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Support, belonging, motivation, and engagement in the college classroom: a mixed method study

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Abstract This explanatory sequential mixed methods study examined how belonging perceptions, academic motivation, and engagement might mediate the relationship between academic contextual characteristics and achievement using structural equation modeling and qualitative follow-up interviews with college students from a large, Midwestern university. In the first, quantitative phase, two hypothesized models of student belonging and motivation were tested. In line with the Self-System Model of Classroom Support for Motivation (Connell and Wellborn, in: Gunnar and Sroufe (eds.) Minnesota Symposium on Child Psychology: Self-processes and Development, 1991), Model 1 hypothesized student belonging and motivation to be directly predicted by supportive classroom environment perceptions, and to directly predict engagement, which was hypothesized to predict achievement. Model 2 elaborated on the traditional self-system model and hypothesized student belonging to mediate the relationship between supportive classroom environment perceptions and student motivation. Quantitative findings revealed support for Model 2. Supportive classroom environment perceptions predicted students' belonging beliefs, which in turn predicted students' motivation, engagement, and achievement in the course. The second, follow-up qualitative phase suggested ways in which contextual characteristics might influence student belonging beliefs in the classroom. Taken together, the

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quantitative and qualitative data illustrate the influential role of classroom contextual characteristics on student outcomes, as well as the role student belonging plays in college student motivation and success.

Keywords Contextual characteristics · Belongingness · Motivation · Engagement · Student achievement

Most researchers and practitioners would agree that support is an important factor in learning and academic success for students of all ages. Research examining student beliefs and behaviors in classroom contexts has produced findings that support this view, and suggests that students with greater perceptions of support from various sources, such as peers and instructors, generally have less distress (Anderman 2002; Buhs 2005; Wentzel 1997, 1998) and higher levels of academic engagement and achievement (Anderman 2002; Buhs 2005; Connell et al. 1994; Umbach and Wawrzynski 2005; Wentzel 1997, 1998). Students' need for relatedness or belonging, defined as the extent to which students feel accepted and supported by teachers and peers (Goodenow 1993; Goodenow and Grady 1993), may be especially important at the college level, as students often face the need to form and maintain new relationships while transitioning from high school to college (Bronfenbrenner 1979; Pittman and Richmond 2008; Tinto 1993). In particular, college students may experience the loss of one's school friends, the need to develop new relationships and groups, moving away from home and becoming acquainted with new college roommates, and the expectation of increased autonomy in life and studies (Cleary et al. 2011).

The majority of belonging research at the college level has focused on the campus community and promoting belongingness among minority students (e.g., Castellanos and Jones 2003; Hurtado and Carter 1997; Nunez 2009; Strayhorn 2008a, b, 2010; Strayhorn and Saddler 2009; Walton and Cohen 2007, 2011). However, Strayhorn (2012) suggests that belonging beliefs are "context-dependent, such that sense of belonging in a particular context (e.g., department, classroom) has the greatest influence on outcomes (e.g., adjustment, achievement) in that area" (p. 20). The classroom is often the center of students' college academic experience and as such, warrants further investigation.

Many students interact a great deal with faculty during their college careers and the salience of faculty-student relationships to the academic success and persistence of students has been highlighted in findings from multiple studies (Pascarella and Terenzini 1980, 1983). In contrast to students who voluntarily withdrew from college institutions, persistent students reported more interaction with faculty and rated their instructors higher in the areas of concern for student development and teaching. Students also spend much of their time with peers in college and these relationships can play an important role in retention and success (Harris 2001; Hoffman et al. 2002; Pittman and Richmond 2008; Tebben 1995). Although results from these findings and others (Hausmann et al. 2007; Wheeless et al. 2011) suggest an influential role for student belonging on persistence or withdrawal from an institution, many questions remain unanswered (Anderman and Freeman 2004). Little is known, for example, about the specific processes via which classroom contextual characteristics might influence college students' belonging perceptions (Freeman et al. 2007). Questions also remain about the precise pathways via which college students' belonging perceptions might, in turn, affect their motivation (i.e., self-efficacy and value beliefs for learning tasks), engagement (e.g., attendance and class participation), and achievement; a set of constructs that likely influence students' persistence in higher education.

In the present study, we addressed this need by posing two main questions: (1) How do student perceptions of support and belonging relate to student motivation, engagement, and achievement, and (2) In what ways do college students believe classroom contextual characteristics relate to their belonging perceptions? These research questions warranted a mixed methods approach. An examination of relationships among the constructs was best addressed with quantitative inquiry, and an exploration of student perceptions of classroom contextual elements that foster or inhibit belongingness was best suited to qualitative inquiry, yielding an explanatory sequential mixed methods design (Creswell and Plano Clark 2010). Quantitative data of student perceptions of instructor academic and social support, belonging, self-efficacy, and task value, and their reported class engagement and achievement, and qualitative data detailing student classroom experiences were gathered.

In outlining the rationale for this study, we begin by summarizing the extant literature on the associations between the social context and students' self-beliefs, behaviors, and outcomes that relies primarily on the self-system model of motivational development (Connell and Wellborn 1991). We then describe findings from related research that suggest elaborations to prior conceptions of processes and linkages between contextual and behavioral variables. Evaluating and comparing a more elaborate model to the more established, yet less precise model, may more accurately illustrate the complexity of academic environments and describe specific processes involving more precisely measured motivation constructs (Hulleman et al. 2008; Wigfield and Cambria 2010).

Links between student belonging, engagement, and achievement

The self-system model of motivational development (Connell and Wellborn 1991) emphasizes the complex dynamics of classroom environments and describes processes by which aspects of the social context impact student self-beliefs and subsequent academic engagement and achievement. Similar to other motivational theorists (e.g., Baumeister and Leary 1995; Deci and Ryan 1985), Connell and Wellborn (1991) posit that humans have fundamental needs for competence, autonomy, and relatedness (i.e., the need to feel socially connected—a construct similar to belonging), and indicate that the degree to which these needs are fulfilled within a context predicts motivation, engagement, and performance in that context.

Previous research findings have consistently supported the utility of the self-system model in academic settings (Buhs 2005; Connell et al. 1994; Hamre and Pianta 2005; Van Ryzin et al. 2009), with many studies emphasizing the predictive role of student belonging in academic and socio-emotional adjustment. The majority of this research has, however, been conducted with elementary and middle school students. In a study of fifth and sixth grade students, for example, Furrer and Skinner (2003) showed that students' perceptions of relatedness to their teacher were associated with engagement in classroom activities. Students with higher relatedness reported higher levels of classroom engagement and vice versa. In related studies with middle school students, Wentzel (1997, 1998) found that students' relationships with teachers predicted academic engagement and performance. Similar studies with college students are rare, though findings are comparable to research conducted with younger populations (Freeman et al. 2007; Micari and Pazos 2012; Strayhorn and Saddler 2009; Strayhorn and Terrell 2007). For example, in a study with undergraduate students, Micari and Pazos (2012) found that student-faculty relationships positively predicted student confidence and achievement in a highly challenging course.

Supportive classroom environments and student belonging as antecedents of motivation, engagement, and achievement

Student belonging is often cited as a protective factor and associated with both academic and social support from teachers (Catalano et al. 2004; Furrer and Skinner 2003). The evidence linking supportive classroom environments and student academic success has been consistent in the literature (Furrer and Skinner 2003; Hamre and Pianta 2005; Van Ryzin et al. 2009; Wentzel 1997, 1998). Studies with middle and high school students show that students with supportive academic climate perceptions were more motivated (Anderman 2003; Murdock et al. 2000) and felt more connected to their school (McNeely et al. 2002). At the college level, Freeman et al. (2007) found that student opinions of their instructors' organization, encouragement of student participation, and warmth and openness positively related to students' feelings of belonging, though they noted that more research in this area with college students is needed. Certainly, instructor academic support is often communicated to students through interactions and the instructional practices incorporated in the classroom. Instructors also play a role in fostering social support by encouraging positive interactions among students in the class (Ryan and Patrick 2001). For example, in a study with undergraduates, McKinney et al. (2006) found that students with instructors who encouraged classmates to get to know one another at the beginning of the semester reported greater belonging perceptions. In the present study, instructor academic and social support was operationalized as student perceptions of instructional practices, and instructor's care, respect, and expectations for students. Student perceptions of peer support were qualitatively explored in the current study.

Some evidence suggests that belonging may relate to student motivation (Battistich et al. 1997; Patrick et al. 1997). For example, adolescents' perceptions of their social relationships have been shown to predict expectations of success, value of school work, general school motivation, and effort (Goodenow 1993; Goodenow and Grady 1993). Similarly, research shows relationships between adolescents' positive perceptions of social support and academic efficacy (Ryan and Patrick 2001).

Within the self-system model aspects of motivation have generally been placed at the same place in the model sequence as belonging constructs. Two motivational variables that have been examined and linked to student belonging are self-efficacy and task value. Self-efficacy is defined as students' beliefs about their academic capabilities for a specific task (Bandura 1986) and task value is defined as students' beliefs about the potential importance, usefulness, and enjoyment associated with an academic task (Wigfield and Eccles 2002). These motivational variables address two important overarching questions students typically ask themselves prior to engaging in a task: "Can I do this task?" and "Why would this task be important to me?" In the model posited by Connell and Wellborn (1991), task value and self-efficacy clearly would be considered aspects of the self-system and placed in the same place in their causal model as relatedness/belonging (see Fig. 1).

Other studies, however, indicate that belonging may be antecedent to aspects of motivation such as self-efficacy and task value. In a study with middle school students, Roeser et al. (1996) found that students' belonging beliefs predicted their academic self-efficacy. Similar results were found by Freeman et al. (2007) in the only similar study, to our knowledge, of college students to date. Their findings suggested a positive relationship between freshmen students' feelings of class belonging and their subsequent academic self-efficacy and task value. Results from other investigations with both adolescents and college students also indicate that supportive messages from instructors may, in turn, bolster students' self-efficacy beliefs (Kim and Keller 2008; Usher and Pajares 2009) and that

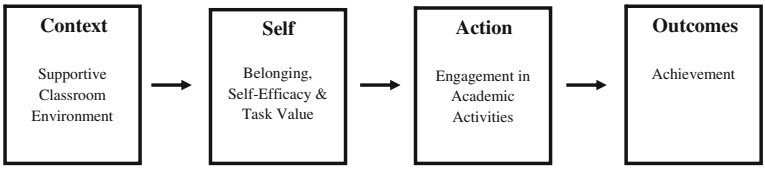

Fig. 1 Self-system model of classroom support for motivation (Adapted from Connell and Wellborn 1991)

students' perceptions of social support from teachers predict task value (Ahmed et al. 2010; Midgley et al. 1989). These findings and models suggesting that belonging/relatedness may precede student perceptions of self-efficacy and value indicate a possible elaboration of the self-system model. Higher self-efficacy and value beliefs may be less likely unless aspects of the classroom context first facilitate belonging. This does not suggest that students begin a course without prior conceptions of self-efficacy or task value, but that aspects of these constructs linked to a specific course may emerge from the sense of belonging attached to that context.

Student engagement is characterized by the time and energy students invest in educationally purposeful activities (Kuh 2003). Engagement has been consistently presented as a mediating link between belonging and motivation and subsequent achievement (see Fredricks et al. 2004 for a review) or other adaptive outcomes (Van Ryzin et al. 2009; Wentzel 1991). Evidence suggests that specific motivational constructs may uniquely predict engagement (Eccles and Wigfield 2002; Linnenbrink and Pintrich 2002). Walker et al. (2006), for example, examined relationships between motivational variables and engagement with college students and found that value of academics and self-efficacy uniquely predicted cognitive engagement.

The research summarized above suggests two possible sets of conclusions about the relationships among college student classroom belonging, motivation, engagement, and achievement. One is the more common model (labeled Model 1) known as the self-system model of classroom support for motivation (Connell and Wellborn 1991). This model represents the notion that belonging, self-efficacy, and task value are directly predicted by a supportive classroom environment, and directly predict engagement. Engagement, in turn, predicts achievement (see Fig. 1). A second possibility (labeled Model 2) is the somewhat newer model proposed in this study that elaborates on the self-system model. As Model 2 indicates, we argue that a supportive classroom environment predicts belonging and that belonging likely predicts self-efficacy and task value. These motivational beliefs, in turn, independently predict engagement and engagement predicts achievement (see Fig. 2). Unlike Model 1, Model 2 examines the specific relationship between belonging and motivation.

The present study combined both quantitative and qualitative data using an explanatory sequential mixed methods design (Creswell and Plano Clark 2010) to provide an extra dimension of description and understanding of college student belongingness. In the initial quantitative phase, two models representing the two possible sequences of linkages (discussed earlier as Models 1 and 2) were tested using structural equations modeling (SEM) with data drawn from college students. Potential associations between student perceptions of instructor academic and social support (i.e., Barnes et al. 2008), sense of class belonging (i.e., perceived relatedness to instructor and peers; Goodenow 1993), academic motivation (i.e., self-efficacy and task value beliefs; Garcia and Pintrich 1996), academic engagement (i.e., instructor ratings of student course engagement; Betts and Rotenberg 2007), and

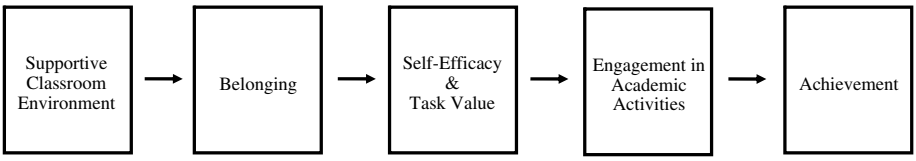

Fig. 2 Revised model of classroom support for motivation

achievement (i.e., instructor reports of student grades) were analyzed. Evaluation of these models is important because most investigations to date have not included evaluations of specific process models that evaluate the potential predictive roles of supportive classroom characteristics, belonging, motivation, engagement, and achievement, and these relationships might reveal important aspects of college student development and retention.

The extant literature also suggests that contextual variables are positively related to student classroom belonging beliefs, though surveys and questionnaires have been the primary instruments used to examine student perceptions of belonging (Nichols 2008). Qualitative explorations and student voices are largely missing from the belonging literature and likely would add to quantitative findings (Anderman and Kaplan 2008), and thus the second purpose of the present study was to explore student belonging perceptions in relation to their classroom experiences. In the qualitative, follow-up phase of this study, students were interviewed about their classroom experiences and belonging perceptions in order to clarify the characteristics of university educational contexts that may promote or impede students' feelings of belonging.

Quantitative phase method

Sample

Student participants in this study were 212 undergraduates (155 females, 73 % female) enrolled in educational psychology classes at a large Midwestern university in the US. Students ranged from 18 to 39 years of age ($M = 20.39$, $SD = 2.54$), and the majority reported sophomore standing (54 %). Nearly all of the participants (90 %) reported that the course was a prerequisite for admission to their major. Participants' self-identified ethnicities included African-American (2 %), European-American (92 %), Latino(a) (3 %), and other groups (3 %).

Four instructors participated (two female) from the undergraduate educational psychology classes in which student participants were enrolled. Instructors ranged from 24 to 32 years of age ($M = 27$, $SD = 3.46$). Three instructor participants identified themselves as European American, and one instructor identified herself as Asian-American. Post-secondary teaching experience for the instructors in this study ranged from 2 to 5 semesters ($M = 3.5$, $SD = 1.29$). All instructors taught two sections of Child or Adolescent Development. Between 25 and 30 students were enrolled in each of the sections. None of the instructors were part of the research team.

Materials and procedure

Student participants completed the following quantitative instruments: (1) a demographic questionnaire developed for this study; (2) an adapted version of the Psychological Sense

of School Membership Scale (PSSM; Goodenow 1993); (3) the task value and academic self-efficacy subscales from the Motivated Strategies for Learning Questionnaire (MSLQ; Garcia and Pintrich 1996); and (4) selected scales from the Student Evaluation of Teaching questionnaire (SET; Barnes et al. 2008). See Table 1 for correlations, means, and standard deviations for all variables included in the above measures. Quantitative data collection took place at approximately the mid-point of the spring semester in university classrooms without the presence of instructors. All quantitative measures were administered at the same time. Students were provided with $\sim$25 min to complete the survey and all students finished within the time allowed.

Demographic questionnaire

Students provided their age, gender, ethnicity, academic major, and enrollment status (e.g., freshman, sophomore, etc.). Students also indicated whether or not the course was required for their major.

Belongingness

The Psychological Sense of School Membership Scale (PSSM; Goodenow 1993) was originally developed to measure middle school students' perceptions of school membership. We used an adapted version of the PSSM to assess college students' perceptions of belonging within a single class (e.g., "I feel like a real part of this school" was changed to "I feel like a real part of this class"). The adapted scale examined students' general sense of belonging (20 items, e.g., "Students in this class treat me with respect;" $\alpha = .90$). Two of the items were new and were developed to measure perceptions of social aspects of membership relevant to the current study; "I can talk to students if I have a problem" and "I am included in group work." Exploratory factor analyses indicated that the new items loaded onto a single factor with the remainder of the scale items. The items exhibited loadings that ranged from .56 to .73 (PCA extraction, varimax rotation). Participants rated items on a 5-point Likert-type scale ranging from "Not at all true" to "Extremely true," and scores were created by taking the mean of all items.

Self-efficacy and task value

The MSLQ (Garcia and Pintrich 1996) was developed to measure the motivational orientation of college students and has demonstrated adequate psychometric properties with similar participants (Pintrich et al. 1993). The two subscales of the MSLQ used in this study were: (1) academic self-efficacy (4 items, e.g., "I'm confident I can do an excellent job on the assignment and tests in this course;" $\alpha = .90$), and (2) task value (6 items, e.g., "It is important for me to learn the course material in this class;" $\alpha = .91$). Participants responded using a 5-point Likert-type scale ranging from "Not at all true" to "Extremely true." Participants received a single sum score for each subscale, which was the mean of all the items.

Instructor academic and social support

The Student Evaluation of Teaching questionnaire (SET; Barnes et al. 2008) assessed student perceptions of instructor academic and social support. This instrument displayed

Table 1 Correlations, means, and standard deviations

	1	2	3	4	5	6
Supportive classroom environment	–					
Belonging	0.53*	–				
Self-efficacy	0.25*	0.44*	–			
Engagement	0.08	0.11	0.35*	–		
Task value	0.43*	0.44*	0.31*	0.08	–	
Achievement	−0.06	0.06	0.43*	0.64*	0.03	–
Means	4.01	3.99	3.95	4.22	3.84	0.87
Standard deviations	0.60	0.47	0.70	0.60	0.72	0.09

* $p < .05$, two-tailed

adequate validity and reliability in studies with similar groups of undergraduates (Barnes et al. 2008). Data from the teacher excellence and teacher preparedness scales indicated the scores were positively correlated ($r = .75$), thus both scales were combined into a general instructor academic and social support scale. The combined scale was composed of 14 items (e.g., "The instructor seems to care whether students learn the material," "The instructor conveys material in a way that is easy to understand," and "The instructor expects academic excellence from students;" $\alpha = .93$). Participants responded using a 5-point Likert-type scale ranging from "Strongly disagree" to "Strongly agree." A single scale score was calculated for each participant by using the mean of all items.

Instructor measures

Instructors completed an adapted version of the Teacher Rating Scale of School Adjustment (Betts and Rotenberg 2007) for each student at mid-term, approximately. This scale included 12 items ($\alpha = .91$) designed to measure students' engagement [e.g., "(The student) actively participates," and "(The student) comes to class"]. Instructors rated students on a 5-point Likert scale ranging from "Does not apply" to "Certainly applies." A single scale score was created for each participant using the mean of all items. Instructors also completed mid-term course grades (later labeled achievement) for each of their students that indicated the number of course points earned relative to total points possible at that point in the semester. Instructors received a department store gift card for their participation.

Quantitative results

Data used in these analyses were examined a priori for conformity to parametric and multivariate assumptions. Bivariate correlations were examined for multicollinearity and to evaluate whether or not the variables correlated in expected directions. No multicollinearity was found and correlation estimates supported a priori expectations (see Table 1 for bivariate correlations, means and standard deviations). The bivariate correlation between belonging and engagement/achievement was significant and indicated initial support for overarching hypotheses of mediation (Baron and Kenny 1986). Confirmatory analyses of the hypothesized structural models (see Figs. 1, 2) were carried out using *Mplus* software

(Muthén and Muthén 1998) to evaluate the fit of the hypothesized models to the data and, given indications of acceptable fit, to obtain parameter estimates for the structural paths.

Model 1 represented a sequence of linkages suggested by the conceptual framework presented earlier in this paper, and includes self-efficacy and task value as aspects of motivation typically viewed as closely related constructs (e.g., Patrick et al. 1997). When examined as components of the self-system model (Connell and Wellborn 1991), the constructs of belonging, self-efficacy, and task value were placed at the same level as predictors of engagement. Instructor academic and social support was placed as the exogenous predictor and was hypothesized to predict belonging, self-efficacy, and task value. Belonging, self-efficacy, and task value, in turn, were hypothesized to predict classroom engagement. Engagement, finally, was hypothesized to predict achievement. Additional direct paths from belonging, self-efficacy, and task value to achievement were included to examine whether or not engagement mediated links to our achievement outcome as suggested by Connell and colleagues (e.g., Connell and Wellborn 1991).

Model 2 was created to test the alternative hypotheses presented that revised the prior assumptions from Model 1 and indicated that instructor academic and social support is a likely predictor of belonging and that belonging is antecedent to self-efficacy and task value. Self-efficacy and task value, in turn, were hypothesized to predict engagement and subsequent achievement. To keep the assumptions between Model 1 and Model 2 parallel, we also tested direct paths from instructor academic and social support to self-efficacy and task value. This allowed us to examine whether or not belonging might mediate linkages from instructor academic and social support to self-efficacy and task value. Following similar logic, we also tested a direct path from belonging to engagement to examine whether or not self-efficacy and task value mediated the link from belonging to engagement. Finally, to further maintain parallel effects in the models, we also tested direct links from self-efficacy and task-value to achievement, to examine mediation among that sequence of linkages as well.

Model fit

We evaluated structural model fit with several fit indices, such as the Comparative Fit Index (CFI values above .95 indicate very good fit and those at or above 0.90 indicate reasonable fit; Bentler 1990), Steiger's Root Mean Square Error of Approximation (RMSEA values below 0.05 indicate a very good fit and those at or below .10 indicate a reasonable fit; Steiger 1990) and the Standardized Root Mean Square Residual (SRMR <.05; Hu and Bentler 1999). Model fit estimates for Model 1 were unacceptable ($\chi^2 = 59.21$, $df = 8$; CFI = .84; RMSEA = .23; SRMR = .11). However, model fit statistics for the hypothesized Model 2 indicated much better fit ($\chi^2 = 14.59$, $df = 4$; CFI = .97; RMSEA = .11; SRMR = .04) and, upon removal of non-significant paths to improve parsimony, the resulting reduced model produced acceptable fit to the data. Non-significant paths from instructor academic and social support to self-efficacy, from belonging to engagement, from task value to engagement and from task value to achievement were removed in this subsequent analysis. With the exception of the path from task value to engagement, non-significant values were consistent with hypotheses and supported expected patterns of mediation. The constellation of fit statistics from Model 2 (Fig. 3) indicated either good or acceptable fit to the data ($\chi^2 = 18.56$, $df = 7$; CFI = .97; RMSEA = .09; SRMR = .05).

Structural path estimates

Given that Model 2 (Fig. 3) exhibited an acceptable fit to the data, estimates of the structural relationships among the model variables were interpreted. Estimated path coefficients were largely consistent with hypothesized linkages (all coefficients reported below are standardized values and significant at $p < .05$ or smaller). Instructor academic and social support was associated with belonging (.52); students who indicated that their instructors were supportive also tended to report greater belonging. Self-efficacy and task value were, in turn, also associated with belonging (.43 and .30, respectively), thus students who indicated greater belonging also tended to report higher self-efficacy and task value. Students with higher self-efficacy also tended to report higher engagement in the classroom (self-efficacy was the only significant predictor of engagement; .35). Higher engagement was also related to higher achievement (.56). The path coefficient estimated for the link between task value and engagement was not significant.

Significant parameter estimates from instructor academic and social support to task value (.28) suggest that belonging partially mediated the link from instructor academic and social support to task value (Muthén 2011). The non-significant direct path from instructor academic and social support to self-efficacy indicates that belonging fully mediated that link. Engagement also partially mediated the relationship between self-efficacy and achievement (the direct path from self-efficacy to achievement was estimated at .24). SEM estimates of indirect effects for belonging on the achievement outcome provided additional support for the hypothesized mediation. Belonging displayed significant total indirect effects (*Mplus*; Muthén and Muthén 1998) on achievement (.19, $p < .01$) via a path to self-efficacy and paths from self-efficacy to both engagement and achievement.

Need for follow-up explanations

To gain a more complete understanding of student classroom experiences and perceptions of belonging, a qualitative follow-up phase was conducted (Creswell and Plano Clark 2010). The focus of the qualitative phase was to better understand students' perceptions of belonging and the classroom experiences that may be part of belonging and important associated processes. The quantitative results showed strong relationships between student belonging and instructor academic and social support. Previous research has examined teachers' instructional support and the connections with students' motivation, but few studies to date have examined the connection between classroom contextual elements and students' sense of belonging (Freeman et al. 2007). One important component of this study was the ability to follow-up with participants, which allowed us to explore what students highlight as important when asked about belonging. In particular, the qualitative phase investigated one overarching question: "How do students describe their belonging perceptions in relation to their classroom experiences?" By gaining insight into the classroom experiences that influence students' sense of belonging, instructors can shape their instructional practices to better suit the needs of students.

Qualitative phase method

Interview data collection

A follow-up phenomenological qualitative investigation was conducted to understand more about participants' belonging perceptions and classroom experiences. In a phenomenological

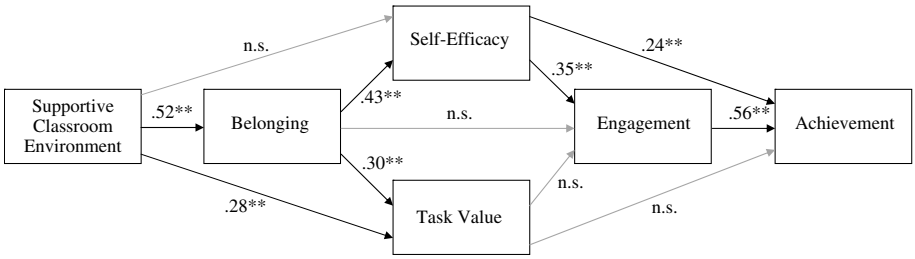

Fig. 3 SEM results: Model 1. ** $p < .01$, *n.s.* nonsignificant

study, the focus of the research process is to develop an understanding of participants' perceptions of experiences (Merriam 2009; Willis 2007).

All students who participated in the quantitiative phase of the study were asked to participate in the qualitative phase. Approximately 81 % ($N = 172$) of students volunteered to participate. Qualitative phase participants were selected across the eight classes from the quantitative phase. The sample for the qualitative phase of this study included two females and one male from each belonging level: low (quantitative belonging scale score equal to one standard deviation below the mean or lower) and high (quantitative belonging scale score equal to one standard deviation above the mean or higher). All four participating instructors were represented by the qualitative phase participants. The average age for the participants in the qualitative phase was 20.60 ($SD = 1.43$) and all identified themselves as European-American.

Table 5 provides descriptive information, quantitative belonging, instructor academic and social support, task value, and self-efficacy mean scale scores, and qualitative descriptions of belonging for each qualitative phase participant. Participants ranged in enrollment status from sophomore to senior, and the course was required for half of the participants. Two of the three students with higher belonging mean scores majored in education. The other student in the higher belonging group majored in sociology, but minored in education. Only one of the three students in the lower belonging group majored in education. The others majored in advertising and sociology. Participants' mean task value scale sores differed considerably between the two groups. Students with higher belonging scores all reported mean scores of 4.50 (scores could range from 1 to 5), compared with scores ranging from 2.17 to 3.00 for students with lower belonging mean scores. Differences in quantitative self-efficacy mean scale scores between the two groups were less apparent. Whereas self-efficacy scores ranged from 4.00 to 4.50 (scores could range from 1 to 5) for participants with higher belonging scores, participants with lower belonging scores reported self-efficacy mean scores between 3.00 and 4.50. Differences in qualitative descriptions among the participants are discussed in the following sections.

For the qualitative phase of the study, interviews were conducted over a 2-week period immediately following the quantitative phase. Interviews lasted between 20 and 30 min and were conducted by the first and second authors. All interviews were tape-recorded and transcribed verbatim. Each interview focused on students' perceptions of belonging and their experiences with their instructor and peers in the course. The interview protocol used in the qualitative phase can be found in Appendix.

Qualitative analytic procedures

After completion of qualitative data collection, all student data were matched. Student names were then removed and replaced with pseudonyms. Data analysis followed Moustakas (1994) procedures for systematic analysis for phenomenological data. This process involves epoche (or bracketing or identifying significant statements), phenomenological reduction, synthesizing themes into a description of individual experiences, and constructing a composite description of the meaning. Authors attempted to set aside any "taken for granted" assumptions about college students or sense of belonging in order to more accurately describe the phenomena.

Transcripts were read in their entirety for overall understanding by two researchers. Phenomenological reduction was achieved through horizontalization, which is the process of exploring the data and treating all pieces of data as equal value (Merriam 2009). Transcripts were re-read and reoccurring ideas among participants were noted. Researchers then met to discuss their initial reactions and discuss potential categories that represented key statements from the participants, a process known as basic thematic categorization (Saldaña 2013). Themes that emerged from student responses were categorized according to commonality. Three major theme categories emerged from the data: perceptions of belonging; perceptions of peer acceptance and support; and perceptions of instructor acceptance and support.

An initial coding list was co-constructed by the two readers using a sub-set of participant responses. After independent initial coding was complete, the researchers met again to discuss a final coding list, which considered connections, contrasts, and comparisons among the theme categories (Saldaña 2013). Transcripts were then re-read in entirety and coded using final sub-category codes. Sub-categories for the theme category, perceptions of belonging—or the sources of student belonging beliefs—included interpersonal interactions with instructors and peers, similarities and differences in academic beliefs and perceptions of task value among classmates (see Table 2). When discussing peer acceptance and support, coding sub-categories encompassed variations in the ways in which students felt similar, different, comfortable, valued, and respected (see Table 3). Coding sub-categories for the perceptions of instructor acceptance and support included students' beliefs about their instructors' availability, approachability, and investment in and respect for students (see Table 4). The ways in which the instructor set the tone for the class and encouraged group interaction also were sub-categories for this theme category. Interestingly, unlike task value, self-efficacy did not emerge as a sub-category code in any theme category.

Qualitative findings

The qualitative data gathered in this study supported and expanded the findings found in the quantitative phase. Specifically, interview data provided a more descriptive picture of students' experiences in the classroom, as well as of the contextual characteristics that foster or inhibit student belonging perceptions.

Perceptions of belonging

When explaining the source of their belonging perceptions, all students referenced interactions with their peers (see Table 5). All students with higher belonging scores said they

Table 2 Coding sub-categories for belonging perceptions

Coding sub-category	Response prototypes
Interpersonal (Peers)	"There's this girl that I sit by that I didn't know before coming to class and I've gotten to know her a little bit and that's been kind of nice"
Interpersonal (Instructor)	"My teacher knows my name"
Academic (Peers)	"Even if I did [participate], sometimes there wasn't much response after that and it was just kind of like I was doing it [participating] by myself"
Task value	"Almost everybody in there is going to be a teacher, so there's common interest"

Table 3 Coding sub-categories for perceptions of peer acceptance and support

Coding sub-category	Response prototypes
Value	"She [another student] told me I did a good job … she acknowledged what I was good at"
Respect	"People are usually pretty accepting of other people"
Similarities	"We all kind of generally had the same thoughts and feelings about things"
Differences	"I know that there were some people who were upset that we weren't as into it [the class] as they were"
Comfort	"The people were nice and you just had a comfort level with them"

Table 4 Coding sub-categories for perceptions of instructor acceptance and support

Coding sub-category	Response prototypes
Investment	"She [the instructor] is willing to work with me to do well"
Respect	"He [the instructor] always tried to listen to your opinion and understand it"
Setting tone	"He [the instructor] tried to lighten the mood by playing music at the beginning of each class"
Availability	"You [the student] could always go and visit [the instructor] during office hours"
Approachable	"I could go to talk with him about things"
Encouraging group interaction	"The instructor tries to get students to participate"

belonged because of their interpersonal relationships with their classmates. Amanda noted, "I sit in the same spot every day so I know the people I sit next to. I know their names, like we've done projects together, and I can say 'hi' to them." Patricia commented, "A lot of people voice their opinions on certain topics that we discuss and everyone seems to feel comfortable doing that."

All students with lower belonging scores also mentioned peers as an important source of their belonging perceptions. Specifically, they felt their belongingness was negatively influenced by their interpersonal interactions with their classmates. Heather described her experience,

Table 5 Qualitative participant descriptive information, quantitative academic and social support, task value, and self-efficacy mean scores, and qualitative descriptions of belonging by quantitative belonging scale score mean

Participant pseudonym and belonging group	Quan. belonging	Enrollment status	Major	Gender	Instructor ID and (Gender)	Required course	Quan. instructor academic and social support	Quan. task value	Quan. self-efficacy	Qual. belonging reason	Qual. accepted or supported by peers	Qual. accepted or supported by instructor
Sarah (lower belonging)	2.80	Sophomore	Sociology	Female	4 (Male)	No	3.36	3.00	4.50	Academic (Peers)	"Kind of"	"Yes"
Collin (lower belonging)	2.95	Junior	Advertising	Male	1 (Female)	No	4.00	2.17	3.13	Academic (Peers)	"I think so"	"Yes"
Heather (lower belonging)	3.15	Sophomore	Secondary education	Female	3 (Male)	Yes	3.93	2.17	3.00	Interpersonal (Peers)	"Somewhat"	"Most of the time"
Patricia (higher belonging)	4.50	Junior	Sociology	Female	1 (Female)	Yes	4.50	4.50	4.50	Interpersonal (Peers)	"Yes"	"Yes"
Amanda (higher belonging)	4.65	Senior	Elementary education	Female	2 (Female)	No	4.71	4.50	4.75	Interpersonal (Peers and Instructor)	"Yes"	"Yes"
Elijah (higher belonging)	4.85	Junior	Secondary education	Male	4 (Male)	Yes	4.93	4.50	4.00	Interpersonal (Peers)	"Yes"	"Yes"

Quantitative belonging, instructor academic and social support, task value, and self-efficacy mean scale scores could range from 1 to 5

> I'm pretty conservative in my beliefs and stuff and there were quite a few liberal people in there [the class]. And that kind of made me uncomfortable at times when they were talking about that stuff. We did a small section on religion and that just got kind of crazy in class and I was almost afraid to speak up and share. … If everyone was agreeing and I disagreed, then I didn't want to speak up because I don't really like confrontation. I didn't want to speak up and be the different one.

The other students with lower belonging scores referenced academic reasons in their explanations. Specifically, both students mentioned academic differences set them apart from their peers. Collin struggled the most with unengaged peers during small group activities. He shared, "We didn't really say much. It was kind of dead … there were days when no one was really responding so it was just kind of like I wasn't there." Sarah explained her experience,

> I fit in with the people that sit in the back [of the classroom] that text and talk. … There are some people that do the reading every night and ask detailed questions about something on a specific page of the textbook whereas other people just try to get like the main ideas. I guess I didn't do the reading every night so I didn't really fit in with that.

Task value seemed to play a role in all students' perceptions of belonging, regardless of their level of belonging. As shown in Table 5, students with higher belonging scores also had higher task value scale scores (4.50 for all students in this group) than their peers with lower belonging mean scores (task value mean scores of 2.17–3.00). Patricia (higher belonging group) reported belonging because "[We have] similar interests, it seems like a lot of us are going to be educators, which is why we're taking this class, so I feel a part of where everyone else is coming from." Elijah (higher belonging group) commented, "Almost everybody in there is going to be a teacher, so there's common interest." Although Amanda (higher belonging group) was not an education major, she shared her experience as a student minoring in education, "That is probably why I don't feel 100 % belonging, because I'm not going to be a teacher." Unlike students in the higher belonging group, Collin (lower belonging group) explained that he sometimes didn't feel as though he fit in because he was "not pursuing education." In their interviews, Sarah and Heather (lower belonging group) both mentioned their lack of interest in many course topics. Sarah shared her frustration with repeated course content, "Sometimes we were like, 'we already know it, let's move on.'"

Peer acceptance and support

When asked whether or not they felt accepted or supported by their peers, all higher belonging students answered positively, but lower belonging students were more tentative with their responses (see Table 5). In describing the reasons for their perceptions of their peers, students with higher belonging scores reported feelings of value and respect. Patricia said, "We each put in our own ideas and nobody's ideas are thrown out. … I've never noticed anyone casting out their [other students'] ideas and being really critical. … People are usually pretty accepting of other people." Elijah also commented about his experiences with his classmates, "They were just very supportive people. You wanted to be successful, but you wanted the other people around you to be successful, too, because you knew them on a more personal level." Conversely, students with lower belonging scores reported feelings of difference and disrespect when describing the unsupportive nature of their

peers. Heather described an example, "At the end of the semester we all had to give presentations. … They [the other students] were just totally against what we were talking about. … I was a little embarrassed and it was kind of awkward."

Instructor acceptance and support

Students' quantitative ratings of instructor academic and social support differed between the two groups (see Table 5). Whereas students in the higher belonging group rated instructor academic and social support between 4.50 and 4.93 (scores could range from 1 to 5), ratings of instructor academic and social support of students in the lower belonging group ranged from 3.36 to 4.00. Interestingly, only one of the six interview participants mentioned interactions with their instructor when initially explaining the source of their belonging perceptions (see Table 5). However, when asked directly, all students reported feeling accepted or supported by their instructor at least most of the time. Students from both high and low belonging groups referenced instructor investment in their descriptions of instructor support. Elijah (high belonging group) commented about his instructor "He was very good at answering questions and making sure he took the time to fully answer them. … He made sure he took the time for you." Sarah (low belonging group) made a similar comment, "He was really nice and helpful and he was really interested in it [the course topics]. … He wanted us to learn it." Instructor respect for students was another common theme throughout participants' responses. Heather (low belonging group) said that her instructor "always tried to listen to [her] opinion and understand it."

Students from both belonging groups also reported "setting the tone of the class" as an important supportive instructional strategy. Patricia (high belonging group) commented about her instructor, "She's just really enthusiastic about things. She makes it interesting." Students with higher belonging scores also referenced availability and approachableness as supportive instructor qualities. Patricia (high belonging group) said, "she's really approachable, and when I e-mail she e-mails me back pretty quickly."

Encouraging group interaction seemed to be a salient supportive instructional strategy for students from both belonging groups. Patricia (high belonging group) reported, "I really think interaction, definitely group interaction, is important because you're not just getting what the teacher says, you're interacting, you're sharing each other's ideas." Specifically, the students emphasized the importance of discussion. Heather (low belonging group) commented, "When we got into discussions, that was when I liked being there [in class] and hearing different people's sides of the story." Collin (low belonging group) agreed with that sentiment, "The teacher did a lot on PowerPoint, but discussion could have increased participation. … There were days when no one was really responding."

Discussion

Though support and belonging are important for college student retention and success, research to date primarily has focused on campus community belonging (Strayhorn 2012), leaving questions about the ways in which college student perceptions of classroom support and belonging might play a role in academic adjustment (Freeman et al. 2007). In this study, quantitative and qualitative methods were used to explore relationships among classroom contextual characteristics and college student belonging, motivation, engagement, and achievement. As we will discuss, many of the individual pathways suggested by

our data validate and build on the complex relationships between multiple social, motivational, and academic adjustment variables, which have been well-documented in primary and secondary educational contexts, at the college level using mixed methodology. The quantitative data revealed a predictive role for instructor academic and social support for student belonging and also suggested meditating roles for belonging, motivation, engagement, and student achievement. This evidence extends findings from previous research and supports pathways identified in our second hypothesized model (see Fig. 2), specified here using a clearly supported sequence of conceptual linkages, that posited student belonging perceptions to be antecedent to task value and self-efficacy motivational constructs. Theoretically, these findings suggest that instructor academic and social support can be a key contributor to students' feelings of belonging that, in turn, may have powerful effects on motivation and achievement (Hausmann et al. 2007; Vallerand et al. 2008).

This relatively complex model was fitted to the data and indicated that students' perceptions of instructor academic and social support were positively and moderately associated with students' feelings of belonging. These findings were consistent with results from past studies primarily conducted with younger populations (e.g., Freeman et al. 2007; Hamre and Pianta 2005; McNeely et al. 2002; Murdock et al. 2000; Van Ryzin et al. 2009). Students with higher belonging scores tended to rate their instructors as prepared, professional, and respectful. Additionally, students with higher belonging scores also rated their instructor as more enthusiastic, passionate, and caring in the classroom. These results suggest that instructor academic and social support may be an important aspect of student belonging, as instructor support in the classroom was related to the extent to which students felt like a part of the class. Although specific pedagogical practices were not examined in the current study, our findings indicate that instructor enthusiasm, passion, and the level of interest and caring they show toward their students may play a central role in supporting student motivation and engagement in the classroom social context—an important component in understanding achievement processes.

As hypothesized, results also showed that student perceptions of belonging displayed linkages to their levels of motivation in the course. These findings also are consistent with past research also primarily conducted with younger populations (Battistich et al. 1997; Freeman et al. 2007; Goodenow 1993; Goodenow and Grady 1993; Patrick et al. 1997; Wentzel 1998). Students who felt comfortable and accepted in class not only tended to have higher efficacy beliefs, but also felt that the course content was more useful than their peers with weaker perceptions.

Similar to results from other studies (Pajares 1996; Schunk 1995), self-efficacy was also linked to both academic engagement and achievement. Students that felt more capable of succeeding in the course tended to be more involved class participants and, subsequently, higher achievers than their less efficacious classmates. Additionally, results showed student engagement to be strongly linked to students' grades in the course. This finding also is consistent with our hypothesized model and with previous studies of motivation and self-system processes (Buhs 2005; Skinner et al. 1998).

A prominent finding in the motivation and achievement literature has been that students' academic task value is positively associated with subsequent engagement (Eccles et al. 1998; Pintrich 1999). We expected similar patterns to emerge here. Specifically, we expected students who believed coursework to be worthwhile and useful would be more likely to engage in learning activities. In the current study, however, task value was not associated with either engagement or achievement. This may have been due to the fact that study participants were recruited from a course required for students entering an educational degree program, yet taken *before* admission to the program. As evidenced in many

of the qualitative interviews, it is possible that students may have felt that the course was not central to their career goals if they were not yet admitted to the certification program or firmly committed to pursuing a degree in education. Their motivation may have been more narrowly described by performance goals (i.e., achieving an acceptable grade) than to mastery-oriented/learning goals tapped by the task value scale.

Finally, our quantitative findings showed that a model that presents belonging as antecedent to motivational constructs/variables (Model 2) fit our data better than one in which instructor academic and social support is directly linked to belonging, self-efficacy, and task value. Belonging, in turn, was not directly linked to engagement except for an indirect/mediated linkage through self-efficacy. Although our design and data were not longitudinal, these results and the significant indirect effects estimates were consistent with the contention that instructor classroom support may more directly influence belonging and that belonging, in turn, is a potential factor that may predict subsequent motivation (especially self-efficacy beliefs), engagement, and achievement. Taken together, these results also provide general support for the self-system model while suggesting that belonging may function antecedent to motivational aspects of student competence and value beliefs.

A purposive sample of six students (three from each quantitative belonging group: high and low) were chosen of the 212 quantitative participants to participate in the follow-up qualitative phase of the study. Results from this phase produced a useful and interpretable set of findings that add detail to the quantitative results and contribute to a more complete understanding of the role of classroom contextual characteristics on college student belonging. All students interviewed felt supported by their instructor at least most of the time. Students from both high and low belonging groups mentioned instructor investment and tone-setting as important indicators of instructor academic and social support. Students also emphasized the significance of instructor respect for student opinions in fostering belongingness in the classroom. Finally, students also mentioned the importance of instructor availability, flexibility, and approachableness.

Although students noted several ways in which instructors fostered a supportive classroom environment, major differences in student belonging beliefs seemed to relate to interactions with their classmates. In particular, only students from the high belonging group reported feeling accepted and supported by their peers with certainty. These students' feelings of belonging seemed to stem from familiarity, comfort, and shared interests and experiences with their peers. Moreover, students with higher belonging perceptions reported feeling respected and valued by their classmates.

Though no students reported feeling completely unaccepted or unsupported, students in the low belonging group were more hesitant about the acceptance and support of their classmates. All students in this group reported feeling different from their peers. Significant reasons included differences in ideas, values, course meaningfulness, and engagement. These students also reported feeling uncomfortable in the classroom and disrespected by their classmates.

Certainly, the instructor cannot manage all peer interactions among students, but instructors play an important role in the instructional design of their courses. For example, it seemed that group interaction was an important source of support for many of the students interviewed from both groups. Even though some students did not necessarily feel like they fit in with the whole class, most mentioned relating to a smaller group of students. This emphasizes the importance of structuring group work for students. However, group work must also be meaningful. Students from both groups mentioned that relevance of course topics played a role in their feelings of belonging. From the quantitative scores of

those interviewed, it is interesting to note the patterns of task value in relation to students' perceptions of belonging. Those with higher task value scores also held more positive class belonging beliefs. This finding is relevant for instructors to consider, as students may develop a deeper personal interest in utilitarian class activities (Hulleman et al. 2008), which may ultimately enhance their perceptions of belonging in the course. In a study on college students' classroom communities, McKinney et al. (2006) found that encouraging students to get to know their class neighbors—those sitting immediately around them—helped students feel more secure and supported in the classroom. In addition to encouraging productive peer group work and making course content meaningful and relevant, instructors should also actively promote respect among class members (Engstrom and Tinto 2008). Explicit discussions regarding the importance of respect ad setting ground rules for class discussions are often effective ways to establish a safe place for students to learn and share (McKeachie 2012).

Overall, the quantitative and qualitative findings from this study illustrated not only the influential role that instructors and peers have in the classroom, but also the role belonging likely plays in college student motivation (via self-efficacy beliefs) as well as relationships with engagement and achievement processes. This research expands on prior findings by applying a model of belonging developed for children and younger adolescents (Furrer and Skinner 2003; Wentzel 1997, 1998) to a college-age sample and demonstrating the potential importance of creating academically and socially supportive classroom contexts at the university level. By understanding how belonging perceptions link to specific aspects of academic motivation, instructors can be better prepared to foster motivation and academic adjustment in college classrooms. Instructors who demonstrate enthusiasm and create a supportive social context appear more likely to foster higher motivation and achievement patterns in their students. This information has the potential to not only improve instructional techniques, but also influence student learning and success in the classroom.

Limitations of the current research should be noted. First, student perceptions of instructor characteristics, belonging, and motivation were all gathered from self-reports. This may have created problems with shared-source variance. Although this study included instructor ratings of student engagement and achievement, future research might also use more objective measures (e.g., observations) to assess instructor characteristics. Similar to other studies in the area of belonging (Catalano et al. 2004; Furrer and Skinner 2003), the current study associated student belonging with both academic and social support from teachers and peers. Future studies in this area might develop more precise psychometric measures of academic and social support to explore possible distinct processes and contributions to student adjustment. Additionally, data were collected from students and instructors at a single time point for this study. Our conclusions are therefore tempered by the correlational nature of our data; however, the findings of this study suggest potential pathways that can be further examined using causal methodology. Classroom observations or a longitudinal analysis exploring the impact of classroom belonging on motivation changes or trajectories of motivation, engagement, and achievement, and further examining peers and instructors as potentially independent and dynamic sources of belonging and support for motivational processes would provide a stronger basis for drawing conclusions about directions of influence. Although the quantitative phase of this study focused on instructor academic and social support, participants' qualitative data highlighted the equal importance of peer academic and social support. Future research should examine quantitative models of belonging that include both instructor and peer academic and social support in relation to student belonging, motivation, engagement, and

achievement. Furthermore, the current study focused on student perceptions of academic and social support and did not directly examine the effect of specific instructional practices on college student perceptions, beliefs, and behavior. Future investigations might examine the influence of explicit pedagogical practices on student belonging, motivation, engagement, and achievement. Seventy-three percent of the participants in this study were female. Although some evidence suggests that females may display slightly different achievement rates and/or motivation levels than males (Jacobs et al. 2002; Pajares and Valiante 2001), there is no evidence that we are aware of in the research literature that would suggest that the specific pattern of linkages we examined here (i.e., our causal model) would differ across gender groups. Higher (or lower) levels of classroom support, belonging, motivation, and engagement likely affect males and females similarly regardless of potential group differences in absolute levels of motivation and/or achievement, though future studies might explore gender differences using models similar to those examined in the current study. Finally, though the sample of interview participants was purposively selected, there is a possibility, given the small sample size, that students' statements were idiosyncratic or related to instructor differences. Future qualitative studies with larger samples are needed to confirm these findings.

Despite these limitations, the evidence gathered for this model and the additional detail gleaned from the qualitative findings reveal support for models of the relationships between classroom contextual characteristics and potential processes explaining student classroom belonging, motivation, engagement, and achievement. The results of this study suggest that college educators should consider the effects of student perceptions of classroom academic and social support—particularly on student feelings of belonging, as these perceptions may affect consequent motivation, engagement, and achievement.

Appendix

Qualitative phase interview protocol

Describe your experience in this class.

- Probe: Was it good? Bad? So-So? Why?

On a scale from 0 – 100, how much would you say that you fit in and belong in this class? Why?

- Follow-up: Did you know the instructor or any of your classmates before this class?
- Follow-up: In what ways do you feel that you do or don't fit in?

What does it mean "to belong" in the classroom?

- Probe: Define belonging in the classroom.

Give a specific example of a time in this class when you felt like you did or didn't belong.
Describe a specific example of your experiences with your peers in this class.

- Follow-up: Based on those experiences, do you feel accepted/supported by your peers? Why do you feel this way?
  - Probe: In what ways do you feel that you are or are not supported?

Describe your experiences with your instructor in this class.

- Follow-up: Do you feel supported by your instructor? Why do you feel this way?
  - Probe: In what ways do you feel that you are/are not supported?
- Follow-up: What instructional practices are used that are supportive?
- Follow-up: What instructional practices are used that are not particularly supportive?

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