Sense of Belonging Among High School Students Representing 4 Ethnic Groups

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The authors investigated the dimensions and mechanisms of belonging relevant to motivation and achievement among high school students representing 4 ethnic groups. Using survey data from 9th to 12th grade students ($N = 5,494$) attending 7 ethnically-diverse high schools, structural equation modeling was employed to explore, independently for each ethnic group, the relationships between students' perceptions of their belonging (encompassing relationships with teachers and peers, extracurricular involvement, and perceived ethnic-based discrimination), motivation (efficacy beliefs and valuing school activities), and academic success. All 4 measures of belonging were significant for European-American and Latino students. However, friendship nominations were not significant for all groups, suggesting potential variability in perspectives across ethnic groups. The strength of the structural model postulating belonging as a mediator, including statistically significant indirect paths, supported the hypothesis that the belonging construct accounted for much of the relationship between student motivation and success across groups.

KEY WORDS: belonging; adolescent; motivation; ethnicity; minority; achievement; high school.

When asked to recount their high school experience, teenagers typically report that interpersonal features are critical to their school engagement (Coleman, 1961; Wentzel, 1989). Researchers have begun to examine this adolescent assertion by integrating the traditionally intrapersonal focus of motivational research with the interpersonal reality of schooling. There is mounting evidence that students' experience of belonging, including close relationships with school social groups, individuals, and activities, significantly facilitates motivation and achievement, with distinct patterns for students of different ethnic groups (Ryan and Stiller, 1994; Skinner and Wellborn, 1994). Yet, there is a lack of clarity regarding what constitutes belonging and the role it plays in students' motivation and achievement for diverse groups (Anderman, 1999; Connell and Wellborn, 1991). To address these issues, we explored students' perceptions of their sense of school belonging in 4 domains: bonding with teachers, having a place within the network of peer relationships, extracurricular involvement, and perceived ethnic-based discrimination. We examined the extent to which these 4 dimensions explained student belonging, and the degree to which belonging accounted for (e.g., mediated) the relationship between motivation and achievement for African American, Asian-descent, Latino, and European American adolescents.

CONCEPTUALIZING BELONGING FOR MULTIPLE ETHNIC GROUPS

Osterman's (2000) review of belonging highlighted dimensions of student-teacher relations, peer relations, and involvement in school activities as key social experiences that tie adolescents to their schools in ways that enhance motivation and achievement, and demonstrated

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how variably researchers have defined each dimension. The extent to which collectively these dimensions are significant for students from diverse ethnic groups remains unclear. Research specific to ethnic minority youth raises the likelihood that students' perceptions of respect for their ethnic group membership may also be related to students' attachment or alienation from school (e.g., Fordham and Ogbu, 1986; Phelan *et al*., 1994; Stanlaw and Peshkin, 1988; Steele, 1997).

Currently 40% of the total public school population is comprised of ethnic minority students (National Center of Educational Statistics [NCES], 2000). Because typical American classrooms are characterized by practices reflecting the dominant culture, scholars have suggested that school belonging may be critical to this growing number of ethnic and language minority students (Delpit, 1995; Phelan *et al*., 1994; Ryan and Patrick, 2001). Phelan *et al*. (1994) demonstrated that the cultural contrasts that many minority students experience (e.g., between home and school) can erect barriers for the student to navigate. Research following bicultural competence theories highlights the necessity of positive relationships in the second culture (e.g., school) as critical to adaptive functioning for minority group members (LaFromboise *et al*., 1993). These views suggest that in order to engage and be successful in school, it is essential that students from ethnic minority as well as majority groups develop a sense of belonging in the school setting. Research also suggests that the cultural background of particular ethnic groups may yield relevance to specific experiences that undergird belonging.

Student-Teacher Relationships

The quality of students' relationships with teachers has consistently been linked with students' positive perceptions of the classroom, and their engagement and achievement within predominantly European American samples (Skinner and Belmont, 1993; Wentzel, 1997, 1998). Students' perceptions of teacher support, respect, and care have also been found to be positively associated with school affect and academic self-efficacy (Roeser *et al*., 1996), and to student motivation and engagement (Ryan and Patrick, 2001) for both African American and White participants. Finn and Voelkl (1993) reported a positive association between student-teacher relationships and academic engagement and effort for a large, predominantly minority sample. Gillock and Reyes (1996) highlighted the pivotal role of relationships with teachers, specifically for Latino students. Few researchers have addressed the relevance of teacher

support for the motivation and achievement of students of Asian-descent.

Some researchers, however, report contradictory findings concerning the importance of teacher relations within ethnically diverse samples. For example, in later studies by Gillock and Reyes, high levels of teacher support were unrelated to academic performance for Latino students (1999). They reported mixed relationships between teacher support, student motivation, and achievement within a predominantly Latino and African American sample (Reyes *et al*., 2000). These findings call into question the role of teacher support for Latino and African American students. The desire for harmonious interpersonal experiences (a cultural script referred to as "sympatía") fostered in many Latino communities may afford positive teacher-student relationships particular relevance to Latino students (Gaines, 1997; Marin and Marin, 1991; Triandis, 1990). Experiences of disrespect for their ethnicity experienced by certain minority families (Way, 2001), or a cultural emphasis on familial- or neighborhood-based relationships found in many Latino and African American homes (Triandis, 1990) may lead members of minority populations to look to adult relationships in these contexts, rather than the school, as a source of support. Equivocal research results regarding the role of teacher support as a source of belonging for differing minority groups may arise from the interplay between these cultural influences. This complexity underscores the need to further understand the relevance of this dimension of belonging, as well as the importance of considering this issue distinctly for different ethnic groups.

We focused on aspects of students' perceptions of their teachers' involvement with them, including caring, liking, and dependability, predicting that these dimensions would contribute positively to students' overall sense of belonging. We are less certain of the strength of this relationship for ethnic minority students.

Relationships with Peers

A consistent positive relationship has been revealed between having a place within the network of peer relationships—indicated by receiving friendship nominations—and positive school affect, motivation, and achievement. Ladd (1990) found that students who experienced greater peer acceptance, defined by higher numbers of friendship nominations, reported more favorable perceptions of school and better school performance. Ryan (2001), and Nichols and White (2001), found similar associations between integration in classroom social networks (e.g., more nominations), and school

affect and achievement. In addition, peer acceptance and social group membership has been related to heightened levels of interest in and enjoyment of school, and academic engagement (Kinderman, 1993; Wentzel, 1991, 1997, 1998, 1999; Wentzel and Caldwell, 1997)

Findings that show a link to belonging through peer relations are based primarily on the school-based friendship nominations experienced by European American students. A small body of research suggests that a student's ethnic background may make a difference in the role played by friendship in belonging. Way and Chen (2000) reported that only 1/3 of Latino, Asian-descent, or African American participants' most supportive friends attended their same school. In other research, African American students were almost twice as likely as their European American counterparts to locate their best friends outside of the school context and to report lower levels of support from their school-based friendships (Clark and Ayers, 1991; Dubois and Hirsch, 1990). It may be that members of minority groups who experience lack of understanding of their ethnicity in the school setting form fewer intimate school-based friendships (Way, 2001). In particular ethnic minority groups, parents may discourage a level of access to peers conducive to the formation of intimate relationships (see Ping and Berryman, 1996, regarding Chinese families). As well, family socialization practices may place more emphasis on familial, rather than school-based relationships (see Marin and Marin, 1991 for Latino families; Gaines, 1997; and Triandis, 1990, for African American, Asian-descent, & Latino families). These differing perspectives regarding peer relationships may color the degree to which school-based friendship nominations reflect an experience of belonging for adolescents representing these minority groups, again underscoring the need to consider this component of belonging distinctly for different groups.

We used the number of friendship nominations received as an indicator of school-based social integration, and expected that students with more friendship nominations would report a greater sense of belonging. If across ethnic groups, school-based friendships carry different levels of intimacy and support, the contribution of friendship nominations to school belonging may vary across groups as well.

Extracurricular Involvement

Student extracurricular involvement has been demonstrated to relate positively to school attachment and achievement (Eccles and Barber, 1999; Gerber, 1996; Mahoney and Cairns, 1997). In his participation–identification theory, Finn (1989) demonstrated that among the various potential levels of participation in school, time spent in social, athletic, or other non-compulsory activities provides a primary source of school attachment, thereby supporting academic success. In a review of the research on extracurricular involvement, Lamborn *et al.* (1988) concluded that academic effort and achievement tended to improve as hours spent on extracurricular activities increased (see also Holland and Andre, 1987; Larson, 2000; Marsh, 1992).

However, several investigations of the associations between extracurricular involvement, school affect, engagement, and achievement for ethnic minority students have suggested that these relationships vary across ethnic groups in ways meaningful for sense of belonging. Although a positive association between participation in school activities and identification with school has been documented for African American and European American students (Voelkl, 1997) and for African American and Latino students (Finn, 1992), Gerber (1996) found a significantly stronger association between the number of extracurricular activities engaged in, and academic achievement, for European American students than for African American. Other researchers have documented that male ethnic minority students (including African American and Latino) involved in extracurricular activities showed significantly lower achievement than nonparticipants (Lisella and Serwatka, 1996; Wentzel, 1997). These findings suggest that extracurricular activities may play different roles with regard to belonging depending on the student's ethnic group; such school involvement may not be as pivotal to school sense of belonging for African American or Latino students. Previous studies suggest that many factors converge to create this complicated role in belonging for extracurricular involvement, including cultural expectations and differential parental influences (Brown and Evans, 2002). Additional research, such as the current study which is specific to distinct ethnic groups, is needed to advance our current knowledge.

We included in the current study a measure of the number of hours in a typical week students invested in any extracurricular school activities. We expected that the number of hours spent would load positively with other dimensions to contribute to students' experience of school belonging, although perhaps not for all minority groups.

Perceived Discrimination

A dimension not traditionally considered in research on belonging surfaces in studies of the school

experiences of ethnic minority youth. A number of studies of ethnically diverse high schools demonstrate the disidentification with school, rather than attachment, that minority adolescents experience when they perceive ethnic-based discrimination, often resulting in behaviors that lead to lower motivation and achievement (Delpit, 1995; Fordham and Ogbu, 1986; Peshkin, 1991; Phelan *et al.*, 1994; Stanlaw and Peshkin, 1988; Steele, 1997). There is some evidence that perceived ethnic-based discrimination contributes to disengagement among European American adolescents in ethnically diverse high schools as well. Peshkin (1991) found pockets of students who, perceiving differential treatment based on being White, distanced themselves from the school socially, academically, and extracurricularly.

These findings suggest that perceptions of how one's ethnic group is treated matters for the affective tie that students develop to their school; this may be especially true for members of ethnic minority groups. We expected that for ethnic minority students, perceptions of discrimination would make a negative contribution to students' sense of belonging. Given hints in past research of the relevance of this factor to European American students, we explored the extent to which ethnic-based discrimination was meaningful to belongingness for this group of students as well.

In summary, by conceptualizing 4 dimensions of students' school experiences to undergird belonging, we hoped to incorporate the relational aspects of school highlighted in the broad array of studies reviewed. Specifically, we explored student perceptions of their bonding with their teachers, social integration as evidenced by peers' friendship nominations, time invested in extracurricular activities, and perceived treatment relative to their ethnic group membership. This holistic conception of belonging encompasses various levels of participation (Finn, 1989) and both affective and behavioral aspects of attachment to school (Johnson *et al.*, 2001). Further, we considered the relevance of these facets of belonging separately for different ethnic groups, to advance the incomplete and equivocal literature on belonging in ethnic minority adolescents' school experiences.

MOTIVATION AND ACHIEVEMENT IN DIVERSE SAMPLES

Researchers have traditionally focused on 2 intrapersonal dimensions of motivation which typically enhance academic achievement. The first: a sense of efficacy regarding schoolwork, including feelings, beliefs, expectations, or attributions of efficacy, competence, or personal

control; the second: a student's assessment of the value of school tasks. Taken together, efficacious self-perceptions and valuing of school tasks have served as a longstanding framework for research on school motivation (for reviews see Eccles and Wigfield, 2002).

Efficacy generally refers to individuals' beliefs or expectations that they are capable of performing a task well, and that the task will produce a desired effect. Achievement that is attributed to internal resources that individuals believe they can control (i.e., through effort or strategy choice), and tasks which individuals believe they are capable of accomplishing, support persistence and selection of effective learning strategies (Bandura *et al.*, 2001; Graham and Weiner, 1996; Pajares, 1996). For the purpose of this research, we adopted the term "efficacy beliefs" to reflect individuals' beliefs regarding their ability to affect academic success. We hypothesized that student's responses reflecting beliefs that they influenced the outcomes they experienced would be positively related to academic success.

Students who value their learning experiences, finding them relevant, important, interesting, or useful also exhibit measurably better engagement and achievement (Ryan and Powelson, 1991; Stipek, 1996). School activities that are congruent with students' views of what is important or worthy of effort are positively related to motivation and achievement (Eccles and Wigfield, 2002; Weiner, 1990). Additionally, students value more highly those activities that take place in environments in which their affective needs are met. For example, although the mean level of adolescents' achievement task value and their ratings of course importance and liking typically decrease over time, the impersonal context of high schools has been associated with these declines (Eccles and Midgely, 1989). Reflecting these findings, we defined valuing of school to include students' perceptions of the general value of school, the number of factors in the school environment and tasks that they report motivated them to work hard, and student reports that they actually worked hard in school (i.e., concentrating, expending effort, etc.). As a composite, these indicators were expected to be positively associated with academic success.

The relationships between these motivational constructs and achievement have been explored primarily among European American samples. Graham (1994) concluded that with regard to motivational traits and processes, African American youth functioned similarly to European American youth. There is also evidence of the meaningfulness of these constructs for Latino (Lay and Wakstein, 1985; Reyes *et al.*, 2000), and Asian-descent students (Eaton and Dembo, 1997). However, Pajares and colleagues (Pajares and Kranzler, 1995; Pajares and

Johnson, 1996) found lower reported efficacy among African American and Latino students. Ryan (2001), too, found lower expectations for success, as well as less valuing of schoolwork, among Latino students. In these studies, differences between ethnic groups with respect to efficacy, value, and achievement indicated variability in mean scores (rather than lack of relevance) regarding these constructs. However, other studies suggest a lack of parallel relationships among these variables across ethnic groups. For example, intrinsic valuing of school and expectancies for success were more indicative of high performance for European American students than for African American or Latino students (Ryan, 2001); in a separate study, teachers' emphasis on promoting respect was associated with increased academic self-efficacy only for African American students (Ryan and Patrick, 2001). Eaton and Dembo (1997) identified lower self-efficacy beliefs for students of Asian-descent, despite the fact that they outperformed their non-Asian-descent counterparts academically. The distinct cultural perspectives discussed earlier may account for such diverse student perspectives on school-based efficacy beliefs or valuing of school. Collectively, these findings suggest the need to consider ethnic group variability in the relationship between these aspects of motivation, and achievement.

THE MECHANISM OF BELONGING

Various dimensions of belonging have a record of positive association with motivation and achievement (Goodenow, 1993; Roeser *et al.*, 1996; Wentzel, 1993, 1997). A direct relationship has been established between traditional motivational variables and achievement (Bandura, 1986; Eccles, 1983; Stipek, 1996; Weiner, 1990). What remains to be understood are the mechanisms through which these constructs relate to one another. According to several theoretical perspectives, as well as a small number of empirical studies, motivational dispositions develop most effectively when students' needs for an affective tie are met. For example, in their theory of stage-environment fit, Eccles and Midgely (1989) argued that a sense of efficacy and valuing of education were enhanced when students felt a sense of comfort, familiarity, or relatedness with school relationships and organization; that is, a sense of belonging elicited more adaptive motivation. Others have advanced views that motivation is enhanced when students' basic psychological needs (including the need for relatedness) are fulfilled. For instance, Connell and Wellborn (1991) found that although traditional motivation constructs predicted achievement,

measures of relatedness accounted for much of the variance in motivation. Similarly, experiences of social support were strongly associated with motivation outcomes, which significantly predicted student grades (Roeser *et al.*, 1996; Wentzel, 1997, 1998). Goodenow (1993) found student perceptions of their sense of belonging accounted for over 1/3 of the variance in the interest, importance, and value students placed on their academic work, which was strongly correlated with achievement (see also Anderman, 1999). These relationships suggest that experiences of belonging account for, or explain, a significant portion of the relationship between motivation and achievement, making belonging a fertile—perhaps requisite—ground within which motivation, and consequently achievement, can best develop.

These associations between belongingness, motivation, and achievement suggest a mediation model. According to Baron and Kenny (1986), in order to conclude that there is evidence of a mediated relationship, 3 conditions must be met. First, there must be a significant relationship between the predictors and outcomes (between efficacy beliefs/valuing, and academic success). Second, there must be a significant relationship between the predictors and mediators (efficacy beliefs/valuing and belonging). Last, there must be a significant relationship between the mediator and the outcome variables. When all variables are analyzed simultaneously, the relationship between the mediator and the outcome must significantly reduce (e.g., account for a significant portion of) the effects of the predictors (motivation) on the outcomes (academic success). Accordingly, we hypothesized that belonging was an underlying, explanatory (mediating) factor in the relationship between motivation and achievement.

In summary, we simultaneously considered multiple dimensions of belonging in an attempt to integrate the many interpersonal facets of school experienced by students in an ethnically diverse setting. In response to research documenting ethnic-based variability in students' experiences with and perspectives on these variables, analyses were conducted separately for African American, Asian-descent, Latino, and European American students. We predicted that these dimensions would produce a coherent composite of belonging, although the composite may be unique for each ethnic group. We additionally explored how belonging related to efficacy beliefs, valuing of school, and academic success, hypothesizing that belonging would mediate (account for a portion of) the relationship between motivation and achievement. Figure 1 illustrates the proposed dimensions of belonging and its hypothesized role as a mediator of motivation and achievement.
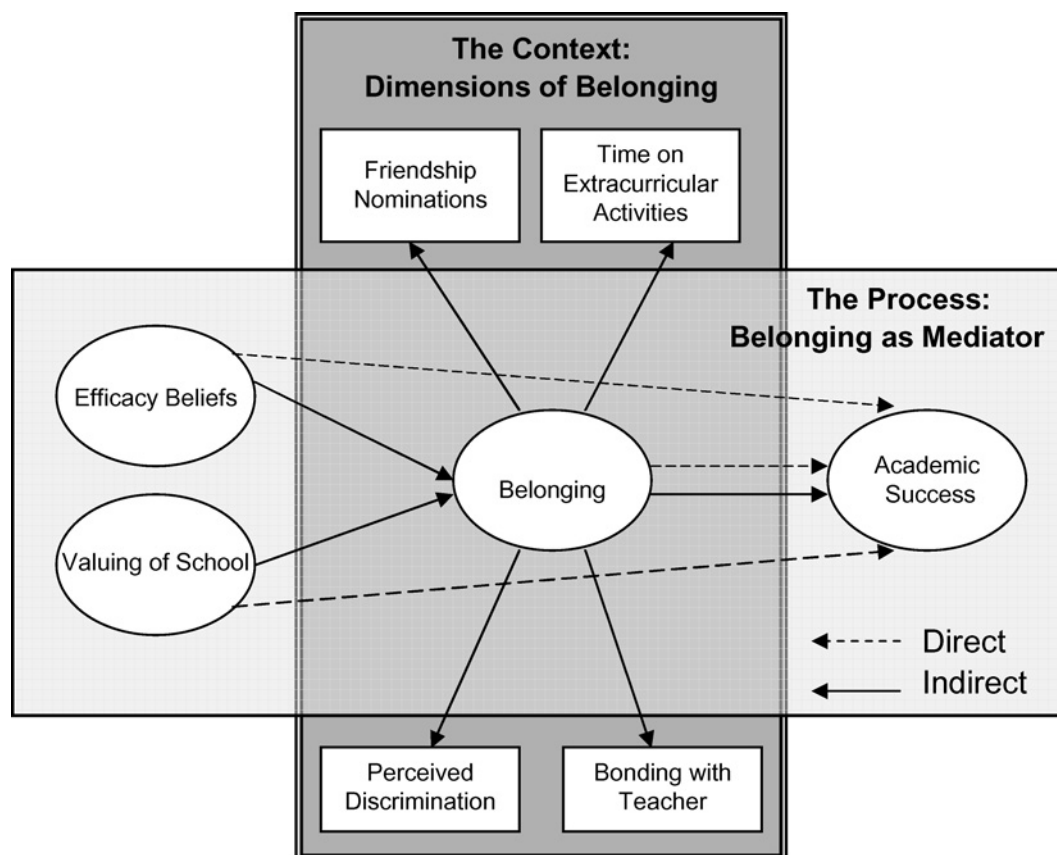
Fig. 1. Theoretical model: Dimensions of belonging and direct vs. indirect model.

METHOD

Sample

The data for this study were drawn from a larger study of 9th–12th grade students attending 7 ethnically diverse high schools, 6 in the San Francisco Bay area, California, and 1 in Wisconsin. The purpose of the larger study was to assess, through student self-report, a wide variety of aspects of psychological adjustment in relation to non-instructional schooling experiences (e.g., Steinberg *et al.*, 1992). Parents and students in each participating school were informed of the study; all students who were present and whose parents did not refuse to allow their children to participate completed self-report questionnaires during the fall and spring. Because of its length, the questionnaire was administered over 2 days.

Respondents included in this study were 580 African American, 948 Asian American, 860 Latino, and 3,142 European American students. Forty-seven percent of the

sample was male. Participation rates were comparable across the 7 schools; each contributed between 500 and 1000 participants to the study ($M = 785$). The schools served a broad base of socioeconomic status within and across ethnic groups, and varied with respect to size. Student demographic data taken from National Center of Education Statistics (NCES) records for each school from the year of data collection (1988) indicated that the California schools served working and middle class neighborhoods and cities. In these schools, European American students constituted the numerical majority, ranging from 44 to 66% of the student body. The proportions of students of Asian-descent in each school ranged from 7 to 30%; Latino students constituted between 11 and 32% of the student body in each school; and the proportions of African American students ranged from 2 to 16%. In the Wisconsin school, 46% of the students were African American, 36% of the students were European American, 14% were Latino, and the remainder of the student body was primarily of Asian descent.

Instrumentation

Participants completed questionnaires that included information on demographics, and academic, social, and extracurricular experiences. Measures of relevance to this study included ethnic-group membership, gender, and indicators associated with the latent constructs: belonging, academic efficacy beliefs, school valuation, and academic success.

Demographics

Ethnic group membership was identified by student self-report of primary ethnic identification from a list of 16 possible categories with a forced response format. Problematic identifications were resolved by comparison with school records. Adolescents who indicated membership in 1 of 4 major categories—African American, Asian American, European American, and Latino—were retained in the current sample. Sample sizes for other ethnic groups represented in the schools were too small for analysis.

Belonging

Several variables related to students' perceptions of their positive connection with peer and teacher relationships, and activities at school were assessed. All participants nominated up to 5 of their closest school friends; the total number of *friendship nominations* received from other students (the number of times the student's identification number appeared as a nomination within a school) were tallied to indicate social integration with peers at school. *Time spent in extracurricular activities* was assessed by a single-item question reporting how many total hours per week students participated in the extracurricular activities possible at their school. Response options included a 6-point Likert scale ranging from *none* to *20 h or more per week*. *Bonding with teacher* reflected students' perceptions that teachers cared for and supported them. Sample items (from a scale of 6 items) included "There is a teacher I could go to if I got into trouble." and "My teachers care about how I am doing." Response options ranged from 1 (*strongly agree*) to 4 (*strongly disagree*), were reverse coded to allow higher scores to reflect greater bonding, and were averaged across the responses to create a single score. Reliability coefficients (Cronbach's alpha) ranged from 0.74 to 0.75 for the 4 ethnic groups represented in the study. *Perceived discrimination based on ethnic group membership* was a 3-item measure of the students' perceptions of how frequently teachers, other adults at school, or other students, respectively, were un-

fair or negative toward the respondent based on his or her ethnic background. Responses ranged from 1 (*almost never*) to 5 (*almost always),* and were reverse coded to allow higher scores to reflect greater acceptance. These 3 items were significantly intercorrelated for all ethnic groups (ranging from 0.49 to 0.62) and were added into a single "perceived discrimination" composite variable. Cronbach's alphas for the scale were between 0.70 and 0.77 for the 4 groups.

Efficacy Beliefs

Efficacy beliefs were defined by 2 indicators of students' beliefs relative to the reasons for their school success. *Efficacious attributions for academic success* were measured with 2 questions about students' perceptions of the reasons for their academic success and failure: "When you get a good grade (poor grade), what are the reasons for your success/failure?" answered separately for mathematics, science, social studies, and language arts. Response options included 6 possibilities such as "Luck," "The teacher liked me," "The course was easy," and "I worked hard." The number of times the student indicated self-oriented reasons for their academic success (i.e., hard work) were tallied across the 2 questions for each content area. These responses were then totaled across the subject areas. In addition, Harter's (1985) Academic Competence subscale of the Self-Perception Profile for Adolescents determined students' general *self-competence attributions*. Response options ranged from 1 (*strongly agree)* to 4 (*strongly disagree)* on items such as "When things go well for me, it is usually not because of anything I myself actually did." (reverse coded), and were averaged across responses to provide a mean score. Cronbach's alphas ranged from 0.75 to 0.79 across the 4 ethnic groups in this sample.

Valuing of School

This dimension was measured by the degree to which students valued various aspects of school, their identification of characteristics of their school environment and tasks that motivated them to try hard, and a self-reported composite of effort expended on academic tasks. *School valuation* was a 5-item scale taken from Wehlage *et al.* (1989), that included items such as, "Success in life does not have much to do with things learned in school." Response options ranged from 1 (*strongly disagree)* to 4 (*strongly agree*), were reverse coded to allow higher scores to reflect stronger valuing of school, and were averaged across items to form a single score. Cronbach's alphas for

the school valuation scale ranged from 0.72 to 0.78 across the 4 ethnic groups. The degree to which students' *reasons for trying hard* reflected valuing of school and school tasks was assessed by their responses to 10 options reflecting the influence of home, task, and school contexts, to the question "When you try hard in school, which of the following reasons are most important to you?" Sample responses included: "I want to learn the material." and "My teachers encourage me to work hard." Responses reflecting that trying hard in school was motivated by aspects of school that were valued were tallied to produce a single score for each student. *Effort* was a composite measured by 5 items regarding how often in their mathematics, science, social studies, and language arts classes students tried as hard as they could on academic tasks, paid attention, invested time on homework, concentrated hard, and tried to understand material. Responses were based on a 6-point Likert scale ranging from *never* to *almost everyday*. Because students' responses to these questions were moderately correlated (*rs* ranging from 0.32 to 0.53) and conceptually related, they were combined across academic content to create a composite that ranged from 0 to 36. Cronbach's alphas for the scale ranged from 0.71 to 0.76 across the 4 ethnic groups.

Academic Success

Two indicators measured academic success. Self-reported *grade-point average* (GPA) was scored on the standard 4-point scale. Self-reported grades have been found to correlate satisfactorily ($r = 0.76$) with students' actual grades (Dornbusch *et al.*, 1987). Students also reported the *number of A.P. and Honors courses taken* at school.

RESULTS

We conducted structural equation modeling (SEM) analyses, using AMOS 4.0, to assess the loading of the 4 measures of belonging on the latent construct of belonging among different ethnic groups (Measurement Model), and to compare the direct effects of efficacy beliefs, valuing school and belonging on academic success, with the effects of belonging as a mediator between the 2 traditional motivational variables, and student academic success (Structural Model). SEM procedures were selected due to the ability to apply complex configurations of multiple observed variables simultaneously to define and explore latent constructs. Preliminary analyses indicated acceptable data distribution, non-collinearity, and model

identification appropriate for a structural equation modeling application.

Descriptive Statistics

Means, ranges, and standard deviations for each of the observed measures of belonging, efficacy beliefs, valuing of school, and academic success, for each school sample, indicated normal distributions, and were comparable across schools. All descriptive statistics are available by request from the authors.

Measurement Model

The SEM measurement analysis identified the relationships between the latent constructs of belonging, efficacy beliefs, valuing of school, and academic success, and the various observed measures of each. The loadings of the latent constructs regressed on their observed variables demonstrated the strength of measurement (see Table I). The correlations between latent constructs, as well as the fit indices associated with this model (see Table II), indicated the viability of the structural model. Figure 2 illustrates the loadings of observed on latent variables in the measurement model; Figure 3 presents the correlations among all latent variables.

Efficacy beliefs and valuing of school were allowed to correlate due to the theoretical relationship between these 2 concepts and the correlation evident between the 2 in previous research (i.e., Meece *et al.*, 1990). Assumptions were not made about other possibly correlated variables or error terms. In the sample, all observed measures were significant indicators of belonging for both European American and Latino students. Friendship nominations did not effectively measure the latent construct of belonging for either African American or Asian-descent students, although each of the other measures was significant. This indicated that when proceeding with the structural model, the indicators of belonging for European American and Latino students should include time on extracurricular activities, bonding with teachers, friendship nominations, and perceived discrimination; however, for African American or Asian-descent students, the model should include only time on extracurricular activities, bonding with teachers, and perceived discrimination.

Two of the factor loadings on belonging were lower than expected (extracurricular activities for Latino & European American students; peer nominations for each ethnic group). The decision to retain these observed variables in the structural model was based

Table I. Measurement Model Fit Indices by Ethnic Group

Ethnic group	n	χ^2	df	NFI	CFI	TLI	RMSEA
African American	580	127.61	48	0.99	0.99	0.99	0.06
Asian-descent	948	231.00	48	0.99	0.99	0.99	0.07
European American	3142	538.80	48	0.99	0.99	0.99	0.06
Latino	860	174.19	48	0.99	0.99	0.99	0.05

Note. NFI: normed fit index; CFI: comparative fit index; TLI: Tucker-Lewis coefficient; RMSEA: root mean square error of approximation.

on the statistical significance of the regression weight for each measured variable. The critical ratios for time on extracurricular activities exceeded the 1.96 cut off which establishes significance at the $p \leq 0.05$ level (African American, 1.98; Asian-descent, 2.62; European American, 7.00; Latino, 9.24). The critical ratio for peer nominations for Latino (2.27) and European American youth (3.97) were significant as well. Moreover, the mean number of friendship nominations received did not differ markedly across ethnic groups (Asian-descent: $M = 2.72$, $SD = 1.99$; African American: $M = 2.97$, $SD = 2.11$; European American: $M = 2.66$, $SD = 1.99$; Latino: $M = 2.28$, $SD = 1.81$). Given that large sample sizes contribute to significant results, and that the relative values of the regression weights were small, we conducted additional tests of the relevance of friendship nominations and time spent on extracurricular activities to student sense of belonging.

As explained by Bollen (1989, p. 173), substantial portions of path coefficients can be underestimated due to the measurement error of observed variables. A sensitivity test, in which the measurement error in question is manipulated, enables assessment of the degree to which measurement error impacted the results. If the regression weight of the measured variable increases as the measurement error is constrained, then a plausible hypothesis is that measurement error is suppressing the effect (K. Bollen, personal communication, July 28, 2003). Applying this strategy for our model substantially increased the relevant regression weights as the error term decreased. Testing a range of measurement error variance from 0.20 to 0.50 for peer nominations resulted in regression weights ranging from 0.94 to 0.97 and 0.92 to 0.96 for European American and Latino youngsters respectively, compared to 0.10, and 0.11 prior to constraining the error variance. The same test for extracurricular activities

Table II. Structural Model Fit Indices: Total vs. Indirect Model by Ethnicity

Ethnic group	n	χ^2	p	df	CFI	TLI	RMSEA
African American							
Total effects	580	95.87		29	0.99	0.99	0.06
Indirect effects[a]	580	97.79		31	0.99	0.99	0.06
$\Delta\chi^2$		1.92	$p \leq 0.50$				
Asian-descent							
Total effects	948	151.91		29	0.99	0.99	0.07
Indirect effects[a]	948	158.34		31	0.99	0.99	0.07
$\Delta\chi^2$		6.44	$p < 0.04$				
European American							
Total effects	3,142	316.73		38	0.99	0.99	0.05
Indirect effects[a]	3,142	353.72		40	0.99	0.99	0.05
$\Delta\chi^2$		36.988	$p < 0.001$				
Latino							
Total effects	860	132.58		38	0.99	0.99	0.05
Indirect effects[a]	860	132.71		40	0.99	0.99	0.05
$\Delta\chi^2$		0.12	$p \leq 1.00$				

Note. CFI: comparative fit index; TLI: Tucker-Lewis coefficient; RMSEA: root mean square error of approximation.
[a]Mediation model.
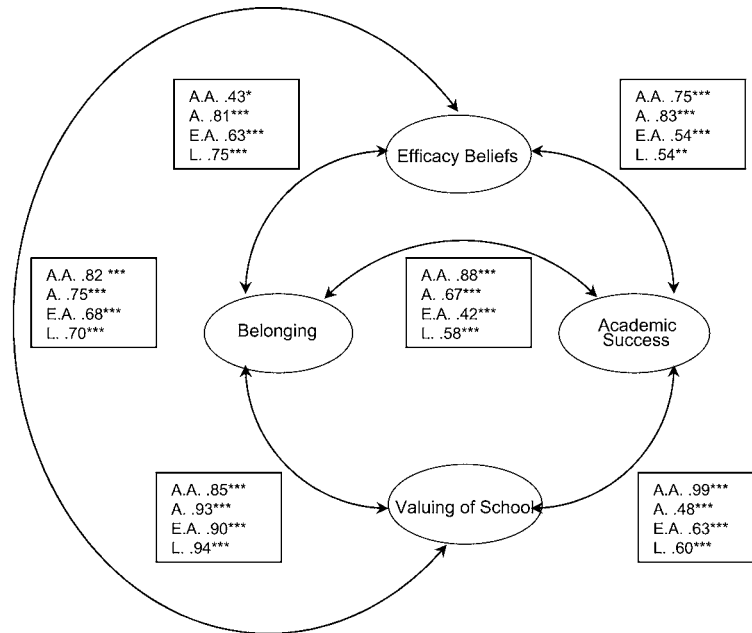
A.A. = African American, (n=580); A. = Asian-decent, (n=948); E.A. = European American, (n=3, 142); L. = Latino, (n=860)

* p ≤ .05,   ** p ≤ .01,   *** p ≤ .001

Fig. 2. Measurement model Part 1: Standardized regression weights by ethnic group.

yielded similar results (regression weights ranging from 0.87 to 0.95 for African American and Asian-descent students, 0.86 to 0.95 for European American students, and 0.89 to 0.96 for Latino students, compared to an initial range from 0.15 to 0.31). The increased regression weights produced by the sensitivity test supported retaining friendship nominations and time on extracurricular activities in our conceptualization of belonging (K. Bollen, personal communication, July 28, 2003). However, we caution that these particular measures are problematic indicators of these constructs and should be interpreted as such.

In a final set of analyses, we conducted invariant structure comparisons to insure that no gender, SES, or school differences confounded our results. Each comparison (between genders, 4 SES groups, and the 7 schools) was conducted with all parameters constrained to be equal ($H_{\Lambda x \Lambda y B \Gamma \Phi \Psi}$). Each analysis revealed similar χ^2 values, fit indices, and AKAIKE values, supporting the hypothesis that the same model operated across groups (see Table III). That is, the model fit was invariant across gender and SES groups, as well as across schools (Bollen, 1989; Kline, 1998).[3]
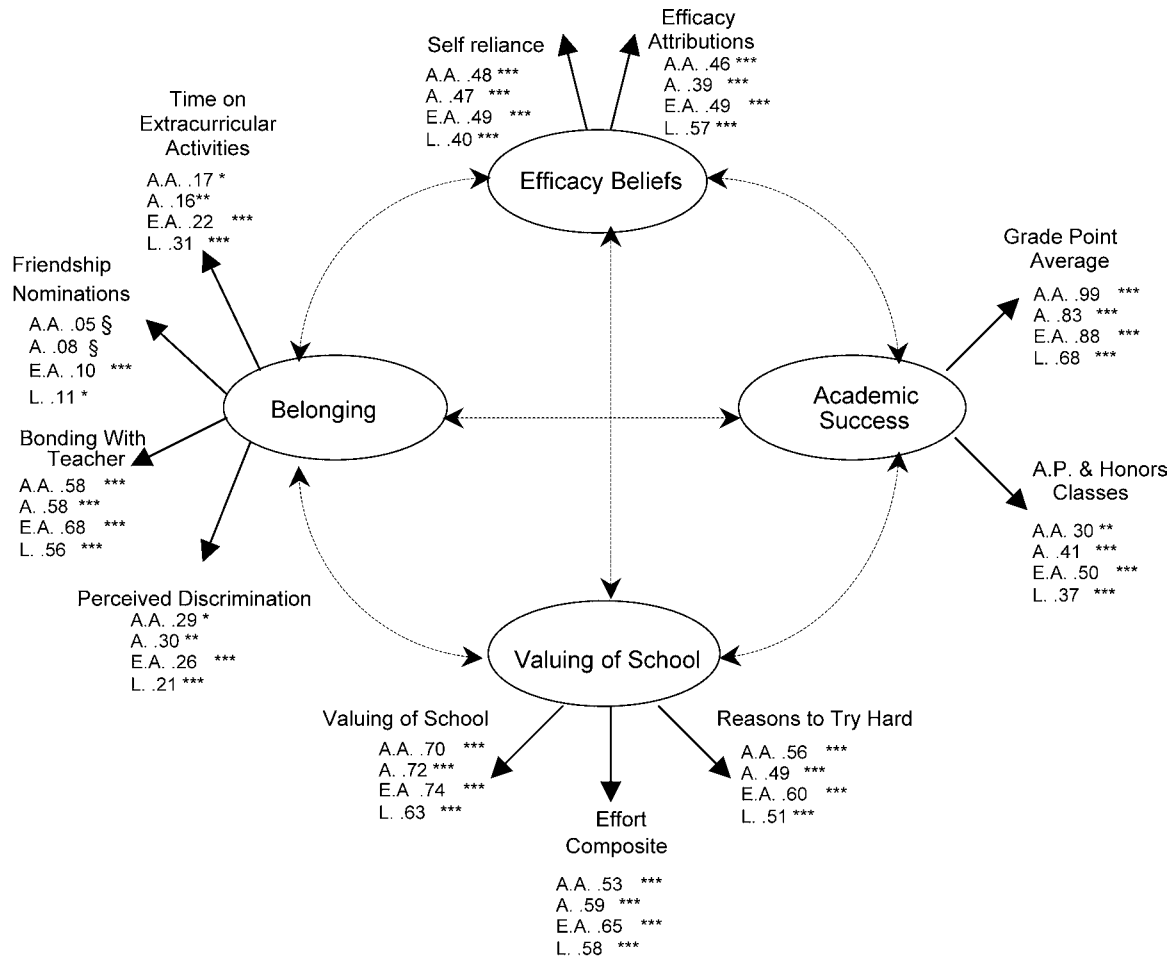
Structural Model

We used the structural model to test the relationship between the latent constructs: efficacy beliefs, valuing of school, belonging, and academic success. We proposed that belonging, as measured in our study, would mediate the relationship between motivational variables and academic success for members of each ethnic group. SEM allowed for direct comparison of 2 structural models in order to test the relative strength of the indirect [mediating] effects of belonging. An indirect structural model, with statistically significant indirect paths, which fits the data as well as a model employing both direct and indirect paths (comparing χ^2 statistic for the 2 models) demonstrates that the indirect exogenous variable serves as a mediator. Mediation would therefore be indicated statistically by non-significant differences in χ^2 (between the overall and the indirect model), with significant paths to belonging in the indirect model (K. Bollen, personal communication, June 30, 2003; Bollen, 1989; Kline, 1998). (See Fig. 1 for path illustration of direct and indirect paths.)

In response to research documenting ethnic-based variability in students' experiences with these variables

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[3]To confirm that the Wisconsin school did not differ substantially from the California-based schools, we ran all structural analyses with a

sample that excluded the Wisconsin school. We found no difference in the pattern of results with the Wisconsin school excluded.

Self reliance
A.A. .48 ***
A. .47 ***
E.A. .49 ***
L. .40 ***

Efficacy
Attributions
A.A. .46 ***
A. .39 ***
E.A. .49 ***
L. .57 ***

Time on
Extracurricular
Activities
A.A. .17 *
A. .16**
E.A. .22 ***
L. .31 ***

Friendship
Nominations
A.A. .05 §
A. .08 §
E.A. .10 ***
L. .11 *

Bonding With
Teacher
A.A. .58 ***
A. .58 ***
E.A. .68 ***
L. .56 ***

Perceived Discrimination
A.A. .29 *
A. .30 **
E.A. .26 ***
L. .21 ***

Grade Point
Average
A.A. .99 ***
A. .83 ***
E.A. .88 ***
L. .68 ***

A.P. & Honors
Classes
A.A. 30 **
A. .41 ***
E.A. .50 ***
L. .37 ***

Efficacy Beliefs

Belonging

Academic Success

Valuing of School

Valuing of School
A.A. .70 ***
A. .72 ***
E.A .74 ***
L. .63 ***

Effort
Composite
A.A. .53 ***
A. .59 ***
E.A. .65 ***
L. .58 ***

Reasons to Try Hard
A.A. .56 ***
A. .49 ***
E.A. .60 ***
L. .51 ***

A.A. = African American, (n=580); A. = Asian decent, (n=948); E.A. = European American, (n=3142); L. = Latino, (n=860)

* $p \leq .05$,   ** $p \leq .01$,   *** $p \leq .001$,   § = non-significant; dropped from model

Fig. 3. Measurement model Part 2: Correlations between latent variables by ethnic group.

Table III. Invariant Structural Analyses of Gender, SES, & School

	χ^2	p	TLI	CFI	RMSEA	AIC
Gender						
H_{form}	1186.21	0.000	0.99	0.99	0.04	1354.21
$H_{\Lambda x \Lambda y B \Gamma \Phi}$	1281.93	0.000	0.99	0.99	0.04	1397.93
SES						
H_{form}	1118.37	0.000	0.99	0.99	0.03	1454.36
$H_{\Lambda x \Lambda y B \Gamma \Phi}$	1503.51	0.000	0.99	0.99	0.03	1683.51
School						
H_{form}	1456.18	0.000	0.99	0.99	0.02	2054.60
$H_{\Lambda x \Lambda y B \Gamma \Phi}$	1753.34	0.000	0.99	0.99	0.02	2173.34

(i.e., Gillock and Reyes, 1996, 1999; Johnson *et al.*, 2001; Pajares and Kranzler, 1995; Way and Chen, 2000) we conducted within-group analysis to avoid comparisons between or generalizations across ethnic groups. We neither conducted an analysis of invariance between ethnic groups, nor examined interaction effects for ethnic group, as we would have were comparing groups our objective.

Table II illustrates the comparison of the indirect (mediation) model with a model employing both direct and indirect paths (the total effects model). For both the African American and Latino samples, there is no statistical difference between the 2 models (e.g., insignificant $\Delta\chi^2$'s), with statistically significant regression weights for the indirect paths (see Fig. 4), confirming a totally mediated model. This comparison for students of Asian-descent and European American students revealed mixed results (significant $\Delta\chi^2$s' between the 2 models), suggesting a potential combination of effects. Further comparison of the direct and indirect models for these 2 groups demonstrated consistently larger Comparative Fit Indices (CFI) and Tucker-Lewis Coefficients (TLI), and smaller Root Mean Square Error of Approximations (RMSEA) and Akaike Information Criteria (AIC) for the indirect model, supporting a partially-mediated interpretation of the data (see Table IV). Figure 4 demonstrates the regression weights and correlations of the indirect structural model for all 4 ethnic groups; the regression weights of the indirect paths (belonging as mediator) were statistically significant across all groups.

These results indicate that experiences of belonging act as a mediator, that is, an underlying, explanatory process, in the relationship between traditional motivational variables and academic success for African American and Latino students represented in this data set. This hypothesis was partially supported for European American students and students of Asian descent. That is, the relationship between traditional motivational variables and academic success is only partially explained by sense of belonging for these 2 groups. The structural analysis displays a better fit to the data for the model representing belonging as a mediator, than the model representing belonging as a correlate of achievement merely contemporaneous with other motivational variables.

DISCUSSION

Adolescents' need for a sense of school belonging is widely acknowledged as a factor in student motivation and achievement (Carnegie Council on Adolescent Development, 1989; Osterman, 2000; Weiner, 1990). We conducted this study to further understand 2 aspects of this construct: the relevant dimensions of belonging and the role of belonging in explaining the relationship between motivation and achievement, for 4 ethnic groups. We found mixed support for our first hypothesis, that belonging within peer, teacher, extracurricular, and ethnic group discrimination domains, as defined by our measures, would be significant across the 4 ethnic groups. But, we found support within all 4 groups that belonging as a construct best explained the relationship between motivation and achievement, as measured by this study. We focus on 2 summary points derived from these results.
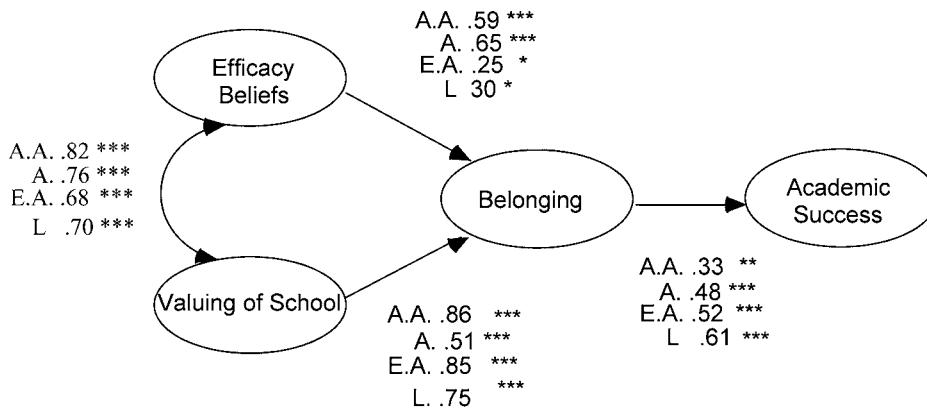
A.A. = African American, (n=580); A. = Asian-decent, (n=948); E.A. = European American, (n=3142); L. = Latino, (n=860)

* p ≤.05,   ** p ≤ .01,   *** p ≤ .001

Fig. 4. Indirect structural model: Regression weights and correlations.

Table IV. Structural Model Fit Indices: Direct vs. Indirect Models Asian-descent and European American Samples

Ethnic group	n	χ^2	df	CFI	TLI	RMSEA	AIC
Asian-descent							
Direct effects	948	409.08	40	0.99	0.98	0.10	483.08
Indirect effects[a]	948	158.34	31	1.00	0.99	0.07	226.34
European American							
Direct effects	3,142	1321.34	40	0.99	0.98	0.10	1395.34
Indirect effects[a]	3,142	353.72	40	1.00	0.99	0.05	394.73

Note. CFI: comparative fit index; TLI: Tucker-Lewis coefficient; RMSEA: root mean square error of approximation; AKAIKE: Akaike information criterion.
[a]Mediation model.

Students Experience Schools in Different Ways

Students can connect to schools through multiple domains. Our review of the literature called attention to 4 dimensions of students' school experiences: relationships with teachers, involvement with peers, engagement in school activities, and perceived ethnic-based discrimination. To consider students' school experiences holistically, we analyzed aspects of these 4 arenas of student experience simultaneously. All were pertinent indicators of belonging for European American and Latino students. For the African American and Asian-descent samples, relationship with teachers, school activity involvement, and perceived ethnic-based discrimination, but not friendship nominations, were relevant. Thus, multiple dimensions of belonging were relevant, but not uniformly so, across ethnic groups.

It was not the case that our Asian-descent or African American participants were socially isolated from peers. Their distributions of friendship nominations were similar to distributions for the other 2 ethnic groups; distribution of friendship nominations was similar across schools as well. It is possible that although their school-mates viewed our participants as socially grounded (indicating this by friendship nominations), the students themselves may not have experienced these nominations as friendship, and may not benefit from an increased connection to the school through these nominations. There is evidence that students from different ethnic groups experience peer relationships differently in the school context, in terms of the support they derive from school-based friendships (Johnson *et al*., 2001; Way and Chen, 2000). Neighborhood rather than school friendships may be more important within certain minority cultures as well (Clark and Ayers, 1991; Dubois and Hirsch, 1990; Way and Chen, 2000). Researchers have suggested that experiences relative to respect for their culture (Way, 2001), and culturally derived parental socialization practices which affect access to peers (i.e.,

Ping and Berryman, 1996), may inhibit formation of intimate school-based friendships among students of certain minority groups. Intimacy experienced within friendships may be a key process linking friendship to sense of school belonging (Hamm and Faircloth, forthcoming). If ethnic minority youth lack intimacy in school-based friendships, these relationships may not serve to psychologically bond teens to their schools. Other researchers have found that the qualities of social relationships, not just their existence, are related to sense of school belonging (see for example, Ryan, 2001; Wentzel, 1997). Differing cultural perspectives (i.e., an emphasis on familial rather than school-based relationships) may introduce variability in the relevance of school-based friendships as well (Gaines, 1997; Marin and Marin, 1991; Triandis, 1990). These cultural forces, which impact the formation and features of peer relationships, may help shape the role of school-based peer relationships relative to belonging for students representing these ethnic groups. In future research, more complete measures of friendship and peer relations should be explored as well.

Interpersonal Connections Animate Student Motivation

We conceptualized belonging, given a meaningful characterization for each ethnic group, as a critical vehicle for translating motivation to achievement. The model in which belonging was represented as the underlying factor in the relationship between motivation and achievement provided a statistically better fit for the data when compared to the model representing belonging as a correlate of achievement merely contemporaneous with other motivational variables. This mediation pattern was robust across all ethnic groups. In other words, it was within the secure base of positive perceptions of belonging that the traditional motivational variables of efficacy beliefs and

valuing of school developed and supported academic success most effectively. Based on these findings we suggest that it is through interpersonal connections in key arenas of school life that student motivation becomes energized.

Limitations

The pre-determination of 4 dimensions of belonging, which formed the basis for this research, introduced certain limitations to the study. Although well grounded in the literature on students' connections to their schools, the study does not inquire whether there may be additional dimensions of school life that also enhance students' sense of belonging. Further exploration may identify aspects of belonging vital to members of particular culture or ethnic groups which are, as yet, unrecognized. Neither does our study shed light on ways in which the 4 proposed components of belonging are encouraged in a classroom or school body. Identifying specific school and classroom features and experiences that develop and sustain belonging is a natural next step for research in this field, one that could yield significant practical benefit for educators.

Additionally, as is often the case in secondary analysis of large-scale data sets, the items available did not offer unlimited freedom in modeling the indicators of particular latent constructs. Statistically speaking, in addition to the problems noted with the use of friendship nominations, the loadings for time spent on extracurricular activities were lower than desirable. Although we conducted a sensitivity test to ensure that particular measures were sensible indicators, and found support for keeping these indicators in the model, we urge readers to use caution in interpreting relationships that involve these indicators.

In a related issue, our conceptualizations of 2 of the measured variables in this study were 1-dimensional. For example, connection to peer social networks was measured solely through friendship nominations. This singularity limits our ability to interpret relationships that are, in reality, fundamentally complex. Students connect with peers at their schools in multiple, overlapping ways, which vary in definition, intensity, valence, and impact. In our own very recent research on an ethnically diverse sample of adolescents, we found that it is important to sense of belonging not only to have friends at school, but also to benefit from relationship qualities such as intimacy, support, and companionship within those friendship (Hamm and Faircloth, forthcoming). The measure of extracurricular activity employed was also a single item (the number of hours students invested in ECAs during a typical week). Although a statistically significant measure of belonging for all 4 ethnic groups

in this study (albeit a weak measure for 2 groups), this measure leaves certain questions unanswered (i.e., Are specific extracurricular experiences or levels of involvement optimal?). Given the important role of belonging indicated by this study, these key dimensions of students' connection to school deserve additional investigation.

Finally, although the dataset used in this study is somewhat dated, it is unique in its inclusion of large proportions of ethnic minority students, and measures of academic as well as non-academic experiences in multiple domains of schooling. Our review of the literature suggested that the ways in which the construct of belonging is defined and measured have not changed dramatically since the data were collected. The constructs drawn from this data set continue to form the basis for conceptualizing belonging today (Osterman, 2000).

CONCLUSION

Enduring efforts to understand student motivation and achievement have highlighted many aspects of students' lives that encourage academic engagement and student success. Interpersonal connections to the life of the school have earned a central place in this endeavor. Definitions of this sense of belonging are nearly as numerous as the researchers who have considered them. We pooled across 4 aspects of student belonging within schools and measured those dimensions in specific ways. These are not the only approaches to measuring belonging, and future studies must continue to flesh out, within the key arenas of school life, accurate markers of belonging for various groups. Nonetheless, researchers have demonstrated that students are most likely to be motivated and successful in contexts in which they have a strong sense of relatedness and community within the learning environment (i.e., Ryan and Patrick, 2001; Ryan and Powelson, 1991; Stipek, 1996).

In this study, we have captured the critical role of belonging for motivation and achievement in a way that respects the complexity and diversity of the lives of contemporary high school students. Our findings underscore the importance of genuine engagement in multiple social systems within the school for students from 4 distinct ethnic groups. Knowing these relationships to be true, the strategies adopted by school personnel to tap into belonging to animate student motivation and achievement should capitalize on the multiple avenues through which students can be connected to schools, while remaining sensitive to potential variability across the ethnic groups represented within the school. That is, in ethnically diverse schools, practices should not be levied uniformly

across the student body without attention to how members of different ethnic groups might experience them.

These findings are especially pragmatic in that, unlike many risk factors represented in research (i.e., low SES or minority status), school experiences that support belonging can be manipulated. Future research can build on these general findings to further reveal the processes through which interpersonal connections to multiple domains of schooling animate student motivation and academic success.

ACKNOWLEDGMENTS

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