to active participation in activities in the school setting (Wang & Degol, 2014), with some researchers distinguishing between *academic engagement* (e.g. time on-task, homework completion) and more general behavioral engagement (e.g., attendance, suspensions) (Reschly & Christenson, 2006a, 2012). *Emotional, psychological,*

*or affective engagement* typically refers to positive relationships with individuals in the school setting, valuing of school-based activities, and feelings of belonging at school (Finn, 1989; Reschly & Christenson, 2012). *Cognitive engagement* refers to effort expended on academic tasks, self-regulation, goal-setting, and the use of meta-cognitive strategies (Appleton et al., 2008; Fredricks et al., 2004; Wang et al., 2017). The subtype of *social engagement*, reflected in more recent research, is defined as the quality of students' interactions with peers both in the classroom and in the broader school setting (Wang et al., 2017).

In these studies, authors used engagement as the conceptual umbrella for their work, despite the use of very different operationalizations of that construct (Appleton et al., 2008). For example, Eccles and Wang (2012) noted that different researchers use the same or similar survey items to assess different subtypes of engagement, with variations in the way researches link theoretical conceptualization of engagement and items chosen as measures of the construct. For example, one author may consider a student's response to the prompt, "I try hard to stay focused in class," as an indicator of academic engagement; another as an indicator of cognitive engagement. Reschly and Christenson refer to these issues as "jingle/jangle problems in theory and measurement" (2012, pp. 16).

Adding to the complexity of discussing engagement, authors using overlapping operationalizations variously refer to their construct of interest as *engagement*, *engagement in schoolwork*, *academic engagement*, *school engagement*, *student engagement*, *student engagement in academic work*, *student engagement in/with school*, or *participation identification* (Appleton et al., 2008). This lack of consensus regarding terminology may lead to the conflation of different constructs and makes generalization of results from studies using different terminology more difficult.

Finally, some authors have argued for the use of a model with two continua of school engagement and disengagement (Skinner et al., 2009; Wang et al., 2017). This conceptualization posits that engagement and disengagement are related but distinct constructs, with disengagement characterized by maladaptive behaviors and mentalities, not simply as lower levels of adaptive behaviors and modes of thought. This model has been tested and validated in a recent mixed-methods study by Wang and colleagues (2017).

Throughout this paper, I use the term "school engagement" to refer to "students' directed and sustained participation in school as well as the observable and unobservable qualities of student interactions with learning activities and social companions." (Wang et al., 2017, p. 1; see also Skinner & Pitzer, 2011). For information about the operationalization of this construct, see the Method section of the paper.

**Engagement and school completion.** The relations between school engagement and academic achievement and school engagement and school completion are well established. Correlational studies have consistently shown a positive association between school engagement and academic outcomes (e.g., grades, test scores) for students at the elementary, middle, and high school levels (Connell, Spencer, & Aber, 1994; Fredricks et al., 2004; Marks, 2000). This relation is strongest for behavioral engagement, with cognitive engagement also a good indicator of academic success. The relation is weaker for emotional engagement. However, the lack of distinction drawn between these subtypes by many authors makes it difficult to determine how consistent this pattern may be (Fredricks et al., 2004).

The strong and consistent association between school engagement and school completion is particularly salient when non-malleable demographic and risk factors are considered. Studying a group of students at high demographic risk for dropout, Finn and Rock (1997) found that levels

of engagement, as rated by students and their teachers, distinguished students who complete high school from those who do not. Reschly and Christenson (2006a) found the same pattern looking at data for students with learning disabilities. When the authors controlled for academic achievement, SES, and in-grade retention, levels of school engagement (as measured in the eighth grade) predicted which students would complete high school and which would drop out. These results are consistent with similar studies that also found variation in school engagement associated with differences in school completion (e.g., Alexander et al., 1993; Dunn et al., 2004; Zablocki et al., 2013).

**Interventions increasing engagement.** There is substantial evidence that increasing the school engagement of middle and high school students is possible. Researchers have successfully tested a wide range of approaches to increasing school engagement, including mentoring (Reschly & Christenson, 2010), cultural awareness programming (Jones et al., 2017), school-based yoga and mindfulness instruction (Frank et al., 2017), career-relevant instruction (Orthner et al, 2013), and a program promoting parenting skills for adults and social emotional skills for students (Spoth et al., 2008). These studies establish that school engagement is not fixed in high school and can be increased via school-based programs.

**Covariates**

Analyses incorporate several commonly explored demographic, behavioral, and academic covariates in the relation between transition to high school and student outcomes.

There is moderate evidence of the influence of SES on students' adjustment to high school. Heck and Mahoe (2006) found that high-SES students were twice as likely to make normal progress toward graduation following transition, while Benner, Boyle, and Bakhtiari (2017), using parent education level as a proxy for SES, found no significant relation between

that measure and student adjustment to high school. SES is commonly used as a covariate in longitudinal studies of school engagement (Reschly & Christenson, 2006a; Zablocki & Krezmien, 2013) and has been used by many authors in experimental papers related to school engagement. In sensitivity analyses, Orthner (2013) found that an indicator of whether a student received free or reduced price lunch, a common stand-in for SES, was significantly related to intervention outcomes.

Race is also a significant covariate for student outcomes following transition, and its relation is nuanced. Heck and Mahoe (2006) found that Black and Hispanic students were more likely to fall behind academically and subsequently dropout after transition than were White and Asian students, but that this effect was reversed for Black students when SES was controlled. Benner and Graham (2009) found that Black and Hispanic students were likely to experience more difficult transitions to high school, but only when students of color were less well represented in the high school than in the middle school. Orthner (2013) found that minority status was a statistically significant covariate of school engagement.

Additionally, gender plays a complex role in predicting student outcomes following transition. Orthner (2013) found that gender was a significant covariate of school engagement. Benner, Boyle, and Bakhtiari (2017) found that boys reported overall lower, but increasing levels of depression across the transition, while girls' depressive levels began higher in eighth grade but reportedly declined across the transition to high school. Benner and Graham (2009) found that girls were overall lonelier and more anxious than boys across the transition period, and while they were likely to have higher GPAs in ninth and tenth grade, their GPAs also decreased more sharply than boys following transition. These findings are consistent with reports from other studies (Finn & Rock, 1997; Lee & Smith, 1995, Russell et al., 1997).

Finally, I have used prior in-grade retention as an indicator of previous academic difficulty. While grades typically decline across the transition to high school, the degree and level of decline are influenced by the grades students earned in previous school years (Isakson & Jarvis, 1999; Benner, Boyle, & Bakhtiari, 2017). Consistent academic difficulty is associated with in-grade retention. In-grade retention is also a strong predictor of dropout (Zablocki & Krezmien, 2012), and retention before ninth grade may predict later academic difficulty and repeated in-grade retention.

**Moderators**

In this study, I controlled for the covariates described, but did not hypothesize about or seek to determine their relation to student outcomes. I have investigated the influence of two moderators on the relation between school support for transition to high school and student outcomes in ninth grade: peer relationships and family support.

Due to the developmental changes children undergo around the time they transition to high school (Furlong et al., 2003), peer relationships become an increasingly important influencer of students' attitudes toward and engagement in school. During adolescence, focus on peer acceptance and a need for relatedness make peers' perceptions of and support for school critical to students' continued interest in school (Eccles & Wang, 2012). Kindermann and colleagues (1996) found that students embedded in networks of highly engaged friends were more likely to become increasingly engaged over time. Nelson and DeBacker (2008) found that this association was consistent when students rated their friend's engagement, suggesting that students with highly engaged friends are more likely to be engaged themselves. In the proposed study, peer support for learning is operationalized as the effort and school-orientation of the survey respondent's closest friend, as reported by the survey respondent.

Another hypothesized moderator of school support for transition and student outcomes is the support of parents and families. Parents' actions to support students, such as help with homework, contact with teachers, and attendance of school events, receives substantial attention both by researchers and by schools as a facilitator of student engagement and academic outcomes, and there is evidence that these types of support do promote student success (Benner et al., 2016; Bempechat & Shernoff, 2012). Beyond tangible actions of parental support, there is compelling evidence that parent expectations for academic achievement are a driver of academic outcomes (Benner et al., 2017; Bempechat & Shernoff, 2012; Doren et al., 2014; Jeynes, 2007; Jeynes, 2010). Parental attitudes toward the utility and importance of education seem to profoundly shape students' perspectives on school. Studies have shown that, even in the face of low teacher expectations, high parental expectations for students' academic outcomes lead to higher grades, stronger school engagement, and likelier school completion (Doren et al., 2014; Jeynes, 2010).

## Study Purpose

The transition to high school is a pivotal moment for many students, with the potential for changes in academic, behavioral, and social trajectories (Alspaugh, 1998; Benner, 2011, Benner & Wang, 2014; Isakson & Jarvis, 1998; Neild, 2009; Reyes et al., 1994; Seidman et al, 1996; Weiss & Baker-Smith, 2011) representing both risk and opportunity. School-based support for this transition is a promising avenue to increase the likelihood that students will maintain previous levels of performance and make a successful adjustment to their new setting, but there is limited research into the efficacy of different types and levels of transition support.

The study extended earlier research in the following ways. First, I analyzed which of the commonly implemented types of support for the transition to high school was most predictive of

school engagement and academic success in ninth grade, two strong predictors of school completion. I used demographic covariates consistent with similar studies. Second, I investigated the role of parental and peer support for learning as critical contexts for facilitating school engagement and academic success. Finally, I focused on students within a single disability category.

In the first stage of analysis, I investigated which types of transition support were most strongly associated with school engagement and GPA in ninth grade. Based on previous research findings (Benner, Boyle, & Bakhtiari, 2017; Mac Iver at al., 2015), I expected program elements designed to engage families, build relationships between peers, and build relationships between students and high school teachers to be most predictive of high grades and school engagement in ninth grade, as these elements help students bridge the social and structural divide between middle and high school. While it has been established that strong social and familial relationships may ease student transitions to high school, there has been little research into the role schools may be able to play in facilitating these connections.

Next, I investigated parental and peer support for learning as moderators of the relation between support for transition, GPA and school engagement. Informed by research from Benner and Boyle (2017), Mac Iver and colleagues, (2015), and Reschly and Christenson (2012), I anticipated that both parental and peer support for learning would have significant positive interactions with school support for transition and students' adjustment to ninth grade. These results would reinforce the argument that peer and parental support are critical in bolstering school efforts to promote successful transition to high school.

Figure 1 shows the model, including the hypothesized pathways among the variables. The predictors in the hypothesized model are the different types of support for transition to high

school: parent engagement, connections between middle school and high school students, connections between middle school students and high school staff, connections between middle and high school staff, high school visit days, and ninth-grade academies. The proximal outcomes represented in the model are behavioral engagement, emotional engagement, and GPA. Moderators of that relation are hypothesized to be family and peer support for learning.

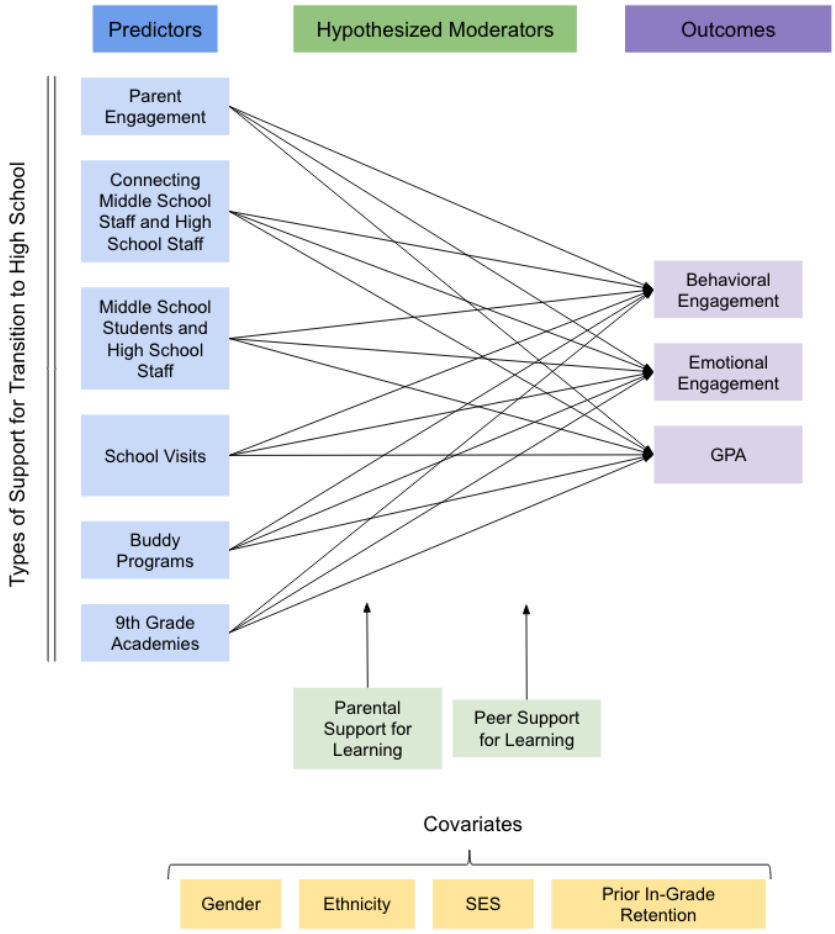


*Figure 1*. Model including all variables

# CHAPTER 2

# METHOD

## Overview

Data for the study were from the *High School Longitudinal Study of 2009* (HSLS:09), a large, nationally representative, longitudinal survey of about 24,000 students who entered the study in 2009 in the fall of ninth grade. The sample was created using a two-stage random sample design with schools ($n$ = 944 from 1,889 eligible; weighted 55.5% response rate) as primary sampling units and students randomly selected from within schools at the second stage. Data were collected from 2009-2016 in four waves, with high school transcripts collected for the 2013-2014 school year.

In Wave 1, in 2009, students completed an online survey and assessment of algebraic skill, both administered in school. If a student was not able to complete the questionnaire in school, a telephone interview was conducted ($n$ = 20,781 from 25,206 eligible; weighted 83% response rate). In Wave 1, parents, math and science teachers, counselors, and school administrators also completed surveys. Parents completed an online questionnaire or, if they preferred, were mailed an abbreviated hard-copy of the survey ($n$ = 16,995 from 25,206 eligible; weighted 67.5% response rate). Teachers, counselors, and administrators could choose to complete the questionnaire online or by phone.

Wave 2, the first follow-up, was administered in the spring of 2012, when most participants were in the spring of their junior year of high school. During this round of data

collection students, parents, counselors and administrators again completed questionnaires. Wave 3, in 2013, gathered information only from students and parents. High school transcripts for the 2013-2014 school year were also collected ($n$ = 21,928, 93.6% coverage rate). Wave 4, an online questionnaire completed only by former students, was collected in 2016 and became available in June, 2018. The complex sample design of HSLS:09 requires the use of sampling weights and complex variance estimation techniques to avoid underestimation of variance. Detailed information about relevant weights is provided in the data analysis section of this paper.

**Identification of Sample for the Present Study**

From the larger sample of HSLS:09, I limited my sample to students identified as having a learning disability (LD). In related correlational literature, there are various approaches for identifying individuals with disabilities in datasets in which IEP status is not available. (In HSLS:09, IEP status is represented by a composite variable drawing from school enrollment records and parent responses, but students' individual disabilities are not indicated.)

Each approach carries risks of over- or under-identifying individuals who should be included in the sample. For instance, McGee (2011) included in his sample all students who self-identified or were identified by a parent as having a disability at any time during data collection. As McGee (2011) noted, participant reports regarding disability were inconsistent over the course of multiple rounds of interviews, indicating this method is unreliable and risks including students who do not have a disability. A second approach, illustrated by Ahrens and colleagues (2010), is to include all students whose parents reported that the student had been diagnosed with LD or that the student had received services related to their disability, parsing the two groups in their analyses. This approach captures the maximum number of students while allowing researchers to detect differences between groups identified in different ways, but creates

ambiguity in considering the group of students as a whole and adds the burden of extra analyses to determine differences between the two groups. This approach also risks including students who have received unrelated services parents might confuse for special education services or students erroneously reported as having been diagnosed with LD who were not diagnosed or were diagnosed with another disability.

A method originated by Hodapp and Krasner (1994) and used by Reschly and Christenson (2006a) is designed to increase reliability of parental identification of disability. This approach includes students whose parents attested both that the child has a disability and that the child has received school-based services related to the disability. The method suggests parents and schools are in agreement about students' needs; therefore, this approach represents a more restrictive method of identification than the methods used by many other researchers in the literature.

I took this approach to identifying students for my sample, adding a composite variable (X1IEPFLAG) which drew data from school enrollment records and was dichotomously coded, indicating that (0) the student did not have an IEP or (1) the student did have an IEP. Parent attestation that the student had been diagnosed with a learning disability was drawn from the base-year parent survey (P1SLD), which was dichotomously coded to indicate that the student had not (0) or had (1) been diagnosed with a learning disability. Parent attestation that the student received related special education services was drawn from the same survey (P1SPECIALED), a categorical variable that was coded as (1) Yes, (2) No, (3) Don't know. Only students marked as having an IEP as per school records, whose parent indicated that they had been diagnosed with a learning disability, and whose parent indicated that they were receiving related special education services were included in the sample.

These methods of sample identification resulted in a sample of 808 students, as comparable sample size to related studies in this area of research. The sample was comprised of students identifying as 65% male, 54% White, 16% Black, and 19% Hispanic. Sample students were retained at a rate of 38% before beginning ninth grade, and 71% of the sample was living at or above the 100% poverty threshold at the time of the survey. Table 1 shows weighted demographic data for the sample in comparison to the complete sample of students represented in HSLS:09.

Table 1

*Demographics of Study Sample*

| | Study Sample ($n$ = 808) | | Total Sample ($n$ = 23,503) | |
|---|---|---|---|---|
| Variable | % | BRR Std. Err. | % | BRR Std. Err. |
| Gender | | | | |
| Female | 35% | 0.024 | 50% | 0.001 |
| Male | 65% | 0.024 | 50% | 0.001 |
| Race | | | | |
| White | 54% | 0.007 | 53% | 0.008 |
| Black/ African American | 16% | 0.027 | 13% | 0.001 |
| Hispanic (race specified) | 17% | 0.023 | 21% | 0.005 |
| Hispanic (no race specified) | 2% | 0.011 | 1% | 0.002 |
| Amer. Indian/ Alaskan Native | 1.7% | 0.007 | 0.7% | 0.002 |
| Asian | 0.3% | 0.027 | 3% | 0.002 |
| Native Hawaiian/ Pacific Islander | 0.3% | 0.029 | 0.1% | 0.001 |
| More than one race | 8% | 0.016 | 7% | 0.003 |
| SES | | | | |
| At/ above 100% poverty threshold | 71% | 0.027 | 81% | 0.007 |
| Below 100% poverty threshold | 29% | 0.027 | 19% | 0.007 |
| Prior In-Grade Retention | | | | |
| Previously Retained | 38% | 0.030 | 12% | 0.005 |
| Never Retained | 62% | 0.030 | 82% | 0.007 |
| Missing | n/a | n/a | 6% | 0.003 |

**Covariates**

In my analyses, I controlled for SES, race, gender, and prior in-grade retention. As explained in the literature review, these covariates are consistent with theory and with similar

and related studies examining the transition to high school, school engagement, and dropout (Benner, Boyle, & Bakhtiari, 2017; Benner & Graham, 2009; Gonzales, et al., 2014; Heck and Mahoe, 2006; Isakson & Jarvis, 1999; Orthner, 2013; Reschly & Christenson, 2006a; Zablocki & Krezmien, 2013; Wang et al., 2017; Wang & Fredricks, 2014).

For SES, I used an existing composite variable (X1SES) which was calculated using parent/guardian level of education, occupation, and family income. The variable was continuous. For race, I used an existing composite variable (X1RACE) which summarized responses to dichotomous race/ethnicity survey items, and identified students as (1) American Indian/ Alaskan Native, non-Hispanic, (2) Asian, non-Hispanic, (3) Black/ African-American, non-Hispanic, (4) Hispanic, no race specified, (5) Hispanic, race specified, (6) More than one race, non-Hispanic, (7) Native Hawaiian/ Pacific Islander, non-Hispanic, (8) White, non-Hispanic. Data from the student questionnaire were prioritized but, if these were missing, data from school rosters or the parent questionnaire were used. For gender, I used an existing composite variable (X1SEX), which categorized all students as either (1) male or (2) female. Data were drawn first from the student questionnaire, then school rosters, and finally from parent questionnaires. For prior academic achievement, I used parent responses to a single survey question, "Since kindergarten, has your 9$^{th}$ grader ever repeated any grade?" with the response options of (1) yes or (0) no.

**Transition Support**

The first round of data collection in the extant database included a survey completed by school counselors reporting information about school-based programming to support incoming ninth graders' transition from middle to high school. The survey asked counselors to provide dichotomous "yes" or "no" responses to items related to supporting students in their transition to

high school, which I grouped into several broader categories for analysis. Those categories are: parent engagement, connecting middle and high school staff, connecting middle school students and high school staff, high school visits, buddy programs, and ninth-grade academies. I created a summary score for each category of support by adding each "yes" response, then standardized the scores in each category.

**Parent engagement.** This category encompassed three items representing efforts made to involve parents and guardians in students' transition to high school. The included items were "HS counselors present HS course/registration information to MS parents" (C1TRANPRNT), "Parents/students visit the HS during summer before students enter HS" (C1TRANSUMMER), "Parents visit HS for orientation in fall after children have entered" (C1TRANFALL). Cronbach's alpha for this measure was .993.

**Connecting middle and high school staff.** This variable included three items indicating communication between middle and high school teachers, counselors, or administrators prior to students' entry to high school. The included items were, "MS counselors meet with HS counselors to assist with student transition" (C1TRANSCNSL), "MS and HS administrators meet together on articulation and programs" (C1TRANADMIN), "MS and HS teachers meet together on courses and requirements" (C1TRANTCHRS). Cronbach's alpha for this measure was .994.

**Connecting middle school students and high school staff.** This subset included four items representing direct efforts by high school staff to support and plan with incoming ninth-grade students. Included items were "HS counselors meet with 8$^{th}$ graders to select 9$^{th}$ grade courses" (C1TRANSCRS), "HS counselors present HS course/registration information to MS students" (C1TRANPRES), "HS counselors assist students with transition from MS to HS in

another way" (C1TRANOTH), "HS staff present information at MS to assist with student transition" (C1TRANSTFFPR). Cronbach's alpha for this measure was .995.

**School visits.** This category included two items indicating in-person visits to the high school by middle school students prior to the ninth-grade year. Included items were "Before school year MS students are invited to HS social event" (C1TRANVISIT), "MS students attend regular classes at HS" (C1TRANCLASS). Cronbach's alpha for this measure was .992.

**Buddy programs.** This variable included two items indicating that incoming ninth-grade students are paired with an older high schooler in a "big brother/ big sister" program or otherwise encouraged to make connections with high school students. Included items are "HS students present information at MS to assist with student transition" (C1TRANSTUDPR), "Buddy or big brother/sister programs pair new students with older ones" (C1TRANBUDDY). Cronbach's alpha for this measure was .992.

**Ninth-grade academies.** This category included one item indicating that incoming ninth-grade students were placed in a "small learning community or ninth-grade academy" for their initial year of high school (C1TRANLRNCOM). "Ninth-grade academy" typically refers to a school-within-a-school model wherein ninth-grade students are sequestered from peers and may attend classes in classrooms nearby one another, follow a schedule different from the rest of the high school, attend their own lunch period, etc.

**Outcome Measures**

**Engagement.** Evidence suggests that students are reliable reporters of their own engagement and may be better assessors of their own emotional and cognitive engagement than their teachers or parents (Appleton et al., 2008). The HSLS:09 base-year dataset contains composite variables for "school engagement" and "school belonging," drawn from the student

survey completed in 2009. These variables were created by the survey designers using principal components analysis and standardized ($M = 0$, $SD = 1$). The engagement score is derived from student responses to four questions with Likert-type scale response options as follows: never, rarely, sometimes, often. The items related to engagement begin with the stem "How often do you…" and end with the conclusions "go to class without your homework done?", "go to class without a pencil and paper?", "go to class without books?", and "go to class late?" Reliability for this measure was low but acceptable (alpha = .67; NCES 2011-328).

The school belonging score is derived from student responses to five statements in a Likert-type scale with the following response options: strongly agree, agree, disagree, strongly disagree. The questions related to belonging are: "You feel safe at school", "You feel proud to be part of this school", "There are always teachers or other adults in your school that you can talk to if you have a problem", "School is a waste of time", and "Getting good grades in school is important to you." Reliability for this measure was acceptable (alpha = .72; NCES 2011-328).

These composite items represent, at maximum, two of the common measures of school engagement represented in the related literature. As discussed in the introduction, there is no consensus definition and means of measuring school engagement, though most recent operationalizations include indicators of behavioral and emotional engagement, with most authors also incorporating indicators of cognitive, academic, and/or social engagement. The items from which the composite variables are constructed are most consistent with measures of "emotional engagement" and "behavioral engagement" used in similar recent studies (e.g., Benner, Boyle, & Bakhtiari, 2017; Gonzales, et al., 2014; Zablocki & Krezmien, 2013; Wang & Fredricks, 2014), and the data set does not include relevant variables to create scales representing the other subtypes of engagement. Consequently, I refer specifically to these two subtypes of

school engagement (emotional and behavioral engagement), with recognition that not all subtypes of school engagement are captured in my analyses. The shortcomings of these measures of engagement are explored in the discussion section of the paper.

**Grade point average.** Academic performance is predictive of school completion, and maintaining satisfactory grades is crucial to on-time promotion. I examined the relation between types of transition support and students' ninth-grade GPA (X3TGPA9TH) (range = 0.25-4.0, *m*= 2.26, *sd* = .03), as a measure of academic success in the first year of high school.

**Moderators**

**Peer support.** I measured peer support for learning using the survey respondents' reports about their closest friends' effort in and orientation towards school. This score was derived from a series of true/false statements about whether the student's closest friend "gets good grades" (S1FRNDGRADES), "is interested in school" (S1FRNDSCHOOL), "attends classes regularly" (S1FRNDCLASS), and "plans to go to college" (S1FRNDCLG). Cronbach's alpha for these items was .977. I created a continuous (0-4) composite variable from these responses, representing the number of "true" responses, then standardize the variable for analysis.

**Parent support.** I operationalized parent support for learning using parental responses to two items, representing parental help with homework and parental expectations for students' educational attainment. These are two of the most commonly determined means of family influence on students' engagement and achievement (Bempechat & Shernoff, 2012), and offer two different types of evidence of parents' support of the student's success in school.

The first measure was derived from the question, "How many days in an average week do you or another adult in your household help [your ninth grader] with homework?"

(P1HWOFTEN). This item has the Likert-type response options “Never”, “Less than once a week”, “1 or 2 days a week”, “3 or 4 days a week”, and “5 or more days a week.”

The second measure was derived from the question, “As things stand now, how far in school do you think [your ninth grader] will actually get [in school]?” (P1EDUEXPECT). This item has the Likert-type response options “Less than high school, high school diploma or GED”, “Complete high school or GED”, “Start but not complete an Associate’s degree”, “Complete Associate’s degree”, “Start but not complete a Bachelor’s degree”, “Complete a Bachelor’s degree”, “Start but not complete a Master’s degree”, “Complete a master’s degree”, “Start but not complete a PhD., M.D., law degree, or other high level professional degree”, “Complete a PhD., M.D., law degree, other high level professional degree”, or “Don’t know.” I recoded this variable to reflect either low (0) or high (1) expectations, with all responses up to and including “Complete high school or GED” coded as low expectations and all other responses coded as high expectations.

# CHAPTER 3

# DATA ANALYTIC STRATEGY AND RESULTS

## Sample Weights and Missing Data

Sample weights, which account for probability of selection and differential response patterns of participants within each round and across time, are available for use in analysis of HSLS:09 data. The use of an appropriate weight results in a smaller analytic sample, adjusting for non-response to each of the surveys included in the weight. The most appropriate weight for the proposed study was W1PARENT, which accounts for selection and non-response bias for students and parents in the base year of data collection, Wave 1. The parent and student surveys from this wave of data collection contain the majority of the data required for the study. A weight accounting for counselor selection and response rates, which would be desirable, was not available. While failing to account for the impact of selection bias and non-response in counselor data risks skewing analyses, there was no more appropriate weight available. I used balanced repeated replication (BRR) to account for sample variance, a step that is necessary when completing analyses using data collected with complex sampling methods and incorporating stratified sampling.

To account for missing data, I used multiple imputation using chained equations (MICE), an approach sometimes known as "imputation using fully conditional specifications (van Buuren, Boshuizen, and Knook, 1999) and as sequential regression multivariate imputation (Raghunathan, Lepkowski, Van Hoewyk, & Solenberger, 2001) in the literature." (SataCorp,

2017) This technique allows for the imputation of multiple variables sequentially. See Lee & Carlin (2010) for a discussion of MICE in comparison to multivariate normal imputation.

**Primary Analyses**

I examined the relation between types of transition support (parent engagement, connecting middle and high school staff, connecting middle school students and high school staff, school visits, buddy programs, and use of ninth-grade academies), behavioral and emotional engagement, and GPA in ninth grade.

In the first stage of analysis, I examined the correlations between the predictors in the model (the covariates and each of the types of transition support). The full correlation table appears in Table 2.

Table 2
*Correlations of Predictors*

| | SES | SEX | RACE | Repeat | PRNT ENG | CMHSF | CMSTHSF | VISIT | BUDDY | ACADEMY |
|---|---|---|---|---|---|---|---|---|---|---|
| SES | 1.000 | | | | | | | | | |
| SEX | 0.030 | 1.000 | | | | | | | | |
| RACE | 0.326 | 0.047 | 1.000 | | | | | | | |
| REPEAT | -0.240 | -0.056 | -0.158 | 1.000 | | | | | | |
| PRNT ENG | 0.050 | 0.089 | -0.035 | 0.052 | 1.000 | | | | | |
| CMHSF | 0.143 | -0.041 | 0.248 | -0.115 | 0.292 | 1.000 | | | | |
| CMSTHSF | -0.005 | 0.050 | 0.022 | -0.078 | 0.409 | 0.374 | 1.000 | | | |
| VISIT | -0.037 | -0.001 | -0.078 | 0.043 | 0.301 | 0.271 | 0.265 | 1.000 | | |
| BUDDY | 0.087 | 0.060 | -0.023 | -0.006 | 0.290 | 0.170 | 0.269 | 0.124 | 1.000 | |
| ACADEMY | -0.146 | -0.041 | -0.185 | 0.042 | 0.235 | -0.037 | 0.190 | 0.294 | 0.110 | 1.000 |

PRTN ENG: Parent engagement, CMHSF: Connecting middle and high school staff, CMSTHSF: Connecting middle school students and high school staff, VISIT: Middle schoolers visit high schools before ninth grade, BUDDY: Use of buddy programs or peer mentors in transition support, ACADEMY: ninth-grade academy exists at the high school.

There were no notable correlations between covariates and types of transition support, indicating that the types of support offered by schools are not strongly associated with students' SES, race, or the likelihood that students had repeated a grade (which could be an indicator of the overall academic or behavioral performance of the student body, or school quality, though school-level inferences related to this predictor would be difficult to determine). Weak correlations exist between SES and race ($r = 0.326$) and race and connections between middle and high school staff members ($r = 0.248$). The strongest correlation ($r = 0.409$) is between parent engagement efforts and connections between middle school students and high school staff, suggesting that schools implementing one type of support are more likely to also offer the other.

In the second stage of analysis, I regressed each type of transition support on the subtypes of engagement (behavioral and emotional), and GPA to examine the relation between each type of support and engagement and GPA. I entered the types of transition support in a stepwise regression model, beginning with a null model and adding the control variables as a block (gender, race, SES, and prior in-grade retention), then adding the types of transition support one at a time sequentially to assess the individual contribution of each type of support to variance in engagement and GPA.

To accommodate STATA's limitations in simultaneously employing multiple imputation techniques and survey settings using BRR, I ran each regression model on five sets of imputed data. Reported coefficients are the means of the coefficients generated in each of the five sets of data. Reported variances are the mean of the variances for each dataset plus the imputation variance, or the variance of the standard errors between the data sets, squared. Complete results for the regression models for each of the data sets is available on request. To ensure that reported

$R^2$ results for each model are representative of the full range of imputed data, I have reported the individual $R^2$ for each model and dataset, as well as the range of and median $R^2$ for each model in Table 3. I examined the significance of the estimates for each predictor and the range of $R^2$ across datasets in considering the strength of the predictors.

Table 3

*$R^2$ Results for All Models and Datasets*

| | | Dataset 1 | Dataset 2 | Dataset 3 | Dataset 4 | Dataset 5 | Range | Median |
|---|---|---|---|---|---|---|---|---|
| GPA | | | | | | | | |
| | Model 1 | 0.0641 | 0.0770 | 0.0708 | 0.0597 | 0.0761 | 0.0597-0.0770 | 0.0708 |
| | Model 2 | 0.0680 | 0.0830 | 0.0730 | 0.0610 | 0.0790 | 0.061-0.0830 | 0.0730 |
| | Model 3 | 0.0700 | 0.0840 | 0.0750 | 0.0650 | 0.0810 | 0.065-0.0840 | 0.0750 |
| | Model 4 | 0.0716 | 0.0850 | 0.0751 | 0.0651 | 0.0821 | 0.0651-0.0850 | 0.0751 |
| | Model 5 | 0.0727 | 0.0860 | 0.0755 | 0.0652 | 0.0822 | 0.0652-0.0860 | 0.0755 |
| | Model 6 | 0.0747 | 0.0877 | 0.0788 | 0.0668 | 0.0839 | 0.0668-0.0877 | 0.0747 |
| | Model 7 | 0.0749 | 0.0881 | 0.0817 | 0.0670 | 0.0843 | 0.0670-0.0881 | 0.0817 |
| B.E. | | | | | | | | |
| | Model 1 | 0.0138 | 0.0200 | 0.0260 | 0.0321 | 0.0216 | 0.0138-0.0321 | 0.0216 |
| | Model 2 | 0.0141 | 0.0200 | 0.0270 | 0.0322 | 0.0224 | 0.0141-0.0322 | 0.0224 |
| | Model 3 | 0.0146 | 0.0221 | 0.0307 | 0.0412 | 0.0226 | 0.0146-0.0412 | 0.0226 |
| | Model 4 | 0.0147 | 0.0235 | 0.0336 | 0.0455 | 0.0229 | 0.0147-0.0455 | 0.0235 |
| | Model 5 | 0.0171 | 0.0252 | 0.0345 | 0.0468 | 0.0245 | 0.0171-0.0468 | 0.0252 |
| | Model 6 | 0.0187 | 0.0275 | 0.0411 | 0.0555 | 0.0315 | 0.0187-0.0555 | 0.0315 |
| | Model 7 | 0.0320 | 0.0323 | 0.0448 | 0.0620 | 0.0421 | 0.0320-0.0620 | 0.0421 |
| E.E. | | | | | | | | |
| | Model 1 | 0.0472 | 0.0401 | 0.0355 | 0.0401 | 0.0505 | 0.0355-0.0505 | 0.0401 |
| | Model 2 | 0.0512 | 0.0469 | 0.0463 | 0.0444 | 0.0539 | 0.0444-0.0539 | 0.0469 |
| | Model 3 | 0.0513 | 0.0470 | 0.0463 | 0.0447 | 0.0540 | 0.0447-0.0540 | 0.0470 |
| | Model 4 | 0.0539 | 0.0470 | 0.0467 | 0.0456 | 0.0541 | 0.0456-0.0541 | 0.0470 |
| | Model 5 | 0.0543 | 0.0482 | 0.0489 | 0.0507 | 0.0553 | 0.0482-0.0553 | 0.0507 |
| | Model 6 | 0.0661 | 0.0556 | 0.0542 | 0.0584 | 0.0680 | 0.0542-0.0680 | 0.0584 |
| | Model 7 | 0.0704 | 0.0586 | 0.0602 | 0.0727 | 0.0733 | 0.0586-0.0733 | 0.0704 |

*Note:* B.E. = Behavioral engagement, E.E. = Emotional engagement. Model 1: Covariates. Model 2: Covariates and parent engagement. Model 3: Covariates, parent engagement, and connecting middle and high school staff. Model 4: Covariates, parent engagement, connecting middle and high school staff, and connecting middle school students and high school staff. Model 5: Covariates, parent engagement, connecting middle and high school staff, connecting middle school students and high school staff, and school visits. Model 6: Covariates, parent engagement, connecting middle and high school staff, connecting middle school students and high school staff, school visits, and buddy programs. Model 7: Covariates, parent engagement, connecting middle and high school staff, connecting middle school students and high school staff, school visits, buddy programs, and 9$^{th}$ grade academies.

**GPA.** None of the types of transition support were significant in predicting GPA in ninth grade. The only significant predictor was SES, which consistently predicted GPA across every model and dataset (SES mean range $\beta$: .224-.229, $p < .001$). The mean coefficients and standard errors for each of the seven regression models are reported in Table 4.

Table 4

*Results of Regression Models Predicting GPA*

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | | Model 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *β* | SE | *β* | SE | *β* | SE | *β* | SE | *β* | SE | *β* | SE | *β* | SE |
| SES | .224*** | *0.064* | .229*** | *0.066* | .226*** | *0.066* | .228*** | *0.066* | .229*** | *0.066* | .234*** | *0.068* | .231*** | *0.067* |
| SEX | 0.113 | *0.106* | 0.122 | *0.105* | 0.128 | *0.103* | 0.127 | *0.103* | 0.127 | *0.104* | 0.130 | *0.105* | 0.127 | 0.037 |
| RACE | 0.042 | *0.033* | 0.041 | *0.032* | 0.038 | *0.033* | 0.038 | *0.033* | 0.039 | *0.033* | 0.038 | *0.033* | 0.037 | *0.033* |
| REPEAT | -0.180 | *0.12* | -0.166 | *0.124* | -0.156 | *0.125* | -0.153 | *0.126* | -0.154 | *0.127* | -0.152 | *0.126* | -0.153 | *0.126* |
| PRNT ENG | | | -0.061 | *0.065* | -0.074 | *0.068* | -0.083 | *0.073* | -0.087 | *0.075* | -0.076 | *0.074* | -0.072 | *0.076* |
| CMHSF | | | | | 0.046 | *0.057* | 0.040 | *0.058* | 0.035 | *0.061* | 0.038 | *0.062* | 0.034 | *0.063* |
| CMSTHSF | | | | | | | 0.024 | *0.064* | 0.022 | *0.065* | 0.030 | *0.066* | 0.032 | *0.065* |
| VISIT | | | | | | | | | 0.021 | *0.053* | 0.021 | *0.053* | 0.028 | *0.056* |
| BUDDY | | | | | | | | | | | -0.05 | *0.072* | -0.048 | *0.072* |
| ACADEMY | | | | | | | | | | | | | -0.024 | *0.064* |

*Note*: *$p < .05$, ** $p < .01$, *** $p < .001$, ^$p < .05$ in some datasets. PRTN ENG: Parent engagement, CMHSF: Connecting middle and high school staff, CMSTHSF: Connecting middle school students and high school staff, VISIT: Middle schoolers visit high schools before ninth grade, BUDDY: Use of buddy programs or peer mentors in transition support, ACADEMY: ninth-grade academy exists at the high school.

$R^2$ values for this series of models were consistently higher than those for the other outcome variables, although the majority of the predictive strength in the models was accounted for by the covariates (median range of $R^2$ = .071 - .082). The range and median of $R^2$ across models are reported in Table 3. Taken together, these results indicate that SES is a substantially stronger predictor of GPA in ninth grade than efforts undertaken by schools to support the transition of rising ninth-grade students, and that transition support programs are doing little to alter the academic outcomes an observer would expect based on a student's SES alone.

Despite the lack of significance of the coefficients of types of transition support in predicting GPA, there are interesting trends in the relative strength and direction of the estimates. While no conclusions can be drawn from these estimates, given their statistical weakness, the trends in strength and direction between outcome variables and create the basis for formulating hypotheses to guide future research. In predicting GPA, both the use of peer mentoring or buddy programs (BUDDY mean range $\beta$ = -.05 - -.048, range $p$ < .389 - .556), and efforts to engage parents in the transition process (PRNTENG mean range $\beta$ = -.087 - -.061, range $p$ < .120-.538) were negatively associated with the outcome. With probability estimates approaching .5 and inconsistent strength and direction of estimates between outcome measures, results related to buddy programs are of limited interest. In contrast, the negative association of parent engagement efforts was echoed across outcome measures, raising questions about the variable and about whether there may be negative impacts of some forms of parent engagement in the transition to high school.

**Behavioral engagement.** None of the types of transition support were significant predictors of behavioral engagement in ninth grade. One predictor, gender, was significant across models and datasets, with the exception of dataset five, where results were less consistent (SEX

in datasets 1-4: range $\beta$ = .236 - .387, range $p$ < .007 - .032; SEX in dataset 5: range $\beta$ = .194 - .224, range $p$ < .037 - .069). The mean coefficients and standard errors for each of the seven regression models are reported in Table 5. These results indicate that girls reported higher behavioral engagement than boys, rating themselves as more likely to be prepared for class and to arrive on time.

Table 5

*Results of Regression Models Predicting Behavioral Engagement*

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | | Model 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *β* | SE | *β* | SE | *β* | SE | *β* | SE | *β* | SE | *β* | SE | *β* | SE |
| SES | 0.048 | *0.078* | 0.050 | *0.079* | 0.047 | *0.077* | 0.042 | *0.076* | 0.040 | *0.076* | 0.048 | *0.074* | 0.060 | *0.072* |
| SEX | .264^ | *0.128* | .267^ | *0.130* | .273^ | *0.133* | .277^ | *0.135* | .275^ | *0.136* | .280^ | *0.137* | .295* | *0.134* |
| RACE | .027^ | *0.030* | .028^ | *0.030* | .024^ | *0.032* | .024^ | *0.032* | 0.021 | *0.032* | 0.020 | *0.032* | .024^ | *0.033* |
| REPEAT | -0.014 | *0.133* | -0.010 | *0.133* | -0.001 | *0.131* | -0.008 | *0.132* | -0.005 | *0.133* | -0.003 | *0.133* | -0.001 | *0.131* |
| PRNT ENG | | | -0.019 | *0.057* | -0.030 | *0.062* | -0.014 | *0.069* | -0.005 | *0.070* | 0.012 | *0.071* | -0.003 | *0.073* |
| CMHSF | | | | | 0.038 | *0.086* | 0.050 | *0.092* | 0.059 | *0.093* | 0.064 | *0.093* | .081^ | *0.091* |
| CMSTHSF | | | | | | | -0.046 | *0.077* | -0.042 | *0.075* | -0.030 | *0.075* | -0.038 | *0.075* |
| VISIT | | | | | | | | | -0.046 | *0.060* | -0.045 | *0.061* | -0.070 | *0.062* |
| BUDDY | | | | | | | | | | | -0.081 | *0.072* | -0.088 | *0.072* |
| ACADEMY | | | | | | | | | | | | | 0.091 | *0.067* |

*Note*: *$p < .05$, ** $p < .01$, *** $p < .001$, ^$p < .05$ in some datasets. PRTN ENG: Parent engagement, CMHSF: Connecting middle and high school staff, CMSTHSF: Connecting middle school students and high school staff, VISIT: Middle schoolers visit high schools before ninth grade, BUDDY: Use of buddy programs or peer mentors in transition support, ACADEMY: ninth-grade academy exists at the high school.

$R^2$ values for models predicting behavioral engagement were lower than those for the other two outcome measures (range of median $R^2$ = .0216 - .0421), indicating that transition support is less predictive of behavioral engagement than emotional engagement or GPA. The range and median of $R^2$ across models are reported in Table 3.

In interpreting these results, it is important to consider how the measure of behavioral engagement was constructed, particularly, which items went into the creation of the composite score. These items primarily reflect preparation for and timeliness to class, indicators that may readily be affected by factors unrelated to the operational definition for school engagement adopted in this paper, "students' directed and sustained participation in school as well as the observable and unobservable qualities of student interactions with learning activities and social companions" (Wang et al., 2017, p. 1; see also Skinner & Pitzer, 2011). I undertake a more thorough discussion of the weaknesses of this measure in the Discussion section. These results indicate that efforts by schools to support students' transition to high school have a negligible predictive relation with academic behavior, including preparation for class and on-time arrival.

As with the models predicting GPA, interesting trends in the coefficients emerged in models predicting behavioral engagement, particularly when considered in tandem with the other two outcome measures, although no strong conclusions can be drawn from these trends due to the statistical weakness of the associations. The use of buddy programs was again generally negative across models (BUDDY mean range $\beta$ = -.081 - -.088, range $p$ < .101 - .485), as were visits to the high school by rising ninth graders (VISIT mean range $\beta$ = -.070 - -.045, range $p$ < .132 - .570). Efforts to engage parents in the transition to high school were again negatively associated with the outcome (PRNTENG mean range $\beta$ = -.003 - .012, range $p$ < .391 - .991), as were initiatives to connect middle school students and high school staff (CMSTHSF mean range

$\beta$ = -.046 - -.03, range $p$ < .246 - .968), though the extreme variability in the significance of these coefficients makes these results harder to consider as indicators of a trend across models.

**Emotional engagement.** None of the types of transition support were significant across datasets and models in predicting emotional engagement, though the predictive value of buddy programs and peer mentoring was significant in some datasets across models (BUDDY mean range $\beta$ = .111 - .118, range $p$ < .025 - .189). The coefficients for buddy programs are also positive in these models, contrasted with negative and non-significant coefficients in the previous two models. Though far from definitive, given the variability in significance of the coefficients, these results suggest that the use of buddy programs may be related to increased emotional engagement in ninth graders. The mean coefficients and standard errors for each of the seven regression models are reported in Table 6. The only consistent predictor of emotional engagement across models and datasets was SES (SES mean range $\beta$: .276-.287, $p$ < .001), echoing results for GPA.

Table 6

*Results of Regression Models Predicting Emotional Engagement*

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | | Model 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *β* | SE | *β* | SE | *β* | SE | *β* | SE | *β* | SE | *β* | SE | *β* | SE |
| SES | .280*** | *0.080* | .287*** | *0.078* | .286*** | *0.077* | .286*** | *0.081* | .288*** | *0.081* | .276*** | *0.080* | .287*** | *0.081* |
| SEX | 0.093 | *0.146* | 0.106 | *0.144* | 0.107 | *0.145* | 0.107 | *0.142* | 0.109 | *0.143* | 0.102 | *0.141* | 0.117 | *0.138* |
| RACE | 0.008 | *0.041* | 0.008 | *0.040* | 0.008 | *0.040* | 0.008 | *0.040* | 0.011 | *0.039* | 0.012 | *0.039* | 0.015 | 0.038 |
| REPEAT | -0.024 | *0.131* | -0.009 | *0.127* | -0.008 | *0.129* | -0.008 | *0.129* | -0.011 | *0.132* | -0.015 | *0.130* | -0.014 | *0.128* |
| PRNT ENG | | | -0.087 | *0.078* | -0.089 | *0.084* | -0.089 | *0.086* | -0.100 | *0.089* | -0.125 | *0.087* | -0.140 | *0.088* |
| CMHSF | | | | | 0.006 | *0.061* | 0.006 | *0.065* | -0.004 | *0.063* | -0.010 | *0.064* | 0.006 | *0.067* |
| CMSTHSF | | | | | | | 0.001 | *0.101* | -0.004 | *0.100* | -0.021 | *0.097* | -0.028 | *0.095* |
| VISIT | | | | | | | | | 0.052 | *0.075* | 0.051 | *0.074* | 0.027 | *0.069* |
| BUDDY | | | | | | | | | | | .118^ | *0.068* | .111^ | *0.067* |
| ACADEMY | | | | | | | | | | | | | 0.089 | *0.078* |

*Note*: *$p < .05$, ** $p < .01$, *** $p < .001$, ^$p < .05$ in some datasets. PRTN ENG: Parent engagement, CMHSF: Connecting middle and high school staff, CMSTHSF: Connecting middle school students and high school staff, VISIT: Middle schoolers visit high schools before ninth grade, BUDDY: Use of buddy programs or peer mentors in transition support, ACADEMY: ninth-grade academy exists at the high school.

$R^2$ values for regression models predicting emotional engagement were modest, with a larger range of median values than for the other two outcome measures (median range of $R^2$ = .0401 - .0704; range and median of $R^2$ across models are reported in Table 3). This increase in $R^2$ across models 1-7 indicates that incorporating the types of transition support did more to change the strength of the models predicting emotional engagement than for those predicting behavioral engagement or GPA. With the context that the total percentage of variance accounted for by the models was small, larger increases in $R^2$ occurred with the addition of the variables representing parent engagement (median $R^2$ increase of .0068) and buddy programs (median $R^2$ increase of .0077). These results reinforce the idea that buddy programs were more impactful for students' emotional engagement in school than for the other outcomes. Coefficients for parent engagement remained negative and nonsignificant across models predicting emotional engagement (PRNTENG mean range $\beta$ = -.087 - -.140, range $p$ < .067-.45).

**Moderator Analyses**

For each predictor in the final regression models, I added an interaction between the predictor and each of the variables representing parent support for learning to determine if there is a moderating relation, keeping the covariates in the model. I repeated these analyses using peer support for learning as a moderator. The purpose of these models was to explore if critical contextual factors moderate the relation between support for the transition to high school and subsequent behavioral and emotional engagement and GPA. These moderators are of interest because of the role parental support plays in determining academic outcomes (Benner et al., 2016; Bempechat & Shernoff, 2012; Doren et al., 2014; Jeynes, 2007; Jeynes, 2010) and because of the increasing role of peer influence in students' lives as they enter their teen years (Furlong et

al., 2003; Kindermann et al., 1996; Nelson & DeBacker, 2008). Unfortunately, there was no consistent significant effect for any of the tested moderators across datasets.

# CHAPTER 4

# DISCUSSION

In the present study, I explored the predictive relation between different types of school-based support for the transition to high school and ninth-grade outcomes for students with LD; specifically, GPA, behavioral engagement, and emotional engagement. I also explored potential moderators of the relation between types of transition support and these outcomes. I extended prior work in this area by evaluating the predictive value of different types of support, controlling for common covariates of academic success and engagement, focusing on students with LD, and by considering the impact of parental and peer support for learning as moderators.

First, I investigated which types of support were most strongly predictive of student outcomes in ninth grade. Based on previous research in the area (Benner, Boyle, & Bakhtiari, 2017; Mac Iver at al., 2015), I expected school efforts to engage parents in students' transitions, build relationships between middle school and high school students, and connect middle school students with high school staff to be most predictive of success in high school.

Counter to expectations, none of the types of transition support were reliably predictive of GPA, behavioral, or emotional engagement. Only one type of support for transition was substantially predictive of one of the outcomes. Buddy and peer mentoring programs, which seek to build relationships between rising ninth graders and their high school peers, were negatively associated with GPA and behavioral engagement, although those associations were not statistically significant. In some data sets, buddy programs were related with increased emotional

engagement in school, but this association was not consistent across datasets. Because of the low $R^2$ values across the tested models and the lack of significance of the negative associations, it is difficult to draw strong conclusions from this pattern. The results are only weakly suggestive that programs that build connections between rising ninth-grade students and their peers in high school may make new students feel more emotionally engaged in high school at the expense of a marginal amount of behavioral engagement and academic success.

Further research in this area might explore whether this pattern holds in other populations, and if there are other meaningful measures of student effort and attitude that might be examined related to this phenomenon. For instance, might ninth-grade students with older mentors feel more empowered to cut classes, come to school with incomplete homework, or otherwise relax their academic behaviors, thus driving down behavioral engagement and GPA? Alternatively, do the weak negative associations with those outcomes disappear in other populations or other sets of data?

Parental engagement efforts, which I expected to be strongly related to higher scores across outcome measures, were instead weakly negatively associated with all three outcomes across models and datasets. Although the strength of the coefficients was nonsignificant and thus the meaningfulness of these results is not assured, the consistent negative association of this type of transition support with all three outcome measures raises questions about parental engagement methods.

Three types of parental outreach were represented in the composite variable for parent engagement: presentation of high school course and registration information to parents by high school counselors, parent visits to the high school in the summer before students begin ninth grade, and parent visits to the high school for orientation sessions after students have entered

ninth grade. Each of these items represents an opportunity for parents to engage with the high school; however, there was no indication within the dataset how well attended parent events were, or what might have taken place at school visits over the summer or in the fall. The measures available do not supply sufficient information to analyze what the strengths and weaknesses of these types of support might have been or to explore what elements of their execution might have caused parents to become meaningfully involved in their students' transition. It is also possible that these types of support were more commonly offered in schools where parent outreach seemed especially important, possibly because of low parental involvement or large populations of students at-risk for school failure, which might have been correlated with lower ninth-grade GPAs and school engagement metrics.

Further research into this area should examine the details of parent engagement efforts. This includes how well events for parents are attended, what types of activities are considered most important by parents and what types of activities are commonly offered, and how satisfied parents are with these events as opportunities to establish and maintain involvement in their children's schools.

The limitations of the parent engagement measure in this dataset are shared by the other types of transition support in this study. This represents a major limitation of these analyses: namely, that scant evidence is provided in the dataset as to how these efforts to support students in their transition to high school are carried out. Important questions remain. For instance, are students systematically evaluated for risk of school failure at the time of transition, and, if so, are individualizations made to accommodate them? Are different programs in place targeting SWD or students who have previously been retained in-grade? Where does the programming for school visit days or orientation meetings originate, and to what degree of fidelity are those

programs implemented? What percentage of the incoming ninth-grade class takes advantage of opportunities to visit the high school, attend school-sponsored social events with older students, or meet with counselors or teachers?

The evidence for transition support in the dataset resulted from what was essentially a checklist of supports, offering little in the way of opportunities for a nuanced study of school practices. Without a more detailed understanding of how transition programs are implemented and monitored, and what their social validity was for the students, teachers, administrators, and parents who participated in them, datasets of this kind do not provide sufficient evidence for studies of what is or is not working nationally in programs to support the transition to high school.

Data of the type, which would allow for a more nuanced study of transition support, have been collected in other studies in this area of research. Mac Iver and colleagues (2015) who systematized this type of data collection from schools, found that schools with higher levels of outreach, and greater adherence to implementation protocols, report fewer students struggling in ninth grade. While survey designers must prioritize which data they collect and attempt to be parsimonious, I would argue that collecting more comprehensive measures of what schools are doing to support transition, the degree to which stakeholders take advantage of those opportunities, and the fidelity or quality with which the programs are implemented would be advantageous to researchers.

Although none of the types of transition support included in the models consistently significantly predicted the three outcomes examined, two covariates were associated with specific outcomes. First, gender was generally predictive of higher levels of behavioral engagement in all models and most datasets (the coefficient for gender failed to reach statistical

significance in one of the five datasets in the first six models). The $R^2$ values for the set of models in which this relation was evident were low, limiting the conclusions that can be drawn from this association, but the consistency of the pattern and statistical significance of the coefficients is noteworthy, and the results are consistent with other studies related to differences in gender across the transition to high school (Benner & Graham, 2009; Finn & Rock, 1997; Lee & Smith, 1995, Russell et al., 1997).

Critical context for understanding these results is the nature of the items comprising the composite variable of behavioral engagement. Four items contributed to this variable, reflecting how often the student self-reported attending class without completing homework, without a pencil or paper, without books, and arriving late. Labelled by the creators of a variable aa a measure of "school engagement," I relabeled this variable "behavioral engagement," because it is the most closely related subtype of engagement represented in the literature on school engagement. Despite this attempt to bring the definition of the variable in line with the literature, these items were better reflections of preparation for class than of a deeper construct of engagement. They may therefore have been substantially affected by a number of factors that were unrelated to students' perspective on and dedication to school.

For instance, attending class without a pencil or paper can be a reflection of a student's organizational skills or money to buy school supplies. Appearing in class without relevant books might reflect whether or not the student owns a backpack or whether the student was able to sleep at home the night before. Going to class without first completing homework may be affected by whether or not the student has a place to complete schoolwork at night or whether the student works after school. Coming to class late might be impacted by whether the student has reliable transportation to school or whether city buses tend to run on schedule on the student's

route. These examples are just some of the myriad complications that can affect students' answers to questions of this kind, and each of them is likely to become increasingly a factor as adult supervision declines and student responsibility increases in the transition to high school (Akos & Galassi, 2004; Falbo, Lein, & Amador, 2001; Mac Iver et al., 2015; Newman, Meyers, Newman, Lohman, & Smith, 2000; Schiller, 1999; Simon, 2004).

With this context, the differences in gender in predicting this outcome measure may be seen as related to established gender differences in homework completion (Xu, 2011) and executive function in adolescence (Mathews, Ponitz, & Morrison, 2009), may be related to the higher GPAs that girls evidence following transition to high school (Benner & Graham, 2009; Finn & Rock, 1997; Lee & Smith, 1995, Russell et al., 1997), or to other factors entirely. These sources of error reflect a lack of clarity related to the concept of "engagement" in the composite variables included in this dataset. To collect meaningful information related to school engagement, survey designers must develop a more comprehensive understanding of the construct and provide clarity to researchers about the subtypes of engagement they seek to measure and reflect. While the available information related to how the composite variables of "school engagement" and "school belonging" in this dataset permits interested parties to dissect their creation, the provision of variables with these labels without serious consideration of the school engagement literature risks misleading users who accept the variables uncritically. The unconsidered use of the term "school engagement" also indicates that survey creators are missing an opportunity to collect more meaningful data related to school engagement, an area of study that warrants more attention in large, longitudinal surveys of this type.

Finally, and troublingly, was the statistical strength of SES in predicting both GPA and emotional engagement in ninth grade. Across models and datasets, SES predicted ninth-grade

GPA and emotional engagement at the $p < .001$ level, a strength of association unmatched by any other predictor in the models, including repetition of a previous grade, which I included as an explicit indicator of previous academic achievement and which might thus be expected to be a very strong predictor of GPA. These results suggest that current levels and types of school support for transition have no meaningful effect on students' academic achievement and emotional engagement in ninth grade above that predicted by SES. This is particularly serious given the predictive strength of ninth-grade GPA in forecasting which students make normal progress towards graduation (Heck & Mahoe 2006). If GPA in ninth grade is a key marker of successful adjustment to high school, and largely indicates which students will be promoted to the next grade and ultimately graduate from high school, then evidence that SES is the most important factor in this model in determining GPA becomes a stark indication that students' academic fates are not being influenced by school-based efforts to support transition. Further, the lack of influence school transition programs had on the emotional engagement of students suggests that the way students from low-SES backgrounds feel at and about high school is not being shaped by school-based efforts to help students adjust to their new context. These results make pursuit of school-based programs and supports to overcome socioeconomic factors all the more urgent, and the high-quality study of those efforts critical.

In sum, the variables representing the support for transition to high school available in HSLS:09 are not meaningful predictors of behavioral or emotional engagement or GPA in ninth grade for students with LD. However, limitations in the way that these constructs were conceptualized, both on the independent and the dependent variable sides of the model, raise larger questions about the type of data collected in large-scale, longitudinal surveys as regards both transition support and school engagement. Greater sophistication in the way these

constructs are identified and measured would allow for more rigorous study of both areas using nationally representative longitudinal data.

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