

# EXPLORING THE ROLE OF SENSE OF COMMUNITY IN THE UNDERGRADUATE TRANSFER STUDENT EXPERIENCE

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*Sense of community may play an important role in the undergraduate transfer student experience by encouraging academic and social success. This cross-sectional study assessed sense of community in the transfer experiences of 53 students majoring in science, technology, engineering, math (STEM) subjects. Sense of community, participation, and GPA were analyzed using moderated regression analysis, t tests, and cross-tabulations. Results suggest that students who reported high participation in STEM activities and strong sense of community performed better academically than students who reported high participation and low sense of community. Further, results highlight discrepancies between students' actual and ideal sense of community (particularly for female and non-White students), as well as greater importance placed upon sense of community at the post-transfer institution compared to the pre-transfer institution. This study suggests the need to examine sense of community in the transfer process. Results have implications for higher education literatures and for research and practice aimed at helping individuals engage with environments. © 2012 Wiley Periodicals, Inc.*

Support for this study came from National Science Foundation (NSF) grants DUE0850208 and DUE0654164 awarded to Timothy A. Mousseau. The authors would also like to thank Susan Hudson, Admissions Office, University of South Carolina; and Oscar Lopez, Center for Science Education, University of South Carolina for their contributions to this work.

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**JOURNAL OF COMMUNITY PSYCHOLOGY**, Vol. 41, No. 3, 277–290 (2013)

Published online in Wiley Online Library (wileyonlinelibrary.com/journal/jcop).

© 2012 Wiley Periodicals, Inc. DOI: 10.1002/jcop.21529

The undergraduate transfer experience is a prevalent phenomenon. According to a recent report released by the National Student Clearinghouse Research Center, about one-third of students who start at a 2-year or 4-year institution after high school transfer to another school before they earn a bachelor's degree (Hossler et al., 2012). Another study showed that one out of five community college students will transfer to a 4-year postsecondary institution (Eggleston & Laanan, 2001). There are unique academic and interpersonal challenges that students face upon transferring. For example, in 1965, John R. Hill wrote that "transfer students suffer an appreciable loss in their level of grades when they transfer" (p. 209). He went on to conceptualize decreases in post-transfer academic performance as "transfer shock." More recent articles support this position (e.g., Townsend, 1995; Townsend, 2008), while other articles suggest a broader conceptualization of transfer shock that includes academic challenges as well as difficulties in adjusting to a more expansive social milieu (Eggleston & Lanaan, 2001), with feelings of social disconnection and "anonymity" being common experiences for transfer students (Kodama, 2002).

Challenges associated with the transfer experience may be particularly significant in the sciences (Lenaburg, Aguirre, Goodchild, & Kuhn, 2012). Nationally, the National Science Foundation-funded Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP) seeks to increase the number of students receiving associate or baccalaureate degrees in established or emerging fields within science, technology, engineering, and mathematics (STEM). The University of South Carolina (USC) STEPs to STEM program is somewhat unique in having an explicit focus on *transfer* students entering or remaining in STEM disciplines. Specifically, the program is intended to make transitions from satellite campuses and technical colleges as seamless as possible and to increase the success and retention of transfer students in the STEM fields. A special focus in the STEPs to STEM program involves efforts to strengthen students' engagement, which we hypothesize will offset potential academic declines by increasing students' self-efficacy and intrinsic motivation to succeed (Chemers, Hu, & Garcia, 2001; McClenney, & Marti, 2006).

*Student engagement* has been conceptualized in the literature as a multifaceted construct that includes both emotional and behavioral domains (Appleton, Christenson, Kim, & Reschly, 2006). Emotional engagement, which includes affective components of engagement (e.g., feelings of identification and belonging), has been operationally defined in the literature as students' *sense of community* (SOC) (Fredericks, Blumenfeld, & Paris, 2004). Behavioral engagement, which includes involvement in academic and social or extracurricular activities, has been operationally defined as students' *participation in activities* (Fredericks et al., 2004).

The current study focuses on the SOC (i.e., emotional engagement) and participation (i.e., behavioral engagement) of undergraduate transfer students in STEM disciplines at a large research-intensive state school. The study will assess the extent to which higher levels of SOC and participation are associated with improved post-transfer academic performance. The study will also examine aspects of SOC that may affect the transfer process, particularly discrepancies between students' *ideal* and *actual* SOC.

## **SOC**

The depth of students' integration and emotional engagement in both the academic and the social systems of a college or university can have a tremendous effect on their academic achievement (Tinto, 1993, 2002). In the higher education literature, emotional engagement has often been conceptualized as students' *sense of belonging*, which "captures

the individual's view of whether he or she feels included in the college community" (Hurtado & Carter, 1997, p. 327). This construct recognizes the interplay between the individual student and the institution. That is, students' academic and social success is affected by the extent to which they identify with and feel welcomed by institutional environments and climates (Johnson, Soldner, Leonard, & Patty, 2007).

Closely related to *sense of belonging*, the *SOC* construct was first conceptualized by Sarason (1974) to describe the importance of belonging to and being an integral part of a larger collectivity. He used the construct to represent the strength of bonding among community members and argued that it was important for personal and collective well-being. As later defined by McMillan and Chavis (1986), SOC is "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (p. 9). Their definition includes four dimensions of SOC: membership, influence, integration/fulfillment of needs, and shared emotional connection. *Membership* refers to the feeling of belonging and identification with the group. *Influence* refers to the bidirectional need for a group to offer its members a feeling of cohesion and for the members to feel they have a reciprocal influence over what happens in the group. *Integration and fulfillment of needs* places importance on common needs, goals, and beliefs among group members. Finally, *shared emotional connection* is based on a sense of shared history and identification with the community and the bonds developed over time between group members (McMillan & Chavis, 1986; Obst & White, 2004).

SOC is a valuable component of community life, and it has been linked to increased psychological well-being (Pretty, Conroy, Dugay, Fowler, & Williams, 1996; Prezza, Arrici, Roberti, & Tedeschi, 2001), perceptions of belonging and community connectedness (Sonn & Fisher, 1996), and participation in the community (Chavis & Wandersman, 1990; Townley, Kloos, & Wright, 2009). Numerous studies have reported relationships between academic outcomes and perceptions of SOC on academic campuses. For example, Thompson, Orr, Thompson, and Grover (2007) examined the campus perceptions of college freshmen and found that academic success was linked to the feeling of campus belonging. Similarly, McKinney, McKinney, Franiuk, and Schweitzer (2006) found that enhanced SOC was associated with a variety of academic outcome variables, including students' performance on exams.

Given the individual nature in which students come to associate themselves with broader university environments, it is important to consider two specific components of SOC more closely. First, students likely differ on how important they deem their connection to the broader campus to be. For some students, experiencing a SOC is a necessary component of adjusting to campus life and forming bonds with students and faculty. For other students, experiencing a strong SOC may be seen as less desirable, particularly if it interferes with their identification with communities that are not recognized or affirmed by the campus (e.g., marginalized ethnic communities, religious organizations, political groups, and alternative lifestyles) (Hurtado & Carter, 1997; Johnson et al., 2007).

Second, the transfer experience is likely influenced by discrepancies between students' *actual* and *ideal* SOC (Glynn, 1981). Literature suggests that transfer students tend to expect a seamless transition to a 4-year university; in other words, they do not anticipate significant changes from their previous institutions (Townsend & Wilson, 2006). Transfer students may become "shocked" upon realizing that the 4-year university has a very different ethos (e.g., larger classes, feeling like a "number," etc.; Townsend, 2008). If students come to a new campus with high expectations of connection and identification (i.e., a high ideal SOC) and are then met with environments that do not facilitate their

emotional engagement—or even worse, are hostile and discriminatory (i.e., they experience a low actual SOC)—then students' academic and social success may be negatively affected (Hurtado & Carter, 1997; Johnson et al., 2007; Locks, Hurtado, Bowman, & Osequera, 2008).

A focus on individual perceptions of students' SOC experiences at the transfer institution is closely in line with the *social climate* approach developed by Moos and colleagues (1973, 2003). This approach assumes that many psychological effects of environments are best assessed in terms of persons' perceptions of environments and the meaning people attach to these environments, as opposed to relying on more "objective" features of environments. Further, it suggests that reconciling differences between individuals' *actual* and *ideal* perceptions of environments is paramount to improving the social climate of the setting (Moos, 1994).

### ***Participation***

Participation, or behavioral engagement, in academic activities increases students' opportunities for collaboration and social network development, while also increasing their agency and competency in a variety of areas (Baker-Doyle & Yoon, 2011). Transfer students can benefit from a supportive university environment that facilitates opportunities for their participation in activities that are customized to their needs and designed to promote their positive adjustment (Davies & Casey, 1999). Transfer students' acclimation can be improved by their participation in activities such as bridge programs (Lam, Srvatsan, Doversplke, Vesalo, & Mawasha, 2005), research internships (Russell, Hancock, & McCullough 2007), learning communities (Nestor-Baker & Kerkor, 2009), supportive mentorship (Gatta & Trigg, 2001), and online forums intended to increase identification with the institution (McKenna & Bargh, 1998).

### ***Study Aims***

As indicated by the review above, the overarching goal of this study is to better understand the influence of SOC and participation on the transfer experiences of undergraduate students. The specific aims of the study are as follows: (a) to investigate the effect of SOC on transfer students' participation and post-transfer GPA; (b) to examine differences between students' pre-transfer SOC and post-transfer SOC; (c) to compare STEPs to STEM students' current perceived importance of SOC and pre-transfer perceived importance of SOC; and (d) to assess discrepancies between transfer students' actual SOC and desired/ideal SOC. Further, we aim to provide suggestions for expanding research in both the SOC and the transfer student literatures by proposing future research directions and highlighting the importance of assessing individual preferences for, and experiences of, SOC in the undergraduate transfer process.

## **METHODS**

### ***Participants***

The sample for the current study consists of 53 students who were enrolled in the STEPs to STEM program at USC-Columbia. Students in the STEPs to STEM program are necessarily USC-Columbia undergraduate students who have (a) transferred from either regional

technical colleges or USC satellite campuses and (b) declared a STEM (i.e., science, technology, engineering, mathematics) major. STEM majors include biology, chemistry, engineering, mathematics, and physics, but not biomedical studies or social science majors. Students in the program have access to special courses, monthly social gatherings with STEM faculty and students, research internships, and special services (e.g., admissions counseling, financial aid education, and a peer mentoring program).

The 53 participants were nearly evenly divided by sex, with 31 (58%) of the participants being male. The racial composition of the sample was as follows: 35 (66%) were White, 11 (20%) were Black, three (6%) were Latino, two (4%) were American Indian/Alaska native, one (2%) was Asian American, and one (2%) was Hawaiian/other Pacific Islander. Forty students (75%) transferred from two-year technical colleges, while 13 students (25%) transferred from satellite campuses (i.e., 2-year and 4-year regional colleges of the USC).

### **Procedures**

An electronic link to the survey was sent to 113 STEPs to STEM students with a cover letter indicating that the survey was “about the STEPs to STEM program” and their “sense of belonging at the university.” Although completing the survey was voluntary, it was not anonymous, as we needed to be able to connect students’ responses with their GPAs. However, after a university office provided GPA data for all students who completed an online survey, all identifying information was removed from their survey responses. There was approximately a 3-week window for data collection. Completion of surveys was tracked throughout data collection, and reminder e-mails were sent periodically throughout the 3-week window. Gift cards to the university book store were offered to incentivize students’ participation.

Of the 113 eligible students, 64 (57%) completed the survey. Eleven of these students were removed from the final sample because they had been enrolled in STEPs to STEM for less than a full semester. Given the nature of the constructs being examined, it was determined that students needed to have been participating in the program for at least a full semester. The modal number of semesters participants attended at the post-transfer institution was two semesters, with a range of two to seven semesters. Data were collected in the same semester for all students.

### **Measures**

**SOC.** SOC was measured via the 12-item Sense of Community Index (SCI; Perkins, Florin, Rich, Wandersman, & Chavis, 1990). Students reported both their actual SOC, as well as their ideal SOC. SCI items were rated on a 5-point scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Minor modifications were made to several SCI items to reflect the context of this study sample (i.e., changing the word “community” to “university”). A sample of a modified item is “Other people and I want the same things from the university.” The original item is “Other people and I want the same things from the community.” Several studies have demonstrated the SCI’s construct validity (e.g., Sonn, 2002; Brodsky, O’Campo, & Aronson, 1999). The Cronbach alpha for the scale in this sample was .78. Composite scores (created by averaging the 12 scale items) ranged from 2.25 to 4.67 (mean [ $M$ ] = 3.64, standard deviation [ $SD$ ] = .54).

Two additional SOC items were included in the survey to assess the following: (a) potential differences between transfer students’ SOC at USC-Columbia (current) and

their pre-transfer institutions (retrospective) and (b) potential differences in the importance transfer students ascribe to a SOC at USC-Columbia (current SOC) versus their pre-transfer institutions (retrospective SOC).

*Participation.* Respondents were asked to report their degree of participation in five specific STEPs to STEM activities, including the following: STEM 101, research internships, socials workshops, HIST 108, and STEM Club. STEM 101 is a semester-long course designed to introduce students to content, concepts, and practical application of STEM disciplines. Research internships allow STEM students to conduct research relevant to their interests with professors, graduate students and fellows, and other undergraduate student interns. The HIST 108 course covers the development of science and technology and their roles in world civilizations from antiquity to the present. Finally, STEPs to STEM students are encouraged to become involved with the STEM Club, which promotes STEM careers by participating in community service and recruitment future STEM students. Participation in each activity was rated on ordinal scales ranging from 1 (*lowest participation*) to 5 (*highest participation*). A composite score of self-reported participation was calculated by summing the activity-specific participation ratings and dividing by five (i.e., the total number of activities). Scores ranged from 1.17 to 4.17 ( $M = 2.44$ ,  $SD = .75$ ).

*Academic outcomes.* The University's Office of Institutional Assessment and Compliance provided GPA data for all STEM transfer students, from which GPA data for the subset of students in the survey sample was extracted. The GPA variable used in this study represents GPA at the end of the most recent semester in which the student participated in STEPs to STEM.

### **Data Analysis**

The influence of SOC, participation, and their interaction on post-transfer GPA was assessed in a hierarchical linear regression using two blocks. The first block included main effects only, and the second block included both main effects and their interaction (i.e., the interaction between SOC and participation in STEM activities). Before conducting the multiple regression analyses to test the interaction, both participation and SOC variables were centered to reduce multicollinearity between the predictors (participation and SOC) and the interaction term (Aiken & West, 1991).

Paired and independent samples *t*-tests examined potential differences in STEPs to STEM students' (a) pre-transfer and post-transfer SOC, (b) current perceived importance of SOC and pre-transfer perceived importance of SOC, and (c) their actual versus ideal SOC ratings.

## **RESULTS**

### ***Assessing the Relationships Between SOC, Participation, and GPA***

Before conducting analyses, we assessed the means, standard deviations, and correlations for students' post-transfer GPAs, SOC, and participation as baseline measures (see Table 1). We also assessed changes in GPA before and after students transferred institutions and, as commonly reported in the literature, found that students had significant declines in post-transfer GPA of less than a half a grade point (Diaz, 1992;  $M = 3.10$ ,

**Table 1. Means, Standard Deviations, and Correlations for Post-transfer GPA, Participation, and Sense of Community (SOC)**

Variable	<i>M</i>	<i>SD</i>	Post-transfer GPA	Participation	SOC
Post-transfer GPA	3.09	0.69	1.000	−0.345*	0.053
Participation	14.70	4.51	–	1.000	0.400**
SOC	3.63	0.54	–	–	1.000

*M* = mean; *SD* = standard deviation.

*N* = 53.

\* $p < .05$ . \*\* $p < .01$ .

**Table 2. Regression Analysis Predicting Post-transfer GPA From Participation, Sense of Community (SOC), and Their Interaction**

Step and Predictor Variable	$R^2$	$\Delta R^2$	<i>B</i>	<i>SE</i>
Step 1	.163*	.163*		
Participation			−.067**	.002
SOC			.024	.015
Step 2	.229**	.066*		
Participation			−.083**	.023
SOC			.023	.015
Interaction			.007*	.003

*N* = 53.

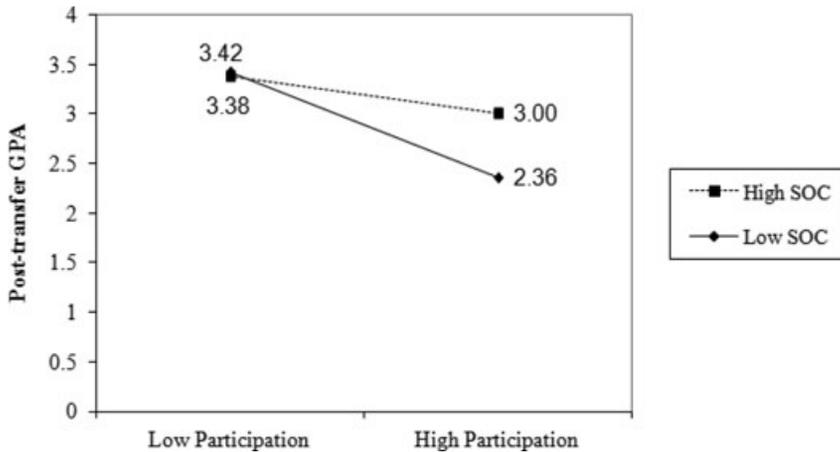
\* $p < .05$ . \*\* $p < .01$ .

$SD = .68$ ) relative to pre-transfer GPA ( $M = 3.28$ ,  $SD = .47$ ),  $t(52) = -2.04$ ,  $p = .04$ ). This could be due in part to students transferring from less competitive academic environment to a more competitive academic environment, although the causal mechanism cannot be fully determined in the current study.

Surprisingly, there was a negative relationship between post-transfer GPA and participation in STEPS to STEM activities ( $r = -.35$ ,  $p = .01$ ). However, it was hypothesized that this relationship would change as a function of students' SOC. Specifically, it was hypothesized that SOC would attenuate the reduction in post-transfer GPA for students reporting high participation in STEPS to STEM activities.

As shown in Table 2, the interaction term for the model of SOC as a moderator of the relationship between participation and GPA was positive and statistically significant ( $s^2 = .06$ ), indicating that as SOC increases there is a less negative relationship between participation in STEPS to STEM activities and post-transfer GPA. The  $R^2$  for the initial block in the hierarchical regression model (which included only main effects) was .16,  $F(2,51) = 4.87$ ,  $p = .01$ . The  $R^2$  for the second block in the regression model (which included both main effects and the interaction term) was .23,  $F(3, 50)$ ,  $p = .007$ . Finally, the change in  $R^2$  for the second block after adding the interaction term was .07,  $F(3,50) = 3.63$ ,  $p = .04$ .

To visualize the interaction, the relationship between participation and post-transfer GPA was plotted at two levels of SOC (see Figure 1). SOC was found to attenuate the negative relationship between self-reported participation in STEPS to STEM activities and post-transfer GPA. Specifically, the average post-transfer GPA for students who had higher participation but lower SOC was 2.36, whereas the average posttransfer GPA for students who had higher participation and higher SOC was 3.00



**Figure 1.** Interaction graph illustrating the relationship between participation and post-transfer GPA at two levels of sense of community.

Note. Participation and sense of community were assessed as continuous variables in the interaction analysis and dichotomized into “low” and “high” for illustration purposes only.

### ***Analyses Highlighting the Role of SOC in Transfer Students’ Experiences***

***Pre-transfer and post-transfer SOC.*** We conducted additional analyses to further understand the SOC construct given the positive role that it may play in buffering reductions in academic outcomes. First, analyses revealed that students transferring from satellite campuses had significantly higher pre-transfer SOC scores ( $M = 3.12$ ,  $SD = .74$ ) as compared with students from technical colleges ( $M = 1.95$ ,  $SD = 1.31$ ),  $t(51) = 5.82$ ,  $p < .01$ . Regardless of the type of institution from which they transferred, students had significantly higher post-transfer SOC scores ( $M = 3.63$ ,  $SD = .54$ ) than pre-transfer SOC ( $M = 3.04$ ,  $SD = 1.25$ ),  $t(52) = 3.05$ ,  $p = .01$ .

***Importance of SOC.*** Second, results suggest that students regarded SOC as significantly more important at the post-transfer institution ( $M = 3.01$ ,  $SD = 1.16$ ) than at the pre-transfer institution ( $M = 2.11$ ,  $SD = 1.40$ ),  $t(52) = 4.93$ ,  $p < .01$ .

***Ideal versus actual SOC.*** Finally, analyses revealed that students had significantly higher *ideal* SOC ( $M = 4.12$ ,  $SD = .44$ ) than *actual* SOC ( $M = 3.63$ ,  $SD = .54$ ),  $t(52) = -7.14$ ,  $p < .01$ . To further understand this finding, we computed the difference between actual and ideal SOC for each student. Students were then separated into two groups: (a) those whose actual versus ideal difference in SOC was at or above the median level of all computed differences (i.e., a *high discrepancy* group) and (b) those whose difference was below the median of all computed differences (i.e., a *low discrepancy* group). Each group contained 50% of the student sample.

No differences in GPA were found between students in the *low discrepancy* group and *high discrepancy* group, ( $M = 3.12$ ,  $SD = .71$  and  $M = 3.06$ ,  $SD = .68$ , respectively),  $t(51) = -.30$ ,  $p = .76$ . Significant differences were found between discrepancy groups and reported participation in STEPS to STEM activities, such that students in the *low discrepancy* group reported significantly higher participation in activities than students in

**Table 3. Cross-tabulations of Student Sex and Race by Discrepancy Between Ideal and Actual Sense of Community**

	<i>Low discrepancy</i>	<i>High discrepancy</i>
Male students	22 (71%)	9 (29%)
Female students	8 (36%)	14 (64%)
White students	23 (66%)	12 (34%)
Non-White students	5 (28%)	13 (72%)

the *high discrepancy* group, ( $M = 2.75$ ,  $SD = .89$  and  $M = 2.25$ ,  $SD = .60$ , respectively),  $t(51) = 2.35$ ,  $p = .02$ .

Given evidence in the transfer student literature suggesting the influence of sociodemographic characteristics on SOC (e.g., Locks et al., 2008; Wawrzynski & Sedlacek, 2003), we conducted a series of cross-tabulations to assess discrepancies in ideal and actual SOC by students' race and sex (see Table 3). Findings indicate that significant statistical differences exist between White and non-White students, and between males and females. Specifically, female students were significantly more likely to report discrepancies in ideal and actual SOC than male students,  $\chi^2(1, N = 53) = 6.27$ ,  $p = .01$ , and non-White students were significantly more likely to report discrepancies in ideal and actual SOC than White students,  $\chi^2(1, N = 53) = 5.42$ ,  $p = .02$ .

## DISCUSSION

This study helps to contribute to the body of literature regarding academic outcomes and campus engagement for undergraduate students transferring to a 4-year institution. Similar to other studies, we found that transfer students experienced post-transfer GPA declines (Diaz, 1992; Cejda, Kaylor, & Rewey, 1998). This was particularly true for students who reported greater participation in the STEPS to STEM program. This nonintuitive finding could be influenced by a number of factors, including a Yerkes-Dodson effect for academic performance and behavioral engagement in STEPS to STEM (Larson, 2006; Yerkes & Dodson, 1908). That is, as engagement in the program increased via participation in such activities as social workshops and research internships, the ability of students to delegate attentional resources and time to such tasks as homework and studying may have decreased.

Encouragingly, we found that students who reported high participation in STEPS to STEM activities and stronger SOC had significantly higher post-transfer GPA relative to students who reported high participation and lower SOC. It is possible that students who are struggling academically are more likely to seek out STEPS to STEM activities (i.e., have high participation), but only those who also succeed in forming a strong SOC may experience increases in GPA. In other words, *both* high participation and success in developing a SOC may be required for academic achievement to improve. Although the causal mechanism for this relationship cannot be determined by the current study, it is likely that students who feel more emotionally engaged with the campus environment perceive a greater sense of support from faculty and students and are more motivated to succeed academically than students who do not feel emotionally engaged.

Additional analyses were conducted to better understand specific components of SOC that may affect the transfer experience. First, we found that students experienced higher

SOC at the post-transfer institution relative to the pre-transfer institution. Numerous aspects of the post-transfer campus environment may have contributed to student gains in SOC, including perceptions of a cohesive student body, increased social opportunities for students, and more resources for social and academic development. Students also considered SOC to be more important at the post-transfer institution than at the pre-transfer institution. This finding suggests that students may have been more committed to actively working toward establishing social ties and becoming emotionally engaged in the social life of the post-transfer school relative to the pre-transfer school.

An area that has been largely underdeveloped in the SOC literature is the critical distinction between participants' *actual* and *ideal* SOC. Further attention to this distinction is warranted, particularly given that the discrepancies may drastically affect individuals' ability to fit into and feel supported by their environments (Moos, 1994; Moos & Lemke, 1984a). This may be particularly true for members of historically marginalized groups, for whom the experience of a SOC is typically more difficult to achieve than for members of majority groups (e.g., Dudgeon, Mallard, Oxenham, & Fielder, 2002; Townley & Kloos, 2011). Indeed, we found that despite gains in SOC after transferring institutions, students' actual post-transfer SOC was still significantly lower than their ideal post-transfer SOC, and this was particularly true for female students and for members of ethnic minority groups. Although we did not test this explicitly in this study, it is possible that aspects of the campus social climate could make it more difficult for women and persons of color to fit in and establish a SOC with the broader campus environment. An alternative interpretation is that women and persons of color have higher expectations for SOC than do members of other groups. Future studies should test this relationship more explicitly and measure factors that may affect SOC, including campus racial tolerance, availability of social groups for women and members of ethnic minority groups, and efforts from campus leadership to maintain a social climate that affirms student diversity.

### **Limitations**

Several limitations about the study are worthy of note. First, the small sample size must be recognized. Although the sample size was large enough to detect a significant interaction between STEPs to STEM participation and SOC, there was insufficient power to detect other potential associations. Further, only slightly more than half of the eligible pool of STEPs to STEM students opted to participate in this study. Thus, we are missing the experiences of students who may be performing better or worse than the students included in the current sample. A future study should collect data from a larger number of individuals to increase both variability of results and also the likelihood of detecting relationships that likely exist in the real world.

Second, causation cannot be inferred from the results of this study's cross-sectional design. Further, students were asked to provide retrospective reports regarding SOC at their pre-transfer institutions. Data might be biased by the fact that individuals tend to distort facts about past behaviors and experiences (Shachar & Eckstein, 2007). A related limitation is that given the cross-sectional design, it is not clear how and when students developed a SOC, or if the STEPs to STEM program was specifically responsible for increasing students' SOC. To address these issues, a future study should track students' experiences over a course of time, beginning before students transfer schools and continuing for several semesters post-transfer. Finally, it is likely that over the course of students' academic studies, the relationships between SOC, participation, and GPA would change.

A longitudinal study design would facilitate better understanding of changes in students' GPA over time, as well as the manner in which changes in SOC and participation in the STEPs to STEM program impact students' academic success.

Another limitation is the absence of a comparison group, which makes it difficult to know whether variables would operate similarly for transfer students who are not involved in STEPs to STEM. As this is a relatively new area of research, we view the current work as a pilot study which helps us to better understand the primary variables of interest (i.e., post-transfer GPA, participation, and SOC) within a group of students participating in the STEPs to STEM program before testing research models across different groups of students. To further understand the unique mechanisms of the intervention, future studies should include a comparison group of transfer students who are not involved in the STEPs to STEM program.

### ***Future Research Directions***

Our findings have implications for future research related to SOC in both the community psychology and the higher education literatures. To our knowledge, this study is the first of its kind to assess SOC as a moderator of the relationship between participation in STEM activities and academic outcomes for transfer students. Future studies should attempt to uncover the mechanism behind the buffering role of SOC. For instance, why is it that transfer students who are more emotionally engaged experience better academic outcomes? Examining this research question will require longitudinal research models and mixed methods of inquiry (e.g., quantitative and qualitative questions). Research should also be conducted to allow for better understanding of why students reported higher SOC at the post-transfer institution relative to their pre-transfer institutions. This information could be useful in developing interventions aimed at increasing SOC at both the pre-transfer and post-transfer schools. Future research and interventions should also be designed to address other factors in the campus environment (e.g., relationships between students and teachers; availability of student resources) that can be modified to help improve outcomes for transfer students.

More specific to the SOC literature, the results of our study suggest that researchers should pay more careful attention to the discrepancies between participants' ideal and actual SOC. Quantitative studies have largely ignored this more nuanced contextual component of the SOC construct. In our own study, ignoring the discrepancy between participants' ideal and actual SOC would have obscured important differences that exist between members of different cultural groups. Similarly, researchers should examine the influence of participant ratings of the *importance* of SOC in analyses. When we assume that all people desire the same levels of connection to their environments (and to other people in their environments), we miss the potentially valuable influence of individual preferences for SOC that likely impact participant outcomes. In future studies, participants should be asked open-ended questions about both the *importance* of SOC and the *discrepancy* between their actual and ideal SOC. These responses could then be assessed qualitatively and assigned numeric ratings which would be entered into quantitative analyses.

### ***Conclusions***

Transferring schools is a difficult process, and transfer shock often results in academic and social challenges for students. Results of the current study highlight the importance

of considering the influence of SOC in the transfer process. We found that students' reports of SOC at the post-transfer institution are associated with and appear to attenuate the reductions in academic outcomes that so often accompany a college transfer experience. Further, we found that students rated SOC as being more important to them at the post-transfer school relative to the pre-transfer school. Although discrepancies were found between the level of SOC that students desire and the level that they experience, it may be possible to reduce this gap by ensuring that campus environments are perceived by students as being supportive and tolerant. As researchers, practitioners, and educators work to make the transfer process smoother, it is important to prioritize students' emotional engagement in their campus environments as a key indicator of their academic and social success.

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