A Longitudinal Study of the Relationship Between Sense of Belonging and Student Success

by

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ABSTRACT

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Title: A Longitudinal Study of the Relationship Between Sense of Belonging and Student Success

This longitudinal, descriptive study examined the relationship between students' sense of school membership and student success over the post-pandemic recovery period. Drawing on administrative data from a comprehensive high school in a small Oregon city between September 2021 and April 2026, the study analyzed survey responses from 2,349 students who completed the *Psychological Sense of School Membership (PSSM)* rating scale across up to eight semi-annual administrations. Three research questions guided the analysis: (a) how PSSM evolves across the high school years, (b) how PSSM related to attendance, grade point average (GPA), and on-time graduation. Mean PSSM scores declined from ninth-grade fall (M = 3.02, SD = 0.55) through fall of eleventh grade and partially recovered by twelfth grade (M = 2.98, SD = 0.59). Differences by race/ethnicity and gender were marginally significant in 9th grade and converged by twelfth grade. LGBTQ+ students reported significantly lower PSSM than non-LGBTQ+ peers across all administrations. A one-point increase in baseline PSSM was associated with a 0.44-point higher ninth-grade GPA, 2 to 5 percentage point higher attendance, and a 10.4 percentage point higher likelihood of on-time graduation. Findings support the use of validated belonging measures as an early warning indicator for targeted school interventions.

Keywords: psychological sense of school membership, belonging, academic resilience, on-time graduation, attendance, early warning measures

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CHAPTER I

INTRODUCTION

High schools are complex organizations. In this setting, students establish and move between interconnected social networks that shape their sense of belonging in school. This connection to school - to teachers, peers, and the organization of school itself - is a precondition for student success. Multiple interventions targeting social network formation demonstrate the importance of peer social networks on student outcomes. Network interventions such as summer transition programs (Cauley & Jovanovich, 2006) and interdisciplinary teaming (Flowers & Mertens, 2003; Lee, Bryk, & Smith, 1993) are associated with increases in peer bonding (Wallace, 2007), and student achievement (Flowers, Mertens, & Mulhall, 1999). These interventions promote social network formation with both peers and caring adults. Positive connection to school supports students' academic persistence (Tinto, 1997), improved educational outcomes (Goodenow, 1993), and successful navigation and completion of high school (Finn & Rock, 1997). Recent writings focus on belonging as a key lever in increasing student success (Cobb & Krownapple, 2019) and encourage utilizing direct measures of belonging through student surveys to monitor overall school climate, and to target individual interventions.

During the COVID-19 pandemic, Oregon's K-12 population experienced significant disruptions in student learning. A primary adverse consequence of disrupted learning environments in the COVID-19 pandemic was the loss of connection. Reestablishing community - both literally, through physical proximity, and psychologically, through the development of relationships and connection - is a first step to education system recovery. The United States government through the Department of Education awarded *Elementary and Secondary*

Education Emergency Relief (ESSER) funds to support learning stabilization and recovery post-pandemic. These funds, which began in 2021 and continued through March 2026 in Oregon, were used to accelerate student learning and to develop comprehensive support for students, providing funding for afterschool and summer learning programs. Districts maintained local control over ESSER funds, submitting proposals to the Oregon Department of Education for permissible expenditures. During this period, schools worked to accelerate student skill recovery while also re-establishing student sense of belonging in school.

In this study, I use a direct measure of student sense of belonging based on student self-reported completion of the *Psychological Sense of School Membership (PSSM)* scale to gather longitudinal data on student belonging. The PSSM asks students to report their connection to peers, adults, and the school identity overall. I will use a descriptive research design to examine the longitudinal relationship between student self-reported sense of school membership and attendance, academic success as measured by grade point average, and on-time graduation for students enrolled in a mid-sized, small-city high school in Oregon.

A detailed understanding of the relationship between student self-reported sense of school membership and student outcomes may provide schools with an important early warning measure that allows schools to link students to interventions to improve student success over time.

Indicators of Post-Pandemic Needs

As might be expected, the COVID-19 pandemic has had a lasting impact on students. One of the most discussed issues is the challenge of getting students to return to school. Both nationally (Dee T. S., 2024) and here in Oregon, irregular attendance has been a significant challenge post-pandemic. Students are identified as regular attenders when they attend 90% of

school days enrolled in an academic year. All states saw an increase in chronic absenteeism varying from a 4 to 23 percentage point increase relative to the 2018-19 academic year (Baker, 2024).

In addition to lower rates of attendance, students have also experienced marked declines in student achievement. According to the Education Data Center's (2025) analysis of post-pandemic academic recovery from 2019 to 2025, among 28 states with comparable student achievement assessment measures for English language arts (ELA), only 6 states have met or exceeded pre-pandemic achievement levels. Of the 28 states with comparable achievement measures, 8 showed additional declines in student achievement from 2019 to 2025 in grades 3-8 ELA proficiency. Oregon - the setting for this study - is one of those states. Of the 32 states with comparable student achievement assessment measures in mathematics, only 7 have met or exceeded pre-pandemic achievement levels.

The focal district of this study has observed similar trends. Using the Oregon Department of Education accountability detail reports for the 2018-19 school year, the percentage of regular attenders was above 75%, while post-pandemic regular attendance fell more than 25 percentage points. Regular attendance recovered to approximately 70% by 2024-25. Prior to the pandemic, the percentage of students meeting the ELA achievement standard was above 60%. In 2021-22, the next year for which state testing data is available, rates fell to less than 15% of students meeting state standards. Significantly, student participation rates in achievement testing fell markedly in the 2021-22 academic year and have recently recovered to pre-pandemic participation rates in 2024-25. By 2024-25, the last year for which state achievement data is available, the percentage of students meeting state standards in ELA grew to 30% of all students, still half of pre-pandemic levels. In mathematics, the percent of students meeting mathematics

achievement standards was approximately 40%. That rate fell to less than 10 percent in 2021-22. By 2024-25 mathematics achievement remains at approximately 10% of students meeting state standards in mathematics. It is clear that student academic skills remain impacted from disrupted learning during the COVID-19 pandemic.

I chose to study student belonging in an effort to identify a potential leading indicator in post-pandemic academic recovery for students. Utilizing direct, validated methods for assessing student sense of belonging, combined with self-reported measures of student safety, physical, and mental health, became one way our school could directly center student needs. Student survey results make tangible the emotional and psychological context for recovery in our school. We know from Maslow's foundational work (1943) on motivation that psychological and social safety are necessary conditions for learning. With concrete measures, I guided teachers to directly develop and monitor recovery in students' sense of belonging alongside teachers' attention to academic instruction and assessment of student learning.

Indicators of Sub-Group Needs

In addition to the initial use of the survey measure to guide school recovery efforts, students' self-reported sense of belonging also became a way to make the experience of various student sub-groups visible to staff for the purpose of targeting school improvement efforts. In a school context with a large racial majority group, the ability to analyze disaggregated data of student experience provides a more nuanced and complete picture of student experience. This survey of student belonging offers direction for schools seeking to improve outcomes for sub-groups within their school population.

CHAPTER II

LITERATURE REVIEW

Social capital shapes individual action through obligations and expectations, information channels, and social norms (Coleman, 1988). Academic resilience, the ability to achieve strong academic outcomes that exceed expectations based on background characteristics, relies on access to social capital. A key mechanism in the transmission of social capital is through relationships. Williams, Bryan, Morrison and Scott's (2017) phenomenological study found relationships are paramount to resilience: Relationships between youth and peers, youth and teachers, youth and family/community were all cited as important protective factors of student success.

Belonging, the feeling that one is accepted, valued, and included in a community (Goodenow, 1993), has been identified as a fundamental human need (Baumeister & Leary, 1995; Maslow, 1943) and is particularly consequential in school settings, where it shapes students' motivation, engagement, and persistence (Goodenow & Grady, 1993; Osterman, 2000). Finn (1989) develops a model of withdrawal from school where participation develops identification with school, offering a pathway for intervention by increasing student participation in school through in-class instructional methods to co- and extra-curricular activities. In this theoretical framework, belonging is seen as the independent variable. Subsequent research studies sense of belonging and its correlates. In a meta-analysis conducted in 2019, Korpershoek et al. summarize the growing body of research on student sense of belonging and its correlates, finding belonging is positively associated with multiple measures of student success including academic achievement measured by grades and standardized assessments, behavioral engagement as measured by attendance and persistence in school.

Academic Resilience and Peer Support

Multiple case studies on academic resilience identify the importance of peer relationships in the academic success of students. In a study using randomized assignment to study groups, Berthelon (2019) found that peer quality improves student performance in academic coursework as measured by course grades. Peer relationships have the potential to enhance access to social capital. Stanton-Salazar and Spina (2005) identify the emotional support of peers as critical to weathering school problems. In this mixed method study of Mexican-origin adolescents, in-depth interviews with 51 youth documented the importance of peer relationships in enhancing network-building and help-seeking behaviors - fostering access to social capital.

The effects of peer groupings are not always positive. A separate study on groupings of students into tracked Algebra courses found that peer networks can have a positive feedback loop meaning groups of high-achieving students experience positive academic influence from peers, while low-achieving students experience negative academic influence from peers (Nichols & White, 2001). This finding is reinforced by the findings from an international qualitative study conducted by Osman, Ydhag, and Mansson (2021). Interviewing a selected sample of students from migrant backgrounds with high academic achievement as measured by course grades, researchers sought to identify how these students exceeded expected educational outcomes. Students identified peer support as a critical factor in their success. Specifically, high-achieving migrant youth described the selection of goal aligned peers as an important action to enhance their success. Choosing peers with shared goals and academic ambitions was identified as being critical to their school success.

Across multiple studies, peer friendships and school-oriented peer social networks have been found to reinforce pro-academic behaviors, and provide emotional support and

encouragement, and mutual academic support. A key protective factor that can enhance students' sense of belonging is positive peer relationships.

Student Success and Connection to Caring Adults

Long-standing research suggests connections to positive adults are key to student success. Comer (1984) identifies "the attachment and identification with a meaningful adult" as a key factor in a child's motivation to learn (p. 327). An early literature review on important factors for improving outcomes for at-risk students conducted by McMillan, Reed, and Bishop (1992) identifies "the important role of the teacher" (p. 8), characterized in the literature as a caring adult staff member who takes a personal interest in students (p. 24). Caring relationships with adults can positively impact student achievement through material support such as tutoring or financial support, through ideational support such as emotional support and encouragement, or through navigational support (Osman, Ydhag, and Mansson, 2021).

Understanding the role that a stable adult relationship serves in promoting student success, schools targeted interventions focused on the importance of adult relationships. Sinclair, Christenson, Evelo and Hurley (1998) studied the impact of a mentoring intervention called check and connect. Using a treatment and control research design assigning 94 students with learning and behavioral disabilities to mentors beginning in 7th grade, and continuing through 9th grade for students in the treatment group, the authors found that students assigned to a stable adult mentor through the first year of high school had a significant impact on reducing dropout risk from high school by maintaining enrollment (91% v. 70%, t=6.87, $p < .05$), increasing credit attainment ($t = 4.01$, $p < .05$), and being on-track to graduate (46% v. 20%, $t = 6.77$, $p < .05$).

The centrality of adult relationships to student connection to school has led the presence of adult relationships to become the defining basis for the degree of belonging. In a 2009 CDC

report defined school connection as “the belief by students that adults and peers in the school care about their learning as well as about them as individuals” (p. 3). Summarizing the research, the report notes that students who feel connected to caring adults are more likely to attend regularly, persist in school longer, and have higher grades (CDC, 2009). Relationships with adults is a key indicator of belonging.

Attendance and Belonging

Although belonging is important to student success, Korpershoek et al.’s (2019) literature review noted that many studies fail to use validated measures of students’ sense of belonging when conducting research. The Oregon Department of Education (ODE) has attempted to close this gap by implementing the *Student Educational Equity Development (SEED) Survey* which directly examines the association between students’ self-reported sense of belonging and attendance. ODE found that students who reported higher agreement with questions assessing student belonging were consistently more likely to be regular attenders. Specifically, students who identified that they had a caring adult at school had a 19 percentage points higher attendance rate than those who did not. This connection between belonging and attendance was especially pronounced for high school aged students (Oregon Department of Education, 2022).

Attendance is long recognized as a behavioral indicator of students’ attachment to the school community (Reid, 1981). Attendance is an easily observed measure of participation in school. This is particularly true in the secondary school setting where students have increased autonomy - and choice - over their rate of attendance relative to elementary school students. Similar to Finn (1989), Korpershoek et al. (2019) also identifies belonging as the independent variable, and its associated correlates as dependent variables. In this literature review of correlational studies published between 2000 and 2018, Korpershoek et al. summarizes across

seven correlational studies there is a negative correlation (r = -.17, p < .001) between absenteeism and belonging. Understanding this conceptual link, attendance can be used as a signal of students' sense of belonging as a behavioral signal of engagement.

Student Characteristics and Sense of School Membership

Research consistently identifies student characteristics, including gender, race, and ethnicity, as meaningful sources of variation in students' sense of school membership. In this paper, sense of belonging is operationalized by the *Psychological Sense of School Membership (PSSM)* scale as developed by Goodenow (1993). The psychometric properties of this scale measure student sense of belonging as the combination of student identification and participation in school, relationships with peers, and connections with adults (Ye & Wallace, 2014).

In the original PSSM scale development, Goodenow (1993) found a significantly higher self-reported sense of school membership among girls compared to boys. This finding has been replicated across age groups. In Furrer and Skinner (2003), researchers administered a 20-question survey assessing relatedness from grades 3 through 6 in a 95% white suburban-rural school district. Analyzing a sample of 641 completed questionnaires, researchers found that girls had a stronger connection to teachers compared to boys. In Gillen-O'Neel & Fuligni (2013), a racially and ethnically diverse sample of 572 students attending one of three urban public high schools in Los Angeles between 2006 and 2010 completed a seven-question survey including items like "I feel like I am part of my school" across multiple years of high school. To be included in the sample, students had to participate in at least two of the possible four years of the study. Approximately 95% of the students participated in at least two of the possible four years of the study, with the mean participant responding on average for 3.54 years of the study. In this study, in the 9th grade sample, girls showed significantly higher connection to school than boys.

This gender gap was reduced over the course of high school, ending with boys and girls at near parity in their relationship to school by 12th grade due to declines in female connection to school relative to boys' stable connection to school (p. 685). In this study, there was no significant variation by race/ethnicity.

Johnson, Crosnoe, and Elder (2001) examine the relationship between race/ethnicity and belonging. Specifically, they examine whether connection to school varies based on race/ethnicity, as well as based on whether a student is part of the majority or minority group relative to overall school composition. This study surveyed more than 90,000 students drawn from 134 middle schools and 80 high schools in a nationally representative sample in the 1994-95 school year. Three racial/ethnic groups were studied: Hispanic, African-American, and white students. In the final study, 8,104 students drawn from 64 high schools were included in the sample. This study used a Likert scale response to a three-question survey asking assessing connection to school, peers, and adults. At the high school level, there was no significant variation in attachment to school by race/ethnicity. However, students who attend schools where their racial/ethnic identity matches the majority racial/ethnic identity of the school are more attached to school (p. 331).

Both the Gillen-O'Neel & Fuligni (2013) and Johnson, Crosnoe, and Elder (2001) findings on race/ethnicity and belonging are consistent with Goodenow (1993). In Goodenow's initial development of the PSSM, there was no significant difference in students' self-reported sense of school membership by race or ethnicity. However, when comparing within individual schools, majority group status was positively associated with higher reported sense of school membership than local minority group peers. This suggests that relative representation within a school community matters more than ethnic or racial identity on its own.

Student Success and Sense of School Membership

A large body of research links students' sense of school membership to student success. A meta-analysis of 82 studies by Korpershoek et al. (2019) found consistent positive associations between school belonging and a range of student outcomes in secondary education including academic achievement, motivation, and behavioral engagement. Academic achievement, as measured by standardized test scores, showed a positive correlation of .12 ($p < .001$) across 19 studies. Separately, academic achievement as measured by grades had a positive correlation of .18 ($p < .001$) across 67 studies. Korpershoek et al. also found a negative association between belonging and drop out. A meta-analysis by Osterman (2000) also found negative association between belonging and high school drop-out.

Prior academic achievement was positively associated with students' sense of school membership. Students with higher grade point averages tend to report higher levels of belonging, and students enrolled in advanced courses have higher belonging relative to peers in non-advanced courses (Legette & Kurtz-Costes, 2021). In their longitudinal study, Legette and Kurtz-Costes (2021) evaluated the connection between belonging and academic placement, specifically in advanced math. The sample included 322 majority white, middle class 6th grade students in the southeastern United States. Using a five-question survey measure adapted from E. M. Anderman (2002) and Goodenow and Grady (1993), students reported their sense of belonging. Student's prior sense of belonging surveyed at the end of 5th grade was controlled for, along with socio-economic factors and 5th grade math achievement. Placement in an advanced math track was positively correlated with increased sense of belonging.

In another study on belonging and academic achievement conducted by Hughes et al. (2015), they similarly found that initial reports of belonging are positively associated with

subsequent academic achievement levels. The 525 students in this study were recruited from one urban and two small-city districts in Texas. The majority of the students were from low-income households (57%), and were 34% white, 38% Latino, and 25% African-American. By grade 6, participants were enrolled in over 90 different schools across 35 school districts (p. 496). In this study, students completed the *Psychological Sense of School Membership Scale* (PSSM) developed by Goodenow (1993). Academic achievement was assessed using the Woodcock Johnson III Tests of Achievement (WJ-III; Woodcock et al., 2001). An additional finding of interest is that growth in belonging over middle school for African American students was predictive of 8th grade achievement. This study suggests that not only is belonging positively associated with baseline academic achievement, but that changes in belonging can also be predictive of changes in achievement over time.

One study, Fall and Roberts (2012), used a combination of survey measures and standardized assessments to construct a theoretical pathway from connection to achievement. The sample included 15,362 students who completed the ELS 2002-2004, designed by the National Center for Education Statistics. This nationally representative sample showed a positive association from connection (teacher/parent) to self-perception to behavioral engagement to academic achievement. This study suggests how changes in belonging lead to changes in relative academic achievement.

Allen et al. (2018) posit that belonging is likely a reciprocal relationship, where students who feel like they belong invest more in school, and academic success reinforces feelings of acceptance in the school community. This theory is reinforced by the findings of Gillen-O'Neel and Fuligni's (2013) cohort study. This study found that school belonging was positively associated with a higher level of academic motivation across a 4-year period. Implementing

multiple survey measures assessing distinct constructs, including belonging, value of school, and academic expectations, researchers found that students who feel they belong at school are also more likely to report that they find school valuable, that they expect to succeed, and that they persist through academic challenges, thus contributing to achievement over time (Gillen-O'Neel & Fuligni, 2013; Korpershoek et al., 2019).

Sense of School Membership Across the High School Experience

Existing research describes a general decline in school belonging as students age, with steep drops occurring during transitions across school levels (e.g., elementary to middle school, and middle school to high school) (Eccles & Midgley, 1989; Eccles et al, 1993). This research generally uses cross-sectional data.

Witherspoon and Ennett (2011) conducted a cohort-sequential longitudinal study for students in grades 6 through 12. Recruited from schools across rural North Carolina, 3,312 students participated in the study. Grade level was used as a measure of time. Responses were collapsed to create a cohort of 6th grade responses, a cohort of 7th grade responses, etc. Using a questionnaire assessing the degree that students felt their school was like a community, researchers found that school belonging did initially decrease during the transition to high school in the 9th grade year. However, unlike studies on middle schoolers, high school students' sense of belonging then began to increase over the remainder of high school.

Gillen-O'Neel and Fuligni (2013) sought to address the gap in longitudinal studies by analyzing reported belonging of urban high school students over 4 years. They followed 572 students from diverse backgrounds enrolled across different urban high schools across all four years of high school. In that study, ninth-grade girls reported a higher sense of belonging than ninth-grade boys, consistent with prior findings comparing sense of school membership by

gender. However, over the course of high school, girls' sense of belonging decreased, while boys' remained relatively stable. Longitudinal studies measuring cohorts across all four years of high school remain rare (Korpershoek et al., 2019).

Sense of School Membership – A Modifiable Risk Factor?

A growing body of literature focuses on identifying assets, protective factors, and modifiable risk factors to enhance achievement among individuals from disadvantaged backgrounds. Beginning with Werner's (1984) theory of resilience in children and a strengths-based model of resilience and continuing with Finn's (1989) development of models for interrupting school withdrawal and drop-out to McMillan et al.'s (1992) meta-analysis concentrating on effective programs that help at-risk youth experience success there has been a focus on understanding the factors that contribute to student success, especially at-risk student success. Finn and Rock's (1997) survey of 1,803 minority youth from the National Educational Longitudinal Study (NELS) (1988) underscores the potential of manipulating and enhancing academic engagement behaviors - such as coming to class and school on time, being prepared for and participating in class work, and completing assignments, and engaging positively in class - in increasing resilience. These theoretical frameworks posit the potential for interventions that increase student attachment to school as a way to decrease risk and increase positive student outcomes.

That engagement is malleable and responds to changes in the school environment is frequently asserted in the research. Fall and Roberts (2012) builds on Finn and Rock's findings, using the Education Longitudinal Study 2002-2004 with a cross-sectional sample of 15,362 10th grade student responses, they find that teacher support increases students' identification with

school. This increase in belonging then increases students' academic and behavioral engagement, which in turn, increases student achievement and reduces risk of drop out.

Fredricks, Blumenfeld, & Paris (2004) conduct a meta-analysis on the connection between student engagement and interventions. In many of the studies, research conducted is cross-sectional and has variable ways of defining engagement. Fredricks et al. note that there are multiple constructs related to engagement: behavioral, emotional, and cognitive. Thus a key area of opportunity in the existing literature is the need for longitudinal studies with validated instruments. They challenge the degree to which opportunities to intervene are demonstrated in the existing body of research. They assert that the relative absence of longitudinal studies leaves open questions in the literature about how responsive engagement is to changes in the educational environment (p. 74).

Students' sense of belonging is associated with their success and may be a modifiable factor for improving student outcomes for underperforming groups. Utilizing direct measures of student sense of belonging, through self-reported sense of school membership in combination with school administrative data allows for a closer study of the psychological dimensions of belonging in combination with student success measures.

CHAPTER III

METHODS

The study used extant data collected by school officials to examine the relationships between sense of school membership, attendance, behavior, and academic achievement as measured by grade point average, credit accrual, and on-time graduation of high school students in grades 9 through 12. This study answered the following three research questions:

1. How does student sense of school membership evolve over the high school experience?
2. What are the relationships between student sense of school membership and student characteristics?
3. What is the relationship between student sense of school membership and student success?

Setting

Data for this study were drawn from administrative data from a single, median sized high school in a small-city school district in Oregon. Serving approximately 1200 students, the student body is approximately 75% white and 25% students of color, and 20% of students identify as Hispanic/Latino. Socio-economic data indicate that 2 in 3 students are from low-income households. One in four students are mobile over the course of their high school experience. One in three adults in the surrounding community have a bachelor's degree or higher.

The school runs on an eight-period block schedule with four periods each school day. The school staff includes approximately 50 teachers, 15 educational assistants, 5 counselors, and

4 administrators. There is a slight demographic mismatch between staff and students, where 90% of staff are white compared to 75% of students.

Sources of Data

The data set includes all students enrolled in the school between September 2021 and April 2026. All individuals in the study were high school students between the ages of 14 and 18. The data set includes students' grade level, age, gender, self-reported sexual orientation, race, ethnicity, and special education status. In addition, the data set includes more limited information about academics prior to high school, such as which middle school the student attended.

Survey Based Measures of Belonging

A central aim of this study was to understand how students' sense of belonging in their school community develops across the high school years, including whether that experience differs across groups of students, and how belonging is associated with academic success. For high school students navigating significant academic and social transitions, the degree to which students feel they belong at school may be variable and impactful. Capturing this experience in a systematic and comparable way across students and over time requires a reliable, validated instrument.

The Psychological Sense of School Membership Scale (PSSM), developed by Goodenow (1993), is an 18-item instrument assessing students' perceived sense of belonging within their school community. The scale captures the degree to which students feel accepted, respected, included, and supported by others in their school environment. Responses are recorded on a 4-point Likert scale (1 = *strongly disagree*, 4 = *strongly agree*). Five items are negatively worded and are reverse coded prior to computing composite scores, so that higher scores consistently reflect a stronger sense of belonging.

School leaders selected the PSSM for several reasons. First, it is among the most widely used and validated instruments for assessing school belonging in adolescent populations, with strong evidence of reliability and construct validity across diverse school settings (Goodenow, 1993; Hagborg, 1994). Second, its item content maps directly onto the theoretical dimensions of belonging most relevant to high school students, including feelings of peer acceptance, identification with school, and teacher support (Ye & Wallace, 2014). Third, the PSSM has been used extensively in research linking school belonging to academic motivation, engagement, and persistence, establishing it as a useful measure in contexts such as the one examined here. These characteristics make it well suited for examining how belonging evolves across the high school years. The school administered the PSSM to all students in attendance each fall and spring semester since fall 2021, providing a panel of belonging measures across the student population over time. Participation is voluntary. See Appendix A for the full item list and additional psychometric details.

Oregon Healthy Teen Selected Questions. In addition to the PSSM questions that are the focus of this dissertation, students also rated their physical and mental well-being, and had the opportunity to identify a caring adult at school and at home by name. Students rated physical and mental well-being on a five-category rating scale from *poor* to *excellent*.

Student Success Measures

Students' success was measured using student attendance rate, grade point average, credit accrual, and when available, on-time graduation status.

Procedures

Procedures for RQ1. How does student sense of school membership evolve over the high school experience?

A unique feature of the data used for this analysis is that PSSM scores are observed for the same student over time as they progress through high school. This allowed for a novel analysis of how PSSM scores evolve over the high school experience. I first document maturation effects by showing how average PSSM composite scores evolve over time. This is shown using a line graph where the x-axis is the time each of the [up to] 8 measures of PSSM composite scores were measured (e.g., freshman fall, freshman spring, …, senior spring) and the y-axis is the average value of the PSSM composite score. One downside of this approach is that the set of students used to compute each average will differ. For example, students who were seniors in the 2021-22 school year are only be included in the senior fall and senior spring averages. To disentangle this effect, I also show separate line graphs for the 5 cohorts where fall and spring measures are available.

In all of these figures, I report 95% confidence intervals around each estimated average. These provide information about the precision of each estimate, which inform whether changes over time can be differentiated from noise.

Procedures for RQ2. What is the relationship between student sense of school membership and student characteristics?

An important question in the literature on student belonging is how belonging is affected by student characteristics such as gender, race, and ethnicity. I study these differences by repeating the above analysis separately by gender and race (due to the constrained number of students in the different non-white identities, I compare white to non-white students' self-

reported sense of belonging). Given the comprehensive nature of the data, I also study differences by disability status and students' self-reported sexual orientation.

Procedures for RQ3. What is the relationship between student sense of school membership and student success?

I estimate the descriptive relationship between student sense of school membership and student success using the following linear regression:

$$y_{ig} = PSSM_{ig} + X_{ig} + E_{ig}$$

The outcome y_{ig} is a measure of school success, including student i's attendance rate, grade point average, and credit accrual in grade g. For students who are observed through their senior year, on-time graduation status is also be considered. $PSSM_{ig}$ is the student's PSSM composite score in the fall of school year g and is the primary dependent variable of interest. X_{ig} is a set of control variables about student i. E_{ig} is the unexplained residual portion of student success.

The primary coefficient of interest is the association between students' PSSM composite scores and their school success. Importantly, the results of this analysis should be interpreted as an association rather than a causal effect because unmeasured factors may influence both belonging and success outcomes. Understanding the descriptive relationship between sense of school membership and student success is valuable as it establishes whether the patterns observed in this school are consistent with the broader literature. Further it identifies which student groups may be most in need of targeted support.

CHAPTER IV

RESULTS

Participation Analysis

The sample for the current study included students who participated in 1, 2, 3, or all 4 years of the study. Out of the 3,262 students enrolled over the data collection period, 72% of students responded to at least one survey measure of the possible eight administration windows (n = 2,349). Participants could enter the study during different years of data collection. This is depicted in Table 1.

Table 1

Survey Responses by Data Collection Period and Graduation Cohort

Grade		Grade 9		Grade 10		Grade 11		Grade 12	
	n	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
2022	298							154	88
2023	347					180	144	88	77
2024	427			202	176	146	94	122	99
2025	489	236	184	148	116	137	147	101	84
2026	520	195	142	139	186	200	178	149	88
2027	446	178	214	236	233	215	159		
2028	403	236	215	223	173				
2029	332	257	193						

Note. Values are omitted where it is not possible for students to complete the survey given the data collection period and their enrollment in the school at that time period.

Participants in the 2024 and 2025 graduation cohorts who were continuously enrolled had the potential to participate in the study all four years of high school, whereas participants in the graduation cohorts of 2022, 2023, and 2026 through 2029 had fewer possible administration periods to participate. In Table 2, I summarized the distribution of survey respondents across demographic characteristics by grade level. I conducted a series of two-sample t-tests to assess if the proportion of respondents differed significantly by demographic characteristics.

Table 2

Survey Participant Differences by Race, Ethnicity, Gender, and Disability Status

Grade	Grade 9		Grade 10		Grade 11		Grade 12	
PSSM	Yes	No	Yes	No	Yes	No	Yes	No
n	1306	1186	1168	1009	1044	762	765	620
White	0.95	0.93	0.95	0.93	0.95	0.94	0.94	0.94
Hispanic	0.16	0.18	0.16	0.18	0.15	0.19	0.14	0.18
Special Education	0.08	0.08	0.07	0.09	0.06	0.09	0.04	0.09
Female	0.47	0.47	0.49	0.47	0.50	0.46	0.54	0.45
Male	0.53	0.53	0.51	0.53	0.50	0.54	0.46	0.55

White students had a slightly higher response rate in 9th and 10th grades than students of color. By senior year, response rates were comparable by race. Hispanic students were over-represented in non-responses across all reporting periods. Students with disabilities were equally

represented in responses and non-responses in grade 9. By senior year, students with disabilities responded at much lower rates. Female students had high rates of response and were more likely to participate than not in every reporting period.

LGBTQ status was only able to be counted for students completing the survey at least once over the data collection period. Based on self-report, 18% of students reported that they identified as part of the LGBTQ community at least once in the demographics section of the student survey. For this reason, no comparison is available for participants versus non-participants by this demographic characteristic.

Table 3

Survey Participant Differences by GPA, Enrollment Duration, and Attendance

Grade	Grade 9		Grade 10		Grade 11		Grade 12	
PSSM	Yes	No	Yes	No	Yes	No	Yes	No
n	1306	1186	1168	1009	1044	762	765	620
GPA	2.66	1.69	2.80	1.67	2.77	1.90	3.01	2.40
Days Enrolled	156.51	112.72	156.42	102.16	155.26	93.26	154.72	91.70
Attendance Rate	90	84	88	80	87	76	85	72

Survey participants did differ based on key outcome indicators, including grade point average, enrollment duration, and attendance rate, with students in the non-response category having lower GPAs, shorter enrollment duration, and lower attendance.

RQ1. How does student sense of school membership evolve over the high school experience?

The first goal of this study was to examine students' sense of belonging over high school. I documented maturation effects by showing the average PSSM composite scores over time. Figure 1 used all available responses. As a result, the sample composition changed across administration periods based on both the opportunity to participate for that administration period and availability of responses.

Figure 1

Psychological Sense of School Membership Across High School

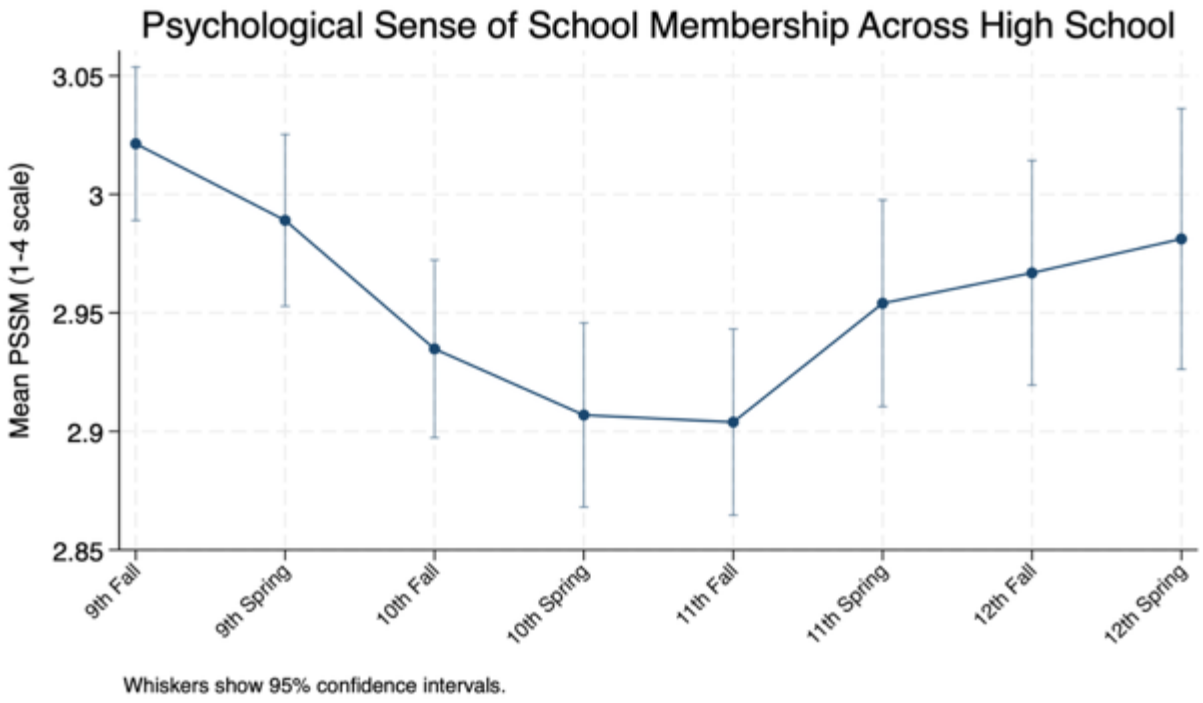


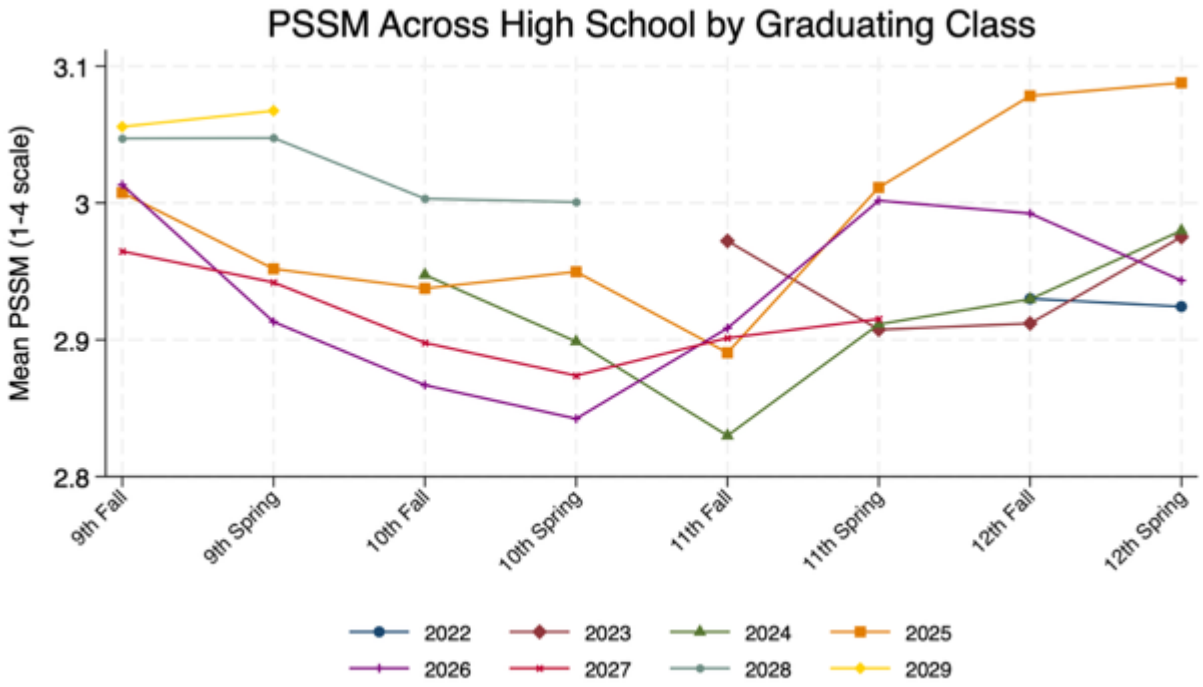
Figure 1 graphs the Psychological Sense of School Membership (PSSM) scale mean score across the 2021 through 2026 cohorts for a given administration period by grade level. Student sense of belonging on average was highest in the fall of 9th grade, just above a composite mean score of 3.02, *SD* = 0.55. Belonging decreased in the 10th and 11th grade years,

with the lowest reported average composite score of 2.90, *SD* = 0.59. Student sense of belonging then gradually increased over the remainder of high school, ending 12th grade with an average composite PSSM score of 2.98, *SD* = 0.59. An analysis of variance (ANOVA) was conducted to examine whether participant responses differed by cohort year. Results indicated a statistically significant effect of grade level on students' sense of belonging ($F(3, 2360) = 5.03$, $p < .01$).

An additional goal of the study was to check for possible variations in belonging based on cohort. Figure 2 shows the mean PSSM composite for each reporting period by graduating class year.

Figure 2

Psychological Sense of School Membership Across High School by Graduating Class



The trajectory of belonging was relatively consistent across cohorts with comparatively higher starting values in grade 9, a gradual decline in grade 10, a turnaround in 11th grade fall or spring, followed by a gradual increase in grade 12.

There was also a statistically significant variation in student sense of belonging by cohort year ($F(7, 2360) = 2.34$, $p = .02$). The class of 2029 had the highest starting value for 9th grade fall ($M = 3.06$, $SD = 0.55$), compared to the class of 2027's lowest starting value for 9th grade fall ($M = 2.91$, $SD = 0.58$). The class of 2024 had a minimum value of 2.83 in fall of 11th grade, compared to a minimum value of 2.89 in fall of 11th grade for the class of 2025. The class of 2025 has the highest ending 12th grade score of 3.08, compared to the class of 2022's lowest ending value of 2.92.

The class of 2029 had the highest sense of belonging with an average PSSM score of 3.06 ($SD = 0.55$), with data for only the 9th grade year. The class of 2028 had the next highest sense of belonging with an average PSSM score of 3.03 ($SD = 0.55$), with data for grades 9 and 10 only. The class of 2025 had the third highest sense of belonging with an average PSSM score of 2.98 ($SD = 0.57$) with data from all time periods grades 9 through 12. The class of 2026 had the fourth highest sense of belonging with an average PSSM score of 2.94 ($SD = 0.59$), with data from all time periods grades 9 through 12. The class of 2024 had the fifth highest sense of belonging, with an average PSSM score of 2.91 ($SD = 0.62$) but was missing data from students' 9th grade year. The class of 2027 also had a PSSM average composite score of 2.91 ($SD = 0.58$) and was missing data from students' 12th grade year. The class of 2023 took the PSSM for two school years, the 11th and 12th grade year, with an average PSSM composite of 2.94 ($SD = 0.60$). The class of 2022 took the PSSM for one school year, during the 12th grade, with an average PSSM composite of 2.93 ($SD = 0.58$).

RQ2. What is the relationship between student sense of school membership and student characteristics?

The second goal of this study was to examine student's sense of belonging over high school by demographic characteristics. Race, ethnicity, gender, LGBTQ, and disability status were considered.

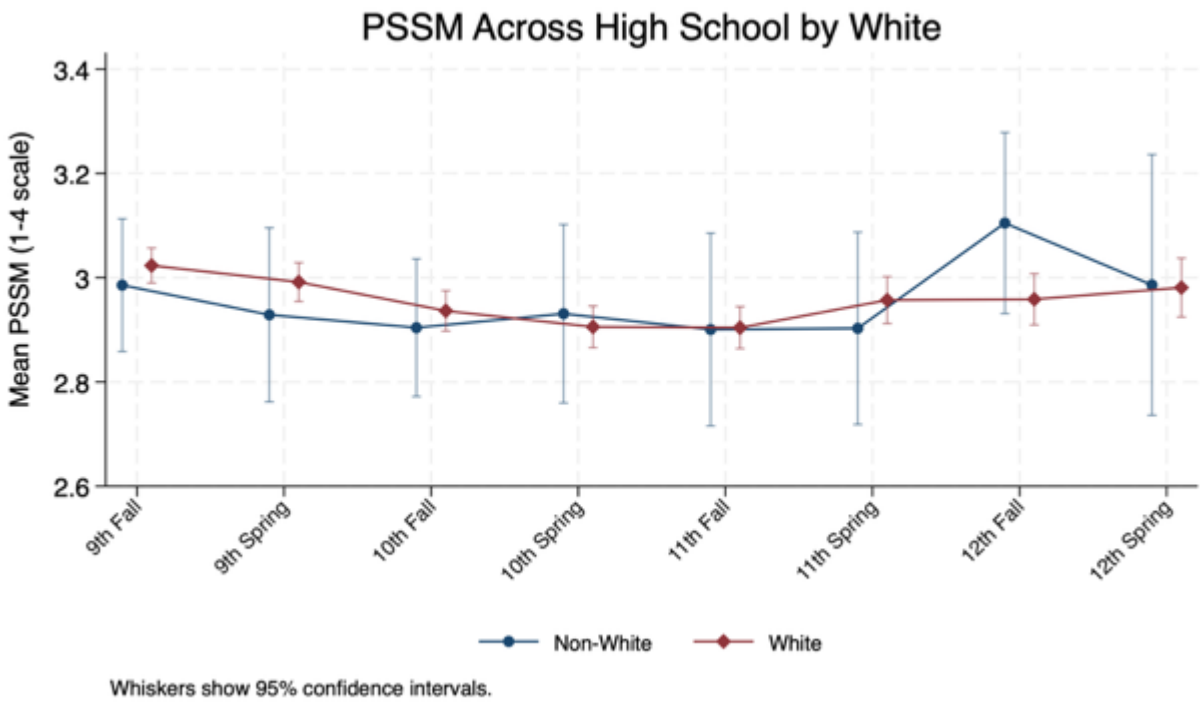
Race/Ethnicity

Although I had planned to compare PSSM by race, small sample sizes in some of the different racial groups made this untenable. For instance, there were a total of 170 Black students in the sample compared to 2,954 white students, with no graduating cohort having more than 33 Black students. Thus, for these comparisons, I collapsed student belonging to all non-white racial and ethnic groups into a single comparison group to compare white to non-white student responses.

Figure 3 depicts the mean Psychological Sense of School Membership score at each reporting period by race. Both white and non-white students began their 9th grade year with an average PSSM score near 3, with white students reporting just above, and non-white students reporting just below that number. Grade level trends were seen by both white and non-white participants. The reported PSSM of students of color was above white students at three time periods - during spring of 10th grade, and during both fall and spring of 12th grade. Analysis of variance was used to determine if the trends by race were significantly different. There was a marginally significant difference in trends during high school by race. ($F(3, 2362) = 2.12$, $p = .10$).

Figure 3

Psychological Sense of School Membership Across High School by Race – white v. non-white



Note. Race was dummy coded such that *non-white* = 0 and *white* = 1.

Because the sample included a sufficient number of Hispanic students, I was able to compare PSSM scores for Hispanic versus white students. In this study, Hispanic was the largest ethnic minority within the school relative to a white racial majority.

Figure 4

Psychological Sense of School Membership Across High School by Ethnicity – Hispanic v. white

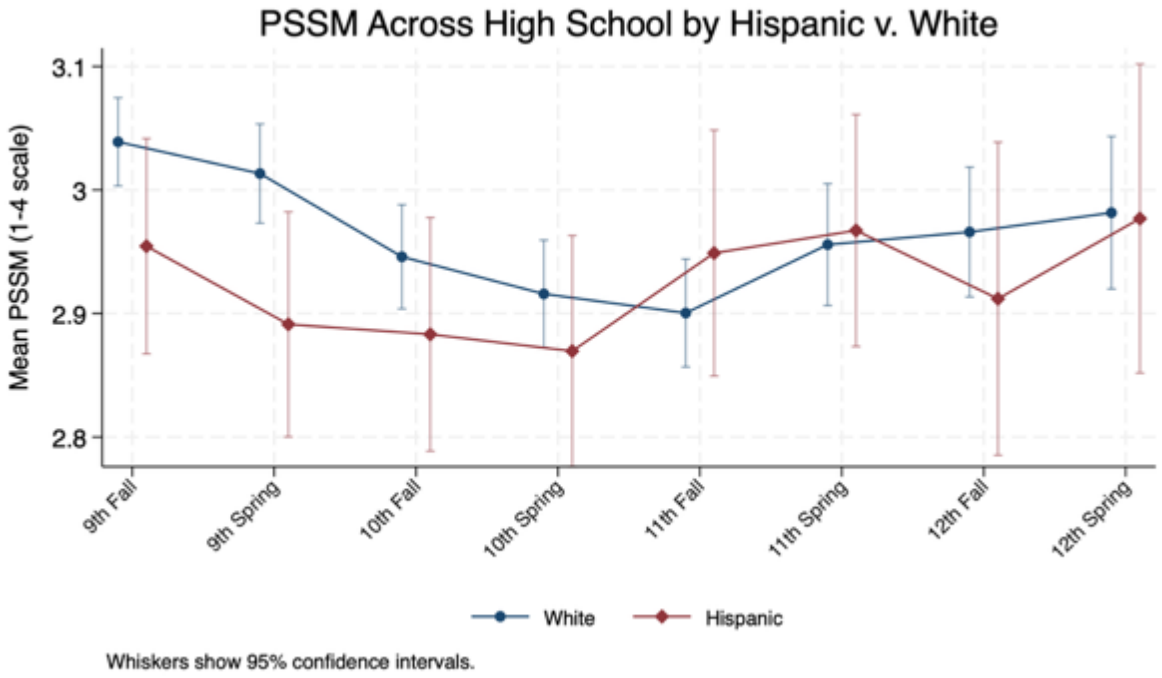


Figure 4 shows the variation in means for Hispanic students' PSSM score relative to white students' self-reported PSSM. In the 9th grade year, there was a significant difference in student sense of belonging by race/ethnicity ($F(1, 2278) = 6.02$, $p = .01$). PSSM scores began to converge by the end of high school, where Hispanic and white scores both ended at a mean of 2.97 ($SD = 0.49$ and 0.59, respectively).

Gender

Previous studies have reported gender as a meaningful source of variation in student sense of belonging. In this sample, I observed a marginally significant difference in sense of school membership for female students at the start of high school ($F(1, 2362) = 3.21$, $p = .07$) and no significant difference in female sense of belonging in senior year relative to male students ($F(1, 2362) = 3.03$, $p = .11$). The trend for mean PSSM score by gender is displayed in Figure 5.

Figure 5

Psychological Sense of School Membership by Gender – female v. male

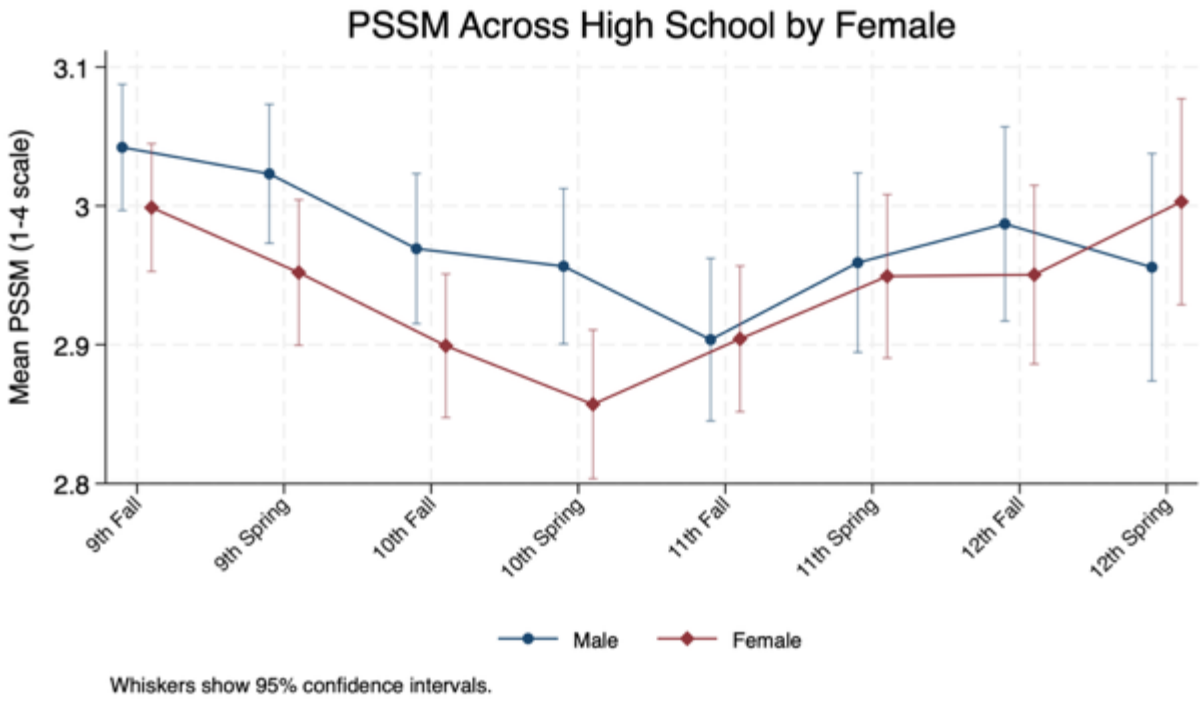


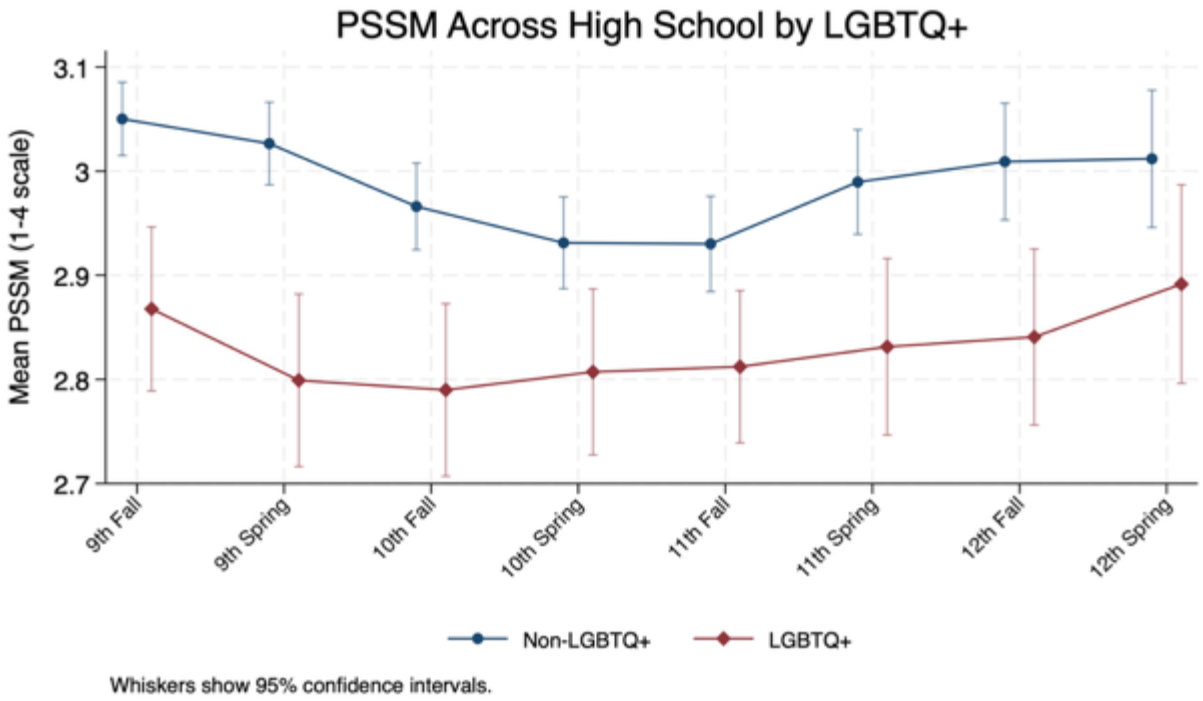
Figure 5 shows that at the start of high school female students reported a relatively lower sense of school membership. PSSM fell for both male and female students through spring of 10th grade, when PSSM began to increase. By the final reporting period in senior year, female students had no significant difference in PSSM relative to their male counterparts.

LGBTQ

In addition, I was able to examine the relationship between LGBTQ identification and sense of belonging. As predicted, I observed that PSSM scores for LGBTQ+ identifying students was significantly lower than their peers ($F(1, 2362) = 22.94$, $p < .01$). This persisted across all periods (see Figure 6).

Figure 6

Psychological Sense of School Membership Across High School by LGBTQ+ Status

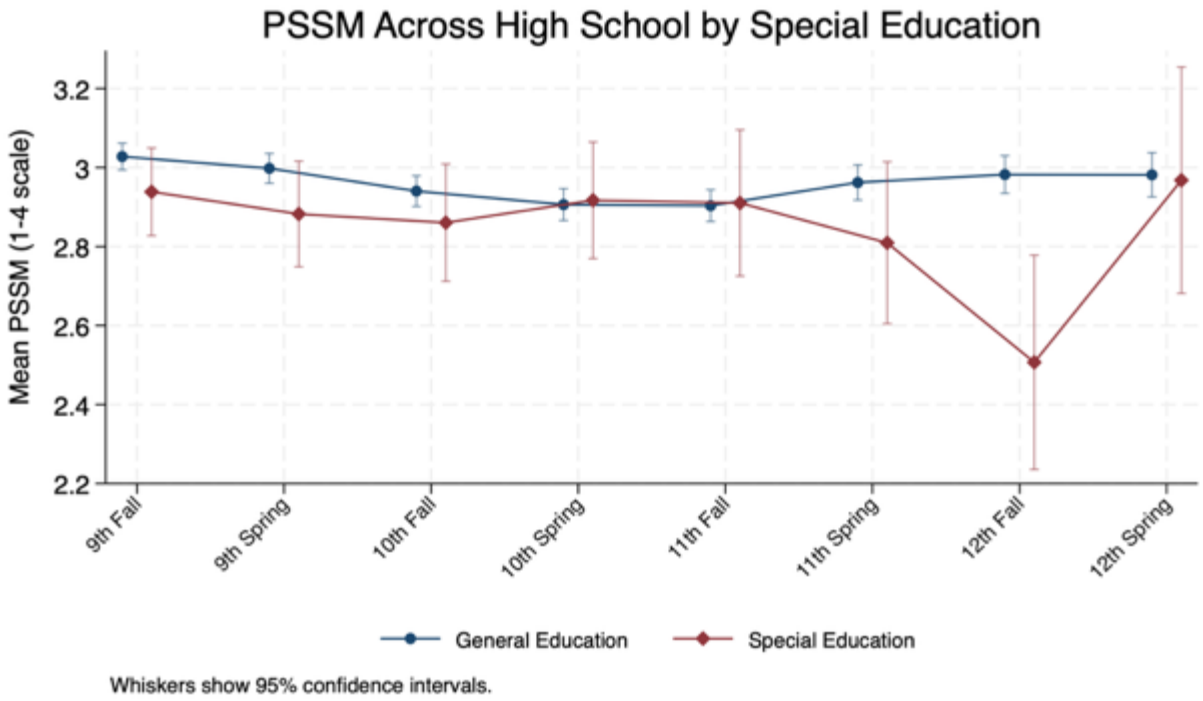


Disability

The sample excluded students served in special programs co-located but not operated by the school district in this study (e.g., Life Skills). Students who were receiving special education services in high school were identified as *students with disabilities* in the data set. These students were served at least part of the day in the general education setting alongside their general education peers. As depicted in Figure 7, students receiving special education services have a 0.18 lower reported PSSM average.

Figure 7

Psychological Sense of School Membership Across High School by Disability Status



This difference was marginally statistically significant ($F(1, 2362) = 3.47$, $p = .06$).

RQ3. What is the relationship between student sense of school membership and student success?

Persistence in Belonging

The final goal of this study was to examine the relationship between student sense of belonging and student success. First, I analyzed the relationship between baseline PSSM, reported in fall of 9th grade, on future PSSM, finding a persistent, predictable relationship in PSSM for a student over time (see Table 4).

Table 4

Persistence of Psychological Sense of School Membership Across High School

Grade	Grade 10	Grade 11	Grade 12
Panel A. Baseline			
PSSM (9th Grade)	0.560***	0.475***	0.355***
	(0.039)	(0.056)	(0.065)
R^2	0.269	0.209	0.217
N	669	439	203

Grade	Grade 10	Grade 11	Grade 12
Panel B. with Health Controls			
PSSM (9th Grade)	0.454***	0.410***	0.286***
	(0.041)	(0.055)	(0.067)
R^2	0.361	0.267	0.339
N	669	439	203

Note. Robust standard errors in parentheses. * $p < .05$. ** $p < .01$. *** $p < .001$.

All models include graduation year fixed effects and control for gender, race/ethnicity, special education status, LGBTQ+ status (set to zero when missing, with missing indicator), 8th grade attendance rate, and number of schools attended in 8th grade. Panel B adds contemporaneous mental and physical health controls (set to zero when missing, with missing indicators included). Controlling for contemporaneous health factors, I found that the effects were persistent ($p < .001$ for each grade level). There was some reduction in coefficients from Panel A to Panel B, suggesting that some of the variation in PSSM over time is associated with students' mental and physical health.

This analysis shows that baseline PSSM is correlated with future PSSM. A one-point increase in fall of 9th grade PSSM is associated with a 0.45 increase in 10th grade PSSM score. Even by senior year, baseline PSSM is associated with a 0.29 increase in 12th grade PSSM.

Belonging and Student Success

I calculated regression coefficients to examine the relationship between student belonging at the start of high school on later school success.

Table 5

Correlation Between Baseline Psychological Sense of School Membership and Long-Run Student Success Outcomes – GPA and On-Time Graduation

	Grade 9 GPA	Grade 10 GPA	Grade 11 GPA	Grade 12 GPA	Graduated
Panel A. Baseline					
PSSM (9th Grade)	0.437***	0.274***	0.324***	0.209*	0.103
	(0.052)	(0.062)	(0.071)	(0.094)	(0.055)
R^2	0.366	0.321	0.279	0.209	0.224
N	1183	872	566	333	238

Grade	Grade 9 GPA	Grade 10 GPA	Grade 11 GPA	Grade 12 GPA	Graduated
Panel B. with Health Controls					
PSSM (9th Grade)	0.369***	0.194***	0.267***	0.131	0.069
	(0.058)	(0.062)	(0.074)	(0.092)	(0.051)
R^2	0.374	0.386	0.314	0.276	0.353
N	1183	872	566	333	238

Note. Robust standard errors in parentheses. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6

Correlation Between Baseline Psychological Sense of School Membership and Long-Run Student Success Outcomes – Attendance

	Grade 9 Attendance	Grade 10 Attendance	Grade 11 Attendance	Grade 12 Attendance
Panel A. Baseline				
PSSM (9th Grade)	0.025***	0.025*	0.054***	0.033
	(0.005)	(0.010)	(0.013)	(0.018)
R^2	0.498	0.310	0.243	0.171
N	1154	836	550	327

Grade	Grade 9 Attendance	Grade 10 Attendance	Grade 11 Attendance	Grade 12 Attendance
Panel B. with Health Controls				
PSSM (9th Grade)	0.022***	0.021***	0.038***	0.026
	(0.006)	(0.010)	(0.013)	(0.018)
R^2	0.520	0.377	0.310	0.212
N	1154	836	550	327

Note. Robust standard errors in parentheses. All models include graduation year fixed effects and controls for gender, race/ethnicity, special education status, LGBTQ+ status (set to zero when missing, with missing indicator), 8th grade attendance rate, and number of schools attended in 8th grade. Panel B adds contemporaneous mental and physical health controls (set to zero when missing, with missing indicators included). * $p < .05$, ** $p < .01$, *** $p < .001$

As predicted, baseline sense of belonging was positively and significantly correlated with multiple measures of academic success. A one unit increase in PSSM scores in fall of 9th grade was associated with a 0.44-point higher GPA in 9th grade. This relationship persisted over time. By senior year, a one-point increase in fall of 9th grade PSSM was associated with a 0.21 higher

GPA in senior year. Similarly, 9th grade fall PSSM was positively correlated with increases of approximately 2.5 to 5 percentage points in attendance.

PSSM was positively associated with on-time graduation, with a one-point increase corresponding to a 10.4 percentage point higher likelihood of graduating on time. Although substantively large, this estimate was not statistically significant at the .05 level ($p = .062$) and should be interpreted with caution.

CHAPTER V

DISCUSSION

The findings from my study highlight the importance of longitudinal tracking versus single point in time measures to control for grade level and cohort variation. I found a consistent pattern across cohorts that students experienced a decline in belonging until the mid-point of high school at which point belonging then began to increase. I also found variations by cohort year. Witherspoon and Ennett's 2011 longitudinal study on school belonging showed a decrease in 9th grade followed by subsequent increases over the course of high school. Although I similarly found that belonging did rebound over the course of high school, I did not find that the trend was strictly increasing. However, both Witherspoon and Ennett (2011) and the current study show that accounting for grade level differences is important when studying belonging.

Previous studies have reported gender as a meaningful source of variation in student sense of belonging. In this sample, I found female students reported lower levels of belonging at the start of high school relative to their male counterparts. I observed a marginally significant difference in sense of school membership for female students at the start of high school and no significant difference in female sense of belonging in senior year relative to male students. This study's findings were consistent with those reported by Gillen-O'Neel and Fuligni (2013), who similarly found that male and female sense of belonging converged by the end of high school. However, the current study and Gillen-O'Neel and Fuligni's 2013 study differ from prior studies where female students reported higher levels of belonging than male students.

In this study, there was a marginally significant difference in PSSM by race / ethnicity at the start of high school, with a convergence in belonging by the end of high school. The context of this single site study provides some evidence that the variations in belonging by race /

ethnicity may be connected to local variations in the relative share of the population. For example, Gillen-O'Neel and Fuligni (2013) found no variation by race/ethnicity, however, the sample in their study had no local racial majority. In the current study, where there was a significant local majority, the group in the racial majority initially had a higher relative sense of belonging than their local minority counterparts. However, this difference decreased over time, again highlighting the value of longitudinal data when studying student belonging.

In contrast to prior published work, this study provided two novel focal groups - LGBTQ identifying students and students with disabilities. As predicted, I observed that PSSM scores for LGBTQ+ identifying students were significantly lower than their peers. In contrast to many other sub-groups which saw diminishing differences in belonging over time, differences in LGBTQ students and their non-identifying peers remained over time. Students receiving special education services had a marginally lower sense of belonging than their general education peers. It appeared that this difference might be driven by 12th grade fall differences. Students with disabilities in the state of Oregon have substantially lower average graduation rates than their general education peers - 72% versus 83% as of 2025. Given the variation in participation rates by disability status, and the expected impact of non-responders, it is likely that this difference is understated.

Finally, the positive correlation between belonging and student success is consistent with prior research. Korpershoek et al.'s 2019 meta-analysis found correlations between belonging and different measures of student success: 0.18 with school grades, 0.16 with attendance, and 0.17 with graduation across studies. In this study, I also found meaningful and substantial connections between belonging and GPA, attendance, and on-time graduation. A one-point increase in PSSM was associated with a 0.44-point increase in GPA in 9th grade, a 2 to 5

percentage point increase in attendance, and a 10-percentage point increase in on-time graduation.

Implications for Practice - At This School Site

These data provide important insight into areas of strength in establishing connection and belonging between students and school. For example, while several demographic characteristics started off as significant in the early years of high school, there was convergence in belonging over time by race/ethnicity and gender. This finding suggests that current strategies to support belonging and connection were successful in connecting students from these groups to school, teachers, and peers. In contrast, persistent gaps in belonging for LGBTQ identified youth identify an area in need of improvement.

An existing strategy in place at the school site that may positively support student belonging at the 9th grade level in particular is a universally scheduled freshman support classes focused on developing high school navigational knowledge such as how to read a transcript and credits required for graduation; self-advocacy skills like signing up for academic support, emailing teachers, and utilizing school based resources such as counseling and academic tutoring; and embedded literacy and language supports including targeted vocabulary development, note taking skill building, and explicit study skills instruction. Trends in the trajectory of belonging over years in high school highlight possible opportunities to improve 10th grade student experience. Extending this course into the 10th grade year whether universally or by criteria referenced placement may help support students' sense of belonging as they transition through the 10th grade year, reducing the drop in student belonging seen in this study.

When considering the convergence in belonging of certain sub-groups over the course of the high school experience, possible interventions in place at the school site include student led

affinity spaces including a Black Student Union (BSU), Latino Student Union (LSU), and Gender-Sexuality Alliance (GSA). These groups are further supplemented by a Women's Empowerment Club, Faith Alliance, and Student Voice leadership group open to any student interested in positively contributing to an inclusive campus culture. Collectively, these groups plan and organize all school and affinity focused events.

In addition to identify affirming spaces within the school that elevate student leadership, the school has a schoolwide statement on belonging available on the school website with named anti-bias policies and reporting mechanisms. This may contribute to an environment where students feel safe at school and supported by school staff, increasing student sense of belonging for historically marginalized student populations.

Perhaps unsurprisingly, cohorts with access to traditional high school experiences (e.g., the Class of 2025) appeared to have higher overall levels of belonging than cohorts that experienced disrupted learning due to distance learning protocols during the COVID-19 pandemic (e.g., the Class of 2022). Examples of embedded practices in place at this school site include positive behavior intervention and support teaming as described by the Center on PBIS tiered implementation fidelity check-list (Center on PBIS, 2025), elected associated student body representatives responsible for implementing student developed pep assemblies, spirit events, and activities designed by students to foster school pride and positive campus climate.

In this study, I observed that the association between sense of belonging and senior success outcomes is weaker for both GPA and on-time graduation, and not statistically significant for attendance. At this site, seniors are frequently scheduled less than full-time. This may have contributed to the weaker relationship observed between belonging and attendance for senior students.

Implications for Practice - For Schools in General

Schools continually seek to improve outcomes for all students. Overall, this study provides positive evidence that student belonging is an important predictor of student success in high school. Using survey measures that allow staff to monitor individual student responses can provide insight into individual student experience. Internally identified data allows staff to target individual interventions and supports to enhance student belonging, for example inviting students to connect with counselors, academic coaches, or peer leaders. Using survey measures where students self-disclose identity groups allows staff to disaggregate the data by student sub-group – creating opportunities for school staff to develop local theories of action and intervention. Using a consistent survey measure over time allows local school staff to monitor effectiveness of interventions on individual students, on focal student groups, and on the student body as a whole. Using disaggregated data of student experience provides a nuanced and holistic picture of student experience and offers insight for schools seeking to improve outcomes for sub-groups within the local school population. Students' sense of belonging is a leading indicator of future academic success, and thus can be used to inform professional collaboration, learning, and problem solving. Utilizing validated measures to individually assess student sense of belonging might serve as an important early warning measure of risk. Collectively, these data can be used to identify focal populations for interventions and support; individually, these data can help match students to interventions and supports.

Limitations and Opportunities for Future Research

This study offers important insights into the value of longitudinal data when studying student belonging. This study provides limited discussion of the impact of mobility or changes in cohort composition on belonging. For example, approximately 1 in 4 students in the sample is

mobile and does not remain enrolled at the school site for all four years of high school. It may be the case that these early leavers have lower belonging. This study does not explore this specific sub-group of mobile students.

This study does describe overall student outcomes among responders versus non-responders. Non-responders tended to have lower attendance, shorter enrollments, and lower GPAs. For this reason, it is likely that any correlations found among responders are understated on the assumption that non-responders and early leavers are disproportionately negatively selected on our outcomes of interest.

Student outcomes, including attendance, GPA, and graduation are observed for all students in the school. However, to be included in the correlation calculations comparing student outcomes to belonging, students were required to be observed in at least two survey response periods. Future research that includes interviews with students to better understand how belonging and connection to school are formed can further enhance our understanding of the correlations observed in this study.

Future research comparing longitudinal data across sites would offer insight into which of the trends described are a reflection of local culture and which variations may, in fact, be persistent across contexts. Identifying specific interventions or affiliations - such as presence of affinity groups, or participation in athletics - that enhance student sense of belonging could further enhance practitioners' ability to incorporate these data into actionable practice.

REFERENCES

Allen, K., Kern, M. L., Vella-Brodrick, D., Hattie, J., & Waters, L. (2018). What schools need to know about fostering school belonging: A meta-analysis. *Educational Psychology Review, 30*, 1–34. https://doi.org/10.1007/s10648-016-9389-8

Berthelon, M., Bettinger, E., Kruger, D. I., & Montecinos-Pearce, A. (2019). The structure of peers: the impact of peer networks on academic achievement. *Research in Higher Education, 60*(7), 931-959.

Cauley, K. M. & Jovanovich, D. (2006) Developing an effective transition program for students entering middle school or high school, *The Clearing House: A Journal of Educational Strategies*, *Issues and Ideas, 80*(1), 15-25, https://doi.org/10.3200/TCHS.80.1.15-25

Center on PBIS. (2025). Tiered Fidelity Inventory (TFI) manual. University of Oregon. https://www.pbis.org

Cobb, F. & Krownapple, J. (2019). Belonging through a culture of dignity: The keys to successful equity implementation.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*(1988), S95–S120. https://doi.org/10.1086/228943

Comer, J. P. (1984). Home-school relationships as they affect the academic success of children. *Education and Urban Society*, *16*(3), 323–337. https://doi.org/10.1177/0013124584016003006

Centers for Disease Control Division of Adolescent and School Health (2009). *School connectedness: Strategies for increasing protective factors among youth.* U.S. Department of Health & Human Services. Last reviewed November 21, 2019.

Dee T. S. (2024). Higher chronic absenteeism threatens academic recovery from the COVID-19 pandemic. *Proceedings of the National Academy of Sciences of the United States of America*, *121*(3), e2312249121. https://doi.org/10.1073/pnas.2312249121

Eccles, J. S., & Midgley, C. (1989). Stage/environment fit: Developmentally appropriate classrooms for early adolescents. In R. Ames & C. Ames (Eds.), Research on motivation in education: Vol. 3. Goals and cognitions (pp. 139–186). Academic Press.

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist*, *48*(2), 90–101. https://doi.org/10.1037/0003-066X.48.2.90.

Education Data Center. (2025, December 19). *2025 summary: ELA & math proficiency changes post-pandemic*. State Test Score Results. https://statetestscoreresults.substack.com/p/2025-summary-ela-and-math-proficiency

Fall, A. M., & Roberts, G. (2012). High school dropouts: Interactions between social context, self-perceptions, school engagement, and student dropout. *Journal of Adolescence, 35*(4), 787–798. https://doi.org/10.1016/j.adolescence.2011.11.004

Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research, 59*(2), 117–142. https://doi.org/10.3102/00346543059002117

Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology, 82*, 221–234. doi:0021-9010/97/

Fredricks, J.A., Blumenfeld, P.C., & Paris, A.H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59-109. https://doi.org/10.3102/00346543074001059

Flowers, N. & Mertens, S.B. (2003). Middle school practices improve student achievement in high poverty schools. *Middle School Journal, 35*(1), 33-43.

Flowers, N., Mertens, S.B., and Mulhall, P. (1999). The impact of teaming: Five research-based outcomes. *Middle School Journal 31*(2). *https://doi.org/10.1080/00940771.1999.11494619*

Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology, 95*(1), 148–162. https://doi.org/10.1037/0022-0663.95.1.148

Gillen-O'Neel, C., & Fuligni, A. (2013). A longitudinal study of school belonging and academic motivation across high school. *Child Development, 84*(2), 678–692. https://doi.org/10.1111/j.1467-8624.2012.01862.x

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30,* 79–90. https://doi.org/10.1002/1520-6807(199301)30:1

Goodenow, C., & Grady, K. E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *The Journal of Experimental Education*, *62*(1), 60–71. https://doi.org/10.1080/00220973.1993.9943831

Johnson, M. K., Crosnoe, R., & Elder, G. H. (2001). Students' attachment and academic engagement: The role of race and ethnicity. *Sociology of Education, 74*(4), 318–340.

Korpershoek, H., Canrinus, E. T., Fokkens-Bruinsma, M., & de Boer, H. (2019). The relationships between school belonging and students' motivational, social-emotional,

behavioural, and academic outcomes in secondary education: A meta-analytic review. *Research Papers in Education, 35*(6), 641–680. https://doi.org/10.1080/02671522.2019.1615116

Lee, V. E., Bryk, A. S., & Smith, J. B. (1993). Chapter 5: The Organization of Effective Secondary Schools. *Review of Research in Education, 19*(1), 171–267. https://doi.org/10.3102/0091732X019001171

Legette, K. B., & Kurtz-Costes, B. (2021). Curricular tracking, students' academic identity, and school belonging. *Journal of Early Adolescence, 41*(7), 961–981. https://doi.org/10.1177/0272431620977659

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370–396. https://doi.org/10.1037/h0054346

McMillan, J., Reed, D., & Bishop, A. (1992) A qualitative study of resilient at-risk students: Review of Literature. Metropolitan Educational Research Consortium.

National Center for Education Statistics (2020). District Directory Information. US Department of Education. Retrieved June 6, 2022, from https://nces.ed.gov/ccd/districtsearch/district_detail.asp

Nichols, J. D., & White, J. (2001). Impact of peer networks on achievement of high school algebra students. *The Journal of Educational Research, 94*(5), 267-273.

Osterman, K. F. (2000). Students' need for belonging in the school community. Review of Educational Research, 70(3), 323–367. https://doi.org/10.3102/00346543070003323

Oregon Department of Education. (2025). *Accountability details report: [name of school withheld for confidentiality purposes].* https://www.ode.state.or.us/data/ReportCard/

Oregon Department of Education. (2022). Summer SEED survey report 2022. https://www.oregon.gov/ode/schools-and-districts/grants/Documents/Summer%20Learning/Past%20Reports/Summer%20SEED%20Survey%20Report%202022.pdf

Osman, A., Ydhag, C.C., and Mansson, N. (2021). Recipe for educational success: a study of successful school performance of students from low social cultural background. *International Studies in Sociology of Education 30(*4) 422-439 https://doi.org/10.1080/09620214.2020.1764379

Reid, K. C. (1981). Alienation and persistent school absenteeism. *Research in Education, 26*, 31-40.

Sinclair, M., Christenson, S., Evelo, D., & Hurley, C. (1998). Dropout prevention for youth with disabilities: Efficacy of a sustained school engagement procedure. *Exceptional Children 65*(1), 7-21. https://doi.org/10.1177/001440299806500101

Stanton-Salazar, R. D., & Spina, S. U. (2005). Adolescent peer networks as a context for social and emotional support. *Youth & Society, 36*(4), 379-417.

Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. *The Journal of Higher Education, 68*, 599–623.

Wallace, J.T. (2007). Effects of interdisciplinary teaching team configuration upon the social bonding of middle school students. *Research in Middle Level Education Online, 30*(5), 1-18, https://doi.org/10.1080/19404476.2007.11462038

Werner, E. E. (1984). Resilient children. *Young Children*, *40*(1), 68–72.

Williams, J. M., Bryan, J., Morrison, S., & Scott, T. R. (2017). Protective factors and processes contributing to the academic success of students living in poverty: Implications for counselors. *Journal of Multicultural Counseling and Development*, *45*(3), 183-200.

Witherspoon, D., & Ennett, S. (2011). Stability and change in rural youths' educational outcomes through the middle and high school years. *Journal of Youth and Adolescence*, *40*(9), 1077–1090. https://doi.org/10.1007/s10964-010-9614-6.

Ye, F., & Wallace, T. L. (2014). Psychological Sense of School Membership Scale: Method effects associated with negatively worded items. *Journal of Psychoeducational Assessment, 32*, 202–215. https://doi.org/10.1177/0734282913504816

Appendix A.

Psychological Sense of School Membership Scale Questions

Each of the 18 questions on the *Psychological Sense of School Membership Scale* are shown below.

- "I feel like a part of my school"
- "People at my school notice when I am good at something."
- *"It is hard for people like me to be accepted at my school."*
- "Other students in my school take my opinions seriously"
- "Most teachers at my school care about how I am doing."
- *"Sometimes I feel as if I don't belong in my school."*
- "There is at least one teacher or adult I can talk to in my school if I have a problem."
- "Other students at my school are friendly to me."
- *"Teachers here are not interested in people like me."*
- "I am included in lots of activities at my school"
- "I am treated with as much respect as other students in my school."
- *"I feel very different from most other students at my school."*
- "I can really be myself at my school."
- "Teachers at my school respect me."
- "People at my school know that I can do good work"
- *"I wish I were in a different school."*
- "I feel proud to belong to my school."
- "Other students at my school like me the way that I am."

Students respond to each question using a Likert scale with 1 corresponding to strongly disagree and 4 corresponding to strongly agree. The responses of italicized questions are reversed so that a higher number corresponds to a greater sense of school membership across all questions. A school membership scale is generated by taking the average of all of these responses.