

# Sense of Belonging and Persistence in White and African American First-Year Students

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**Abstract** The authors argue for the inclusion of students' subjective sense of belonging in an integrated model of student persistence (Cabrera et al., *J Higher Educ* 64:123–139, 1993). The effects of sense of belonging and a simple intervention designed to increase sense of belonging are tested in the context of this model. The intervention increased sense of belonging for white students, but not for African American students. However, sense of belonging had direct effects on institutional commitment and indirect effects on intentions to persist and actual persistence behavior for both white and African American students.

**Keywords** Sense of belonging · Persistence · Intentions · Intervention

Extensive efforts to identify factors that increase the persistence of students at colleges and universities have yielded sophisticated theories and complex models of student persistence. The current study investigates the importance of one factor that, although not traditionally emphasized in prevailing models of the college student experience, has recently received increased attention in research on student persistence: students' sense of belonging to their college or university. This study examines whether sense of belonging deserves a place in

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models of student persistence. It also tests whether sense of belonging can be increased using simple methods grounded in social psychological theory and research.

### **Sense of Belonging in Models of Student Persistence and Involvement**

Consistent with Hurtado and Carter (1997), we define students' sense of belonging as their psychological sense of identification and affiliation with the campus community. As in early theorizing on student persistence, we view students' subjective sense of belonging as conceptually distinct from behavioral indicators of participation, or integration, in the social and academic aspects of university life (Spady 1971). Specifically, we argue that when students become integrated into the social and academic systems of the university, they develop a psychological sense of belonging to the university community, which is an important precursor to desirable outcomes such as increased commitment and persistence. However, as Hurtado and Carter (1997) point out, the distinction between behavioral indicators of social and academic integration and students' psychological sense of belonging has been largely neglected in prevailing models of student persistence and involvement (Astin 1984; Pascarella and Terenzini 1980; Tinto 1987, 1993).

The neglect of students' sense of belonging in this literature is clearly evident in two prominent and widely studied models of the college student experience, Tinto's student integration model (Tinto 1987, 1993) and Astin's model of student involvement (Astin 1984). A key aspect of Tinto's model is that students' integration into their social and academic college environment predicts whether they are likely to remain enrolled in college. Although integration can consist of both behavioral involvement and a psychological sense of belonging, measures of integration used to test Tinto's model have focused heavily on behavioral involvement, such as reported interactions with peers and faculty (e.g., Pascarella and Terenzini 1980). Similarly, Astin's (1984) model emphasizes that behaviors indicative of student involvement cultivate student learning and development, which can ultimately lead to increased persistence. In an attempt to identify overlap in these two models, Berger and Milem (1999; Milem and Berger 1997) found that students who report more involvement behaviors also report more social integration (e.g., development of close relationships with peers and/or faculty), which is then associated with commitment to the university, intentions to enroll for a second year (Milem and Berger 1997), and actual re-enrollment (Berger and Milem 1999). As in past research focused on the Tinto and Astin models, however, Berger and Milem did not examine students' subjective sense of belonging in their studies. One would predict that students who report more social integration would also have developed a stronger sense of belonging, which would at least partially explain the effects of social integration on commitment and persistence.

An exception to the common omission of subjective sense of belonging from research and theory on student persistence is a model proposed by Bean (Bean 1980, 1985). Bean's student persistence model focused on factors likely to affect the socialization of students, including institutional fit, college academic performance, and institutional commitment. Bean describes institutional fit, in part, as the extent to which students feel they "fit in" at the university (Bean 1985). In theory, this definition is quite similar to a subjective sense of belonging. In practice, however, institutional fit has been measured with a combination of items explicitly measuring sense of belonging (e.g., To what extent do you feel you belong at this university?) and items of much less pertinence to belonging (e.g., To what extent do you feel able to control your academic life here? How certain are you that this university was the right choice for you?) (Bean 1985; Cabrera et al. 1992). Even though Bean's model

of student persistence emphasizes the importance of sense of belonging on a conceptual level, sense of belonging has not been independently assessed in work inspired by his model, nor have its unique effects on persistence and related outcomes been examined.

Bean's conceptual emphasis on sense of belonging was further diminished by efforts to integrate and consolidate the models of student persistence proposed by Tinto and Bean (Cabrera et al. 1992, 1993). In an impressive study of the two models, Cabrera, Nora and colleagues first examined the predictive validity of each model and the overlap in constructs across models (Cabrera et al. 1992). When examining Bean's model, the researchers found that the single item used to measure institutional fit loaded on the same factor as items used to measure institutional quality, so they combined the items into a single measure of Institutional Fit & Quality. When examining the convergence between Tinto's and Bean's models, they found that the Institutional Fit & Quality construct from Bean's model had substantial overlap with the Institutional Commitment construct from Tinto's model. This was also the case in a separate confirmatory factor analysis that found institutional commitment, fit, and quality comprised a single factor (Nora and Cabrera 1993). In a test of an integrated model of student persistence, sense of belonging was therefore not retained as a distinct factor, but was instead measured with one item that was combined with several others as a measure of institutional commitment (Cabrera et al. 1993).

That subjective sense of belonging has not maintained more prominence in research on student persistence is unfortunate, as research in the field of psychology has demonstrated that the need to belong is a fundamental human motivation that can have a powerful influence on behavior (Baumeister and Leary 1995). At a general level, failing to achieve an adequate sense of belonging can lead to increased stress, detriments in mental and physical health, and even suicide (Baumeister and Leary 1995; Durkheim 1951). Furthermore, feeling that one belongs to a group has a host of implications for cognitions and behaviors, such as preferential attitudes toward and treatment of in-group members over out-group members, as well as increased altruism and co-operation with the group (Turner 1987). With such broad applicability to many other aspects of life, it seems likely that sense of belonging plays a distinct role in student persistence behavior as well. Indeed, as evidenced by the previous discussion, a recurring theme in prevailing models of student persistence and involvement is that students who are more integrated into the university community, and are thus likely to have an enhanced sense of belonging, are more likely to remain enrolled. Examining whether sense of belonging does, in fact, mediate the relationships between traditional measures of social and academic integration and outcomes such as persistence is necessary for determining whether efforts to improve such outcomes should include strategies for increasing sense of belonging. Accordingly, researchers have demonstrated renewed interest in the relevance of sense of belonging to student persistence in recent years.

### **Renewed Interest in Sense of Belonging in Recent Research on Student Persistence**

It has been over a decade since Hurtado and Carter (1997) first pointed out the omission of subjective sense of belonging from most research on student persistence. Since then, a handful of studies examining sense of belonging in the university context have emerged. The first of these was Hurtado and Carter's initial study examining the antecedents of sense of belonging among Latino students (1997). More recently, Hurtado and colleagues (2007) used national surveys of first-year students to examine the correlates of sense of belonging across racially diverse sub-samples of students majoring in the sciences. They identified

several variables that are positively related to students' sense of belonging, such as SAT scores, interacting with graduate students or teaching assistants, and getting advice from other students. Although overall academic adjustment was closely related to sense of belonging, GPA was not. Kember and Leung (2004) also focused on identifying correlates of sense of belonging, with a particular emphasis on coping skills in part-time students. They found that various coping skills, such as negotiating with one's family to allow time to study and establishing social connections with like-minded students, were related to sense of belonging.

A small number of studies have examined the relationship between sense of belonging and other positive educational outcomes. Thomas and Galambos (2004) reported that sense of belonging predicts general satisfaction with college. Mounts (2004) went a step beyond examining the outcomes of sense of belonging by testing whether sense of belonging mediates the relationships between perceptions of campus racial hostility and parental support, on the one hand, and college drug use and psychological adjustment, on the other. She found that sense of belonging did not play a mediating role for drug use, but did mediate relationships involving psychological adjustment.

One particularly innovative study on sense of belonging was conducted by Walton and Cohen (2007), who tested an intervention designed to protect the sense of belonging of African American students pursuing computer science degrees. By telling students that it is normal to have doubts about whether they belong in college, Walton and Cohen successfully protected students' sense of belonging from declining over time. Moreover, African American students who were randomly assigned to the intervention (vs. control) group experienced a variety of positive outcomes, including spending more time studying, communicating with professors more frequently, expressing more confidence in their own academic potential, and experiencing greater improvement in their GPA over time.

Walton and Cohen's research suggests that fostering students' sense of belonging may be an effective means of improving college performance of potentially marginalized students. Student persistence, however, was not an outcome evaluated in Walton and Cohen's research. To our knowledge, the relationship between sense of belonging and actual persistence, independent of other factors such as institutional commitment, has not been empirically studied. A qualitative study of 53 part-time students concluded that, "A sense of belonging can make the difference between completing the programme or dropping out" (Kember et al. 2001, p. 340). But, given this study's small sample and its focus on part-time students, more research is necessary to clarify the role of sense of belonging in determining student persistence.

### **Sense of Belonging in the Current Study**

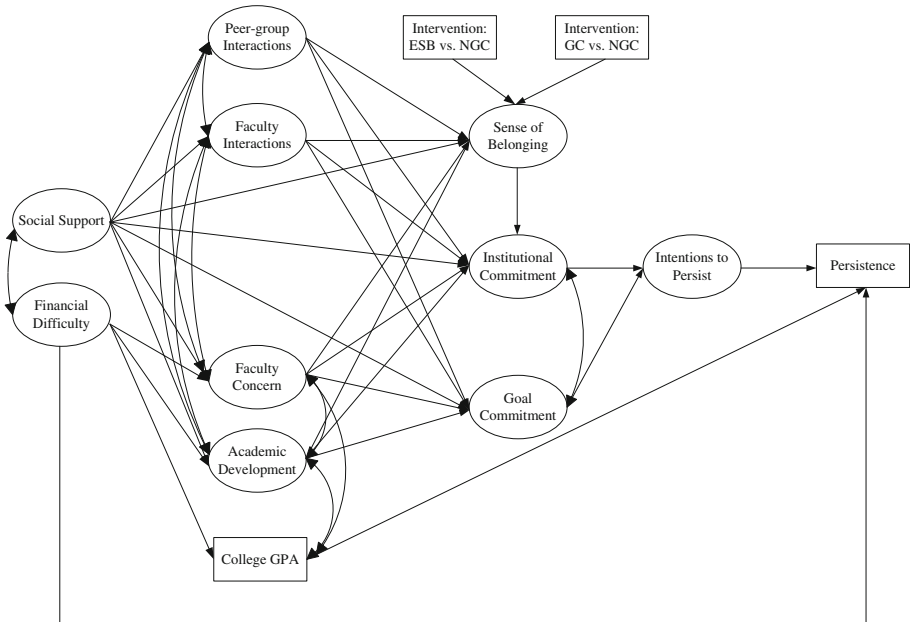
The current study was designed to examine whether subjective sense of belonging is positively related to student persistence in white and African American first-year college students. We designed the study to test the independent influence of sense of belonging within the context of the integrated model of student persistence tested by Cabrera et al. (1993). In addition to measuring sense of belonging, we therefore measured each of the constructs in their final structural model: encouragement from friends and family, financial attitudes, academic and social integration, institutional and goal commitment, college GPA, intentions to persist, and actual persistence.

Anticipating that sense of belonging would indeed play a role in student persistence, we also decided to test whether sense of belonging is modifiable using basic principles

grounded in social psychology. Over and above testing the general effects of students’ existing sense of belonging, we therefore tested the effects of a simple intervention designed specifically to increase students’ sense of belonging during their first year of college. Given that sense of belonging may be a particularly important issue for students at-risk of being marginalized (Hurtado and Carter 1997; Kember et al. 2001; Walton and Cohen 2007), we examined the effects of sense of belonging and the intervention for both African American and white students at a predominantly white university.

The hypothesized relationships among the variables in Cabrera et al.’s (1993) integrated model, sense of belonging, our intervention, and student persistence are illustrated in Fig. 1. A few minor differences between our model and that of Cabrera et al.’s should be clarified. First, our measure of students’ financial situation assessed difficulty in paying for college and concern about their individual ability to pay for college because these seemed like aspects of a student’s financial situation that would impact persistence, whereas Cabrera et al. assessed satisfaction with financial aid. We therefore refer to our financial construct as “financial difficulty” rather than “financial attitudes,” as in Cabrera et al.’s study. With regard to social and academic integration, a factor analysis of our measures indicated that it was appropriate to retain two factors to represent each of these, whereas Cabrera et al. had single factors named “social integration” and “academic integration.” Our model therefore contains “peer-group interactions” and “faculty interactions” in lieu of a single social integration factor, and “faculty concern” and “academic development” in lieu of a single academic integration factor.

Other than those involving sense of belonging and our intervention, all paths shown in Fig. 1 are based on Cabrera et al.’s integrated model. To examine the role of sense of belonging independent of other constructs such as institutional commitment, we included sense of belonging as a unique factor in the model. We expected sense of belonging to



**Fig. 1** Baseline model

mediate the effects of several variables on institutional commitment. Specifically, we expected encouragement from family and friends, social integration (i.e., peer-group interactions and faculty interactions), and academic integration (i.e., faculty concern and academic development) to affect students' sense of belonging, which would then affect institutional commitment. This is consistent with early theorizing that behavioral indicators of student involvement affect sense of belonging, which then affect educational outcomes such as persistence (Spady 1971). It is also consistent with previous work showing that feeling a part of the university community mediates the relationship between student satisfaction and willingness to recommend the university to others (Gaertner and Dovidio 2000).

Figure 1 also illustrates our expectation that the intervention would affect sense of belonging. Consistent with past research that has shown institutional commitment to be a strong and consistent predictor of intentions to persist, which in turn comprise the strongest predictor of actual persistence, we expected any effects of our intervention or sense of belonging on persistence to be routed through institutional commitment (Berger and Milem 1999; Cabrera et al. 1993; Mallette and Cabrera 1991).

We have previously assessed pieces of this model using individual growth curve modeling (Hausmann et al. 2007). Because these analyses were completed before enough time had elapsed to allow measurement of actual persistence, we focused on intentions to persist as the main outcome. We found that our intervention protected students from a decline in sense of belonging over their first year, and that the intervention showed a marginally significant trend towards protecting students from a decline in intentions to persist. Since that report, we have collected additional data on the actual persistence of students through their second year of college, as well as their college GPA. The current paper therefore tests the effects of sense of belonging and the intervention with actual persistence as the main outcome and with GPA included in the model.

## Methodology

### Student Sample

The study was conducted at a large, public, mid-Atlantic, predominately white (77% white, 8% African American, 12% other race/ethnicity, and 3% unknown race/ethnicity) university. All full-time, first-year, non-transfer African American students ( $n = 254$ ) and a random sample of their white peers ( $n = 291$ ) were invited to participate in a three-wave survey. Surveys were mailed to students at the beginning of the fall semester and at the beginning and end of the spring semester. Data for the current analyses were drawn primarily from the third wave of the survey. For Survey 1, 220 (76%) white students and 145 (57%) African American students responded. All students who returned Survey 1 and who had not subsequently withdrawn from the university were invited to complete Surveys 2 and 3. Due to frequent reminder mailings and financial incentives for completing the surveys, there were very high response rates for Surveys 2 and 3 (Survey 2: 94% for both whites and African Americans; Survey 3: 96% for whites, 89% for African Americans).

Enrollment status during the spring term of the second year (enrolled vs. not enrolled) was identified for the 365 students who returned at least the first survey. Nine students who were no longer enrolled and who had not completed any of the measures subsequent to the implementation of the intervention were excluded from the analysis. As a result, 356 students were retained for the analysis, 59% of whom were female and 60% of whom were

white. The white and African American samples were 54% and 67% female, respectively. Women were slightly over-represented in our sample compared with the university population, in which 51% of white students and 59% of African American students are female.

## Procedure

Participants received three surveys throughout their first year of college. All surveys contained measures of financial difficulties, encouragement from family and friends, social and academic integration, sense of belonging, institutional commitment, goal commitment, and intentions to persist. Data from the third survey were used in the present analysis because they provided the most recent student perceptions of the aforementioned constructs before student persistence was measured at the end of the second year.

### *Sense of Belonging Intervention*

We included an experimental component to our study to determine whether we could influence sense of belonging using basic strategies grounded in social psychological research. Upon returning the first survey, students were randomly assigned to one of three groups, with the constraint that white and African American students were distributed equally across each group. The groups consisted of an enhanced sense of belonging group (ESB) and two control groups. A multi-faceted approach was used to increase sense of belonging in students in the ESB group. These students received several written communications from university administrators (e.g., the Provost and/or Vice-Provost for Student Affairs) emphasizing that they were valued members of the university community and that their responses to the surveys (in aggregate form) would be used to help improve campus life for all students. Research in social psychology has demonstrated that identification with a group can also be strengthened through simple means such as having people wear clothing that identifies their membership in the group or displaying the group's name on a nametag (Gaertner et al. 1989, 1990, 1999). We therefore sent ESB students several small gifts for daily use (e.g., baseball caps, ID holders, magnets, decals, etc.) that displayed the university's name, logo, and/or colors. The purpose of these gifts was to surround students with items that emphasized their connection to their university and thereby increase their sense of belonging. A total of seven mailings containing written correspondence and gifts were delivered to participants in the ESB group, the first of which was delivered after participants returned the first survey. The remaining mailings were sent at roughly equal time increments spanning the fall and spring semesters, with 3–5 weeks between each mailing.

Students in both control groups were asked to complete the same surveys as those in the ESB group but did not receive the communications and logo-bearing gifts designed to affect their sense of belonging. Specifically, all communication with these students came from the research team rather than from university administrators. Furthermore, students' membership in the campus community was not mentioned in these communications. We thought it was possible that receiving added attention and gifts during one's freshman year might be sufficient to affect students' sense of belonging, regardless of whether the attention came from university officials or whether the gifts displayed university insignia. Therefore, students in the gift control group (GC) received paraphernalia from the research team identical to that received by students in the ESB group and on the same delivery schedule, except that the gifts for this group did not contain

university insignia, name, or colors. In the no-gift control group (NGC), students did not receive any gifts or additional communications, thus providing data from respondents who did not have any experiences related to their participation in the study other than completion of the surveys.

### Study Measures

In addition to assessing students' self-reported race and gender, we included measures to assess the following constructs from the integrated model of student retention tested by Cabrera et al. (1993): perceived difficulty in financing college, encouragement from family and friends, social integration, academic integration, institutional commitment, goal commitment, and intentions to persist. All constructs were measured using items developed and used in previous retention research (see Table 1). In accordance with Pascarella and Terenzini's measure of social and academic integration (Pascarella and Terenzini 1980), social integration consisted of peer-group interactions and interactions with faculty, whereas academic integration consisted of perceived faculty concern for student development and teaching, and students' perceived academic and intellectual development. In addition to these variables, we assessed sense of belonging using Bollen and Hoyle's (1990) 3-item sense of belonging subscale (see Table 1). This is a reliable measure that has been validated using college and community samples (Bollen and Hoyle 1990) and has been used successfully in prior studies of sense of belonging in diverse college populations (Hurtado and Carter 1997; Hurtado et al. 2007).

A confirmatory factor analysis (CFA) was conducted to verify that items measuring financial difficulty, encouragement of family and friends, social and academic integration, institutional commitment, goal commitment, intentions to persist, and sense of belonging loaded on the appropriate factors. Only items that had factor loadings of at least .40 on the appropriate factors were included in the final analysis (see Table 1). Complete details of the confirmatory factor analysis are available from the authors upon request.

We obtained data on student persistence and college GPA from university records. Students who were still enrolled in the spring semester of their second year were categorized as "persisters," whereas those who were not enrolled were categorized as "non-persisters." Cumulative GPA at the end of the fall term of the second year was used for persisters. For non-persisters, cumulative GPA as of the last semester for which it was available was used.

### Analytic Procedures

After using CFA to identify an appropriate measurement model, we conducted a multi-group CFA for measurement invariance to determine whether the measurement model was consistent across white and African American students. Next, we used multi-group structural equation modeling (SEM) to test the effects of our intervention on sense of belonging and to determine whether the intervention had unanticipated effects on other variables. Finally, after examining overall differences in persistence rates by student race and gender using chi-square statistics, we used multi-group SEM to test the effects of sense of belonging and our intervention in the context of the entire model in our white and African American samples. CFA and SEM procedures were performed using the software *Mplus* (Muthén and Muthén 2006).



**Table 1** Description of study variables with standardized factor loadings and scale reliability

Variable	Items used to measure variable	Standardized factor loading	Alpha
Financial Difficulty (FINDIF)	Considering the financial aid you've received and the money you and your family have, how much difficulty have you had so far in paying for your school expenses? (no difficulty, some difficulty, or a great deal of difficulty)	.84	.83
	Do you have any concern about your future ability to finance your college education? (No, some concern, or major concern)	.98	
Encouragement from Family & Friends (ENCOUR) (Cabrera et al. 1992)	My close friends encourage me to continue attending <name of institution>	.80	.72
	My family approves of my attending <name of institution>	.71	
	My family encourages me to continue attending <name of institution>	.88	
Interactions with Peers (PEERINT) (Pascarella and Terenzini 1980)	Since coming to this university I have developed close personal relationships with other <name of institution> students	.86	.87
	It has been difficult for me to meet and make friends with other <name of institution> students	.68	
	My interpersonal relationships with other <name of institution> students have had a positive influence on my intellectual growth and interest in ideas	.89	
	Most students at this university have values and attitudes different from my own	.88	
	The student friendships I have developed at this university have been personally satisfying	.86	
Interactions with Faculty (INTFAC) (Pascarella and Terenzini 1980)	My non-classroom interactions with faculty have had a positive influence on my personal growth, values, and attitudes	.88	.85
	My non-classroom interactions with faculty have had a positive influence on my career goals and aspirations	.89	
	My non-classroom interactions with faculty have had a positive influence on my intellectual growth and interest in ideas	.94	
	I am satisfied with opportunities to meet and interact informally with faculty members	.72	
	Since coming to this university I have developed a close personal relationship with at least one faculty member	.56	
Faculty Concern (FACON) (Pascarella and Terenzini 1980)	Few of the faculty members I have had contact with are generally interested in students	.77	.77
	Few of the faculty members I have had contact with are superior teachers	.76	
	Few of the faculty members I have had contact with are willing to spend time outside of class to discuss issues of interest and importance to students	.81	

**Table 1** continued

Variable	Items used to measure variable	Standardized factor loading	Alpha
Academic Development (ACADEV) (Pascarella and Terenzini 1980)	My academic experience has had a positive influence on my intellectual growth and interest in ideas	.87	.83
	My interest in ideas and intellectual matters has increased since coming to this university	.77	
	I am more likely to attend a cultural event (for example a lecture, concert, or art show) now than I was before coming to this university	.84	
	I am satisfied with my academic experiences at this university	.82	
Sense of Belonging (BELONG) (Bollen and Hoyle 1990)	I feel a sense of belonging to <name of institution>	.93	.94
	I feel that I am a member of the <name of institution> community	.96	
	I see myself as part of the <name of institution> community	.96	
Institutional Commitment (ICOM)	I am confident I made the right decision to attend <name of institution>. (From Institutional and Goal Commitments subscale from Pascarella and Terenzini 1980)		
Goal Commitment (GCOM)	It is important for me to graduate from college		
Intentions to Persist (INTENT)	I intend to complete my degree at <name of institution>	.93	.79
	Have you ever seriously considered leaving <name of institution>? (1 = Yes, often, 2 = Yes, sometimes, 3 = Hardly ever, 4 = No, never)	.85	

*Note:* Items were measured using 5-point Likert response scales (1 = strongly disagree, 5 = strongly agree) unless otherwise noted. Negatively worded items were reverse-scored prior to being combined with other items. Higher values indicate more favorable responses for all measures

### Measurement Scale

Most constructs were assessed on 5-point ordinal Likert-scales. Although the use of maximum likelihood estimation is justified for ordinal data when items contain at least four response options (Byrne 1998), we opted to use the modified weighted least square estimation method for ordinal variables (WLSMV in Mplus) because there were some items for which only 3 of the 5 response options were used by participants. This estimation method has been shown to work satisfactorily in studies with samples similar in size to ours (Muthén and Muthén 2006).

### Incomplete Data

Students with missing responses on some items were retained for analysis by using direct maximum likelihood estimation with missing data in Mplus.

### Model Fit Indexes

The extent to which each model fit the data was assessed using the following commonly used goodness-of-fit indexes: the chi-square statistic, CFI (Comparative Fit Index), TLI (Tucker Lewis coefficient), and RMSEA (Root Mean Square Error of Approximation). CFI and TLI with values of .95 or above (Hu and Bentler 1999) and RMSEA smaller than .08 (MacCullum et al. 1996) indicate good fit. Given that the chi-square statistic is largely dependent on sample size and is therefore not a practical test of model fit (Cheung and Rensvold 2002), we placed more emphasis on the other fit indexes.

## Results

### Multi-group CFA for Measurement Invariance

In preparation for examining whether the effects of sense of belonging or our intervention differed between African American and white students, we first tested the measurement model for measurement invariance, which refers to the assumption that the instrument presents the same measurement properties for the two groups of students. Two multi-group CFA models were analyzed, with the factor loadings, measurement intercepts and thresholds constrained to be equal across whites and African Americans in the first model, but not in the second. The first, more restrictive, model fits the data well ( $\chi^2_{(df=128)} = 266.343$ ,  $p < .001$ , CFI = .969, TLI = .986, and RMSEA = .079), as does the second model ( $\chi^2_{(df=127)} = 264.845$ ,  $p < .001$ , CFI = .969, TLI = .986, and RMSEA = .079). The chi-square difference test suggests that these two models fit approximately equally well ( $\chi^2_{(df=14)} = 20.715$ ,  $p = .11$ ), suggesting the assumption of measurement invariance holds. In subsequent SEM analyses, equivalent measurement models were therefore used for whites and African Americans.

### Race and Gender Differences in Persistence Rates

Before proceeding with the main SEM analyses, we first examined whether persistence rates differed significantly by student gender and race (see Table 2). A chi-square analysis indicated that African American students had a lower persistence rate than white students,  $\chi^2_{(df=1)} = 15.678$ ,  $p < .001$ , whereas there was no gender difference in persistence,  $\chi^2_{(df=1)} = 0.347$ ,  $p = .556$ . We therefore did not include gender as a factor in the SEM analyses.

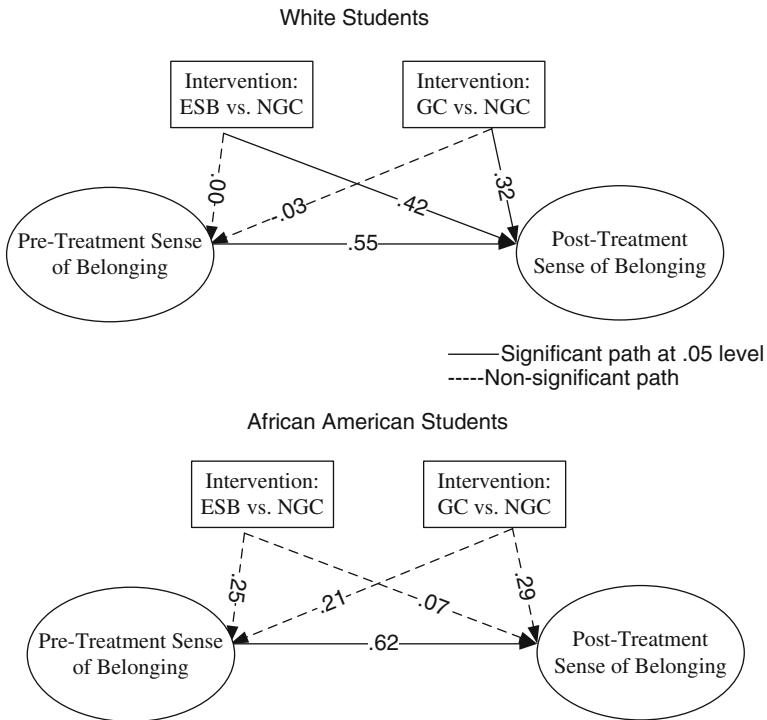
### Effect of Treatment on Student Sense of Belonging

A multi-group SEM model (see Fig. 2) was analyzed to examine whether the intervention affected sense of belonging for white and African American students while controlling for their initial sense of belonging, which was measured prior to the implementation of the intervention. Mean levels of sense of belonging (see Table 3) were not significantly different for white and African American students prior to or following the intervention ( $z = 1.80$ ,  $p > .05$  and  $z = -0.08$ ,  $p > .05$ , respectively). For white students, there were no significant differences in initial levels of sense of belonging across the ESB, NGC, or GC groups ( $z \leq .14$ ,  $p > .05$  for all comparisons). However, after controlling for initial sense of belonging, those in the ESB ( $z = 2.64$ ,  $p < .01$ ) and GC group ( $z = 1.97$ ,  $p < .05$ ) had

**Table 2** Student persistence by gender and race

Race	Gender	Status				Total <i>n</i>
		Non-persisters		Persisters		
		<i>n</i>	(%)	<i>n</i>	(%)	
White	Female	12	(10)	103	(90)	115
	Male	6	(6)	94	(94)	100
	Total	18	(8)	197	(92)	215
African American	Female	20	(21)	75	(79)	95
	Male	13	(28)	33	(72)	46
	Total	33	(23)	108	(77)	141

*Note:* Non-persisters are defined as students who were no longer enrolled as of the second semester of their sophomore year



**Fig. 2** Treatment effect on sense of belonging

significantly higher sense of belonging at the end of the study than did those in the NGC group, while there was not a significant difference between the ESB and GC groups ( $z = .61, p > .05$ ). The effects of our intervention on sense of belonging only held for white students. For African American students, there were no significant differences on initial or final levels of sense of belonging among any of the groups ( $z \leq 1.27, p > .05$  for all comparisons).

We conducted similar analyses to examine whether there were significant differences between the ESB, GC, and NGC groups on any of the other survey measures. There were

**Table 3** Sense of belonging at times 1 and 3, by race and treatment conditions

	Time 1 sense of belonging			Time 2 sense of belonging		
	<i>M</i>	(SD)	<i>n</i>	<i>M</i>	(SD)	<i>n</i>
White						
ESB	4.08	(0.88)	73	4.15	(0.81)	70
GC	4.07	(0.87)	71	4.05	(0.88)	66
NGC	4.06	(0.88)	70	3.78	(1.02)	68
African American						
ESB	3.99	(0.89)	47	3.81	(1.06)	41
GC	3.96	(0.82)	45	4.00	(0.88)	42
NGC	3.82	(0.88)	49	3.70	(0.75)	42

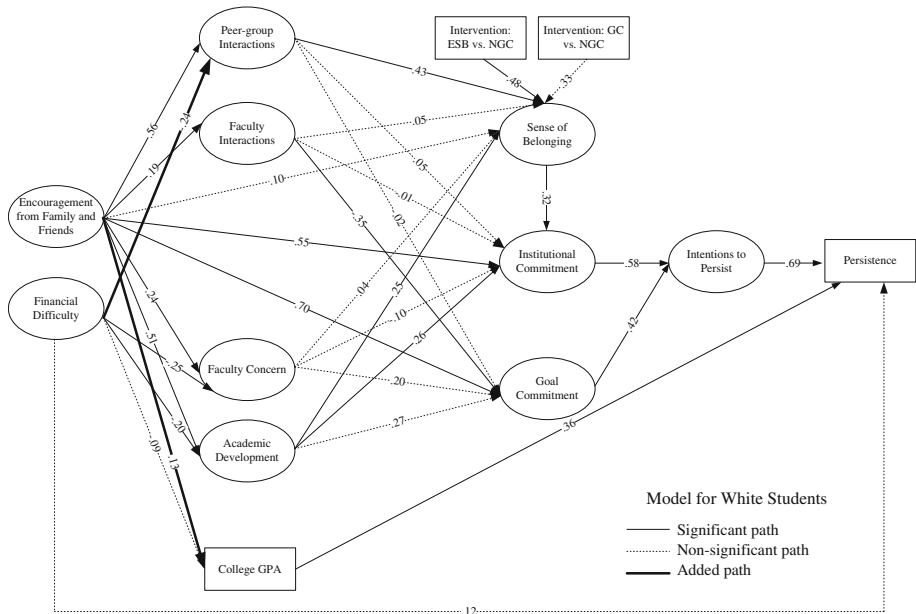
*ESB*: Enhanced sense of belonging group, *GC*: Gift control group, *NGC*: No gift control group

no significant differences in initial or final levels of any of the other variables. This demonstrates that (a) our intervention did not have unintended effects on constructs other than sense of belonging, and (b) differences in final levels of sense of belonging across groups were not due to initial differences in other study measures (i.e., random assignment appeared to be successful).

### Structural Equation Modeling of Student Persistence

Next, we tested the effects of the intervention and sense of belonging in the context of the model presented in Fig. 1. We used multi-group SEM to examine the fit of the model within our white and African American subgroups. The model provides a reasonably good fit to the data ( $\chi^2_{(df=142)} = 271.371$ ,  $p < .001$ , CFI = .972, TLI = .983, and RMSEA = .072).

Modification indices suggested that, for white students, adding paths from financial difficulty to peer-group interactions and from encouragement from family and friends to GPA would enhance the fit of the model. A model including these two paths indeed provided a better fit ( $\chi^2_{(df=142)} = 258.533$ ,  $p < .001$ , CFI = .974, TLI = .985, and RMSEA = .068), confirmed by the chi-square difference test ( $\chi^2_{(df=2)} = 18.214$ ,  $p < .001$ ). Many of the paths from Cabrera et al.'s integrated model of student persistence (1993) were significant for white students in our sample (see Fig. 3). Specifically, encouragement from family and friends had significant direct influences on the social and academic integration variables ( $p < .05$ ), institutional commitment ( $p < .001$ ), and goal commitment ( $p < .001$ ). Financial difficulty directly affected academic integration variables ( $p < .05$ ), but not GPA. Institutional commitment was directly affected by academic development ( $p < .05$ ) and encouragement from family and friends ( $p < .001$ ), but not by either social integration variable or faculty concern, one of the academic integration variables. Although Cabrera et al. found that goal commitment was affected by academic integration but not by social integration, in our white sample the academic integration paths were not significant and there was a significant negative path from faculty interactions, a social integration variable, to goal commitment ( $p < .05$ ). Consistent with Cabrera et al.'s findings, we found that intentions to persist were affected by institutional commitment ( $p < .001$ ) and goal commitment ( $p < .001$ ), and that actual persistence was directly affected by intentions to persist ( $p < .001$ ) and GPA ( $p < .05$ ), but not financial difficulty.



**Fig. 3** Final structural model for White students

Most of the correlational effects included in Cabrera et al.’s (1993) integrated model were also replicated in our white sample (Table 4). Our social integration variables were positively correlated with our academic integration variables, with the exception of peer-group interactions and faculty concern. Both academic integration variables were also positively correlated with GPA. However, in contrast to Cabrera et al.’s findings, the correlation between institutional commitment and goal commitment was significantly negative and encouragement from family and friends was not correlated with financial difficulty in our white sample.

The paths involving sense of belonging and our intervention were not included in Cabrera et al.’s (1993) integrated model. We hypothesized that sense of belonging would be affected by encouragement from family and friends and each of the social and academic integration variables. We also hypothesized that our intervention would affect sense of belonging, and that sense of belonging would affect institutional commitment. We found partial support for these hypotheses in our white sample. Although sense of belonging was not affected by encouragement from family and friends, it was affected by interactions with peers ( $p < .001$ ) and academic development ( $p < .01$ ). After controlling for these effects, the intervention had a significant effect on sense of belonging. Specifically, as predicted, students in the ESB group reported more sense of belonging than those in the NGC group ( $p < .05$ ). There was also a marginally significant trend for students in the GC group to report more sense of belonging than those in the NGC group ( $p < .10$ ). Alternative dummy coding of the three comparison groups to test for the difference between the ESB and GC groups indicated that these groups did not significantly differ on sense of belonging. Finally, we found that sense of belonging directly affected institutional commitment ( $p < .001$ ).

**Table 4** Modeled correlational effects

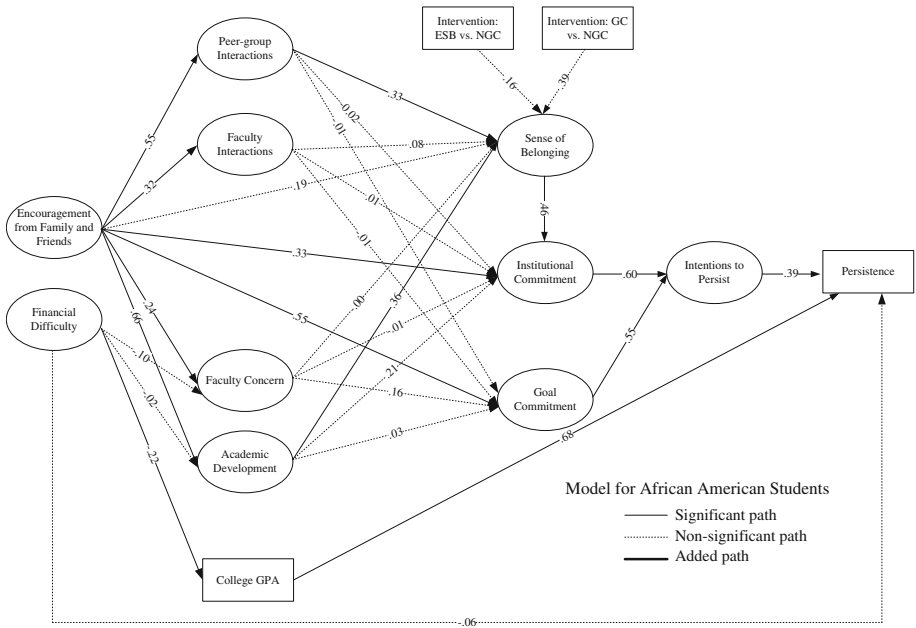
	PEERINT	INTFAC	FACON	ACADEV	FINDIF	ICOM
White						
INTFAC	.204*					
FACON	.072	.315***				
ACADEV	.459***	.440***	.463***			
FINDIF						
ENCOUR					-.010	
GPA			.188*	.306***		
ICOM						
GCOM						-.669***
African American						
INTFAC	.334***					
FACON	.182	.179*				
ACADEV	.392***	.355***	.216*			
FINDIF						
ENCOUR					-.229*	
GPA			.231**	.252***		
ICOM						
GCOM						-.773***

Note: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

As in our white sample, the majority of paths from Cabrera et al.'s integrated model were replicated in our African American sample (Fig. 4). However, there were a few differences in our final structural models for African American and white students. First, whereas financial difficulty affected all social and academic integration variables except faculty interactions in our white sample, financial difficulty affected none of these in our African American sample. In contrast, financial difficulty affected GPA for African American students, but not for whites. The effects of the social and academic integration variables were similar across the two racial groups, with two exceptions: academic development affected institutional commitment and interactions with faculty affected goal commitment for whites but not for African Americans. As in Cabrera et al.'s model, encouragement from family and friends was correlated with financial difficulty in our African American sample. Results for all other direct and correlational effects (Table 4) from Cabrera et al.'s integrated model were similar across the two groups.

The effects involving sense of belonging were somewhat different for African American and white students. The hypothesized effect of the intervention on sense of belonging was observed only among white students. However, the effects of peer-group interactions and academic development on sense of belonging, as well as the effect of sense of belonging on institutional commitment, were observed for both African Americans and for whites.

We examined and rank-ordered the standardized coefficients of the total effects (direct plus indirect effects) of variables in the final model on intentions to persist and actual persistence (Table 5). For white students, the largest total effect on intentions to persist was from encouragement from family and friends, followed by institutional commitment,



**Fig. 4** Final structural model for African American students

**Table 5** Total effects on persistence and intent to persist

Variable	Intentions to persist				Actual persistence			
	White		African American		White		African American	
	Total effect	Rank	Total effect	Rank	Total effect	Rank	Total effect	Rank
ENCOUR	.674***	1	.751***	1	.510***	2	.292***	3
FINDIF	-.093*	7	-.013		.022		-.212	
PEERINT	.102		.072		.070		.028	
INTFAC	-.141*	6	.020		-.097		.008	
FACON	.032		.081		.022		.032	
ACADEV	.309**	4	.209		.212**	6	.081	
ESB VS. NGC	.088*	8	.044		.060*	8	.017	
GC VS. NGC	.060		.108		.041		.042	
BELONG	.183***	5	.277***	4	.126**	7	.108**	6
ICOM	.578***	2	.599***	2	.397***	3	.233***	4
GCOM	.423***	3	.552***	3	.291***	5	.214**	5
INTENT					.688***	1	.389***	2
GPA					.361*	4	.675***	1

Note: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

goal commitment, academic development, sense of belonging, faculty interactions, financial difficulty and the intervention (ESB treatment, specifically). For African American students, the largest total effect on intentions to persist was also from encouragement



of family and friends, followed by institutional commitment, goal commitment, and sense of belonging. For actual persistence, the largest total effect for white students was intentions to persist, followed by encouragement from family and friends, institutional commitment, GPA, goal commitment, academic development, sense of belonging, and the intervention (ESB treatment specifically). For African American students, the largest total effect on actual persistence was from GPA, followed by intentions to persist, encouragement from family and friends, institutional commitment, goal commitment and sense of belonging. For white students, the final structural model accounted for 74.7% of the variance observed in intentions to persist and 57.0% of the variance observed in actual persistence. For African American students, the model accounted for 80.2% of the variance observed in intentions to persist and 47.3% of the variance observed in persistence.

## Discussion

This study found evidence to support the inclusion of students' subjective sense of belonging as a unique factor in a complex model of student persistence. Using Cabrera et al.'s (1993) integration of prominent models of student integration (Bean 1985; Tinto 1993) as a starting point, we tested a model with sense of belonging as a stand-alone factor rather than combining items reflecting sense of belonging with measures of institutional fit or commitment, as has been done in past research (Bean 1985; Cabrera et al. 1992, 1993; Nora and Cabrera 1993). In doing so, we found that sense of belonging had a direct, positive effect on students' institutional commitment, and significant indirect effects on intentions to persist and actual persistence.

Our findings are consistent with considerable existing evidence that factors presumed to be similar or related to students' subjective sense of belonging are related to positive educational outcomes such as GPA, satisfaction, commitment, and persistence (e.g., Bean 1980, 1985; Bennett and Okinaka 1990; Berger and Milem 1999; Eimers and Pike 1997; Einarson and Matier 2005; Fischer 2007; Mayo et al. 1995; Nettles et al. 1986; Nora et al. 1996; Suen 1983; Zea et al. 1997). However, as Hurtado and Carter (1997) have pointed out, the impact of students' subjective sense of belonging on their college persistence has not often been directly examined empirically, although its potential importance has been noted in theories of student persistence (Bean 1985; Spady 1971). The current study found that social integration, whose direct effect on institutional commitment has often been highlighted in previous research (Cabrera et al. 1993), actually has only an indirect effect on institutional commitment through its impact on sense of belonging. We also found indirect effects of sense of belonging on intentions to persist and actual persistence, via institutional commitment. In total, our results suggest that sense of belonging should be included as a variable in models of student persistence.

One important reason for examining the unique role of variables such as sense of belonging in models of student persistence is to identify possible mechanisms by which student persistence may be increased. Anticipating that sense of belonging would indeed play a positive role in persistence behavior, we tested whether sense of belonging can be modified using a relatively simple and low-cost intervention that included sending correspondence and paraphernalia to students to emphasize their valued membership in the college community. We tested the effects of this intervention on both white and African American students' sense of belonging. The intervention had the intended effect on sense of belonging for white students, in that students who received the intervention reported

more sense of belonging than students in a control group that only completed the study surveys. The intervention also had significant indirect effects on white students' intentions to persist and their actual persistence. Sense of belonging and persistence of African American students, however, were unaffected by the intervention.

Our intervention strategy, although grounded in social psychological research, may have been too minimal to affect sense of belonging in African American students, who often report heightened feelings of alienation on predominantly white campuses (Allen 1992). Indeed, we intentionally designed our intervention to be quite basic because our primary goal for it here was to demonstrate the feasibility of influencing students' sense of belonging, not to test a fully developed program intended to cause major changes in students' sense of belonging. Bolstering sense of belonging in African American students may require a more intensive intervention that specifically targets the concerns or needs of this group. For example, intervention tactics could address the possibility that African American college students face doubt about whether they belong or will succeed in rigorous academic environments, given the history of negative stereotypes about the academic abilities of African American students (Steele 1997). Efforts to increase the sense of belonging of African American college students may need to dispel negative stereotypes and reassure students that they are capable of excelling academically. It would also be appropriate to ensure that there are ample opportunities to obtain any academic or financial support students need to achieve success and to take steps to increase the number of students who utilize such opportunities. Offering reassurance to African American students that it is normal to have doubts about whether they belong in college has also been shown to be an effective intervention strategy for protecting the sense of belonging of this potentially marginalized student population (Walton and Cohen 2007). Finally, recent work suggests that providing more opportunities for students of all racial and ethnic backgrounds to have positive interactions with diverse peers during college may be an effective strategy for increasing the sense of belonging of students of color as well as students who are white (Locks et al. 2008).

Aside from the differential effects of our intervention, the results of this study were quite similar for white and African American students. The majority of the original paths specified in Cabrera et al.'s (1993) integrated model of student persistence were replicated in both groups. The paths we added involving sense of belonging were also largely similar across groups, with sense of belonging having comparable effects on institutional commitment, intentions to persist, and actual persistence for white and African American students. The relevance of predominant theories and models of student persistence for racial and ethnic minority students has been questioned (Murguia et al. 1991; Tierney 1999), with some studies finding that different sets of factors explain student persistence in different racial and ethnic groups (Bennett and Bean 1984; Nora 1987; Nora et al. 1996; Otero et al. 2007). Our research, however, is consistent with studies documenting more overlap than discrepancies in the factors explaining persistence for white students and students of color (Cabrera et al. 1999; Donovan 1984; Eimers and Pike 1997; Nora and Cabrera 1996). Although studies may continue to find that certain issues, such as racial climate, feelings of alienation, or discrimination (Allen 1992; Hurtado 1992; Loo and Rolison 1986; Suen 1983), are of particular concern to racial and ethnic minority students attending predominantly white universities, the current study suggests that comprehensive models of student persistence such as the one tested here are likely to generalize at least to African American students.

## Implications for Practice

The clear implication of the current study for practices in higher education is that it highlights and confirms students' sense of belonging to the university community as a significant determinant of their commitment to the university, their intentions to persist, and their actual persistence. When designing programs to increase student persistence, universities should include elements aimed at making students feel like valued members of the university community. This study demonstrated that bolstering sense of belonging for white students at a predominantly white institution can be accomplished relatively easily with basic and low-cost strategies. It would not be prohibitively expensive or difficult for colleges to send letters and university paraphernalia to their first-year students to emphasize their valued status at the university, as we did in the current study. However, this strategy is likely only to be effective at affecting the sense of belonging of white students, as we found it did not have the same beneficial impact on African American students. Our study therefore suggests that, although sense of belonging plays a similar role in student persistence for African American and white students, different strategies may be necessary to increase the sense of belonging of African American students. In designing programs to foster a sense of belonging among African American students, universities will likely need to consider the unique issues facing African American students at predominantly white institutions, as discussed earlier.

## Conclusions

In this study, we demonstrated the unique contribution of sense of belonging within a broad model of student persistence that includes other important predictors of student persistence. Sense of belonging is an important construct to include both in models of student persistence and in efforts by colleges and universities to improve student persistence.

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