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Co-constructing Student Involvement: An Examination of Teacher Confirmation and Student-to-Student Connectedness in the College Classroom

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In order for students to succeed academically instructors must foster a supportive and connected learning environment. Importantly, not only do instructors need to connect with students, they also need to allow students the opportunity to connect with one another. Following that framework, aligned with the Dimensions of Learning model, we examined teacher confirmation behaviors and student-to-student connectedness as predictors of students' willingness to talk in class and preparedness for class (e.g., reading assigned chapters). Results found student-to-student connectedness mediated the relationships between teacher confirmation behaviors and in-class student involvement. Thus, this co-constructed, positive classroom climate nurtures student involvement. Student-to-student connectedness also served as a stronger predictor of student involvement than class size. Regardless of class size, student-to-student connectedness is an important classroom resource that instructors need to tap into as they try to engage their students.

Keywords: Student Involvement; Teacher Confirmation; Student-to-Student Connectedness; Willingness to Talk in Class; Self-Regulated Learning

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In her editorial, *Creeping Passivity*, Ann Cutler (2007) noticed a disturbing trend of nonparticipation in her college classrooms. Ultimately, she was concerned that the classroom climate was shifting to one of student noninvolvement. Following the editorial, the National Science Teachers Association (NSTA, 2007) website received an avalanche of responses from college instructors. Many wrote, after several futile attempts, they would just give up asking questions or encouraging discussions and return to the traditional lecture format.

The entire responsibility for student involvement should not fall on students alone. For example, larger classes can inhibit student communication (Smith, Kopfman, & Ahyun, 1996). Prior research found an inverse relationship between size and performance, in which the larger the class size the worse students perform (Chatman, 1997; Gibbs & Lucas, 1996). Furthermore, Coffield (1981) suggested some of the blame for student noninvolvement should be placed on instructors. Students may become noninvolved in the classroom when instructors use the traditional lecture format in the college classroom (Fyrenius, Bergdahl, & Silén, 2005). Verbally aggressive instructors may suppress student participation (Myers, Edwards, Wahl, & Martin, 2007), and their use of inappropriate aggressive and intense anger displays can negatively influence students' affect for them and course (McPherson, Kearney, & Plax, 2006). Moreover, Howard and Henney (1998) reported students' in-class involvement is also influenced by the sheer presence of other students. Fassinger (2000) argued that researchers need to consider the classroom as a group phenomenon that can affect student involvement. Therefore, in order to fully capture predictions of student involvement, it is also important to consider the overall classroom climate in terms of student-to-student connectedness fostered by instructors. This study explores how the instructor and students, as a group, *co-construct* an educational environment that may promote or hinder student involvement.

Enhanced Student Involvement Through Connected Classrooms

Even though student performance should be considered the most important outcome of the classroom experience (Hirschy & Wilson, 2002; Page & Mukherjee, 2000), and is a campus-wide responsibility (Hunter, 2006), Kerr (2001) argued that post-secondary schools are often not student-centered:

> Teaching loads and student contact hours have been reduced. Faculty members are more frequently on leave or temporarily away from campus; some are never more than temporarily on campus. More of the instruction falls to teachers who are not members of the regular faculty. The best graduate students prefer fellowships and research assistantships to teaching assistantships. There seems to be a point of no return after which research, consulting, graduate instructions become so absorbing that faculty efforts can no longer be concentrated on undergraduate instruction as they once were. (p. 49)

Thus, the current culture of higher education may actually discourage student involvement (i.e., physical and psychological energy put into coursework), and it is

critical for institutions to reconsider their approach to classroom interaction. Kerr (2001) encouraged higher education to examine and incorporate K-12 pedagogy in order to become more student-centered. One way of conceptualizing this is a model developed by Marzano (1992) framing the classroom as a connected, supportive environment. An Internet search revealed numerous K-12 websites adapting Marzano's Dimensions of Learning (DOL) model into their pedagogical practices, but there has been little research focusing on the separate dimensions.

This study focuses on attitudes and perceptions about the classroom experience linked to learning within the college setting, following the first dimension of the DOL. According to Marzano (1992), students do not learn well if they do not have positive attitudes and perceptions in the classroom. Thus, the focus of this first dimension is to create positive social experiences for students in the classroom, leading to active communication during class time, and thought and preparation even when outside of the classroom. As a guide for instructors, dimension one encourages that students be given the opportunity to think positively and constructively about themselves, peer groups, teachers, and tasks. Key components include the classroom climate, feeling accepted by teachers and peers, and experiencing a sense of comfort and order. Thus, instructors are encouraged to be positive and supportive of students in the classroom while also allowing students the opportunity to build positive relationships with one another in the classroom.

Kagan (1997) indicated such student-to-student engagement is content-free and enables students to interact with one another in the classroom. Students in social learning settings perform better on novel, conceptual problem-solving, and are better able to integrate material learned (Mazur, 1997), because they are more linked with their colleagues. Students may arrive at college with the expectation that their postsecondary experience will be as supportive and connected as their prior school years.

Following dimension one of this K–12 pedagogical model, instructional scholars should consider whether a co-constructed (developed collaboratively by the instructor and students) supportive, connected classroom environments would also benefit college students. Prior instructional communication has extensively explored the instructor–student relationship. Frymier and Houser (2000) stated the instructor–student relationship is, in part, an interpersonal one, and Menzel and Carrell (1999) found students were more willing to talk in class when they perceived their instructors to be verbally immediate (e.g., use of personal pronouns). Moreover, Johnson (2009) found an association between perceived instructor nonverbal immediacy and peer connectedness. Johnson concluded that students may model instructors' nonverbal immediacy, not only with that instructor, but also with each other in the classroom. As a step in understanding student involvement and preparation, this study examines whether the communication variables of teacher confirmation behaviors and student-to-student connectedness co-construct student involvement in and out of the college classroom.

Student Involvement

Astin (1999) defined student involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 518). Astin stated students who are highly involved devote a great deal of energy to studying, spend a lot of time on campus, actively participate in student organizations, and regularly interact with faculty and other students. On the other hand, noninvolved students neglect studies, are seldom on campus, do not participate in student organizations, and have little contact with faculty and other students. Astin delineated the role of student involvement in part to guide researchers in their investigation of student development, as well as to assist college administrators and faculty in their design of more effective learning environments.

Astin's (1999) conceptualization of student involvement centers on the behavioral aspects of involvement as a part of the entire constellation of involved behaviors. As he puts it, "it is not so much what the individual thinks or feels, but what the individual does, how he or she behaves, that defines and identifies involvement" (p. 519). Given that involvement is a behavioral construct, Astin offered an extensive list of active terms that reflected his notion of student involvement: e.g., engage in; participate in; take an interest in; devote oneself to; and tackle. Kuh, Kinzie, Schuh, and Whitt (2005) stated one key component of involvement is the effort put forth by students into their studies and other activities that contribute to the experiences and outcomes promoting student success. In addition, Pintrich (2003) described student motivation as being linked to the ability to self-regulate learning activities, that is, being metacognitively, motivationally, and behaviorally active in one's own learning processes and goal achievement. Involvement can come in many forms, Wade (1994) stated that an ideal class discussion happens when almost all students are engaged and interested, are learning, and listening attentively to their peer's comments and suggestions. Similarly, Petress (2006) noted involved students need to regularly attend and actively attend to the day's topic. Thus, this study frames involvement as active engagement in the learning process both in and out of the college classroom. To this end, in-class involvement refers to students' willingness to communicate in class as an indicator of engagement (e.g., talking in small groups, responding to instructor's questions). Out-of-class involvement refers to students' preparedness for class or self-regulated learning as a classroom extension (e.g., studying for class, reading course material).

Student involvement leads to positive learning outcomes. Tinto (1997) stated student involvement matters, in that the greater the involvement in the life of the college the greater the acquisition of knowledge and development of skills. Students who are involved with their instructors also demonstrate higher levels of learning gain (Astin, 1993; Endo & Harpel, 1982). Similarly, Milem (1997, July/August) advocated early involvement with faculty since it tends to have a positive influence on student persistence. Thus, when students are actively involved in their courses they are more apt to learn and succeed (ASHE Higher Education Report, 2005; Kuh, 2007). Kuh et al. (2005) argued that students learn more when they are intensely involved in their

education and are given opportunities to think about and apply what they are learning in different settings. Involvement is not only important while students are in college, but it will also help to prepare them for life after college (Kuh, 2007). Hence, it is essential to consider what factors, both instructor-based and contextual, foster student involvement.

Teacher Confirmation

"Interpersonal communication is a two-edged sword; it can confirm as well as disconfirm, and build us up or tear down the most fragile structures of our lives" (Cushman & Florence, 1974, p. 11). Confirming and disconfirming responses help to create a communication climate, setting the emotional tone between interactants (Cissna & Sieburg, 1981). Indeed our self-concept as worthwhile and valuable individuals is often based on both confirming and disconfirming messages we receive from others around us (Cissna and Keating, 1979).

Overall, confirming communication allows others to feel endorsed, recognized, and acknowledged (Cissna & Sieburg, 1981). However, implementing the concept of confirmation may become more challenging as class size increases and students believe they are anonymous. Teachers can enact endorsement, i.e., the acceptance and validation of another's feelings and thoughts, recognition, i.e., show awareness of others' existence, and acknowledgement, e.g., the attentiveness to what another says, feels, or thinks. For our overall health and well-being, Buber (1957) suggested individuals need such confirmation from others. Confirming behaviors nurture feelings of significance and offer opportunities to connect with others.

Ellis (2000, 2004) offers a pragmatic application for enhancing the classroom experience with specific instructor confirmation behaviors. Ellis (2000) found four general behavioral patterns that reflect teacher confirmation strategies: (a) teachers' responses to students' questions and comments, (b) demonstrated interest in students and their learning, (c) style of teaching, (d) absence of general disconfirmation. Teacher confirmation is a strong predictor of student cognitive and affective learning and also promotes student motivation (Ellis, 2004). Thus, students are more comfortable communicating in the classroom when they perceive instructors as confirming in the classroom. Moreover, Schrodt, Turman and Soliz (2006) found students are likely to be more engaged and successful in the classroom when instructors enact confirming behaviors. Specifically, results revealed perceived teacher confirmation had direct effects for both teacher credibility and evaluations, and indirect effects on students' perceived understanding. Turman and Schrodt (2006) examined teacher confirmation and teacher power and found perceived confirmation behaviors were closely associated with prosocial forms of power (e.g., expert power) in the classroom. When confirming instructors connect with students, the students in turn, may be more involved in class. Teacher confirmation is one interpersonal communication behavior that encompasses both ego support and referential skills (Schrodt et al., 2006) both deemed essential skills for teachers (Frymier & Houser, 2000).

In contrast, disconfirming behaviors, such as indifference, disqualification, and impervious messages (Bavelas & Chovil, 1986), can lead to negative classroom experiences. Instructional literature indicates that there are negative consequences for students receiving verbally aggressive messages (Moore & Pepler, 2006; Myers & Knox, 1999). Kearney, Plax, Hays, and Ivey (1991) stated that teachers, who commit rude behaviors in the classroom or have a generally unpleasant attitude, negatively influence the classroom environment and students' learning abilities. Verbally aggressive messages are negatively correlated with homophily, interpersonal attraction, and credibility within the teacher–student context (Rocca & McCroskey, 1999; Wrench & Punyanunt-Carter, 2005). Ultimately, this communication confirmation or disconfirmation has a profound effect on students' classroom experience.

Classroom Connectedness

The classroom learning environment can be viewed as a community setting, and as Redding (1972) noted of other environments, the optimal climate is characterized by supportiveness, empathy, participation, and trust. Communication research has primarily focused on the classroom environment in terms of the student–teacher interactions in the classroom (Dwyer et al., 2004). For this study, classroom connectedness also includes positive connectedness among students in the classroom. Connectedness is "student-to-student perceptions of a supportive and cooperative communication environment in the classroom" (Dwyer et al., 2004, p. 267). For example, Kendrick and Darling (1990) reported students often ask other students in the classroom clarifying questions to better understand course material. Even though teaching and learning occurs between teachers and students, it also happens among peers (Hirschy & Wilson, 2002). However, prior research has not fully examined the classroom environment based on perceptions of student-to-student behaviors (Dwyer et al., 2004).

Palmer (1993) claimed knowing and learning are part of a communal, collaborative process shared among individuals. Hirschy and Wilson (2002) argued that as teachers and students spend several weeks to several months together in one setting, they develop relationships over time through interactions and common goals. This social linkage eventually emerges and can either facilitate or impede learning. Even though instructor behaviors and teaching methods greatly influence the classroom experience, students are integral to the classroom community and take part in the responsibility for class interactions. Peer interactions are especially important in courses that involve group collaboration (Colbeck, Cabrera, & Terenzini, 2000). Fassinger (1995, 1997) examined participation as a group experience and found college students' perceptions of peer friendliness and support influenced how often they were willing to speak in class, whereas perceptions of the instructor had less impact on student participation.

It is important to differentiate between simple presence of peers and *supportive* peers. Participation is deterred when students report a general awareness of the traditional classroom audience (Hudson & Bruckman, 2004). Students in large

college classes report a lack of involvement, lack of individualized attention from instructor, and an inhibition of student-instructor communication (Smith et al., 1996). Similarly, Kendrick and Darling (1990) found an inverse relationship between college class size and student clarifying tactics (e.g., question-asking); however, interpersonal familiarity and acceptance mediate classroom participation (Neer & Kircher, 1989). Students are evidently more comfortable communicating in small groups rather than with the entire class, thus, establishing relationships with other students enhances the perception of a group identity, and is a precursor to student involvement.

Rationale for Hypotheses and Research Question

"Meaningful interactions between students and their teachers are essential to high-quality learning experiences" (Kuh et al., 2005, p. 207) and students are likely to benefit from the classroom experience if both instructors and students contribute to co-construct a positive classroom atmosphere. Positive perceptions of teacher confirmation and student-to-student connectedness should lead to positive increases in student communication both within and outside of the classroom. However instructors may encounter contextual barriers that deter student communication in the classroom.

Class size can negatively influence the classroom experience (Chatman, 1997). There is an inverse relationship between size and performance, in that the larger the class size the worse students academically perform (Chatman, 1997; Gibbs & Lucas, 1996). Larger classes deter student communication and involvement (Kendrick & Darling, 1990; Smith et al., 1996). However, when students are familiar with one another and feel accepted by their peers, it mitigates the effect of isolation/alienation and they become more actively involved in the course (Neer & Kircher, 1989). For example, Bell (2007) found that microteaching (e.g., students teach lessons to their peers) created a classroom environment in which students were uniformly helpful, compliant, responsive, and participated in open classroom discussion. Therefore, it is likely perceptions of student-to-student connectedness may temper the impact class size has on students' in-class involvement. Thus, the following hypothesis is offered:

> H1:   Student-to-student connectedness is a stronger predictor of student in-class involvement than class size (i.e., small, medium, large).

Furthermore, Fassinger's work (1995, 1997) indicated that perceptions of peer friendliness tend to predict student in-class involvement more than do perceptions of the instructor. Therefore, it is important to consider peer environment within the classroom. The supportive, connected environment (as opposed to an alienated atmosphere) that students co-construct with their instructors affords the framework within which to study the learning experience in college settings. Therefore, the following hypothesis predicts:

> H2:   Student-to-student connectedness mediates the relationship between teacher confirmation behaviors and student in-class involvement.

Last, we contend that it is vital that students are prepared ahead of time to effectively communicate in class. Out-of-class involvement represents students' self-regulated learning and includes studying for exams and reading assigned chapters (Pintrich, 2003). Overall, what happens in the classroom is likely to affect students' level of academic commitment in college life (Berger & Braxton, 1998; Tinto, 1975). Hence, the following research question is asked:

> RQ: Which of the classroom variables, student-to-student connectedness or teacher confirmation behaviors, better predicts student out-of-class involvement?

Method

Participants and Procedures

Participants were 434 ($n = 201$ males, $n = 233$ females) undergraduate students across academic ranks ($n = 75$ freshmen, $n = 106$ sophomores, n $= 141$ juniors, $n = 112$ seniors), in introductory and upper-level communication courses at a midsize, mid-Atlantic university. Survey administration took place during normal class time, and students received minimal course credit for the voluntary participation.

Following the methodology developed by Plax, Kearney, McCroskey, and Richmond (1986), participants completed the instruments in reference to the instructor of the course they attended immediately prior to the research session to ensure students reported on a variety of courses and instructors during the eighth week of the spring semester. Surveys included several measures which were teacher confirmation behaviors, student-to-student connectedness, willingness to talk in class, and the Metacognitive Self-Regulation subscale. Information about class size (i.e., small, medium, large) followed Gorham's (1988) study in which students were asked approximately how many students were in the course: 1–25, 26–50, or more than 51.

Students' ranged in age from 17 to 39 ($M = 20.4$; $SD = 1.92$),. The majority of the sample was Caucasian ($n = 393$), 14 identified as African American, 14 as Hispanic or Latino, six as Asian, two as Native American, one as Pacific Islander, and two as other. The sample included diverse majors ($N = 54$), and reported on a range of course subjects ($N = 43$). For class size, 87 students reported on a small class, 83 on a medium class, and 226 on a large class.

Measures

Teacher confirmation. The original 27-item, Likert-type, Teacher Confirmation Scale (TCS) measures the extent to which students perceive an instructor to exhibit confirming and disconfirming behaviors during a semester (Ellis, 2004). Ellis' (2000, 2004) 16-item version was used for the present study using responses based on a 5-point scale, 0 (*strongly disagree*) to 4 (*strongly agree*), because it measures low inference behaviors across three dimensions. The first dimension is teachers' responses to questions, and includes five items (e.g., "My instructor takes time to

answer students' questions fully"); the second dimension, demonstrated an interest in students and in their learning, includes six items (e.g., "My instructor makes an effort to get to know students"); and the third dimension, style of teaching includes five items (e.g., "My instructor uses an interactive teaching style"). Turman and Schrodt reported alpha reliabilities of .86 for teachers' response to questions, .87 for demonstrating interest, and .86 for teaching style. For this study, responding to questions obtained $\alpha = .80$ ($M = 16.14$, $SD = 3.35$), with a range of 3 to 20; $\alpha = .83$ ($M = 17.89$, $SD = 4.99$), range of 1 to 24 for demonstrating interest; and $\alpha = .85$ ($M = 13.00$, $SD = 5.10$), with a range of 0 to 20 for teaching style.

Classroom connectedness. The 18-item, unidimensional, Likert-type, Connected Classroom Climate Inventory (CCCI) was first developed by Dwyer et al. (2004), in which undergraduate students responded to the question, "What does it mean to be connected to other students in a college classroom?" and thus the measure represents student-to-student behaviors that contribute to perceptions of a supportive classroom climate. Based on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*) students reported on their perceptions of peer connectedness of a particular class (e.g., "The students in my class smile at one another," "The students in my class are supportive of one another"). For the original study ($M = 70.97$, $SD = 9.91$, $\alpha = .94$), Dwyer et al. stated the CCCI was a reliable instrument with initial evidence of validity. For this study, $\alpha = .93$ ($M = 59.27$, $SD = 11.82$), with a range of 25 to 90.

In-class involvement. Student in-class involvement was assessed with the Willingness to Talk in Class (WTC) measure. It was "developed through interviews with students who were asked about what they believed were situations in which voluntary classroom participation would occur" (Menzel & Carrell, 1999, p. 35). The 19-item, Likert-type instrument gauges how often, from 0 (*never*) to 4 (*very often*), students would be willing to participate in the class they have immediately before the one in which they are surveyed. The statements reflect behaviors such as interest in the class or topic, motivation, similarity to classmates, similarity to the instructor, and classroom variables (e.g., seating). Previous reliabilities for the scale ranged from .83 ($M = 37.22$, $SD = 12.51$) (Myers, 2004) to .92 (Menzel & Carrell, 1999). For this study, $\alpha = .93$ ($M = 45.04$, $SD = 13.36$), with a range of 6 to 76.

Out-of-class involvement. The 12-item Metacognitive Self-Regulation Questionnaire[1] (MSRQ) assessed students' out-of-class involvement on a 7-point scale ranging from 1 (*not at all true of me*) to 7 (*very true of me*). The MSRQ (e.g., "Before I study new course material thoroughly, I often skim it to see how it is organized") is a subscale of the Motivated Strategies for Learning Questionnaire (MSLQ). The comprehensive Likert-type, self-report MSLQ instrument investigates the nature of student motivation and learning strategies use (Pintrich, Smith, Garcia, & McKeachie, 1991). The MSLQ consists of 15 subscales, six within the motivation section and nine within the learning strategies section. As noted previously (Pintrich, 2003) students'

motivation is directly linked to their ability to self-regulate learning activities, and he defined self-regulated learning as being metacognitively, motivationally, and behaviorally active in one's own learning processes and in achieving one's own goals. Pintrich et al. (1991) indicated in their MSLQ manual that the instrument is completely modular, and the scales can be used together or individually. They reported that the MSRQ has good reliability in terms of internal consistency, the measure appears valid, and it also offers predictive validity.

The MSRQ subscale was modified slightly in order to focus only on students' out-of-class involvement. One statement, "During class time I often miss important points because I'm thinking of other things" was altered to "During study/reading time I often miss important points because I'm thinking of other things. The subscale offered a previous reliability of .79 (Duncan & McKeachie, 2005), and Pintrich et al. (1991) reported a composite item mean of 4.54 ($SD = .90$) for the subscale. For consistency with other measures in this study, we used a summed mean ($M = 50.27$, $SD = 10.48$, $\alpha = .79$), with a range of 20 to 79.

Results

Hypothesis one predicted student-to-student connectedness would be a greater predictor of student in-class involvement than class size (see Table 1 for intercorrelations). A multiple regression analysis tested the influence of class size (small $= 1$, medium $= 2$, large $= 3$)[2] and student-to-student connectedness on willingness to talk in class. Results revealed that the stronger significant predictor of students' in-class involvement was student-to-student connectedness, $\beta = .329$, $p < .0001$, followed by class size, $\beta = -.146$, $p < .005$. The regression indicated that the model including student-to-student connectedness and class size, $F(2, 346) = 31.81$, $p < .0001$, accounted for 16% ($R^2 = .16$, adjusted $R^2 = .15$) of the variance in in-class involvement.[3] Overall, results supported the first hypothesis.

Hypothesis two predicted that student-to-student connectedness would mediate the relationships between teacher confirmation (i.e., (a) responding to questions, (b) demonstrating interest, and (c) teaching style) and student involvement. Specifically to determine if student-to-student connectedness mediated the relationship between responding to questions and student involvement the mediating paths for student involvement were analyzed (Figure 1). A path analysis is an extension of the regression model, and offers a path model relating independent, intermediary, and dependent variables (Everitt & Dunn, 1991). In this case it was conducted to parse out specific mediation effects. The path analysis supported hypothesis two in that there was a direct association between teachers responding to questions and student-to-student connectedness ($\beta = .33$, $p < .001$), and between responding to questions and student involvement ($\beta = .15$, $p < .001$). When student-to-student connectedness was included in the model, the association between responding to questions and student-to-student connectedness was no longer significant ($\beta = .027$, $p = .63$). Thus, student-to-student connectedness fully mediated the relationship between teachers'

Table 1 Pearson Correlations Among Student Involvement Outcome Variables and Predictor Variables

|	Variable	1	2	3	4	5	6	7
1.	MSRQ Subscale (out-of-class involvement)	–						
2.	Willingness to Talk in Class (in-class involvement)	.43*	–					
3.	Classroom Connectedness	.30*	.37*	–				
4.	Responding to Questions	.20*	.15**	.33*	–			
5.	Demonstrating Interest	.27*	.26*	.40*	.75*	–		
6.	Teaching Style	.29*	.30*	.44*	.70*	.77*	–	
7.	Class Size	−.09	−.23*	−.27*	−.07	−.13**	−.23**	–

Note. $^*p < .0001$, $^{**} p < .05$.

response to questions and student involvement. Before students are willing to ask questions in class, students may need to feel connected to their peers.

To determine if student-to-student connectedness also mediated the relationship between teachers demonstrating interest and student involvement the mediating paths for student involvement were analyzed (Figure 2). There was a direct association between teachers demonstrating interest and student-to-student connectedness ($\beta = .40$, $p < .001$), as well as between demonstrating interest and student involvement ($\beta = .26$, $p < .001$). However, when student-to-student connectedness was included in the model, the association between demonstrating interest and student involvement was reduced ($\beta = .137$, $p < .005$), and the Sobel test revealed partial mediation ($z = 3.04$, $p < .01$).

To determine if student-to-student connectedness mediated the relationship between teaching style and student involvement mediating paths were analyzed (Figure 3). There was a direct association between teaching style and student-to-student connectedness ($\beta = .44$, $p < .001$), and between teaching style and student
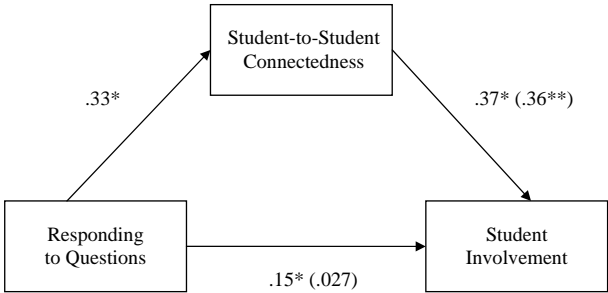
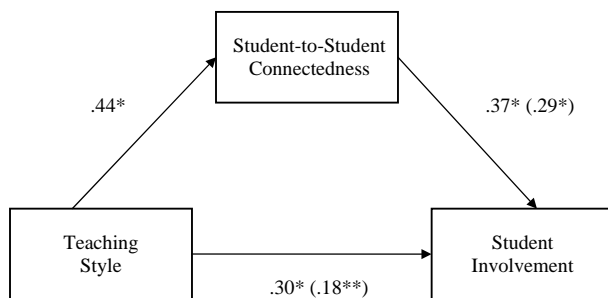**Figure 1.** Mediation model: responding to questions. Mediation model relating responding to questions, student-to-student connectedness, and student in-class involvement. Values represent standardized regression coefficients. The value in parentheses denotes the effect of teacher responding to questions on student involvement with student-to-student connectedness as the mediator. $^*p < .001$, $^{**}p < .05$.
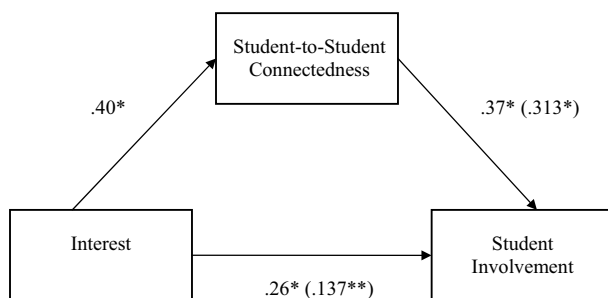
Figure 2. Mediation model: teacher interest. Mediation model relating teacher interest, student-to-student connectedness, and student in-class involvement. Values represent standardized regression coefficients. The value in parentheses denotes the effect of teacher demonstrating interest on student involvement with student-to-student connectedness as the mediator. $^*p < .001$, $^{**}p < .05$.

involvement ($\beta = .30$, $p < .001$). When student-to-student connectedness was included in the model, the association between teaching style and student involvement was reduced ($\beta = .18$, $p < .005$). Again, the Sobel test revealed significant partial mediation ($z = 3.29$, $p < .001$).

The research question explored the impact teacher confirmation behaviors (i.e., responding to questions, demonstrating interest, and teaching style) and student-to-student connectedness may have on students' out-of-class involvement (see Table 1 for correlations). The regression analysis revealed the model predicted students' out of class involvement, $F(4, 308) = 10.49$, $p < .0001$, $R^2 = .12$, adjusted $R^2 = .11$. A closer examination revealed there were only two significant predictors of students' out-of-class involvement, student-to-student connectedness, $\beta = .194$, $p < .001$, followed by teaching style, $\beta = .173$, $p < .001$. Thus, a sense of peer connectedness, along with a participatory teaching style, promoted students' out-of-class involvement.

Figure 3. Mediation model: teaching style. Mediation model relating teaching style, student-to-student connectedness, and student in-class involvement. Values represent standardized regression coefficients. The value in parentheses denotes the effect of teaching style on student involvement with student-to-student connectedness as the mediator. $^*p < .001$, $^{**}p < .005$.

Discussion

Rubin, Rubin, and Jordan (1997) noted communication researchers are continuously interested in predicting academic success and, thus, strive to determine if that success can be attributed to classroom instruction. Our study was predicated on the premise that learning environments are co-constructed by the relationship students have with their instructors and peers, and it appears that there exists a complex balance as each may encourage (or discourage) general student involvement.

The first, and most consistent, finding is entirely congruent with the first dimension of the DOL model, that positive perceptions of student-to-student connectedness are associated with increased student involvement, essentially regardless of size of the class. Even though there was an overall negative, minimal relationship between class size and students' willingness to talk in class, the more students felt "connected" with each other, the more willing they were to participate in class. Classes may develop certain norms and dynamics among the students that influence student involvement (Fassinger, 2000), and we found that even in larger classrooms, connectedness fostered a positive communication climate and sense of community for college students. This outcome offers university educators, no matter what the size of their classes, an opportunity to incorporate a pedagogical framework that includes the development of meaningful relationships within the classroom. They may also gauge their classrooms in order to foster instructional practices that enhance communication, using the CCCI as an assessment tool.

The second area of this study focused on how classroom connectedness served a mediating function between teachers' behaviors and active in-class involvement. Feeling connected in class did indeed enhance the relationship between positive perceptions of teacher confirmation behaviors and students' willingness to talk in the classroom. Consistent with Fassinger (1995, 1997), students' perceptions of their peers had a greater impact on their classroom participation than did their perceptions of the instructor. However, Fassinger's classroom research took place at a small, private liberal arts college with a mean class size of 20. At a research-intensive university we had the opportunity to explore student-to-student connectedness across class sizes. We found students' communication, as a group phenomenon, related to increased student in-class involvement across class sizes.

This is not to say that instructor behaviors are unimportant, because they set the tone, policies, and structure for the class. We found that feelings of student-to-student connectedness mediated the relationship between the three different teacher confirmation behaviors and students' willingness to talk in class. In the first path analysis, student-to-student connectedness fully mediated the relationship between instructor responding to questions and student involvement. Before teachers can respond to questions, students must ask, and establishing this sense of peer connectedness may be a precursor to student question asking. Instructors' practices lay the groundwork for building such linkage.

Students' communication with other students can also suppress interaction. Weaver and Qi (2005) found that peers play a crucial role in exacting conformity in

the classroom, in that when students reported fear of peer disapproval it suppressed participation. This outcome has major implications for instructional practices. Previous research found instructors are more likely to ask questions and encourage student involvement early in the semester, and then as the semester progresses instructors may spend less effort attempting to stimulate student involvement (Howard & Henney, 1998). Given the mediating effects of student relationships with each other, instructors may want to first encourage student-to-student connectedness, and then move toward student in-class involvement. Once connectedness is established, other positive instructional outcomes may be facilitated.

The second path analysis revealed positive perceptions of instructor interest and positive perceptions of classroom connectedness both promote student in-class activity and involvement. As teachers demonstrate confirming behaviors, and as classroom connectedness heightens, students communicate more receptivity to each other and mutually encourage interaction. The variables, teacher interest and peer connectedness, co-construct students' willingness to talk in class.

This is also congruent with our third analysis. Student-to-student connectedness partially mediated the relationships among teacher confirmation, teaching style, and students' willingness to talk in class. Again we see that as teachers confirm students, and an environment of connectedness is developed, instructors and their students co-construct a learning environment that promotes active involvement. Using a participatory teaching style in a classroom lowers the potentially adversarial nature of teacher–student interaction, fosters a sense of linkage among students, and can generate a comfortable, supportive communication environment.

The collective results substantiate the importance of developing an instructional framework along the lines described in the first dimension of Marzano's (1992) model. This entails creating a positive integrated climate so that students feel connected, not only to their instructor, but to their peers as well. Even confirming, engaging instructors may find students unresponsive in classrooms that lack student-to-student connectedness. If students perceive little connection with their peers, they may be uncomfortable asking and answering questions. In efforts to develop positive learning environments instructors may benefit by assessing students' perceptions of their class peers as a supportive entity.

Finally, we also explored *out-of-class* involvement and preparation associated with teacher confirmation behaviors and student-to-student connectedness. Not only is it important for students to communicate during class, but it is essential that they are prepared ahead of time to interact in class. Out-of-class involvement indicates that students do not stop thinking about the course and its material as soon as they leave the classroom. It represents students returning prepared for a course (e.g., studying for exams, reading assigned chapters), and acknowledges readiness to participate. Students' level of academic commitment can be either bolstered or diminished based on communication in the classroom (Berger & Braxton, 1998; Tinto, 1975). But positive connectedness may be mutually reinforcing among students, even after they have left the formal classroom environment. Astin (1999) claimed students who are highly involved are actively engaged in their learning environments, and ultimately,

preparing for class is at least one indicator of student involvement and academic success. In this study, we found students more likely to prepare for class when a) they feel a sense of connection with their peers, and b) they perceive their instructors to engage in participatory teaching in the classroom. Both teaching style and student-to-student connectedness predicted out-of-class involvement. Thus, when instructors use a variety of teaching techniques to help students understand course material, and incorporate an interactive teaching style students are more likely to prepare for the class. Overall we found that teachers' confirming communication, teaching style, and student-to-student connections increased the probability that students actively prepared [outside of class time] for in-class interaction.

Limitations and Implications

First we recognize some limitations of this study. As Hess, Smythe, and Communication 451 (2001) noted, a halo effect may occur when students report on their perceptions of instructors. More specifically, students may offer positive evaluations of instructors based on factors extraneous to the variables examined, for example, bringing food to class or grading easily may influence students' perceptions of instructors. However, we contend that supportiveness can be fostered, and a positive sense of classroom community built without sacrificing scholarship.

Second, Smythe and Hess (2005) found disagreement between student reports of teacher behaviors in the classroom and trained observer reports. Hence, we recognize that our study is based on students' perceptions of what happens in the classroom, not necessarily the actions that occur according to uninvolved observers. Third, this study examined involvement across a variety of courses at a research-intensive university which may have affected results. For example, some measurement outcomes differed from other published studies. For this study the student-to-student connectedness mean was 59.27, clearly lower than the mean of 70.97 for Dwyer et al. (2004). The current study examined connectedness across different courses, while Dwyer et al. focused only on public speaking classes, and such a difference in procedures may have influenced outcomes. However, we argue that assessing across class types represents a more stringent test of connectedness and such a method also potentially generalizes to more different types of college classrooms.

Results of this study attest to the importance of student-to-student connectedness in the college classroom. Fassinger (2000) noted students are responsible for the way they treat one another in the classroom, however, instructors may consider how they can facilitate connectedness and use it as a tool to promote various types of student involvement. Like many other teaching strategies (e.g., immediacy, humor) instructors can build connectedness as another method of enhancing positive student learning outcomes. The current study focused on student-to-student connectedness as a pre-existing phenomenon in the classroom. However, it is likely instructors affect the level of student-to-student connectedness in the classroom, either maximizing or minimizing such connections. Future research might explore more specifically how instructors develop and foster a sense of student community in the classroom, as well

as various other instantiations and forms of student involvement. Our field would also benefit from study of how connectedness can change over time as a result of class occurrences, using critical events or turning points forms of data.

To develop student-to-student connectedness in the college classroom, instructors and instructional communication researchers may well want to strategically implement dimension one of Marzano's (1992) DOL model. For example, if students are more comfortable communicating in small groups rather than with the entire class (Neer & Kircher, 1989), instructors might adopt student microteaching into their course planning. Additionally, assigning student leaders in the classroom encourages students to take ownership of their own learning (Kammeyer-Mueller & Wanberg, 2000), allows students to work with others in groups, and promotes open discussions (Bell, 2007). As instructors incorporate meaningful group activities, especially early in the semester, they can also continuously assess the classroom climate. Using the CCCI instrument periodically would allow determination of whether students are developing a sense of connection with one another over time. Methodologically, it appears that instructors should first nurture a sense of connection among the students within smaller groups, building acquaintanceship, and then as the semester progresses, bring students together as a larger class, encouraging student involvement with an interactive, participatory teaching style.

Conclusions

Student involvement signals to instructors that learning is occurring in the classroom (Richmond & Gorham, 1992). As Cutler (2007) points out, it is often troubling for instructors to find students passive and uninvolved. If student academic success is the most important outcome of the classroom experience (Hirschy & Wilson, 2002; Page & Mukherjee, 2000), it is critical to understand how classroom communication leads students toward involvement or noninvolvement.

Developing positive attitudes and perceptions about learning is central to both preparation for participation and on-site processing and involvement. Included in the instructional framework is the requisite that students need to perceive a sense of acceptance and comfort in the classroom. Marzano (1992) argued that a lack of acceptance by instructors and peers deters learning in the classroom, but a supportive peer communicative climate develops a sense of comfort for students. Consistent with previous conceptualizations, we found that positive perceptions of an instructor, along with positive perceptions of peers as a supportive community promote student involvement, regardless of class size. Co-constructed, positive classroom climates should nurture student involvement and minimize passivity.

Notes

[1]   The adapted Metacognitive Self-Regulation (Pintrich et al., 1991): (1) During study/reading time I often miss important points because I'm thinking of other things; (2) When reading for this course, I make up questions to help focus my reading; (3) When I become confused

about something I'm reading for this class, I go back and try to figure it out; (4) If course readings are difficult to understand, I change the way I read the material; (5) Before I study new course material thoroughly, I often skim it to see how it is organized; (6) I ask myself questions to make sure I understand the material I have been studying in this class; (7) I try to change the way I study in order to fit the course requirements and the instructor's teaching style; (8) I often find that I have been reading for this class but don't know what it was all about; (9) I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for this course; (10) When studying for this course I try to determine which concepts I don't understand well; (11) When I study for this class, I set goals for myself in order to direct my activities in each study period; (12) If I get confused taking notes in class, I make sure I sort it out afterwards.

[2]   Class size was treated as an interval/ratio scale, based on a heavily rounded off scale.

[3]   Following Seibold and McPhee (1979)Seibold and McPhee (1979a) decomposition analysis quantified the impact of the causal factors student-to-student connectedness and class size on students' willingness to talk in class. Regardless of the order entered, results revealed the sum of squares for connectedness (entered first, $SS = 8446$, entered second, $SS = 6257$) are much greater than the sum of squares for class size (entered first, $SS = 3420$, entered second, $SS = 1231$). Connectedness impacts students' willingness to talk in class more so than class size.

References

ASHE Higher Education Report. (2005). *The challenge of involvement*, 31, 25–37.

Astin, A. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, 40, 518–529.

Astin, A. (1993). *What matters in college: Four critical years revisited*. San Francisco: Jossey-Bass.

Bavelas, J. B., & Chovil, N. (1986). How people disqualify: Experimental studies of spontaneous written communication. *Communication Monographs*, 53, 71–74.

Berger, J. B., & Braxton, J. M. (1998). Revising Tinto's interactionalist theory of student departure through theory elaboration: Examining the role of organizational attributes in the persistence process. *Research in Higher Education*, 39, 103–119.

Bell, N. D. (2007). Microteaching: What is it that is going on here? *Linguistics and Education*, 18, 24–40.

Buber, M. (1957). Distance and relation. *Psychiatry*, 20, 97–104.

Chatman, S. (1997). Lower-division class size at U.S. postsecondary institutions. *Research in Higher Education*, 38, 615–630.

Cissna, K. N. L., & Keating, S. (1979). Speech communication antecedents of perceived confirmation. *Western Journal of Speech Communication*, 43, 48–60.

Cissna, K. N. L., & Sieburg, E. (1981). Patterns of interactional confirmation and disconfirmation. In C. Wilder-Mott & J. H. Weakland (Eds.), *Rigor and imagination: Essays from the legacy of Gregory Bateson* (pp. 253–282). New York: Praeger.

Coffield, K. E. (1981). Student apathy: A comparative study. *Teacher Psychology*, 8, 26–28.

Colbeck, C. L., Cabrera, A. F., & Terenzini, P. T. (2000). Learning professional and confidence: Linking teaching practices, students' self perceptions, and gender. *Review of Higher Education*, 24, 173–191.

Cushman, D. P., & Florence, D. D. (1974). The development of interpersonal communication theory. *Today's Speech*, 22, 11–15.

Cutler, A. (2007). Creeping passivity. *Journal of College Science Teaching*, 36, 6–7.

Duncan, T. G., & McKeachie, W. J. (2005). The Making of the Motivated Strategies for Learning Questionnaire. *Educational Psychologist*, 40, 117–128.

Dwyer, K. K., Bingham, S. G., Carlson, R. E., Prisbell, M., Cruz, A. M., & Fus, D. A. (2004). Communication and connectedness in the classroom: Development of the connected classroom climate inventory. *Communication Research Reports*, *21*, 264–272.

Ellis, K. (2000). Perceived teacher confirmation: The development and validation of an instrument and two studies of the relationship to cognitive and affective learning. *Human Communication Research*, *26*, 264–291.

Ellis, K. (2004). The impact of perceived teacher confirmation on receiver apprehension, motivation, and learning. *Communication Education*, *53*, 1–20.

Endo, J. J., & Harpel, R. L. (1982). The effect of student–faculty interactions on students' educational outcomes. *Research in Higher Education*, *16*, 115–135.

Everitt, B. S., & Dunn, G. (1991). *Applied multivariate data analysis*. London: Arnold.

Fassinger, P. A. (1995). Professors' and students' perceptions of why students participate in class. *Teaching Sociology*, *24*, 25–33.

Fassinger, P. A. (1997). Classes are groups. *College Teaching*, *45*, 22–26.

Fassinger, P. A. (2000). How classes influence students' participation in college classroom. *Journal of Classroom Interaction*, *35*, 38–47.

Frymier, A. B., & Houser, M. L. (2000). The teacher–student relationship as an interpersonal relationship. *Communication Education*, *53*, 1–20.

Fyrenius, A., Bergdahl, B., & Silén, C. (2005). Lectures in problem-based learning—Why, when and how? An example of interactive lecturing that stimulates meaningful learning. *Medical Teacher*, *27*, 61–65.

Gibbs, G., & Lucas, L. (1996). Class size and student performance. *Studies in Higher Education*, *21*, 261–294.

Gorham, J. (1988). The relationship between verbal teacher immediacy behaviors and student learning. *Communication Education*, *37*, 40–53.

Hess, J. A., Smythe, M. J., & Communication 451. (2001). Is teacher immediacy actually related to student cognitive learning? *Communication Studies, 52*, 197–219.

Hirschy, A. S., & Wilson, M. E. (2002). The sociology of the classroom and its influence on student learning. *Peabody Journal of Education*, *77*, 85–100.

Howard, J. R., & Henney, A. L. (1998). Student participation and instructor gender in the mixed-age college classroom. *Journal of Higher Education*, *69*, 384–405.

Hudson, J. M., & Bruckman, A. S. (2004). The bystander effect: A lens for understanding patterns for participation. *Journal of Learning Sciences*, *13*, 165–195.

Hunter, M.S. (2006, Summer). Fostering student learning and success through first-year programs. *Peer Review, 4*–7.

Johnson, D. I. (2009). Connected classroom climate: A validity study. *Communication Research Reports*, *26*, 146–157.

Kagan, S. (1997). *Cooperative learning*. San Clemente, CA: Kagan Cooperative Learning.

Kammeyer-Mueller, J. D., & Wanberg, C. R. (2000). Predictors and outcomes of proactivity in the socialization process. *Journal of Applied Psychology*, *85*, 373–385.

Kearney, P., Plax, T. G., Hays, E. R., & Ivey, M. J. (1991). College teacher misbehaviors: What students don't like about what teachers say and do. *Communication Quarterly*, *39*, 309–324.

Kendrick, W. L., & Darling, A. L. (1990). Problems of understanding in classrooms: Students' use of clarifying tactics. *Communication Education*, *39*, 15–29.

Kerr, C. (2001). *The uses of the university*. Cambridge, MA: Harvard University Press.

Kuh, G. D. (2007). How to help students achieve. *Chronicle of Higher Education*, *53*, B12.

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2005). *Student success in college: Creating conditions that matter*. San Francisco, CA: Jossey-Bass.

Marzano, R. (1992). *A different kind of classroom: Teaching with dimensions of learning*. Alexandria, VA: Association for Supervision and Curriculum Development.

Mazur, E. (1997). *Peer instruction*. Upper Saddle River, NJ: Prentice Hall.

McPherson, M. B., Kearney, P., & Plax, T. G. (2006). College teacher misbehaviors. In T. P. Mottet, V. P. Richmond, & J. C. McCroskey (Eds.), *Handbook of instructional communication* (pp. 213–234). Boston, MA: Pearson.

Menzel, K. E., & Carrell, L. J. (1999). The impact of gender and immediacy on willingness to talk and perceived learning. *Communication Education, 48*, 31–40.

Milem, J.F. (1997, July/August). A modified model of college student persistence: Exploring the relationship between Astin's theory of involvement and Tinto's theory of student departure. *Journal of College Student Development*, Retrieved from http://findarticles.com

Moore, T. E., & Pepler, D. J. (2006). Wounding words: Maternal verbal aggression and children's adjustment. *Journal of Family Violence, 21*, 89–93.

Myers, S. A. (2004). The relationship between perceived instructor credibility and college student in-class and out-of-class communication. *Communication Reports, 17*, 129–137.

Myers, S. A., Edwards, C., Wahl, S. T., & Martin, M. M. (2007). The relationship between perceived instructor aggressive communication and college student involvement. *Communication Education, 56*, 495–508.

Myers, S. A., & Knox, R. L. (1999). Verbal aggression in the college classroom: Perceived instructor use and student affective learning. *Communication Quarterly, 47*, 33–45.

National Science Teachers Association (NSTA). (2007, July). *Student passivity strikes a nerve with JCST readership*. Retrieved from http://www.nsta.org

Neer, M. R., & Kircher, F. W. (1989). Apprehensives' perceptions of classroom factors influencing their participation. *Communication Research Reports, 6*, 70–77.

Page, D., & Mukherjee, A. (2000). Improving undergraduate student involvement in management science and business writing courses using the seven principles in action. *Education, 120*, 547–557.

Palmer, P. J. (1993). *To know as we are known: Education as a spiritual journey*. San Francisco: Harper & Row.

Petress, K. (2006). An operational definition of class participation. *College Student Journal, 40*, 821–823.

Plax, T. G., Kearney, P., McCroskey, J. C., & Richmond, V. P. (1986). Power in the classroom VI: Verbal control strategies, nonverbal immediacy, and affective learning. *Communication Education, 35*, 43–55.

Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation learning and teaching contexts. *Journal of Educational Psychology, 95*, 667–686.

Pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W. J. (1991). *A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ)*. Ann Arbor, MI: University of Michigan, National Center for Research to Improve Postsecondary Teaching and Learning.

Redding, W. C. (1972). *Communication in the organization: An interpretative review of research*. New York: Industrial Communication Council.

Richmond, V. P., & Gorham, J. (1992). Communication, learning, and affect in instruction. In J. C. McCroskey & V. P. Richmond (Eds.), *The Burgess series on communication instruction*. Edina, MN: Burgess.

Rocca, K. A., & McCroskey, J. C. (1999). The interrelationship of student ratings of instructors' immediacy, verbal aggressiveness, homophily, and interpersonal attraction. *Communication Education, 48*, 308–316.

Rubin, R. B., Rubin, A. M., & Jordan, F. F. (1997). Effects of instruction on communication apprehension and communication competence. *Communication Education, 46*, 104–114.

Schrodt, P., Turman, P., & Soliz, J. (2006). Perceived understanding as a mediator of perceived teacher confirmation and students' rating of instruction. *Communication Education, 55*, 370–388.

Seibold, D. R., & McPhee, R. D. (1979). Commonality analysis: A method for decomposing explained variance in multiple regression analyses. *Human Communication Research, 5*, 355–365.

Smith, S. W., Kopfman, J. E., & Ahyun, J. (1996). Encouraging feedback in the large college class: The use of a question/comment box. *JACA, 3*, 219–230.

Smythe, M., & Hess, J. A. (2005). Are student self-reports a valid method for measuring teacher nonverbal immediacy? *Communication Education, 54*, 170–179.

Tinto, V. (1997). Classroom as communities: Exploring the educational character of student persistence. *Journal of Higher Education, 68*, 599–623.

Tinto, V. (1975). Drop out from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*, 89–125.

Turman, P. D., & Schrodt, P. (2006). Student perceptions of teacher power as a function of perceived teacher confirmation. *Communication Education, 55*, 265–279.

Wade, R. (1994). Teacher education students' views on class discussion: Implications for fostering critical reflection. *Teaching and Teacher Education, 10*, 231–243.

Weaver, R. R., & Qi, J. (2005). Classroom organization and participation: College students' perceptions. *Journal of Higher Education, 76*, 570–601.

Wrench, J. S., & Punyanunt-Carter, N. M. (2005). Advisor–advisee communication two: The influence of verbal aggression and humor assessment on advisee perceptions of advisor credibility and affective learning. *Communication Research Reports, 22*, 303–313.