University of Rhode Island

DigitalCommons@URI

12-2020

"High Schoolers' and Middle Schoolers' Connections in their Schools: Relation to Tardiness, Absences, Disciplinary Referrals, and Failed Courses"

Margaret Rogers
University of Rhode Island, mrogers@uri.edu

Edward Churchill

Kimberly A. Pristawa

December 2020

"High schoolers' and middle schoolers' connections in their schools: Relation to tardiness, absences, disciplinary referrals, and failed courses"

Margaret Rogers
University of Rhode Island

Edward Churchill
University of Rhode Island

Kimberly A. Pristawa
Burrillville High School

Follow this and additional works at: https://digitalcommons.georgiasouthern.edu/nyar

Recommended Citation

Rogers, M., Churchill, E., & Pristawa, K. A. (2021). "High schoolers' and middle schoolers' connections in their schools: Relation to tardiness, absences, disciplinary referrals, and failed courses". *National Youth-At-Risk Journal, 4*(2). https://doi.org/10.20429/nyarj.2021.040203

"High schoolers' and middle schoolers' connections in their schools: Relation to tardiness, absences, disciplinary referrals, and failed courses"

Abstract

The Connections Project (Author, 2012) is designed to assist school personnel in identifying students at-risk for social-emotional concerns by examining students' perceptions of connectedness with adults and peers in school. Currently used in several states, schools complete the screening measure as part of their use of the Multi-Tiered System of Support (MTSS) framework. While many measures of connectedness are lengthy and designed for elementary grade children, the Connections measure is an efficient, straightforward assessment employed with middle school and high school aged youth and school personnel. The purpose of the current study was to examine student connectedness with adults (including advisory teachers) and peers in relationship to several student outcome variables (i.e., tardy arrivals, attendance, disciplinary referrals, failed courses, and school dropout) when controlling for SES and student qualification for IEP or 504 plan. Results indicated that students with higher levels of perceived connectedness to adults and peers in their school building had more positive school outcomes. Students with higher levels of connectedness had fewer instances of disciplinary referrals and fewer failed courses when compared to peers with lower levels of perceived connectedness. Further, students who named their advisory teacher as an adult connection had fewer instances of tardy arrivals, absences, and failed courses. However, student-perceived connectedness was not a significant predictor of dropout risk. Study limitations and future research directions are discussed

Keywords

High schoolers' and middle schoolers' connections in their schools: Relation to tardiness, absences, disciplinary referrals, and failed courses

Numerous investigations have shown that the ecosystem of a school can have a profound influence on a student's academic achievement, social-emotional well-being, and their sense of belonging and connectedness (Sanders & Munford, 2016; Suldo et al., 2009). The research on connectedness is particularly meaningful because it focuses on relationships and connections students form with others in the school building - adults and youth alike - as well as with the school itself (Lohmeier & Lee, 2011). Previous scholarship on school connectedness has used a variety of terms and definitions (i.e., school engagement, school bonding, school attachment, etc.), often interchangeably, yet may be describing different phenomena (Libbey, 2004; Shochet et al., 2006). For the present purposes the CDC (2009a) definition of school connectedness will be employed, which states that it is "the belief by students that adults and peers in the school care about their learning as well as about them as individuals" (p.1).

Feelings of school connectedness are not unique to one developmental period, and are salient across all students, through to post-secondary settings (Lohmeier & Lee, 2011). The feelings of connectedness to adults in the school building are linked not only to teachers and administrative staff, but extend to all adults (i.e., lunch personnel, janitorial staff, coaches, etc.; Blum, 2005). Research has shown that it is the student's perception of support that is most important (Murray et al., 2008). Indeed, perceptions of positive relationships and connections with school-based adults and schoolmates can provide a student with understanding and reassurance when in a crisis; comfort and consistency when those qualities are absent elsewhere; and a sense that they are important to others. School connectedness may be especially important to foster in students from vulnerable at-risk populations, such as LGBTQ+ students, students with disabilities, students with physical or mental health problems, and students who live in poverty (CDC, 2009a; Sulkowski et al., 2012; Tillery et al., 2013). These connections have been shown to fuel a student's sense of belonging and place in their school (Sanders & Munford, 2016), increase the likelihood that students will seek help while learning (Ryan & Shim, 2012), and decrease non-complaint behavior (Wang & Eccles, 2012). Other studies have shown that school connectedness is positively correlated with classroom test scores, grades earned, academic motivation, and academic self-efficacy (CDC, 2009b; Klem & Connell, 2004; Niehaus et al., 2012; Rudasill & Rakes, 2012).

Research has shown that a student's sense of connection to teachers and other adults within the school system are related to other important student outcomes. For example, teacher connectedness is a protective factor, inhibiting the initiation of several health risk behaviors, including smoking, escalation of smoking, suicidal attempts, and age of first intercourse (McNeely & Falci, 2004). Further, connectedness is negatively related to the development of conduct problems, engagement in substance use, antisocial and violent behavior, depression, anxiety, emotional distress, and suicidality (Lohmeier & Lee, 2011; Sulkowski et al., 2012). Despite this large body of research, gaps in our knowledge about connectedness exist, especially concerning middle and high school age youth utilizing brief, easy-to-use measures of connectedness.

Advisory connections

Increasingly, schools have identified innovative ways of helping students to develop relationships with their teachers, including the use of advisories in secondary school settings. Advisories have been employed to offset the change in teacher-student relationship that comes with advancing grades such that students no longer have a single teacher for all subjects as they move from elementary to middle school. Advisories are arranged so that a school staff member, typically a teacher, meets with students regularly during school hours with an advisor-to-student ratio usually one to about 12 students. Advisors and their students have contact from multiple times in one day to at least once per week. Advisors are expected to track academic progress, to develop supportive, encouraging and trusting relationships with students, to develop a sense of community within their group, to "give equal time to each student, and to seek out these students who do not naturally come forward" (Van Ryzin, 2010, p. 137).

In their mixed-methods study of successful advisory programs and advisors that foster school connectedness, Shulkind and Foote (2009) found seven key characteristics of effective advisors and advisory programs. Strong advisory programs address issues of community, promote open communication, create close trusting relationships over a long period of time, and create student-advisor connections that directly improve academic performance. Additionally, successful advisors know and care about their advisees, closely supervise advisees' academic performance, and act as problem-solvers for their students. Further, Shulkind and Foote (2009) found that students who reported the highest levels of connectedness shared that advisory provided a way to bond students and they perceived links between their academic performance and advisory.

Additional research has provided support for advisory relationships at the high school level (Phillippo & Stone, 2013). Phillippo and Stone (2013) studied 509 students and their 45 teachers to examine the impact of teachers who expanded their role as teacher beyond that of the conventional focus on instruction to concern for student social-emotional well-being as well as academic achievement - serving

an advisory function. The study encompassed three high schools, with about 91% students of color, and about 40% students receiving free- or reduced-price lunch. They found that students who worked with teachers that served an advisory function (by providing emotional support and encouragement, viewing their students as important, and helping with problem solving about life as well as academics) were more likely to feel supported and showed greater academic prowess than those students whose teachers primarily focused on instruction. To better understand the role of advisory in facilitating adult connections in the school environment, these results need to be replicated across various student populations including with middle school aged youth.

Peer connections

A considerable body of research has looked at the influence of peer connections on social-emotional well-being of school students. Buchanan and Bowen (2008) examined the additive and moderating influence of peer support beyond adult support on the psychological well-being of middle school students. Using a large sample ($n = 13,843$), they asked the students to complete the School Success Profile (SSP; Bowen & Richmond, 2001), a 220-item survey assessing students' social environments, health, and well-being, and scales for adult support, peer support, and student psychological well-being. They found that the most significant variable influencing students' psychological well-being was adult support, followed by peer support.

Recent research, completed with younger students, has shown that both adult and peer support are important in helping students to feel connected and to stay engaged in learning while in school. For example, in their study of 586 children from Belgium attending grades four through six, Weyns et al. (2018) asked the students to complete the Support Scale of the Children Relationship Questionnaire-Revised (Hughes, 2011), a 15-item measure of social support that assesses teacher support. The students also completed a peer rating for each of their classmates that asked how much they wished to play with the classmate, and a 19-item measure of engagement, the Dutch School Questionnaire, that assesses attitudes towards homework, on-task behavior, and classroom attention. Weyns et al. (2018) found that support from their teachers and acceptance from peers facilitated student connection and engagement in school. The present study will examine other measures of engagement (i.e., number of tardy arrivals, number of absences, number of failed courses, number of disciplinary referrals, school dropout risk) for both middle school and high school aged youth to better understand the influence of peer and adult support.

Vulnerable populations

Students with disabilities and those living in poverty are considered to be especially at-risk for being socially marginalized in their schools, a phenomena that affects their inclusion and connectedness. Studies have shown that students with

disabilities are often stigmatized (Shifrer, 2013) and see themselves as less socially skilled than their non-disabled peers (Svetaz et al., 2000). These experiences may lead students to feel less connected in their school, leading to school dropout, among other school-related problems. Doren et al. (2014) examined the predictors of school dropout for high school students with learning disabilities (LD) in a large sample of 11,000 13-17 year old students. They studied 26 predictors across four domains (e.g., sociodemographic, individual, family, and school-based factors). The results indicated that grades, risk behaviors, parent expectations, and the quality of students' relationships (i.e., getting along with teachers and other students) remained salient predictors of school dropout among students with LD. Given the increased dropout risk among students with disabilities and the importance of positive relationships with teachers and peers, student connectedness should be considered in models of dropout risk and monitoring student outcomes. One aim of the present study was to examine differences in connectedness based on SES (using free and reduced lunch status as a proxy) and differences in connectedness based on qualification for an academic support plan (e.g., individualized education program (IEP), 504 plan) in the school environment.

Early warning system in Rhode Island

In recent years, several states and districts have developed early warning systems (EWS) to identify at-risk students in middle and high school with the intention of designing and implementing interventions to keep them on track to graduate (Frazelle & Nagel, 2015). EWSs use student-level data as indicators of student progress toward graduation. An effective EWS should utilize indicators and thresholds that have been verified in the local context in which the system is being used. Given the statistical knowledge needed to create localized systems, districts are encouraged to use attendance, behavior incidents, and course performance (the "ABCs") as their base set of indicators when building an EWS (Frazelle & Nagel, 2015). In line with the multi-tiered systems of support (MTSS) framework, tiered systems of intervention are suggested in order to address the complexity of student needs.

As mandated by the Rhode Island Secondary School Regulations, local education agencies are required to monitor and analyze student indicators beginning in grade six and continuing to grade 12 (Rhode Island Department of Education, 2017). In 2012, the Rhode Island Department of Education (RIDE) developed the state's initial early warning system as a tool to identify and intervene with students at-risk of not graduating high school on time or dropping out (RIDE, 2013). Using student demographic and performance data as independent variables, the development team completed regression modeling to determine the most salient predictors of on-time graduation for each grade. On-time graduation was represented as a binary dependent variable, with students who graduated within four years of entering high school considered on-time graduates and students who

took longer than four years considered non-on-time graduates (RIDE, 2012). Results from the regression models were cross-validated to determine accuracy rates for the grade-based model of on-time graduation. Of the 17 possible indicators, results indicated that six indicators were the most robust predictors: 1) attendance, 2) years overage (i.e., the number of years a student is older than the standard age for a given grade), 3) number of suspensions, 4) New England Common Assessment (NECAP) reading scores, 5) NECAP math scores, and 6) aggregate on-track percentage. The aggregate on-track indicator is an equation that provides a percent likelihood that a student will graduate on-time given the student's current year performance and demographic data, and varies by grade level. It should be noted that although student gender was highly predictive of on-time graduation, this variable was removed from the list of indicators as it is not an "actionable" or modifiable variable. Further analyses were used to create benchmarks for each indicator for every individual grade level by calculating the accuracy and scope of each variable in predicting on-time graduation. For an in-depth discussion of the development of the RIDE EWS, refer to RIDE (2012).

The Connections Project

The Connections Project is an on-going initiative developed by Author (2013) to identify secondary students at-risk in the social-emotional domain. The Connections screening was originally created in response to growing school climate concerns in a rural district in Rhode Island after a union work-to-rule decision that required union members to abide by the exact terms of their contract (e.g., no advising or coaching, no working with students after school hours). The implementation of the work-to-rule decision was informally assessed as detrimental to the student body in negatively affecting their sense of connectedness to school. Consequently, the Connections screening was developed to examine students' perceptions of connectedness with adults and peers in the school environment. Under the MTSS framework, all students complete a universal screening measure to identify the names of adults and peers in the building with whom they feel a good personal connection. In conjunction with the student screening measure, teachers and staff also complete a survey in which they name students in the building whom they feel they have a good personal connection. For both the student and teacher versions, the measure is very brief and quick to administer. Localized data obtained from the screening measure has been used to target students who may be in need of social-emotional intervention. Presently, there are several middle schools and high schools involved in the Connections Project in Connecticut, Delaware, Michigan, Wisconsin, and Rhode Island. The present study is based on the Connections Project and draws from a middle school and a high school in Rhode Island.

To further the knowledge base about accessible universal screening measures that can be used to measure middle school and secondary students' connectedness to their teachers, school staff, and peers, the present study had two

hypotheses. The first hypothesis was that when controlling for SES and presence of IEP/504 plan, adult connections and peer connections would be inversely related to negative school outcome data (i.e., greater tardy arrivals, absences, disciplinary referrals, failed courses, and school dropout). The second was that students who felt connected to their advisor, regardless of reciprocity, would have more positive school outcomes (i.e., fewer tardy arrivals, absences, disciplinary referrals, and failed courses).

Methods

Participants

The present study was based on an analysis of a secondary data set that included 1,309 students and corresponding data from 140 school personnel in their respective school buildings from two schools in Rhode Island. No data were collected about gender, race, or ethnicity of students and teachers. The middle school included 556 (42.5%) students representing grades 6-8 and the high school included 753 (57.5%) students in grades 9-12. Approximately 13% of the middle schoolers had an individualized education program (IEP) and about 6% had 504 plans. Twenty-nine percent of the middle schoolers received a free or reduced-price lunch. Among the high schoolers, about 10% had IEPs and almost 10% had 504 plans. About 26% of high schoolers received free or reduced-price lunch.

Measures

The measures employed in the study included eight student-based variables, the Student Connections Survey, and the Adult Connections Survey. Information about student participants was drawn from the school database which included four student background variables and four student outcome variables. For the purposes of this study, student background variables included year of graduation, student connection to advisor, qualification for free or reduced-price lunch (FRL; an index of socioeconomic status), and presence of IEP or a 504 plan. Student outcome variables included number of tardy arrivals, number of absences, number of disciplinary referrals, and number of failed courses. Four other variables were created for the study purposes and are described in the "Preliminary coding and data analyses" subsection.

Student Connections Survey. Student perceptions of connectedness were assessed using the Student Connections Survey (SCS; Author, 2013), a self-report measure containing two questions. On the SCS, the first question asks students to identify the names of one or more adults in the school building with whom they feel they have a good personal connection. The second question asks them to report the names of one or more peers in the school building with whom they feel they have a good personal connection. A personal connection is defined as "a person you trust, a person that you know cares about you, and a person you feel you can talk to if you have a problem." If a student feels that they genuinely have no connections, they are asked to check the appropriate box at the end of the adult

and/or student section. The measure is scored by identifying the number of perceived adult connections (range = 0-3) and the number of perceived peer connections (range = 0-3). Ruise (2018) provided evidence for concurrent validity of the SCS using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001).

Adult Connections Survey. Adult perceptions of connectedness were measured using the Adult Connections Survey (ACS; Author, 2013), a single item measure. The ACS survey asks school personnel in the school building (including teachers, staff, and support personnel) to provide data regarding student-adult relationships by identifying the names of up to six students with whom they feel they have a good personal connection. Adults are told that these students may be those who seek advice and guidance for personal or academic matters. Instructions to teachers note that the students they name may not necessarily be current students in their classrooms. Adult-perceived connections are tallied for each student and added to the student data as "number of faculty/staff connections," which can range from zero to seven or more.

Procedure

The study was approved by the university IRB. The present study used secondary data from the Connections Project (Author, 2013), which is an on-going project. The schools complete the universal screening measures as a part of their MTSS framework. Data were collected across the school sites serving grades six through 12 after the first academic quarter of the 2016-2017 academic school year and were de-identified at the source. Approximately 3,500 students completed the Connections Screening across all school sites. Two schools in Rhode Island granted administrative support for the present study and are the focus of the investigation. After excluding individuals with missing covariates, the final sample size for the present study was 1,309 students and 140 teachers/staff.

Results

Preliminary coding and data analysis

Four variables were created to perform the analyses to test the study hypotheses. A variable was created for school code (i.e., School A and School B) to determine if differences existed between school sites prior to data analysis. Additionally, a variable called "connections risk category" was created based on suggestions for tiered levels of support from the Connections Project to examine differences in student-perceived level of support. This variable included four levels of support (high risk [no adult or peer connection], moderate risk [no adult, some peer connection], slight risk [some adult, no peer connection], lowest risk [some adult, some peer connection]). To assess differences between students with a perceived connection to their advisory teacher, a variable called "connection to advisor" was formed (no perceived connection, advisor-perceived connection, student-perceived connection, and advisor- and student-perceived connection). The

variable "student dropout risk" was created to examine the relationship between level of support and dropout risk (lowest risk, slight risk, moderate risk, and high risk) based on the Rhode Island EWS guidelines for student attendance. In addition, for the purpose of this study, attendance percentage was calculated by dividing the number of days the student attended school by the number of days in the first quarter (e.g., 45 days).

Prior to conducting analyses to address the study hypotheses, descriptive statistics were examined to determine if the data met the assumptions of normality, linearity, and homogeneity of variance. Preliminary analyses revealed that the data did not meet these assumptions. Therefore, student outcome data variables (e.g., tardy arrivals, attendance, disciplinary referrals, and failed courses) which contained several zero values, were transformed using the square root method in order to normalize the distribution, similar to McKee and Calderella (2016). After performing square-root transformations, tardy arrivals, absences, and failed courses were in the acceptable range for skewness and kurtosis (|1.0| and <2.0, respectively; Harlow, 2014). However, skewness and kurtosis for disciplinary referrals remained elevated (e.g., 3.62 and 14.76).

In order to assess whether any statistically significant group differences existed between school sites, a multivariate analysis of variance (MANOVA) was used to examine continuous variables across schools (e.g., number of adult connections, number of peer connections, tardy arrivals, number of absences, number of disciplinary referrals, number of failed courses). Results from the MANOVA indicated a significant multivariate effect for the linear relationship between student outcome variables and connectedness on school site, $F(6,1302) = 75.36$, Pillai's trace = .258, $\eta^2 = .258$. Given the significance of the overall MANOVA, univariate effects of the six dependent variables were examined using follow-up ANOVAs. Significant univariate effects were found for tardy arrivals ($F(2) = 184.27$, $p<.001$), absences ($F(2) = 397$, $p<.001$), disciplinary referrals ($F(2) = 18.97$, $p<.001$), and failed courses ($F(2) = 30.83$, $p<.001$). Secondary students obtained significantly more tardy arrivals ($d = 0.77$), absences ($d = 1.11$), disciplinary referrals ($d = 0.25$), and failed courses ($d = 0.32$). Tardy arrivals and absences have relatively large effect sizes (i.e., greater than 0.8), while disciplinary referrals and failed courses represent small effect sizes. Historical data available for School A and School B from 2010 to 2015 indicates that students at School B have consistently had more absences and incidents of suspensions than School A (RIDE, 2015); data were not available to inform differences in tardy arrivals and failed courses. Nevertheless, no significant differences existed between middle school students (School A) and secondary school students' (School B) perceived adult connectedness or peer connectedness.

Additionally, a logistic regression was used to examine group differences in categorical variables (e.g., connection to advisor, student connectedness,

qualified for IEP/504 plan, and SES) across school sites. As a set, connection to advisor, student connectedness, qualified for IEP/504 plan, and SES showed a significant relationship with school site identification among the sample of 1,309 students across the two schools, $\chi^2(8)=25.16$, $p = .001$. The average pseudo R^2 value was 0.02, indicating a small effect size (ES) according to Cohen's guidelines for multivariate ES (Harlow, 2014). For qualification for IEP/504 plan, SES, and student connectedness, the first category was used as the reference category, all of which indicated little to no risk based on the literature (e.g., not qualified for IEP/504 plan, not qualified for free or reduced lunch, and high levels of connectedness, respectively). Inversely, the last category for connection to advisor (i.e., student- and advisor-perceived connection) was used as the reference category. Two of the four predictors, connection to advisor and student connectedness, significantly predict school site. Odds ratios greater than 1.0 suggest higher odds of being in the high school group, and results less than 1.0 suggest lower odds of being in the high school group.

Using the odds ratios and their respective confidence intervals, results suggest that high school students had four times more odds than middle school students of having an advisor-perceived connection to their advisor ($OR = 4.02$, $p = .02$, 95% CI [1.24, 13.00]). While the overall odds ratio for student connectedness was significant ($p = 0.04$), only the moderate risk category approached significance ($OR = 0.42$, $p = 0.058$, 95% CI [0.16, 1.03]) when compared to the lowest risk category. Descriptive statistics indicate that 2.16% of students in School A fell in the moderate risk category, while only 1.06% of students in School B fell in the moderate risk category. The specific results are summarized as follows according to the two hypotheses.

Findings: Hypothesis one

The first hypothesis, that the presence of adult connections and peer connections would be inversely related to negative school outcome data, when controlling for SES and qualification for IEP/504 plan, was addressed in two ways. First, a one-way multivariate analysis of covariance (MANCOVA) was used to assess group differences in student-perceived levels of support (i.e., no peer support, no adult support; some peer support, no adult support; no peer support, some adult support; some peer support, some adult support) using student outcome variables as the dependent variables. "Some adult support" and "some peer support" indicated that the student named one or more adult or peer connections. Student SES and qualified for IEP/504 plan were entered as covariates. Due to the apparent violation of the assumption of homoscedasticity as indicated by the Box's test of equality of covariance matrices, [$F(30, 10056.96) = 4.59$, $p<.001$], Pillai's trace was used to evaluate the macro-level results of the MANCOVA as it is more robust against violations than Wilk's Λ (Harlow, 2014). Results indicated a significant multivariate effect for the combined independent variables after

controlling for student SES and qualified for IEP/504 plan, $F(12, 3906) = 6.46$, $p<.001$, Pillai's trace $= 0.58$, $\eta^2 = .019$, indicating a small effect size between student-perceived levels of support and student outcome variables.

Follow-up ANCOVAs were completed to analyze micro-level results. Significant univariate effects were found for disciplinary referrals, $F(1) = 14.76$, $p<.001$, $R^2 = .033$, and failed courses, $F(1) = 16.14$, $p<.001$, $R^2 = .036$, indicating that disciplinary referrals and failed courses explained 3.3% and 3.6%, respectively, of the variance with student-perceived levels of support after qualified for IEP/504 plan and SES were taken into consideration. Both of these are considered to have small effect sizes (Harlow, 2014). As there were more than two groups in the independent variable, post hoc tests using the Bonferroni approach were completed. Post hoc tests revealed that lower levels of support (i.e., high risk: no adult, no peer) had significantly higher rates of disciplinary referrals and failed courses when compared to peers with greater levels of support.

To further test the first hypothesis, a logistic regression was used to extend the study results from Buchanan and Bowen (2008) to school-based student outcome variables. Student background variables (i.e., qualified for IEP/504 plan and SES) were entered in stage one, followed by number of adult connections, number of peer connections, and the adult connection by peer connection interaction in subsequent stages. Given that attendance percentage was the only Rhode Island EWS variable available in the data set, each student's attendance data was coded to reflect the level of dropout risk (i.e., lowest risk, slight risk, moderate risk, and high risk) based on the benchmark for their respective grade, which served as the dependent variable.

As the majority of students fell in the lowest dropout risk category ($n = 1,000$), dropout risk was collapsed into two categories, low risk and moderate risk, as opposed to four categories. For the purpose of this analysis, the low risk group served as the reference category. Two-tailed Pearson correlations did not reveal any evidence of collinearity among the variables in this analysis. Results indicated that the set of variables, qualified for IEP/504 plan, SES, adult connectedness, peer connectedness, and the adult connectedness by peer connectedness interaction term, significantly related to student dropout risk, $\chi^2(5) = 14.22$, $p = .01$. The average pseudo R^2 value was 0.01 indicating that differences between groups did not reach substantive significance (i.e., .02) according to Cohen's guidelines for multivariate ES (Harlow, 2014; Sullivan & Feinn, 2012). From an examination of the odds ratios and their respective confidence intervals, students in this sample who qualified for FRL had 1.57 times more odds than students who did not qualify for FRL to be considered at-risk for school dropout ($OR = 1.57$, $p = 0.001$, 95% CI[1.19, 2.07]). Adult connectedness, peer connectedness, and qualification for an academic support plan did not predict school dropout above and beyond student SES.

Findings: Hypothesis two

It was hypothesized that students who felt connected to their advisor, regardless of reciprocity, would have more positive student outcomes. A MANOVA was conducted using student connection to advisor as the independent variable (e.g., no perceived connection, student-perceived connection, advisor-perceived connection, student-and advisor-perceived connection) and student outcome data as the dependent variables. Results from the MANOVA indicated a significant multivariate effect for the relationship between student outcome variables on student- and advisor-endorsed connection to advisor, $F(12, 3912) = 3.18$, $p < .001$, Pillai's trace = .029, partial $\eta^2 = .010$, indicating a non-meaningful multivariate effect size. Micro-level results revealed significant univariate effects for tardy arrivals ($F(3) = 6.32$, $p < .001$, $R^2 = .014$), absences ($F(3) = 5.67$, $p = .001$, $R^2 = .013$), and failed courses ($F(3) = 4.31$, $p = .005$, $R^2 = .010$; however, there was no significant effect for number of disciplinary referrals on connection to advisor. Post hoc Tukey HSD tests were conducted on all possible pair-wise comparisons (see Table 1). Regarding tardy arrivals and absences, significant differences ($p < .05$) were present between students with no endorsed connection to their advisor and student-perceived connection to the advisor, indicating students with no endorsed connection had higher rates of both tardy arrivals and absences. Additionally, when examining failed courses, post hoc tests showed significant differences ($p < .05$) between students with no endorsed connection to their advisor and those who had a student-perceived and advisor-perceived connection to their advisor. Students with no perceived connection had higher numbers of failed courses in their first quarter of school.

Due to the vastly uneven group sizes represented in the student connection to advisor variable in the first MANOVA (no perceived connection $n = 797$; advisor-perceived connection $n = 27$; student-perceived connection $n = 413$; student- and advisor-perceived connection $n = 72$), an additional MANOVA was completed wherein the independent variable was collapsed into two groups: student-perceived connection to advisor ($n = 824$) and no student-perceived connection to advisor ($n = 485$). Similarly, results indicated a significant multivariate effect for the relationship between student outcome variables on student- and advisor-endorsed connection to advisor, $F(4,1304) = 5.25$, $p < .001$, Pillai's trace = .016, partial $\eta^2 = .016$, indicating a small effect size. Significant univariate effects were found for all four student outcome variables. However, there were no meaningful Cohen's d effect sizes; effect sizes ranged from 0.004 to 0.011.

Discussion

The present study utilized relatively new, easy-to-administer universal screening measures of student perceptions of their connections within their schools to investigate the relation between student perceptions to important student outcomes. Several findings of interest emerged in the analyses. First, partially

consistent with the first hypothesis, when controlling for SES and IEP/504 plan, the higher the level of connectedness students perceived to the adults and peers in their school building the fewer disciplinary referrals and failed courses they experienced. Surprisingly, student-perceived connectedness was not a significant predictor of tardy arrivals, number of absences, or school dropout risk. This finding may be related to the fact that the Student Connections Survey and Adult Connections Survey are administered at the end of the first quarter after approximately 45 total school days. The mean number of days absent and number of tardy arrivals across students was 2.28 and 1.16, respectively. Results may have been different if the measure was administered at a later date, given typical increases in absences and tardy arrivals through the progression of the academic year. The relationship between levels of support and attendance and tardy arrivals may have also been influenced by the square root transformations completed on those variables. These results can be used to examine differences between students who would be identified as low, moderate, or high risk according to the Student Connections Survey, perhaps indicating that these students should be targeted for additional interventions under multi-tiered systems of support.

Student perceptions of adult and peer connectedness did not significantly predict school dropout risk, and consequently do not extend the findings from Buchanan and Bowen (2008). Socioeconomic status was the only salient factor in the model, which included IEP/504 plan, SES, adult connectedness, and peer connectedness. One possible reason for this finding is that in the present study, the outcome variable only consisted of attendance data from the Rhode Island EWS, as opposed to the full algorithmic model used by the Rhode Island Department of Education. The full model includes years overage, number of suspensions, NECAP reading and math scores, and the aggregate on-track percentage. Use of the full model would have allowed for the creation of a more robust measure of dropout risk; however, these data were not included as part of the existing data set. Further, the use of attendance to measure dropout risk may have also been problematic given the well-known connection between student income level and school attendance (Chang & Romero, 2008). However, SES may have had stronger effects in this particular population given the amount of socioeconomic diversity present in the district. District-level data indicates that the median household income in the participatory district is $67,693, whereas the per capita income is $32,073, suggesting a considerable discrepancy between the two (U.S. Census Bureau, 2016). According to the U.S. Census Bureau, "median household income" refers to the income of the householder and all individuals in the house over age 15, whereas "per capita income" is derived by dividing the aggregate income of a particular group by the total population in that group (U.S. Census Bureau, 2016). In areas where there is not such a large discrepancy in SES, this factor may not be as influential.

A second major finding was that students who named their advisory teacher as an adult connection had fewer instances of tardy arrivals, school absences, and failed courses. The importance of relationships to advisors continues to be well-supported in the literature for students at the post-secondary level (Craft et al., 2016; Khalil & Williamson, 2014; Zhang, 2016); however, there is still a dearth of information regarding the effects of advisor-student relationships in secondary schools. In the present sample, 37.1% of students named their advisor as a connection. This finding adds to the research suggesting that student-perceived support, rather than adult perception of given support, has a greater impact on student outcome data (Murray et al., 2008). Pragmatically, this finding deserves attention. The data suggest that middle and high school students who feel connected to their advisors will be present for a longer school day, be more motivated to attend school, and show better academic performance than their less connected peers. For teachers, these findings suggest that the effort they devote to building relationships with students carries significant weight in facilitating student success. Studies have shown that creating stable and sustaining connections with students lays the groundwork for their developing the social capital they need to advance to college and beyond, especially for those students who lack consistent adult attention otherwise (Skobba et al., 2018). Likewise, for the school administrators, staff, and coaches, aside from fulfilling the conventional portions of their jobs, attending to students as unique individuals and cultivating genuine relationships with them benefits the students in multiple, often unseen, ways. The connections may expand students' interests and ideas about possible career trajectories (Plasman, 2018) as well as buoy and carry them through fraught and emotionally challenging periods of their life. A recent meta-analysis of 18 samples of students in grades 6 through 12 conducted by Marraccini and Brier (2017) found that adult connections to students was a key factor in preventing adolescent suicidal thoughts and behaviors. Indeed, such connections can serve as a steady, guiding, and expanding influence as students make decisions that shape and ground them academically, socially, emotionally, and psychologically.

Regarding failed courses, students with no perceived connection to their advisor had higher numbers of failed courses in their first quarter of school when compared to those with both a student-perceived and advisor-perceived connection to advisor. In this instance, reciprocity of the endorsed relationship between students and their advisors mattered. These findings are in line with previous research by Van Ryzin (2010), who found that 40.7% of their student participants nominated their advisor as an attachment figure. Similarly, students who nominated their advisor as an attachment figure were more engaged in school and shared a bond with them that could be used when they faced challenges as well as successes at school. Being able to share the day-to-day trials of school life with adults keyed

into their emotional needs can be an invaluable resource with wide implications for students' school life and beyond.

Limitations

Several limitations are notable in this study. First, given the relative newness of the connections measures used (i.e., the SCS and the ACS), the psychometric qualities of the measures have not been fully demonstrated. Recently, Ruise (2018) explored the concurrent validity of the SCS using the Strengths and Difficulties Questionnaire (SDQ), a 25-item questionnaire developed to screen for behavioral and emotional difficulties and social skills with school-aged youth. Findings indicate that there is a negative relationship between students' self-reported peer connectedness and the Peer Relationships Problems subscale of the SDQ, suggesting that as peer connections increase, peer problems decrease. Thus, it seems that these tools may be measuring similar constructs. Ruise (2018) also sought to evaluate the social validity of the Student Connections Screening. Teachers who participated in the study perceived the administration of the SCS to be useful and appropriate for the school setting, suggesting that the screening tool is practical for use by schools.

Second, the two measures of connectedness are based solely on self-report at one sampling point during the school year. However, under the MTSS framework, universal screeners are typically administered multiple times per school year (i.e., Fall, Winter, Spring) to accurately track all students (National Center on Response to Intervention, 2012). Thus, future research will need to examine the utility of the measures at multiple administration points.

Third, this study created dropout risk categories based on the Rhode Island EWS; therefore, the results may not be generalizable to samples outside the state. However, it should be noted that several individual districts and states (i.e., Sioux Falls School District, Houston Independent School District, Delaware Department of Education) have implemented similar systems to track dropout risk (Frazelle & Nagel, 2015). The ACS and SCS measures can be used in conjunction with localized EWS models.

Fourth, given that the study was based on an existing data set that did not include important variables, the study findings are limited. Future research would benefit by including additional demographic data, such as gender, race, and ethnicity, as well as added measures of socioeconomic status (i.e., parental income level and parental education level) and a third aspect of student connectedness, connectedness to the school itself, as delineated by Lohmeier and Lee (2011).

Conclusion

Given the limitations, the present results indicate that the Connections screening measures hold promise when used in conjunction with EWS's in schools

to provide additional quantitative and qualitative data to understand student progress and behavior. Currently, the measures are being used to target school climate issues, such as social relationships for students who are new to the district, and school crisis issues, such as suicide risk assessments and threat assessments. In crisis situations, the Connections Project measures are used to identify and foster supportive adult relationships in the school environment as part of student safety plans. Given the current demands on schools to engage in data-informed decision-making and the increased attention on students affected by trauma in various forms, the utility of the Connections Project screening devices seem to hold real promise for schools building trauma-sensitive school environments.

Conflict of Interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

Blum, R. (2005). *School connectedness: Improving the lives of students.* Johns Hopkins Bloomberg School of Public Health. https://www.casciac.org/pdfs/ SchoolConnectedness.pdf

Buchanan, R. L., & Bowen, G. L. (2008). In the context of adult support: The influence of peer support on the psychological well-being of middle-school students. *Child and Adolescent Social Work Journal, 25*(5), 397-407. https://doi.org/10.1007/s10560-008-0143-z

Centers for Disease Control and Prevention. (2009a). *School connectedness: Strategies for increasing protective factors among youth.* U.S. Department of Health and Human Services. http://www.casciac.org/pdfs/School_Connectedness-Strategies_for_Increasing_Protective_Factors_Among_Youth.pdf

Centers for Disease Control and Prevention, Division of Adolescent and School Health. (2009b). *Fostering school connectedness: Improving student health and academic achievement.* https://www.cdc.gov/healthyyouth/protective/pdf/connectedness_ administrators.pdf

Chang, H.D. & Romero, M. (2008, September). *Present, engaged, and accounted for: The critical importance of addressing chronic absence in the early grades.* National Center for Children in Poverty. http://www.nccp.org/publications/pdf/text_837.pdf

Craft, C. M., Augustine-Shaw, D., Fairbanks, A., & Adams-Wright, G. (2016). Advising doctoral students in education programs. *NACADA Journal, 36*(1), 54-65.

Doren, B., Murray, C., & Gau, J. M. (2014). Salient predictors of school dropout among secondary students with learning disabilities. *Learning Disabilities Research and Practice, 29*(4), 150-159. https://doi.org/10.1111/ldrp.12044

Frazelle, S., & Nagel, A. (2015). *A practitioner's guide to implementing early warning systems.* (REL-2015-056). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northwest. http://ies.ed.gov/ncee/edlabs

Goodman, R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child and Adolescent Psychology, 40*(11), 1337-1345. https://doi.org/10.1097/00004583-200111000-00015

Harlow, L. L. (2014). *The essence of multivariate thinking: Basic themes and methods* (2nd ed.). Routledge.

Hughes, J. N. (2011). Longitudinal effects of teacher and student perceptions of teacher-student relationship qualities on academic adjustment. *The Elementary School Journal, 112*, 38-60. https://doi.org/10.1086/660686

Khalil, A., & Williamson, J. (2014). Role of academic advisors in the success of engineering students. *Universal Journal of Educational Research, 2*(1), 73-79.

Klem, A. M., & Connell, J. P. (2004). Relationships matter: Linking teacher support to student engagement and achievement. *Journal of School Health, 74*(7), 262-273. https://doi.org/10.1111/j.1746-1561.2004.tb08283.x

Libbey, H. P. (2004). Measuring student relationships to school: Attachment, bonding, connectedness, and engagement. *Journal of School Health, 74*(7), 274-283. https://doi.org/10.1111/j.1746-1561.2004.tb08284.x

Lohmeier, J. H., & Lee, S. W. (2011). A school connectedness scale for use with adolescents. *Educational Research and Evaluation, 17*(2), 85-95. https://doi.org/10.1080/13803611.2011.597108

Marraccini, M. E., & Brier, Z. M. F. (2017). School connectedness and suicidal thoughts and behaviors: A systematic meta-analysis. *School Psychology Quarterly, 32*(1), 5–21. https://doi.org/10.1037/spq0000192

McNeely, C., & Falci, C. (2004). School connectedness and the transition into and out of health-risk behavior among adolescents: A comparison of social belonging and teacher support. *Journal of School Health, 74*(7), 284-292. https://doi.org/10.1111/j.1746-1561.2004.tb08285.x

McKee, M. T., & Caldarella, P. (2016). Middle school predictors of high school performance: A case study of dropout risk indicators. *Education, 136*(4), 515-529.

Murray, C., Murray, K. M., & Was, G. A. (2008). Child and teacher reports of teacher-student relationships: Concordance of perspectives and associations with school adjustment in urban kindergarten classrooms. *Journal of Applied Developmental Psychology, 29*, 49-61. https://doi.org/10.1016/j.appdev.2007.10.006

National Center on Response to Intervention. (2012). *RTI implementer series module 1: Screening, training manual*. http://www.rti4success.org/sites/default/files/ImplementerSeries_ScreeningManual.pdf.

Niehaus, K., Rudasill, K. M., & Rakes, C. R. (2012). A longitudinal study of school connectedness and academic outcomes across sixth grade. *Journal of School Psychology, 50*(4), 443-460. https://doi.org/10.1016/j.jsp.2012.03.002

Phillippo, K. L., & Stone, S. (2013). Teacher role breadth and its relationship to student-reported teacher support. *The High School Journal*, 358-379. https://doi.org/10.1353/hsj.2013.0016

Plasman, J. S. (2018). Career/Education plans and engagement in secondary schools. *American Journal of Education, 124*, 217-246. https://doi.org/10.1086/695608

Author. (2014). The development of a universal social-emotional screening. *Communique, 42*(7), 24-26. https://www.nasponline.org/publications/periodicals/communique/issues/volume-42-issue-7/the-development-of-a-universal-social-emotional-screening.

Author & Marraccini, M. (2013). *Connections Screening Manual.* Burrillville High School.

Rhode Island Department of Education. (2012, September). *EWS benchmark*

development: Initial creation of model. http://ride.ri.gov/Portals/0/Uploads/
Documents/Diploma-System/EWS/EWS-Model-Deliverable.pdf.

Rhode Island Department of Education. (2013, September). *Rhode Island early warning
system guide.* http://www.ride.ri.gov/Portals/0/Uploads/Documents/Diploma-
System/EWS/RIEWS_FINAL.pdf.

Rhode Island Department of Education. (2015). *Infoworks! Rhode Island education data
reporting: Data finder.* http://infoworks.ride.ri.gov/search/data

Rhode Island Department of Education. (2017, January). *Secondary school regulations
reference guide.* http://www.ride.ri.gov/Portals/0/Uploads/Documents/Diploma-
System/Secondary%20School%20Regulations%20Reference%20Guide-Final.pdf

Ruise, B. (2018). *The school connections survey and middle school students:
Concurrent validity with the strengths and difficulties questionnaire* [Doctoral
dissertation, University of Rhode Island]. University of Rhode Island Digital
Commons. https://digitalcommons.uri.edu/oa_diss/732/.

Ryan, A. M., & Shim, S. S. (2012). Changes in help seeking from peers during early
adolescence: Associations with changes in achievement and perceptions of
teachers. *Journal of Educational Psychology, 104*, 1122-1134.
https://doi.org/10.1037/a0027696

Sanders, J., & Munford, R. (2016). Fostering a sense of belonging at school-five
orientations to practice that assist vulnerable youth to create a positive student
identity. *School Psychology International, 37*, 155-171.
https://doi.org/10.1177/0143034315614688

Shifrer, D. (2013). Stigma of a label: Educational expectations for high school students
labeled with learning disabilities. *Journal of Health and Social Behavior, 54*, 462-
480. https://doi.org/10.1177/0022146513503346

Shochet, I. M., Dadds, M. R., Ham, D., & Montague, R. (2006). School connectedness is
an underemphasized parameter in adolescent mental health: Results of a
community prediction study. *Journal of Clinical Child and Adolescent Psychology,
35*(2), 170-179. https://doi.org/10.1207/s15374424jccp3502_1

Shulkind, S. B., & Foote, J. (2009). Creating a culture of connectedness through middle
school advisory programs. *Middle School Journal*, *41*(1), 20-27.
https://doi.org/10.1080/00940771.2009.11461700

Skobba, K., Meyers, D., & Tiller, L. (2018). Getting by and getting ahead: Social capital
and transition to college among homeless and foster youth. *Children and Youth
Services Review, 94,* 198-206. https://doi.org/10.1016/j.childyouth.2018.10.003

Suldo, S. M., Friedrich, A. A., White, T., Farmer, J., Minch, D., & Michalowski, J. (2009).
Teacher support and adolescents' subjective well-being: A mixed methods
investigation. *School Psychology Review, 38*, 67-85.

Sulkowski, M. L., Demaray, M. K., & Lazarus, P. J. (2012, May). Research-based
practice: Connecting students to schools to support their emotional well-being and
academic success. *Communiqué.* http://www.nasponline.org/publications/

periodicals/communique/issues/volume-40-issue-7/connecting-students-to-schools-to-support-their-emotional-well-being-and-academic-success

Sullivan, G.M. & Feinn, R. (2012). Using effect size – or why the *p* value is not enough. *Journal of Graduate Medical Education, 4*(3), 279-282. https://doi.org/10.4300/JGME-D-12-00156.1

Svetaz, M. V., Ireland, M., & Blum, R. (2000). Adolescents with learning disabilities: Risk and protective factors associated with emotional well-being: Findings from the national longitudinal study of adolescent health. *Journal of Adolescent Health, 27*, 340-348. https://doi.org/10.1016/S1054-139X(00)00170-1

Tillery, A. D., Varjas, K., Roach, A. T., Kuperminc, G. P., & Meyers, J. (2013). The importance of adult connections in adolescents' sense of school belonging: Implications for schools and practitioners. *Journal of School Violence, 12*(2), 134-155. https://doi.org/10.1080/15388220.2012.762518

U.S. Census Bureau. (2016). *Quick facts: Burrillville town, Providence county, Rhode Island.* https://www.census.gov/quickfacts/fact/table/burrillvilletownprovidencecountyrhodeisland/PST045216

Van Ryzin, M. (2010). Secondary school advisors as mentors and secondary attachment figures. *Journal of Community Psychology, 38*(2), 131-154. https://doi.org/10.1002/jcop.20356

Wang, M., & Eccles, J. S. (2012). Social support matters: Longitudinal effects of social support on three dimensions of school engagement from middle to high school. *Child Development, 83*, 877-895. https://doi.org/10.1111/j.1467-8624.2012.01745.x

Weyns, T., Colpin, H., De Laet, S. Engels, M., & Verschueren, K. (2018). Teacher support, peer acceptance, and engagement in the classroom: A three-wave longitudinal student of late childhood. *Journal of Youth and Adolescence, 47*, 1139-1150. https://doi.org/10.1007/s10964-017-0774-5

Zhang, Y. (2016). An overlooked population in community college: International students' (in)validation experiences with academic advising. *Community College Review, 44*(2), 153-170. https://doi.org/10.1177/0091552116633293

Table 1
Tukey HSD Pairwise Comparisons of Connection to Advisor and Student Outcome Variables

Dependent Variable	(I) Connection to Advisor	(J) Connection to Advisor	Mean Difference (I-J)	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Tardy Arrivals	No Perceived Connection	Adult-Perceived Connection	-.2313	.543	-.6782	.2156
		Student-Perceived Connection	-.2120*	.001	.0735	.3505
		Student- and Adult-Perceived Connection	.0022	1.00	-.2788	.2832
Absences	No Perceived Connection	Adult-Perceived	-.2996	.476	-8353	.2362
		Student-Perceived Connection	.2346*	.002	.0686	.4006
		Student- and Adult-Perceived Connection	.1561	.632	-.1808	.4930
Disciplinary Referrals	No Perceived Connection	Adult-Perceived Connection	-.0544	.940	-.2992	.1903
		Student-Perceived Connection	.0697	.085	-.0061	.1455
		Student- and Adult-Perceived Connection	.0396	.911	-.1903	.2992
Failed Courses	No Perceived Connection	Adult-Perceived Connection	.1972	.340	-.1064	.5007

Student-Perceived Connection	.0828	.107	-.0113	.1768
Student- and Adult-Perceived Connection	.2068*	.028	.0159	.3976

Note: *The mean difference is significant at the .05 level.