

# Predicting Sense of Community among Graduate Students in a Distance Learning Environment

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**Abstract** The purpose of the current study was to investigate the sense of community in graduate level distance education programs. This manuscript provides the results of a descriptive analysis of the existing sense of community among students while exploring the most robust prediction model to explain the variation. This cross-sectional analysis included 382 graduate students enrolled in various graduate programs delivered using the same instructional technology. The predictor variables were related to program characteristics (e.g., time spent in asynchronous coursework) and participants' demographics (e.g., age). The outcome variables were the total sense of community, learning community subscale, and social community subscale scores from a revised Classroom Community Scale (Rovai, 2002b). Results showed that perceived outside interaction with students, sexual orientation, importance of sense of community, and outside interaction with faculty accounted a significant proportion of the variation in participants' total sense of community scores. Importance of sense of community, outside interaction with students, and sexual orientation accounted for significant variation in participants' social community subscale scores. Finally, sexual orientation, outside interaction with students, proficiency with technology, outside interactions with faculty, and age accounted for significant variation in participants' learning community subscale scores.

**Keywords** Sense of Community, Distance Education, Community

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## 1. Introduction

By 2020, it is estimated that five million individuals will complete their degrees online (Clinefelter & Aslanian, 2016). This increased enrollment has altered the landscape of online education. The typical online student is starting to

look more and more like the typical on-ground student (Clinefelter & Aslanian, 2016), and more non-profit institutions are offering online programs (Friedman, 2017). Within this shifting landscape, there has been an increased demand for interactivity, given the fact that the establishment of interactive relationships, both with other peers and professors, leads to satisfaction in the program (Sun & Chen, 2016). In response, programs have searched for methods to increase interactivity and sense of community.

Sense of community (SOC) is a construct that has been studied extensively in online education (e.g., Rovai, 2002a, 2002b) with a primary focus on the community that develops in an individual classroom. While at least one study has evaluated SOC at the department level (Exter, Korkmaz, Harlin, & Bichelmeyer, 2009), no studies were found that evaluated SOC at the program level. There is little consistency in the demographic and program variables related to and predictive of SOC. Additionally, each program is very unique, includes different instructional technologies, and serves a diverse student body; therefore, there is a need to control as many potential confounding variables as possible, namely instructional technology. Therefore, the purpose of this research was to provide a point in time assessment of SOC among a sample of graduate programs using the same instructional technology and explore the variables that account for the most variation in students' SOC.

## 2. Literature Review

### 2.1. Defining Sense of Community

The dynamic expansion of online education brings both opportunity and challenge as educators and students step into the future of graduate study. Along with the newfound opportunities for increasingly affordable and accessible education comes a salient challenge, to create a meaningful

SOC that promotes retention and student learning. Creating a SOC in online environments has been widely acknowledged as a difficult yet important task of online education (Sun & Chen, 2016; Shen, Nuankhieo, Huang, Amelung, & Laffey 2008; Rockinson-Szapkiw, Pritchard, McComb-Beverage, & Schellenberg, 2013). As avenues of online education grow, the ability to cultivate a SOC among online students will only grow in importance. But what is SOC, and what does it look like in an educational setting?

SOC as a concept lacks a universal and cohesive definition in the existing literature; however, there is some consensus on the components of SOC. These components include regular interaction with group members (Byrd, 2016; Dawson, 2006), a sense of belonging or connectedness (Shackelford & Maxwell, 2012; Rovai, 2002b), a degree of trust among group members (Rovai, 2002b), a feeling of importance or that individuals matter within the group (Exter et al., 2009), a set of common values as well as culture for group functioning (Etzioni & Etzioni, 1999), and finally, shared goals that are common to all group members. Previous research has also identified several variables related to the development of SOC.

Not surprisingly, increased interaction has been correlated with higher levels of perceived SOC (Dawson, 2006; Shen et al., 2008). This correlation suggests that interaction is a basic component of cultivating a SOC; however, mere interaction does not encompass the entirety of this concept. Etzioni and Etzioni (1999) describe SOC as “a web of affect-laden relationships... that crisscross and reinforce one another, rather than simply a chain of one-on-one relationships” (p. 241). This single statement speaks to the unique nature of community in learning environments. Though interaction is important, it is clear that a rich mosaic of relationships must be present for those interactions to form a community, and many online students desire to connect with their peers, instructors, and advisors in some capacity (Drouin & Vartanian, 2010; Exter et al., 2009).

## 2.2. Benefits of Sense of Community

It is important to explore some of the specific benefits of having a strong SOC in an online learning environment. Previous research has identified positive correlations between higher SOC and perceived learning engagement, learning, belongingness, and student satisfaction (Liu, Magjuka, Bonk, & Lee, 2007; Trespalacios & Perkins, 2016; Seckman, 2014). Perceived learning engagement is defined as how involved students feel in their classes and the learning process, whereas perceived learning describes how much students feel that they have learned (Liu et al., 2007). The benefits of SOC also extend to non-academic arenas. Students who report higher levels of SOC, also report higher satisfaction in their residential and social

lives, which is also associated with decreased loneliness and stress in both on-ground and online programs (Elkins, Forrester, & Noel-Elkins, 2011). Moreover, student-to-student interaction was found to correlate to SOC more than student-to-faculty interactions (Drouin, 2008). However, the perceived behavior of the instructor regarding how much they cared about the class was found to correlate with SOC and feelings of belongingness (Liu et al., 2007) and is an important predictor of learning (Lundberg & Sheridan, 2015). Additionally, learning style was found to moderate SOC and learning (Chen & Chiou, 2014). Despite the clear relationships between SOC and many important educational variables, no studies were found that included a comprehensive list of variables or aimed to predict the variation in SOC among a homogenous sample of online graduate students.

## 2.3. Measuring Sense of Community

One prominent measure of SOC is the Classroom Community Scale (CCS; Rovai, 2002b). The CCS has been used in several studies evaluating perceived cognitive learning and persistence (Rovai, 2002b), instructor communication style and personality (Rovai, 2003), feelings of alienation (Rovai & Wighting, 2005), the experience of community among various demographic groups including gender and race/ethnicity (Rovai & Baker, 2005; Rovai & Gallien, 2005), the use of social networks (Dawson, 2008), factors related to SOC (Ouzts, 2006), and students' style of motivation (Wighting, Liu, & Rovai, 2008). In sum, these studies have provided insights regarding the existence of community among online learners compared to on-ground students and characteristics related to SOC but have largely focused on small samples of online programs facilitated using only one learning management system (Blackboard). Additionally, the majority of the SOC studies, except for Exter et al. (2009), have focused on classroom community rather than community within the program as a whole. Given the benefits of SOC to student learning outcomes, it is important to develop strategies to explore and predict SOC at the program level. Accordingly, the following research questions guided the current study:

**Research Question 1:** How do online graduate students perceive their SOC?

**Research Question 2:** Which variables account for significant variation in online graduate students' SOC?

## 3. Materials and Methods

### 3.1. Participants

A cross-sectional descriptive design was used to complete the current study. Participants were recruited

using convenience sampling methods from online graduate programs that partnered with a singular educational technology company. This educational technology company assisted in the facilitation of all programs including the production of course content and design of the virtual campus. After receiving Institutional Review Board approval, program directors of ten programs received recruitment emails asking for their assistance in distributing an online survey to their students. A total of seven programs responded to this inquiry. Four programs sent recruitment emails to their students independently and three programs provided an email list of students to the researchers to send recruitment materials directly. The recruitment emails sent to students included an anonymous link to a survey created for the current study using the Qualtrics (Qualtrics, Provo, UT) survey research platform. Participants were incentivized to participate by opting-in to a random drawing for one of 50 Amazon gift cards valued at \$50 each. Recruitment emails were sent three times at two-week intervals.

A total of 382 responses were obtained, but 43 were removed from the data analysis due to not responding to an attention check item in the survey appropriately. This resulted in a final sample size of 339. As can be seen in Table 1, most participants identified as White or Caucasian (47%), female (85%), and heterosexual (87%). Most participants were aged 25-34 (55%) and had a bachelor's degree only (85%) when entering the program.

### 3.2. Instrumentation

A survey was created for the purposes of the current study using the Qualtrics research platform. All items included in the survey were drawn from previous SOC research as well as anecdotal evidence from existing faculty and students in online graduate programs.

#### 3.2.1. Predictor Variables

After giving consent to participate in the research via button click on the Qualtrics survey, participants were asked to share information regarding several demographic and program-specific variables: (1) program name and discipline; (2) terms enrolled; (3) enrollment type (part-time vs. full-time); (4) cumulative grade point average (GPA); (5) highest level of education prior to enrolling in their current program; (6) participation in graduate, teaching, or research assistantships; (7) annual household income; (8) employment outside of the academic program; (9) household size; (10) age range; (11) racial and/or ethnic identity; (12) gender identity; (13) sexual orientation; (14) proficiency in the use of technology required for the program; (15) hours spent on asynchronous content per week; (16) hours spent in synchronous live sessions per week; (17) frequency of interactions with students outside of regularly scheduled class time; and (18) frequency of interactions with faculty outside of regularly scheduled class time. A preliminary analysis was conducted to decide which variables to include in subsequent regression analyses.

**Table 1.** Participant Characteristics

Race/Ethnicity	%	Gender Identity	%	Annual Household Income	%
White or Caucasian	46.6	Female	84.4	\$25,000 to \$49,999	28.0
Black or African American	15.1	Male	14.2	\$50,000 to \$99,000	28.0
Hispanic or Latino/a	13.1	Prefer not to respond	1.2	Less than \$24,999	23.6
Asian	11.3	Another gender identity	.3	\$100,000 or more	20.4
Multiple	9.5	-	-	-	-
Another	2.7	-	-	-	-
Prefer not	1.8	-	-	-	-
Age	%	Sexual Orientation	%	Prior Degree	%
25-34 years	55.2	Heterosexual	87.3	Bachelor's	84.7
18-24 years	17.7	Bisexual	5.3	Master's	9.1
35-44 years	16.2	I prefer not	2.4	Ph.D., law or medical degree	6.2
45-54 years	8.6	Lesbian	1.8	-	-
55-64 years	2.1	Gay	1.2	-	-
Age 65 or older	.3	Another	1.2	-	-
-	-	Questioning	.9	-	-

3.2.2. Outcome Variables

For the current study, SOC was defined via a quantitative analysis of responses to a revised version of the Classroom Community Scale (CCS; Rovai, 2002a; Exter et al., 2009). The original CCS is a 20-item self-report measure that assesses respondents' SOC in a learning environment and includes two subscales: social community and learning community (Rovai, 2002b). The original study that developed the CCS found results to be reliable, with a Cronbach's  $\alpha$  for the full CCS of .93 (Rovai, 2002b). The results of the current study bolstered a Cronbach's  $\alpha$  of .911, which is similar to the original validation of the CSS (Rovai, 2002b).

The original CCS was developed to measure SOC within the classroom setting by asking participants to rate their level of agreement to items, such as "I feel connected to others in this course," on a five-point Likert-scale ranging from strongly disagree (0) to strongly agree (4). Later research revised the CCS to measure SOC within educational departments by replacing the word "course" with "department" (Exter et al., 2009). In the current study, the word "department" was replaced with "program," and the same five-point Likert-scale was used.

Consistent with previous research, several items were reverse scored – 4, 5, 8, 9, 10, 12, 14, 17, 18, and 20 – so that higher scores on all items indicated higher levels of SOC. An attention check item was placed halfway through the CCS to assess validity of responses. This item asked participants to select "strongly agree." Participants that did not select "strongly agree" were excluded from this study. All three scales of the revised CCS (Total CCS score, Social subscale score, and Learning subscale score) were used as outcome variables in the current study.

4. Results

**Research Question 1:** How do online graduate students perceive their SOC?

Descriptive statistics were used to measure participants' SOC. The mean for Total CCS scores was 55.01 ( $SD = 11.06$ ). The mean for Social subscale scores was 24.95 ( $SD = 6.74$ ). The mean for Learning subscale scores was 30.09 ( $SD = 5.47$ ). As can be seen, the sense of community that develops through learning endeavours was higher than the sense of community that develops through social endeavours.

**Research Question 2:** What variables account for significant variation in online graduate students' SOC?

4.1. Preliminary Analysis

One-way ANOVA,  $t$ -test, and correlation analyses were used to explore potential predictor variables for SOC. Statistically significant mean differences were observed in total, social, or learning SOC for the following subgroups: program, race/ethnicity, sexual orientation, age, technological proficiency, importance of SOC, outside of class interactions with other students, and outside of class interactions with faculty (see Table 2). Correlation analyses were used to test for the presence of significant relationships between SOC measures and continuous and ordinal independent variables. Table 3 provides an overview of Pearson product moment correlation statistics with each of the three SOC outcome variables.

All three measures of SOC had statistically significant relationships to one another with lower magnitude of those relationships between the social and learning community subscales, which supports construct validity of the revised CCS. Significant positive relationships were observed between total SOC and age, proficiency with technology, importance of SOC, and outside contact with other students and faculty. Significant positive relationships were observed between social community, importance of SOC, and contact with other students and faculty. Learning community scores had significant positive relationships with GPA, age, proficiency with technology, and contact with other students and faculty.

**Table 2.** Significant t-test and ANOVA Results for Subgroup Analyses

	Total SOC		Social		Learning	
	F/t	p	F/t	p	F/t	p
Program	3.54	.004*	4.50	<.001*	NS	
Race/Ethnicity	2.09	.020*	NS		2.70	.07*
Sexual Orientation	3.46	<.001**	3.79	<.001	3.23	.002
Age	NS		NS		2.74	.029
Technological Proficiency	NS		NS		3.45	.017
Importance of SOC	6.17	<.001*	10.84	<.001*	NS	
Outside contact with students	6.59	<.001	10.23	<.001	2.46	.018
Outside contact with faculty	3.94	.001	4.68	<.001	2.34	.032

**Table 3.** Significant Correlations Between SOC and Individual/Program Variables

	Total SOC	Connect	Learning
Total SOC	1	.926**	.886**
Connect	.926**	1	.645**
Learning	.886**	.645**	1
Please enter your current cumulative GPA.	NS	NS	.130*
What is your age?	.126*	NS	.141**
How would you rate your proficiency in the use of technology required in your online program?	.127*	NS	.166**
How important is a sense of community to you in your online graduate program?	.251**	.335**	NS
How often do you interact with students outside of regularly scheduled class time?	.329**	.379**	.199**
How often do you interact with faculty outside of regularly scheduled class time?	.245**	.260**	.174**

Note. NS = No significant correlation found. \* $p < .05$ , \*\* $p < .01$

#### 4.2. Primary Analysis

Several exploratory multiple linear regression analyses were conducted to explore the amount of variance in participants' SOC scores that was accounted for by the predictor variables. All eight variables identified as significant via the preliminary analyses were included as predictor variables: age range, sexual orientation, race/ethnicity, technological proficiency, importance of SOC, time with peers outside of class, time with faculty outside of class, and GPA. Sexual orientation and race/ethnicity were recoded into ordinal data to allow for analysis. Sexual orientation was recoded as not heterosexual (0) and heterosexual (1) so that a change in the variable represents a move to the majority population. Race/Ethnicity was also recoded in terms of majority with White/Caucasian (1) and Not White/Caucasian (0).

1). How much of the variance in students' total SOC is accounted for by individual and program variables?

The initial regression analysis included the total SOC score as the outcome variable and all eight predictor variables were entered simultaneously. This model was statistically significant,  $R^2 = .250$ ,  $F(8, 268) = 11.147$ ,  $p < .001$ . Only four individual predictors: importance of SOC,  $\beta = .178$ ,  $t = 3.081$ ,  $p = .002$ , sexual orientation  $\beta = .240$ ,  $t = 4.439$ ,  $p < .001$ , outside interaction with students,  $\beta = .232$ ,  $t = 3.853$ ,  $p < .001$ , and outside interaction with faculty,  $\beta = .137$ ,  $t = 2.298$ ,  $p = .022$ , showed statistically significant contribution to the prediction model.

A stepwise linear regression analysis was used to explore the most influential prediction model for total SOC scores. The final regression model accounted for 23% of the variance in total SOC scores,  $R^2 = .233$ ,  $F(4, 272) = 20.604$ ,  $p < .001$ , and the same four predictor variables were retained in the model. Outside interaction with students,  $\beta = .258$ ,  $t = 4.402$ ,  $p < .001$ , sexual orientation,  $\beta = .240$ ,  $t = 4.497$ ,  $p < .001$ , importance of SOC,  $\beta = .180$ ,  $t = 3.268$ ,  $p = .001$ , and outside interaction with faculty,  $\beta$

$= .119$ ,  $t = 1.999$ ,  $p = .047$ , all accounted for significant variation in the model when all other variables were controlled for.

2). How much of the variance in students' social SOC is accounted for by individual and program variables?

The initial regression analysis included social community as the outcome variable and all eight predictor variables listed above were entered simultaneously. This model was statistically significant,  $R^2 = .284$ ,  $F(8, 269) = 13.319$ ,  $p < .001$ . Three individual predictors: importance of SOC,  $\beta = .259$ ,  $t = 4.59$ ,  $p < .001$ , outside interaction with students,  $\beta = .280$ ,  $t = 4.78$ ,  $p < .001$ , and sexual orientation,  $\beta = .202$ ,  $t = 3.829$ ,  $p < .001$ , showed statistically significant contribution to the prediction model.

A stepwise linear regression analysis was used to explore the most influential prediction model for social community scores. The final regression model accounted for 27% of the variance in social SOC scores,  $R^2 = .270$ ,  $F(3, 274) = 33.769$ ,  $p < .001$ . The same three predictor variables were retained in the final model: importance of SOC,  $\beta = .276$ ,  $t = 5.247$ ,  $p < .001$ , outside interaction with students,  $\beta = .330$ ,  $t = 6.279$ ,  $p < .001$ , and sexual orientation,  $\beta = .196$ ,  $t = 3.787$ ,  $p < .001$ , showed statistically significant contribution to the prediction model.

3). How much of the variance in students' learning SOC is accounted for by individual and program variables?

The initial regression analysis included learning community as the outcome variable and all eight predictor variables listed above were entered simultaneously. This model was statistically significant,  $R^2 = .168$ ,  $F(8, 269) = 6.771$ ,  $p < .001$ . Three individual predictors: sexual orientation,  $\beta = .240$ ,  $t = 4.214$ ,  $p < .001$ , proficiency with technology,  $\beta = .138$ ,  $t = 2.398$ ,  $p = .017$ , and outside interaction with faculty,  $\beta = .142$ ,  $t = 2.270$ ,  $p = .024$ , accounted for significant variation in participants' learning

community scores.

A stepwise linear regression analysis was used to explore the most influential prediction model for learning community scores. The final regression model accounted for 15% of the variance in total SOC scores,  $R^2 = .151$ ,  $F(5, 272) = 9.648$ ,  $p < .001$ . Five individual predictor variables were retained in this model. Sexual orientation,  $\beta = .239$ ,  $t = 4.178$ ,  $p < .001$ , outside interaction with students,  $\beta = .138$ ,  $t = 2.223$ ,  $p = .027$ , proficiency with technology,  $\beta = .138$ ,  $t = 2.435$ ,  $p = .016$ , outside interaction with faculty,  $\beta = .146$ ,  $t = 2.363$ ,  $p = .019$ , and age,  $\beta = .113$ ,  $t = 1.986$ ,  $p = .048$ , accounted for significant variation in participants' learning community scores when all other variables were controlled for.

### 5. Discussion

The purpose of the current study was to describe online graduate students' perceived SOC and explore variables that accounted for significant variation in online graduate students' SOC. The results of the current study extend the existing body of literature in several ways. Using the two-factor model for SOC measured by the CCS, the results of the current study extend research into the prevalence of SOC. As can be seen in Table 4, the CCS results in the current study are within the range of CCS scores from previous research (Rovai, 2002a; Rovai, 2002b; Rovai, 2003; Rovai & Baker, 2005; Rovai & Gallien, 2005; Dawson, 2006; Shea, 2006). It is important to note that most previous research using the CCS measured SOC in single courses or individual classroom sessions. Therefore, these results support the use of the revised CCS to measure SOC at the program level. It is likely that developing SOC at a programmatic level is more complex than developing SOC at the course or class level. The findings of the current study suggest that programs were able to foster levels of SOC across the entire program that are on par and slightly exceed the SOC developed in individual courses and classes in previous research.

Consistent with previous research, the learning subscale

scores in the current study are higher than the social subscale scores. This finding suggests the community that develops through the pursuit of learning seems to be more prevalent than general social community. Considering that online students likely have more opportunities to connect for academic reasons rather than social purposes, these findings seem fitting. Programs can consider ways to accentuate strengths of community that evolve from learning as well as build additional opportunities for social and personal/emotional connections.

The current study significantly expands the list of demographic and program variables related to SOC compared to previous research. Several variables measured in the current study warrant further inquiry: program, racial/ethnic identity, sexual orientation, age range, technological proficiency, importance of SOC, frequency of outside contact with students, and frequency of outside contact with faculty. These findings identify subgroups of the student population that might experience SOC differently. More focused research on SOC among these subgroups can inform targeted interventions for groups of students that demonstrate less SOC.

The findings from the regression analyses in the current study recommend that different variables contribute to each factor of SOC. The prediction model suggests that total SOC is increased when SOC is viewed as more important, participants have more outside interaction with students and faculty, and are of the majority sexual orientation. For social community, the prediction model indicates that increased importance of SOC, outside interaction with students, and being of the majority sexual orientation will lead to increased social community. For learning community, the prediction model suggests that being of the majority sexual orientation and increased outside interaction with students and faculty, proficiency with technology, as well as age will lead to increased learning community. These findings indicate a need to re-evaluate the construct of SOC while studying the unique contributing variables to each subtype of SOC independently.

**Table 4.** Descriptive Statistics for SOC Scores Compared to Previous Research

Dependent Variable	Min.	Max.	X	SD	Prior research range a
Total SOC (out of 80)	17	78	55.01	11.06	47.5 to 60.83
Social (out of 40)	9	40	24.95	6.74	22.1 to 29.07
Learning (out of 40)	8	40	30.09	5.47	25.5 to 32.90

Note. Higher scores indicated higher reported SOC.

aRovai, 2002a; Rovai, 2002b; Rovai, 2003; Rovai & Baker, 2005; Rovai & Gallien, 2005; Dawson, 2006; Shea, 2006

Several findings from the current study are consistent with previous SOC research. Like previous research (Dawson, 2006; Exter et al., 2009), the results of the current study suggest that students who interact more with other students and faculty outside of class tend to report higher levels of SOC. Despite these similarities, other findings from the current study are inconsistent with previous research. Previous research (Rovai, 2002a, 2002b; Rovai & Baker, 2005; Rovai & Gallien, Jr., 2005; Shea, 2006) has shown that females tend to report higher levels of SOC than males. The findings in the current study, although not statistically significant, suggest that people who identify as male have higher SOC scores than females. Given the lack of statistical significance, it is possible that a larger sample size could further explore the potential for significant differences to emerge.

Previous research (e.g., Rovai & Gallien, Jr, 2005; Rovai & Wighting, 2005) indicated that participants that identified as African American reported lower levels of SOC; however, the results of the current study suggested that people who identify as Black or African American have more SOC than almost all other groups. Additionally, these results suggest that people who identify as Asian experience significantly lower levels of SOC. This highlights an important subgroup of the student population to research and develop targeted interventions to enhance SOC.

In addition to the contributions listed above, there are several other unique findings from the current study. The significant program differences indicate a need for each program to create a focused assessment of SOC development that captures their unique program features. The finding about the reduced SOC among students identifying as Asian, not-heterosexual, and in the 18-24-year-old range, indicates the need for targeted community development efforts. When thinking about outside interactions being the largest contributing factor for SOC, it is essential to create meaningful, authentic, outside-of-class opportunities for connection and support for all students, but specifically the students identified as having less SOC.

While the related variables and subgroup differences are important, only some of them can be manipulated. Therefore, these variables can inform the recruitment and onboarding of new students and development of targeted SOC interventions. Finally, GPA was only related to the learning subscale scores. As scores on the learning subscale increased so did GPA. This has implications for the justification of SOC efforts in terms of student learning outcomes, but future research can explore the impact of SOC on other indicators of student learning.

## 6. Limitations

The results of the current study need to be considered

with the following limitations in mind. The preponderance of previous research used learning platforms different than those used in the programs in the current study. Additionally, apart from Exter et al. (2009), other previous research using the CCS focused on classroom community rather than community across an entire academic program. Many of the inconsistencies in the current study with previous research are likely attributed to differences in samples, delivery methods, and program vs. classroom settings.

The homogeneity of variances in a few of the subgroup analyses could not be assumed; however, given the exploratory nature of this study, their results were still reported to encourage inclusion in future research. As with all online data collection, there are threats to validity in the data as one cannot confirm the actual identity of the participations to ensure that they are a member of the target population; however, the recruitment email was only distributed to university emails of enrolled and recently graduated students. It is also impossible to know the actual distribution rates of recruitment emails by programs that were submitted independently. This, along with a relatively small response rate of 10% in the current study compared to 33% from previous research (Exter et al., 2009), increases the threats to reliability, validity, and generalizability of these results. Additionally, no comparison group was included in the study; however, the results of the current study were compared to previous research to get a sense of how SOC in this group compared to previous research using the same instrument.

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