

Modeling the mediating effects of self-processes and social capital in the educational outcomes of high school students: An SEM approach

Purpose

Social factors that contribute to student engagement, achievement, and attainment can provide educators with important information about how to improve the quality of education for all students. The purpose of this study was to propose and test a model of the mediating effects of self-processes and certain forms of social capital (social support and school belonging) on the relationship between social networks and educational outcomes using structural equation modeling (SEM). Social capital is generally defined as the resources that accrue to an individual through social networks, and is not only determined by an individual's choices but by the choices, actions, and dynamics in the social network.

This study focuses on school as a socialization context that provides access to certain forms of social capital (networks and relationships) and also offers opportunities for activation of social capital (trust and support from school agents). The conceptual framework used in this study places self-processes and social capital as mediating factors between social capital (family and social background and network characteristics) and educational outcomes. The proposed framework is the result of previous work by the authors. Social network, social support, and academic engagement measures were developed and tested with a sample of over 1,000 high school students. Following the work of Lin (1999), five network characteristics were measured as indicators of potential social capital. The study piloted measures of three social capital forms as indicators of activated social capital. The results of the pilot study indicated acceptable reliability and validity of the measures. Regression analyses revealed that network qualities and network processes both explained significant proportions of variance in educational outcomes. Confirmatory factor analysis (CFA) showed acceptable fit of measurement models proposed among the model factors.

This paper presents a summary and discussion of the findings, a discussion of the methodological contributions of the study, as well as suggestions for future research and implications for educators. The paper builds on previous work by the authors in the conceptualization and measurement of social capital.

Conceptual Framework

Over the past 15 years, social capital has become an important explanatory construct in educational research (see Dika & Singh, 2002). Social capital has been modeled as a qualitative characteristic of a system; either present or absent; in most empirical work utilizing the social capital concept (Sandefur & Laumann, 1998). This paper asserts that family background is one of several indicators of an individual's social capital and that self-processes play an important role in mediating the effects of family disadvantage on educational achievement (DuBois, 2001). Horvat (2003) presents an excellent summary of Bourdieuan sociology and its utility for understanding the interactive effects of race and class in educational research. The conceptual model for this study attempts to incorporate Bourdieuan notions of capital, habitus, and field to develop a more nuanced understanding of how social capital is activated by young people in school environments to achieve their desired educational outcomes.

The conceptual framework for the study is summarized in Figure 1. The socioeconomic background and social networks of young people are forms of capital that are valuable in the school environment (field). The bulk of educational research on the effects of social capital links these forms of social capital with educational achievement and attainment. Following the work of Lin (1999) and others, network variables theorized to link individuals with more valuable forms of capital (large networks, high occupational status, loose ties) are included as forms of social capital the student may access within and outside the school environment. The study model includes individual dispositions and self-processes (habitus) and school-based forms of social capital as mediating variables in this relationship. Dispositions which may foster access to institutionally-based social capital; high self-concept, trust, and help-seeking orientation; are modeled interactively with forms of institutional or academic social capital (academic support and school belonging). Finally, the model considers other educational outcomes; aspirations and engagement; as important variables in understanding the activation of social capital by young people in schools.

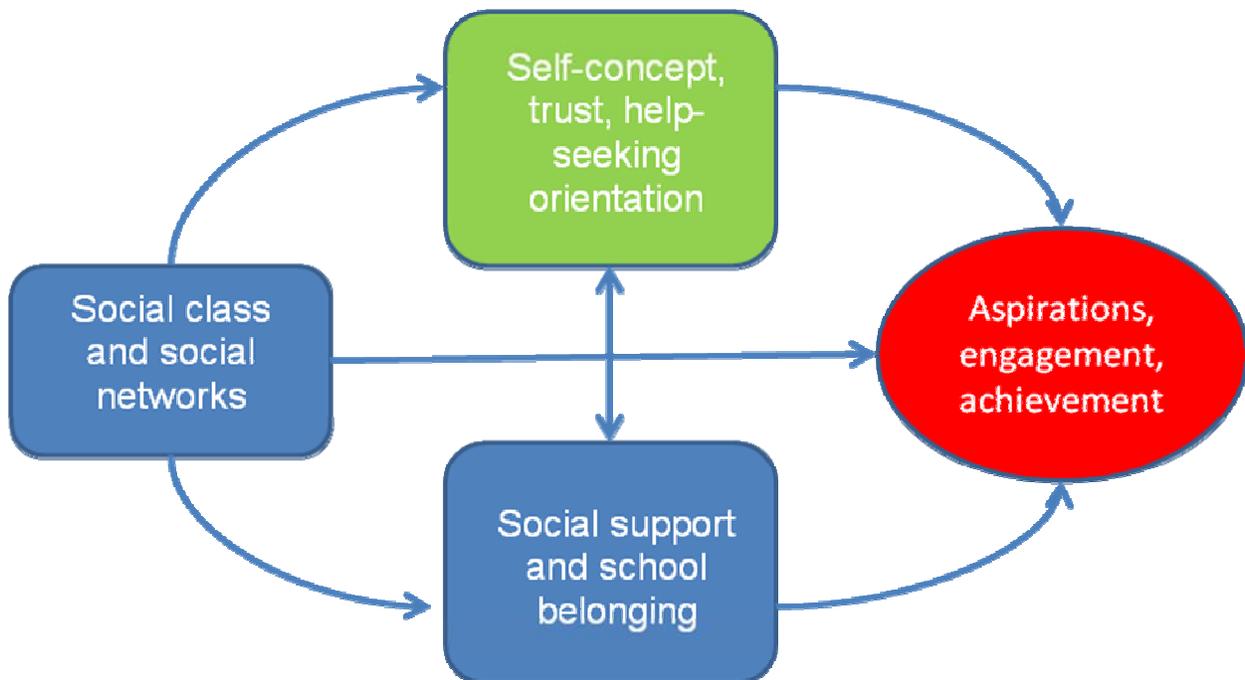


Figure 1. Conceptual framework of social capital activation in school environments.

Methods

A theoretical model, developed using confirmatory factor analysis (CFA) to ensure reliability and validity of the constructs and indicators, was specified as an a priori model. The a priori model was then tested and revised, using various goodness-of-fit criteria (i.e., GFI, CFI, RMSEA, ECVI, and SRMR) to determine when a statistically better fitting model could be attained by re-specifying the model. All models were estimated using the maximum likelihood method. While some researchers have criticized post hoc model fitting, others have noted that the process takes both practical and statistical significance into account. The fitted model in this study was cross-validated by randomly splitting the data from the sample into two parts. The

ECVI for hypothesized and revised models were compared to determine which model fit best to the data.

Data Sources

Instrumentation and Sampling

The School Relationships and Experiences Survey (SRES) provided the data used in this study. The survey, administered in June 2002, included items about demographic characteristics, relationships with important people, self-processes, social support, educational aspirations, academic engagement, and achievement. Superintendents of three school divisions agreed to allow high school classrooms in their school divisions to participate. Students completed the survey in their classrooms under the supervision of their regular classroom teachers.

The sampling frame included all students enrolled in science courses at the six participating high schools. The number of usable surveys returned was 1,176. This response rate reflects teacher rather than student choice to participate. Students in the sample were high school students in grades 9 through 12 who were present on the day of survey administration. The sample was slightly imbalanced by gender, with 45.8% males and 54.2% females. In terms of ethnicity, the majority of students were White (75.8%), 15.3% of students were African American, and the remaining 8.9% were from other ethnic groups. Students were fairly equally divided across grades 9 (29.0%), 10 (32.6%), and 11 (28.5%), while only 9.9% were in grade 12. Over half of students were in a general education program (58.1%) rather than college preparation track (32.6%), and 9.6% of students were in vocational education.

Measures

The endogenous variables for this study include self-processes, social support and belonging, engagement (academic orientation and effort), aspirations, and expected grades. Details on number of items, reliability estimates, and rating scales are shown in Table 1.

Table 1. Constructs and Items for Endogenous Variables

| Construct | Reliability estimate | Number of items | Rating scale |
|----------------------------|----------------------|-----------------|--------------|
| Self-processes | | | |
| Self-concept | $\alpha = .89$ | 4 | 1-4 |
| Trust | $\alpha = .72$ | 4 | 1-5 |
| Help-seeking orientation | $\alpha = .90$ | 6 | 1-4 |
| Activated social capital | | | |
| Perceived teacher support | $\alpha = .89$ | 6 | 1-4 |
| Academic support | $\alpha = .75$ | 4 | 1-4 |
| Sense of school membership | $\alpha = .82$ | 5 | 1-4 |
| Aspirations | -- | 1 | 1-5 |
| Academic orientation | $\alpha = .83$ | 5 | 1-4 |
| Academic effort | $\alpha = .81$ | 4 | 1-4 |
| Expected grades | -- | 1 | 1-5 |

The exogenous variables for the model include three social capital variables – family background (SES), network size, network density (% non-kin), and compositional quality (maximum occupational status).

Results and Discussion

The final fitted structural model is shown in Figure 2. Highlights of the results are presented in the following sections by construct group.

Social Class and Social Networks

The effects of social class and social network variables in the full structural model were largely indirect. Network size had small to moderate effects on all self-processes, and percent non-kin had a moderate direct effect on help-seeking orientation. When students have larger and more diverse networks, they are likely to feel more comfortable in seeking help and to have greater trust in others. Surprisingly, social networks and social class had only small to moderate indirect effects on social support and school belonging. This finding corroborates the work of Lareau and Horvat (1999), indicating that individual factors play a role in the activation of social capital, and that the connection between social class and social capital is nuanced rather than deterministic. Socioeconomic status had a strong direct effect on grades, corroborating the well-known connection between family background and educational outcomes. Maximum occupational status had a moderate effect on educational aspirations, supporting the notion that higher compositional quality of the network would increase students' aspirations. Students who have adults of higher occupational status in their networks are more likely to have higher aspirations themselves, illustrating a type of "role model" effect. The indirect effects of the social network variables on educational outcomes were small to negligible.

Adaptive Self-Processes

Measures of self-concept, trust, and help-seeking orientation were proposed as endogenous variables in the final structural model. Self-concept had strong effects on trust and help-seeking orientation. Help-seeking had the strongest effects of the three variables on the school-based social capital variables. Help-seeking orientation creates access to greater levels of support in school (Stanton-Salazar, 2001). Self-concept affects school membership, and trust affects academic support. Self-processes also had strong indirect effects on social capital, especially for trust on teacher support. The effects of self-processes on educational outcomes were primarily indirect, but strong and positive. Overall, the results support the hypothesis that self-processes (habitus) act as mediating variables in the model.

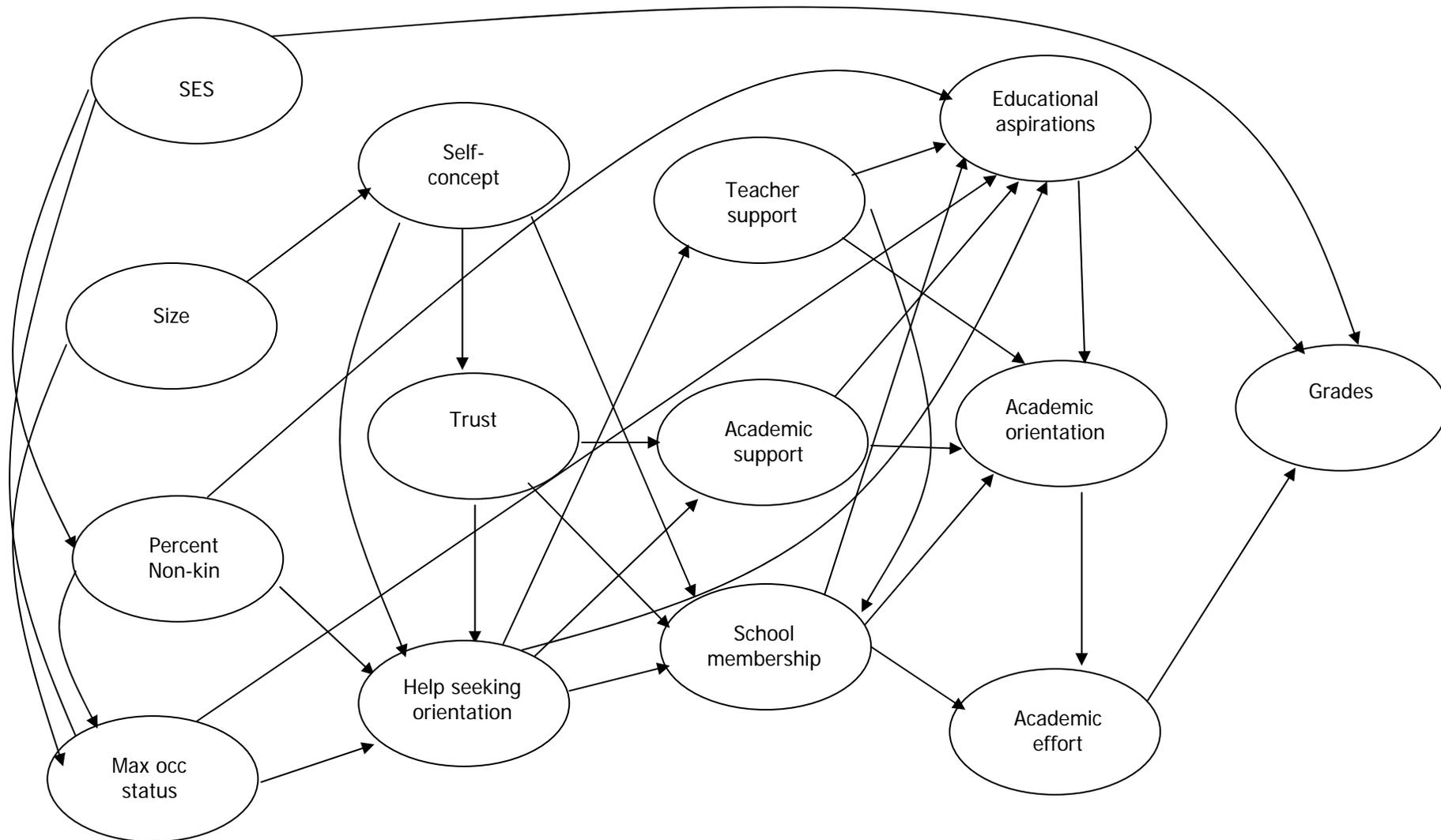


Figure 2. Final structural model of the mediating effects of self-processes and activated social capital on the relationship between potential social capital and educational outcomes.

School-Based Social Capital

The final model had three indicators of school-based social capital: perceived teacher support, academic support from network members, and school membership. All social capital factors were hypothesized to affect aspirations and academic engagement. None of the factors directly affected grades, which is not surprising. Within these social capital factors, teacher support had a moderate effect on school membership. All three factors had strong effects on academic orientation, effort, and educational aspirations. Students who utilize the school's support systems are more likely to have deeper engagement in learning, as well as higher aspirations. Many of the indirect effects estimated were significant, and the largest was for teacher support on academic effort. The pattern of effects supports the hypothesis that school-based social capital positively affects academic engagement and aspirations more than achievement.

Academic Engagement & Aspirations

Four educational outcomes were included in the final model, with expected grades as the final outcome. The variables were significantly correlated, especially the engagement factors (academic orientation and effort) and aspirations with grades. Educational aspirations had moderate effects on academic orientation and academic effort, but strong effects on grades. Academic orientation had a strong effect on effort, and only a moderate indirect effect on grades. The effect of academic effort on grades was strong as well. The indirect effects of aspirations on academic effort and grades were small. These results support the hypothesis that academic orientation (valuing of learning) has an indirect effect on grades through academic effort.

Methodological Contributions

A major goal of the study was to improve the quality of measurement of social capital. The measures most often used in educational research (e.g., number of parents, household size) are crude and arbitrary, and appear to be chosen based on ease of access in national data sets, following the example set by Coleman and his use of High School and Beyond data (Dika & Singh, 2002). These conventional measures of supportive ties are unreliable indicators of social capital, and they give little information about relationship dynamics or the quality of the resources accessed (Stanton-Salazar, 2001).

The instrument described in this study was designed to measure different forms of social capital based in the adolescent's social network of important adults in and outside of the school environment. This measurement is an improvement on generic measures of support, and allows the connections between social networks and social support to be investigated in much more meaningful ways. Further, this model points to the development of relationships and engagement as a key to student achievement and attainment. Methodologically, the use of structural equation modeling (SEM) to enable the specification of a complex model of interconnections between social networks, self-processes, social support and belonging, and educational outcomes makes a contribution to educational research on social capital, and to research in sociology of education. Educational research must become more rigorous in its use of advanced methods to understand the complex nature of schooling.

Educational Importance and Future Directions

Our proposed explanations of academic achievement must move beyond family background variables. While socioeconomic status tells us something about the background and experiences of young people, as a sole indicator it obscures the individual differences and self processes that play a role in educational development. An understanding of how these factors interact, contribute to the activation of social capital, and consequently lead to educational outcomes offers us a better awareness of what currently goes on in schools and what can be done to help activate social capital for all students.

The findings of this study suggest that schools can indeed act as mechanisms of social capital activation for students. However, the findings do not reveal the processes by which schools can do this. Teacher support and school membership appear to be important factors in increasing academic engagement and aspirations. The dispositions of students play a clear role in activating social capital in the school setting. The “rules of the game” – which middle class families know by osmosis - must be made more explicit, and their role in denying the activation of social capital for working class and minority youth must be part of our broader educational dialogue.

Based in his work on the social networks of Mexican-American adolescents, Stanton-Salazar (2001) identifies seven forms of institutionally-based funds of knowledge that are essential for students to activate social capital: (a) institutionally-sanctioned discourses; (b) academic task-specific knowledge; (c) knowledge of how bureaucracies operate; (d) networking skills; (e) technical funds of knowledge (computer, studying, test-taking, time management); (f) knowledge of labor and educational markets; and (g) problem-solving knowledge. Some students are unable to access all of these forms of knowledge through their own social networks. Schools can act in ways to make these funds of knowledge more accessible to all students and families. Stanton-Salazar also identifies forms of institutional support that facilitate the activation process, including implicit and explicit socialization into institutional discourses, bridging connections to gatekeepers and other social networks, advocacy, modeling effective coping with stratification forces (help-seeking, problem solving), emotional and moral support, and personalized advice and guidance. It may sound like a tall order for schools to provide these things, considering all they are expected to do. However, existing structures in schools could be redesigned with the purpose of provision of institutional support. There is a particularly important role for school counselors, who are perhaps in the best position to facilitate greater access to institutionally-based knowledge, and act as bridges and advocates for students as they navigate the educational landscape. Future research in this area can draw on the work of Stanton-Salazar and Horvat (2003) to develop more comprehensive understandings of access to educational opportunities at all levels, incorporating individual and institutional level variables along with qualitative and ethnographic methods.

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