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Relationships between Sense of Community and Academic Achievement: A Comparison among High School Students

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Abstract: This paper reports on a research study measuring the constructs of community and academic achievement and examining the relationship between them. The authors' research compares sense of community and academic achievement among 11th grade students attending three independent high schools in a southeastern US state. Implications for teachers of high school students are discussed.

Keywords: Sense of School Community, Academic Achievement, High School Students

RECENT RESEARCH REGARDING school effectiveness offers a number of suggested ways in which student achievement can be influenced by the overall characteristics of the school and classroom environments (e.g. Stoll, Fink & Earl, 2003; Huffman & Hipp, 2003; Rutter & Maughan, 2002). One recommendation in the literature to improve school effectiveness is to develop the concept of schools as communities, each with its own school climate and student support system.

Sense of Community

A school community is a learning environment where teamwork is prevalent, diversity is incorporated, and individuals care about, trust, and respect each other. Community members share a vision for the future of the school, a common sense of purpose, and a common set of values. Rovai, Wighting, and Lucking (2004) theorize that sense of community in an educational setting includes two underlying dimensions, which one can label social community and learning community. Social community represents the feelings of the community of students regarding their spirit, cohesion, trust, safety, interactivity, interdependence, and sense of belonging. Learning community consists of the feelings of community members regarding the degree to which they share group norms and values and the extent to which their educational goals and expectations are satisfied by group membership. Mitchell and Sackney (2000) define a learning community as “a group of people who take an active, reflective, collaborative, learning-oriented and growth-promoting approach towards the mysteries, problems and perplexities of teaching and learning” (p. 9). Tinto (1997) maintains that students require academic, social, and personal support from their school. This support, whatever its form, needs to be readily available and connected to other parts of the students' total school experience. Beneficial educational outcomes are also supported by Astin's (1984) theory of involvement, which suggests that students learn more when they are more involved

in both the academic and social aspects of the school experience. Consequently, learning has important social and cognitive dimensions and occurs most effectively when the school provides a positive social environment with a strong sense of community.

Sense of Community and Academic Achievement

Academic achievement can be measured in a number of different ways. According to the Center for American Progress (2006), over 50 different measures of student performance exist in the United States. Each state chooses its own standardized test to measure achievement, and individual school divisions may measure students using grade point averages and performance on school-designed tests. Alternative means of assessment such as portfolio review are used in some states. This wide variation across the nation may make it difficult for parents and teachers to gauge accurately how well their children are learning in comparison to their peers. While much of the literature points to the notion of increased academic achievement being associated with sense of community (e.g. Overbaugh & Lin, 2006; Wighting, 2006), few studies have directly explored this type of relationship. Furthermore a review of the literature revealed no published studies that utilized standardized measures to compare sense of community and academic achievement among high school students.

Purpose

The current study examines the relationship between sense of community and academic achievement among 11th grade high school students and explores implications for teachers. The researchers measured the sense of community within the institutions as a whole and compared the level of community to a measurement of academic achievement among students at three independent high schools. The purpose of this study is to examine these two constructs and to address the following research questions:

1. Is there a relationship between sense of community and academic achievement?
2. Are there any significant differences in either sense of community or academic achievement by gender?

Methodology

Participants

A nonrandom sample of 176 students from three independent high schools in Virginia participated in this study. Parental permission was obtained from each voluntary participant. Due to some respondents being unable to recall their PSAT scores ($n = 16$) or self-reporting scores that were outside the range of the sum of the three subparts (60 to 240) of the assessment ($n = 10$), 26 cases were not included in the dataset. Descriptive statistics for the final sample of students ($N = 150$) are presented in Table 1.

Table 1: Descriptive Statistics on Demographic Variables

Variable		<i>n</i>	%	Variable		<i>n</i>	%
School				Gender			
	A	32	21.3		Female	69	46.6
	B	42	28.0		Male	79	53.4
	C	76	50.7				
				Ethnicity			
Age					African-American	9	6.0
	13 - 14	1	0.7		Asian/Pacific Islander	4	2.7
	15 - 16	90	60.4		Caucasian	117	78.5
	17 - 18	58	38.9		Hispanic	4	2.7
					Other	15	10.1
<p><i>N</i> = 150. Only 149 participants divulged information about their ethnicity, 148 about their gender, and 149 about their age.</p>							

Instrumentation

Sense of community was measured using the *Classroom and School Community Inventory (CSCI)*, developed by Rovai, Wighting, and Lucking (2004). This valid and reliable instrument measures the construct of psychological sense of community on a school-wide basis; furthermore it is able to discriminate between classroom community and school community. The authors report an extensive collection of reliability and validity data, which is summarized below.

Internal consistency estimates of reliabilities for the classroom form and the school form using Cronbach’s coefficient alpha were .84 and .83 respectively. Additionally, internal consistency coefficients for the social community and learning community subscales of the classroom form were .90 and .87 respectively, and for the school form the coefficients were .85 and .82 respectively. This study incorporated the school form of the instrument. Stability estimates for each scale using Pearson *r* correlation coefficients and a two-week interval between pretest and posttest measurements were .91. The survey items are worded suitably for use with the target population, with a Flesch Reading Ease score of 81.1 on a 100-point scale (the higher the score, the easier it is to understand).

With this particular study examining the relationship between sense of community and academic achievement in 150 high school students, the overall internal consistency of the school form measure using Cronbach’s alpha was .84. The internal consistency coefficients for the social community and learning community subscales of the school form were .87 and .73 respectively. All reliability coefficients are above the accepted social science cut-off of .70 (Nunnally, 1978).

The construct of academic achievement was operationalized using the *Preliminary SAT/ National Merit Scholarship Qualifying Test (PSAT/NMSQT)*. In 2007, the *PSAT/NMSQT* was taken by more than 3.4 million students worldwide (College Board, 2008). Cosponsored by the College Board and the National Merit Scholarship Corporation, this valid and reliable

standardized test is designed to serve as a practice test for the *Scholastic Aptitude Test (SAT)* and to screen candidates for the National Merit Scholarship.

The *PSAT/NMSQT* assesses critical reasoning skills and encompasses three areas that are important for success in college: critical reading, mathematics, and writing skills (The College Board, 2008). Additionally, it is reported as having a moderate to strong correlation with key measures of academic success in high school, such as Advanced Placement (AP) participation and exam scores, overall grade point average, number of advanced courses taken in a particular subject area, etc. (College Entrance Examination Board, 1997; Ewing, Camara, & Millsap, 2006; Milewski & Sawtell, 2006). *PSAT/NMSQT* Scores are reported on a scale of 20 to 80 for each of the three areas assessed. In 2008, the average score for high school juniors nationwide was 47 in Critical Reading, 49 in Mathematics, and 46 in Writing Skills (for a total score of 142); and the average Selection Index for a National Merit Scholarship was a total score of 147 (College Board, 2008).

The most extensive study commissioned by the College Board to establish validity of the *PSAT/NMSQT* as a measure of high school academic success was conducted by Milewski and Sawtell (2006). Participants in the study were 857,375 students who took the *PSAT/NMSQT* during their junior year of high school. Findings revealed a moderate to strong correlation between *PSAT/NMSQT* scores and several key measures of academic success in high school, including the following: high school grade-point average, years of study within an academic area, rigorous course participation, academic intensity, and participation in Advanced Placement (AP) courses (Milewski & Sawtell, 2006). The strongest areas of correlation were between *PSAT/NMSQT* composite scores and academic intensity in math/science and humanities/social science ($r = .62$) and high school GPA ($r = .53$). Additionally, results indicated that taking more than four years of study in an academic subject area or participating in an honors course was associated with notably higher scores (as much as 15 points higher on the 20-to-80 *PSAT/NMSQT* composite score scale) (Milewski & Sawtell, 2006, p. 14).

Results

Test assumptions were evaluated prior to analysis. Boxplots were generated to screen the data for outliers and two extreme outliers were identified and removed. Assumptions for normality on the new dataset ($N = 150$) were evaluated using the Kolmogorov-Smirnov (K-S) test and revealed some deviations from normality. Because assumptions for normality were not met, the Spearman rho was used to evaluate the relationship between reported PSAT scores and student measures on the Total Sense of Community, Social Community, and Learning Community scales.

The self reported PSAT scores and Total Sense of Community scale for the whole data set ($N = 150$) indicated a slight positive (Spearman rho) rank-order correlation of $r_s = 0.17$ ($p = .03$), accounting for 3% of the variance. The scatterplot in Figure 1 demonstrates the slight positive linear relationship between the two variables. There was no correlation in the data set between PSAT scores and the subscales of Social Community and Learning Community. Intercorrelations are presented in a correlation matrix in Table 2.

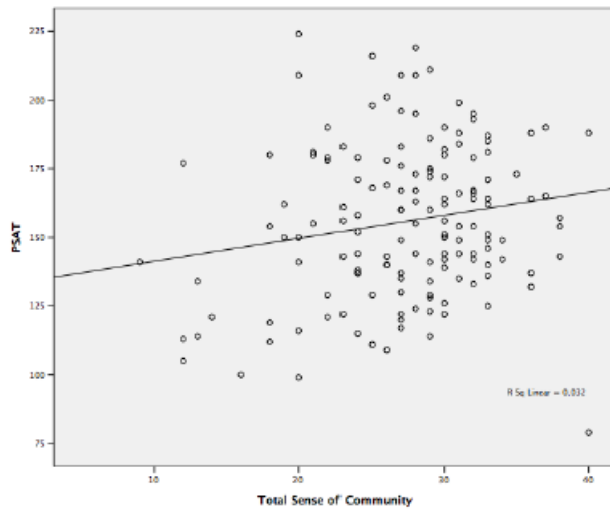


Figure 1: Scatterplot between Reported PSAT Scores and Total Sense of Community

Table 2: Spearman Rho Correlations between PSAT and Sense of Community Scores

Total Data Set (N = 150)	PSAT	Total Sense of Community	Social Community	Learning Community
PSAT	—	0.17*	0.12	0.13
Total Sense of Community		—	0.88**	0.75**
Social Community			—	0.39**
Learning Com- munity				—
<i>Note: *</i> Correlation is significant at the .05 level (2-tailed); <i>**</i> Correlation is significant at the .01 level (2-tailed)				

Three additional correlational analyses were conducted to evaluate the relationship between reported PSAT scores and student measures on the Total Sense of Community, Social Community, and Learning Community scales *by school*. The self reported PSAT scores and Total Sense of Community scale for School A indicated a moderate positive (Spearman rho) rank-order correlation of $r_s = 0.42$ ($p = .02$), accounting for 18% of the variance. The self reported PSAT scores and Learning Community subscale indicated a moderate positive (Spearman rho) rank-order correlation of $r_s = 0.56$ ($p < .01$), accounting for 31% of the variance. There was no correlation between PSAT scores and the Social Community subscale for School A. Intercorrelations are presented in a correlation matrix in Table 3.

Table 3: School A: Spearman Rho Correlations Between PSAT Scores and Sense of Community Scores

School A (<i>n</i> = 32)	PSAT	Total Sense of Community	Social Community	Learning Community
PSAT	—	0.42*	0.18	0.56**
Total Sense of Community		—	0.86**	0.74**
Social Community			—	0.34
Learning Community				—

Note: *Correlation is significant at the .05 level (2-tailed); **Correlation is significant at the .01 level (2-tailed)

There were no significant correlations in the data set for School B (*n* = 42) or School C (*n* = 76) between self reported PSAT scores and student measures of Total Sense of Community, Social Community, and Learning Community scales. Means and standard deviations on the variables according to schools are presented in Table 4.

Table 4: Descriptive Statistics on Variables by School

Dependent Variables	School A (<i>n</i> = 32)		School B (<i>n</i> = 42)		School C (<i>n</i> = 87)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PSAT	147.91	28.52	142.83	25.41	166.49	24.52
Total Sense of Community	24.91	6.43	27.36	5.57	28.57	5.70
Social Community	12.38	4.61	13.14	4.53	14.43	3.80
Learning Community	12.53	3.23	14.21	2.42	14.13	2.70

Note: PSAT scores can range from a low of 60 to a high of 240; Total Sense of Community scores can range from a low of 0 to a high of 40; Social Community and Learning Community scores can range from a low of 0 to a high of 20.

A one-way multivariate analysis of variance (MANOVA) was conducted to determine the effect of gender on students’ reported PSAT scores and measures on the Total Sense of Community, Social Community, and Learning Community scales. Despite some violations to normality, MANOVA are robust to moderate violations as long as they are due to skewness rather than extreme outliers (Grimm & Yarnold, 1995; Tabachnick & Fidell, 2001). Assumptions for homogeneity of variances were evaluated using Levene’s Test and were found tenable for each factor (*p* > .05). The one-way MANOVA revealed a non significant main effect, Pillai’s Trace = .02, *F*(3, 144) = 1.15, *p* = .33, multivariate η^2 = .02, indicating that there are no significant differences by gender on any of the four measures. Table 5 displays the means and standard deviations on the dependent variables for each gender.

Table 5: Descriptive Statistics on Variables by Gender

Dependent Variables	Female (<i>n</i> = 69)		Male (<i>n</i> = 79)		Total (<i>N</i> = 148)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PSAT	155.97	27.25	155.04	27.58	155.47	27.33
Total Sense of Community	28.28	5.34	26.78	6.41	27.48	5.97
Social Community	14.33	4.03	13.05	4.40	13.65	4.27
Learning Community	13.94	2.54	13.05	3.04	13.83	2.81

Note: PSAT scores can range from a low of 60 to a high of 240; Total Sense of Community scores can range from a low of 0 to a high of 40; Social Community and Learning Community scores can range from a low of 0 to a high of 20.

Discussion

The results of this small-scale study reveal a relationship between sense of community and academic achievement; overall a slight positive correlation exists between the two constructs.

Additionally, the results show that in one of the schools sampled (School A) there was a moderate positive correlation between the sub-scale of Learning Community and academic achievement, as well as a moderate positive correlation between Total Sense of Community and academic achievement; however, these correlations were not present in either of the other two schools.

This difference may be explained by social or educational factors not measured in this study. For example, one of the three schools (School C) is distinctly college preparatory, and although Schools A and B also prepare students for college, that is not part of their stated mission. Interestingly, School C had the highest mean score for Total Sense of Community (*M* = 28.57), as well as the highest mean PSAT score (*M* = 166.49); yet the correlation between the two was not statistically significant. In School A, a moderate correlation was found between both Total Sense of Community and PSAT score, as well as between Learning Community and PSAT score; and although the student population and culture in Schools A and B are relatively similar, these correlations were not found for School B. The study data are insufficient to enable conclusions to be drawn about these particular differences among the schools.

Finally, study findings reveal (Table 5) that in addition to there being a relationship between sense of community and academic achievement, the recorded sense of community is higher for females than for males. Previous research (e.g. Rovai & Baker 2005; Wighting, 2006) has reported similar findings.

Results of the current study are significant for future educational research and practice. The study is an important first step in investigating the complex interaction between students’ sense of community and educational outcomes in high schools. The positive correlations reported herein warrant consideration by practicing classroom teachers and school administrators, because the data indicate that this line of research may lead to ways to improve student learning.

Several limitations of the current study, however, should be noted. Sample size was relatively small (*N* = 150), and the three schools included in the study were independent secondary

schools in an urban environment. Results of this research can only be generalized to a similar population of participants; thus, findings may be different among students from other types of high schools (e.g., public schools) or in schools located in different environments. An additional limitation of this study was the self-report nature of the instrument employed in this study. It is recognized that subjects taking part in research studies involving self-report instruments are often reluctant to report negative experiences. Finally, correlation does not imply causation. Clearly, further research is needed to more fully explore the constructs of sense of community and academic achievement.

Recommendations for Further Research

Future research can build upon the present small-scale study by replicating the research with a larger sample size and in more diverse settings. It is recommended that further studies into the various relationships between sense of community and academic achievement be conducted in a variety of secondary schools, using multiple measures of academic achievement. Finally, additional exploration of the gender differences found in this study is recommended. Statistical procedures such as canonical correlation may be incorporated to isolate social and educational variables that may impact both sense of community and student achievement.

Conclusion

The current study reveals a positive correlation between high school students' sense of community and academic achievement. This relationship could be linked to student learning, and therefore teachers and administrators may find it beneficial to measure levels of community within their schools and to apply the results to classroom teaching practices. In light of the gender differences reported in this study (and in previous research, e.g., Rovai & Baker 2005; Wighting, 2006), teachers may wish to structure collaborative learning among students in ways that benefit from this. For example, in order to build upon the sense of community it is recommended that group projects be organized in ways that encourage female and male interaction. Females with high sense of community scores can be selected to perform given roles that promote the facilitation of a sense of community. Application of sense of community in this way may benefit the learning environment for all students, regardless of gender.

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About the Authors

Dr. Mervyn Wighting

Mervyn J. Wighting, originally from the south of England, has considerable experience in the education of people from diverse ethnic and cultural backgrounds, and has taught in a variety of institutions in the United Kingdom and in Europe. Dr. Wighting has lived in the United States for the past twelve years, where he has worked in public and independent schools as well as in higher education. He possesses a Virginia professional teaching license with endorsements as a principal and as a teacher in middle and secondary education. He has taught extensively through both face to face instruction and distance education, and is a strong advocate of lifelong learning.

Dr. Deanna Nisbet

Dr. Deanna Nisbet is an Associate Professor and Director of the TESOL Program in the School of Education at Regent University. Her areas of expertise and research include first and second language acquisition, literacy for second language learners, classroom community, and research related to Chinese students of English as a second or foreign language. Dr. Nisbet developed and presently oversees the Regent TESOL program, as well as partnerships with school districts in the Hampton Roads, VA area, for the training of current and prospective ESL teachers and tutors.

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