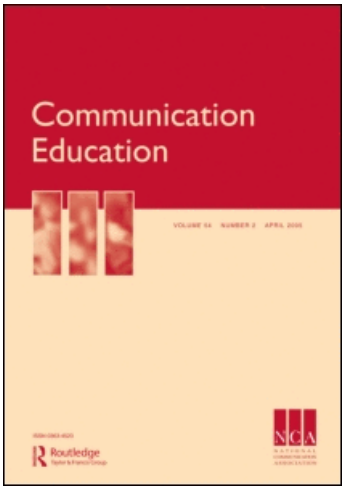

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Emotion in Teaching and Learning: Development and Validation of the Classroom Emotions Scale

Scott Titsworth, Margaret M. Quinlan & Joseph P. Mazer

Although scholars from across the field of communication have highlighted the importance of emotion in interpersonal relationships, persuasive messages, and organizations, the topic has yet to receive systematic attention from scholars who study classroom communication. Using interdisciplinary literature from communication and other fields as a foundation, the Classroom Emotions Scale (CES) was created to assess students' perceptions of emotional experiences in classes. Study 1 situates the scale within theory connecting emotions with classroom communication. The study reports initial evidence on scale dimensionality and connections between classroom emotions and three teacher communication variables: nonverbal immediacy, clarity, and communication competence. Study 2 extends those results by reporting a confirmatory factor analysis testing dimensionality of the scale; criterion and divergent validity evidence is also presented. Results of the two studies provide reliability and validity evidence for the CES, show that teachers' communication behaviors are related to students' reports of emotional experiences in classes, and document relationships between students' emotional experiences and various indicators of their motivation, affective, and cognitive learning. Findings are discussed as they relate to previous emotional response theory as well as philosophical works seeking to reduce binaries between emotion and reason.

Keywords: Emotional Response Theory; Emotion Work; Teacher Communication Competence; Teacher Immediacy; Teacher Clarity

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Reasons for exploring classroom emotions are abundant. Data reported by the National Center for Educational Statistics (National Center for Educational Statistics, 2009) revealed that only 73% of high school freshmen graduate within four years; for those who enter college, only 55% attain a bachelor's degree and just over 18% leave postsecondary education altogether. Although multiple factors undoubtedly contribute to academic risk, negative emotions associated with learning could be a substantial reason for students' disengagement, withdrawal, and failure in school (see Skinner, Furrer, Marchland, & Kindermann, 2008).

Expanding on studies exploring classroom climate (e.g., Dwyer et al., 2004; Mazer & Hunt, 2008), teacher–student relationships (e.g., Frymier & Houser, 2000), and student engagement (e.g., Titsworth, 2001), the current project examines how teachers' communication behaviors are related to students' emotional experiences in classroom situations. In Study 1, a scale assessing students' perceptions of their emotional experiences was developed and students' responses on that scale were then correlated with reports of teachers' communication competence, immediacy, and clarity. Study 2 provides additional evidence on the dimensionality and validity of the instrument. Before turning to Study 1, literature connecting communication and emotion is analyzed.

Communication and Emotion

Emotion and communication are inherently intertwined as communicators symbolically experience, construct, and express feelings toward others and their environment (Lupton, 1994). While a complete review of literature on emotion and communication is beyond the scope of this article (for reviews see Andersen & Guerrero, 1998; Burleson, 2009; Miller, Considine, & Garner, 2007), three aspects of that literature were salient to the current study.

First, Andersen and Guerrero (1998) argued that, in interpersonal relationships, people develop a "valence" or net positive/negative assessment of other people (see p. 322). Emotional valences can extend to other aspects of the communication environment. For instance, negative experiences with emotion work can result in an overall negative emotional valence (Nixon, 2009), including perceptions of emotional exhaustion and depression (Wharton, 1993). Likewise, students develop emotional valences toward learning as a result of behaviors exhibited by the teacher, other students, and various activities undertaken in the class (see Honeycutt, Nasser, Banner, Mapp, & DuPont, 2008). In fact, a key premise of Mottet, Frymier, and Beebe's (2006) emotional response theory is that students will develop generally positive or negative emotional reactions toward learning.

Second, through communication, people develop relationships with others that contribute to perceptions of emotional support. Emotionally supportive communication is any message intended to promote desirable outcomes, including decreased emotional distress, more effective coping strategies, improved emotional health, and supportive interpersonal relationships in situations where another person is emotionally upset, distraught, or distressed (Burleson, 2009). Emotionally supportive

messages can occur in a variety of communication contexts. For example, in health care settings patients desire high levels of emotional support from physicians when discussing health concerns (Hummert, 2009). In organizational settings, employees who are under higher levels of emotional stress feel less connected to the organization than do employees who have lower levels of emotional stress (Duke, Goodman, Treadway, & Breland, 2009); in academic settings higher levels of perceived emotion work are associated with lower levels of perceived support from both peers and mentors (Schmisseur, 2003). Thus, how teachers communicate with students might be related to students' perceptions of supportive communication from the teacher.

Third, as communicators interact, they implement various strategies for coordinating external displays of emotion. Emotion work involves careful management of displayed emotion such that the intensity or embodied expression of emotion is controlled rather than spontaneous (Miller et al., 2007). For example, some communication situations require the suppression of emotions (Buzzanell & Turner, 2003), whereas others require communicators to display inauthentic but socially acceptable emotions (Hochschild, 1983/2003). Studies exploring emotions in educational settings show that both teachers (Carlyle & Woods, 2002) and students (Sanders, 2009) engaged in emotion work as they communicated. Teachers who are more effective at communicating with students could create environments in which students are able to be more authentic with their emotional displays, thus reducing the amount of emotion work required in the class.

Taken together, these three aspects of the literature provide a strong rationale for investigating further the connection between classroom communication and the emotional experiences of students. As students interact with each other and their teachers, emotional valences, perceptions of emotional support, and orientations toward emotion work are likely to develop. Using the literature as a guide for face validity, the first two authors created the Classroom Emotions Scale (CES) to tap these three dimensions of students' emotional experiences. Study 1 develops and tests hypotheses predicting relationships between students' perceptions of their teachers' communication behaviors and their self-reports of perceived emotional valence, perceived emotional support from the teacher, and behaviors related to emotion work.

Study 1

Students' Emotional Responses to Teachers' Communication

Emotion has traditionally been relegated to the periphery of theory and research in education. Reason (i.e., instrumental or technical rationality) has been valued over emotion in formal learning situations (Zembylas & Fendler, 2007), despite evidence that emotion is both culturally and cognitively a driving force behind human action (Greenberg & Paivio, 1997). In fact, many students experience orientations toward learning in which emotion is labeled and treated as a disorder (e.g., Webster-Stratton,

2008) or at the very least "a distraction . . . to be contended with" (Dewey, 1944, p. 141).

A growing body of interdisciplinary scholarship has attempted to broaden understandings of how emotion and learning are interrelated. Scientists are now developing robust explanations of how people's emotional experiences influence the storage and retrieval of learned information. Packard and Cahill (2001) reported that memory systems organized in the hippocampus (i.e., cognitive memory) and caudate nucleus (i.e., S→R or *habit* formation memory) regions of the brain are stimulated by affective (i.e., emotional) modulation from the amygdala region. They hypothesize that emotional experiences cause certain hormones to be released in the brain; which, in turn, influence how information is encoded into memory structures. Similarly, Grossberg's (2009) unified theory of brain processing suggests that emotional triggers can modify how people use previously learned information to make decisions. Similar to Packard and Cahill, Grossberg argued that the amygdala region of the brain strengthens associative links providing motivations for certain actions/decisions. In education contexts, recent studies show that students exposed to emotionally arousing stimuli after learning new information are better able to retain and retrieve the new information (Nielson & Lorber, 2009). For instance, Harp and Mayer (1997) argue that emotional interest sparks cognitive engagement, which facilitates heightened attention and aids information recall.

Instructional communication scholars have also explored specific types of emotion, including communication apprehension (see Bourhis & Allen, 1992; Frymier, 1993; O'Mara, Allen, Long, & Judd, 1996) and more general affective reactions to learning (see Andersen, 1979; Rodríguez, Plax, & Kearney, 1996; Titsworth, 2001). Mottet et al. (2006) recently proposed emotional response theory (ERT) as a holistic way of synthesizing instructional communication research linking classroom communication, emotion, and learning. Their theory posits that implicit messages from teachers (e.g., nonverbal immediacy, affinity-seeking, and behavioral alteration techniques) elicit emotional responses from students; in turn, those responses modify students' orientations to either approach or avoid learning. Responding to Mottet et al.'s call to explore "specific instructional communication behaviors or conditions [that] lead to enhanced student emotional responses" (p. 264), subsequent sections of this review developed reasons for considering teacher communication competence, teacher immediacy, and teacher clarity as implicit messages potentially related to students' emotional responses.

Teacher communication competence. Communication competence (CC) is based on impressions of one's own or another's communication effectiveness and appropriateness (Rubin, 1985; Spitzberg & Cupach, 1984), including their perceived ability to encode and decode messages effectively (Monge, Backman, Dillard, & Eisenberg, 1982). Communication competence has received considerable attention in the classroom. For instance, recent research has explored how teachers operationally define their own communication competence (Worley, Titsworth, Worley, & Cornett-DeVito, 2007). Scholars have also studied students' perceptions of their peers'

communication competence (Fortney, Johnson, & Long, 2001), students' perceptions of their own communication competence (Canary & MacGregor, 2008), and students' perceptions of their teachers' communication competence (Frymier, Wanzer, & Wojtaszczyk, 2008; Rubin & Feezel, 1985).

Cross-disciplinary literature suggests that teacher communication competence could serve as a source of implicit messages for students. When teachers are supportive in their communication, students report higher levels of emotional engagement and lower levels of boredom, anxiety, and frustration (Skinner et al., 2008); on the contrary, when teachers enact hurtful messages, students experience negative emotions and save face by changing majors or avoiding future interactions with the instructor (Maresh, 2007). Glaser-Zikuda and Fuss (2008) also reported strong positive correlations between students' perceptions of their well-being in a class and their teachers' ability to recognize and respond to difficulties. As suggested in these studies, the various ways in which teachers listen (i.e., decoding CC) to and respond (i.e., encoding CC) to students has some relationship to students' emotions. From the perspective of emotional response theory, implicit messages received in teachers' encoding and decoding behaviors are likely to be related to students' emotional reactions to learning.

> H_1: Students who have teachers they perceive as high in encoding and decoding communication competence will report more positive emotional reactions to those classes.

Nonverbal immediacy. Teacher immediacy is enacted through verbal and nonverbal behaviors generating perceptions of psychological closeness between the teacher and students (Andersen, 1979). In classroom contexts, nonverbal immediacy behaviors have been operationalized to include the use of eye contact, movement, facial expressions, and vocal variety, among others (see Andersen, 1979). Studies exploring the relationship between teacher nonverbal immediacy and student learning (e.g., Richmond, Gorham, & McCroskey, 1987) have shown that students are drawn to highly immediate teachers because those behaviors facilitate a sense of liking and compel a person to approach, rather than avoid, the source of the immediate behavior (Mehrabian, 1981). This line of reasoning explicitly assumes that, as students feel compelled to enact approach behaviors, they do so out of a state of heightened positive emotion.

In fact, substantial evidence linking teacher immediacy to broad indicators of emotion already exists. In studies of other service professions, immediacy was identified as a strategy for responding to emotional needs of others (see Miller, 2007). Jones and Wirtz (2006) also observed the positive effects of nonverbal immediacy on people's perceived emotional improvement in controlled laboratory situations. In the classroom context, results of experimental studies have shown that, when teachers use nonverbal immediacy, students report higher levels of perceived affect (e.g., Chesebro, 2003; Comstock, Rowell & Bowers, 1995; Titsworth, 2001; Witt & Wheeless, 2001); and, numerous correlational studies have observed a similar relationship (e.g., Andersen, 1979; Christophel, 1990; Plax, Kearney, McCroskey, &

Richmond, 1986; Rodríguez et al., 1996). In fact, a meta-analysis of 55 studies, examining the relationship between teacher nonverbal immediacy and students' perceived affective learning, found an average correlation of .49 (Witt, Wheeless, & Allen, 2004). In their description of emotional response theory, Mottet et al. (2006) used such literature to highlight nonverbal immediacy as a likely source of implicit messages related to students' emotional responses.

H_2: When teachers display higher levels of perceived nonverbal immediacy behaviors, students will have more positive emotional reactions to the class.

Teacher clarity. In classroom situations, clarity can include the use of examples, descriptions, and explanations (see Bush, Kennedy, & Cruickshank, 1977). As noted by Titsworth, Novak, Hunt, and Meyer (2004), those behaviors can occur verbally, as teachers talk about course material, and nonverbally, through teachers' use of PowerPoint displays, handouts, and notes on the board. Although many studies relied on self and other-report measures assessing teachers' use of clarity behaviors, scholars have also noted that clarity is a communicative process that emerges through the give-and-take of classroom communication (Simonds, 1997).

Much of the teacher clarity literature has explicitly explored relationships between clarity and cognitive learning outcomes. However, Titsworth and Mazer's (2010) review of clarity research noted that several ($n = 9$) studies have found significant and positive correlations between teachers' use of clarity behaviors and students' affect/motivation toward a class. Likewise, Glaser-Zikuda and Fuss (2008) observed a strong positive correlation between students' reports of their perceived well-being and their teachers' clarity behaviors; teacher clarity was negatively related to students' perceptions of anxiety. Those findings provide a rationale for exploring teacher clarity as a source of implicit messages related to students' emotional reactions to learning.

H_3: When teachers display higher levels of perceived clarity behaviors students will have more positive emotional reactions to the class.

Method

Participants and target classes. A total of 420 students from two medium-sized public universities participated in the study. Students were nearly evenly split between the two universities, with just over 50% from one and 49% from the other. The average age of participants was 22.7 years old ($SD = 11.68$). The majority of participants were freshmen ($n = 135$, 32.1%), followed by seniors ($n = 94$, 22.4%), juniors ($n = 71$, 16.9%) and sophomores ($n = 61$, 14.5%); there were also 59 (14%) graduate students in the sample. Students had an average GPA of 3.40 ($SD = .56$) according to self-report estimates. There were twice as many females ($n = 280$, 66.7%) as males ($n = 140$, 33.3%), which are slightly skewed toward females in comparison to the overall demographics of the universities. Similar to the overall statistics for both universities, the vast majority of participants were Caucasian ($n = 361$, 86%), with no other ethnic group accounting for more than 5% of the total.

Following an approach common in instructional communication research (see Plax et al., 1986), students were asked to identify the first class they attend in a particular week and to use that class as the reference point for all questions on the survey. The size of students' target classes was large, with an average of 49 students enrolled ($SD = 3.48$). Most of the target class teachers were males ($n = 236$, 56.2%; females $n = 184$, 43.8%). Given the size of estimated enrollments, the fact that most classes were described as "lecture oriented" ($n = 242$, 57%) is not surprising; only 25% of the courses ($n = 106$) were described as "mostly discussion oriented," and 72 students (17%) did not answer the question. Almost half of the students ($n = 193$, 46%) reported they were enrolled in their target class because of their major, whereas a slightly smaller number ($n = 148$, 35%) said that they were taking the class because of a general education requirement. A total of 39 students (9.3%) indicated they were taking the class as part of a second major or minor, and 40 students (9.5%) did not provide a reason for taking the target class.

Course naming and numbering conventions differed between the two universities represented in the sample. As a result, determining a precise estimate for the total number of unique target classes included in the sample was not possible. However, by analyzing course titles and prefixes it was estimated that courses from 75 different fields were represented, with most from English ($n = 36$, 8.6%), political science ($n = 37$, 8.8%), math ($n = 30$, 7.1%), and communication studies ($n = 23$, 5.5%).

Measures. Institutional Review Board (IRB) committees at the two universities approved all procedures used in the study. In a period of three weeks, from mid-October through early November, students from the two universities were contacted by e-mail and invited to complete an online survey about classroom communication. In addition to answering demographic questions and providing information about their target class, participants responded to questions on four different scales selected to assess variables in the study.

Communication competence. Students rated their target class teacher's level of communication competence using Monge et al.'s (1982) Communicator Competence Questionnaire (CCQ). This scale was used because it was designed to focus on encoding and decoding skills that facilitate interaction between people in role positions similar to the teacher–student relationship (see also Papa & Tracy, 1988). The CCQ is a 12-item scale that can be adapted to target other people who hold specific positions within the organizational setting, including both supervisors and subordinates (see Madlock, 2008). In the current study, students were asked to rate, on a 7-point scale, the communication competence of their target teacher. The CCQ has two factors: encoding (e.g., "My instructor has a good command of the language") and decoding (e.g., "My teacher is easy to talk to"). Cronbach's (1951) Alpha reliability estimates for the current study were .83 and .87 for the encoding and decoding factors, respectively.

Teacher nonverbal immediacy. The second scale was the Perceived Nonverbal Immediacy Behavior Scale (PNIB; McCroskey, Sallinen, Fayer, Richmond, & Barraclough, 1996). The PNIB directs participants to indicate, using a 5-point scale, the extent to which their teacher used 10 nonverbal immediacy behaviors. Previous estimates of reliability for various versions of scales assessing teacher nonverbal immediacy have ranged from .69 to .89. In the current study, the Cronbach's (1951) Alpha reliability estimate was .82.

Teacher clarity. Despite substantial scholarly interest in teacher clarity, no single method for assessing clarity has emerged. Whereas a variety of options exist (see Titsworth & Mazer, 2010), the decision to use any particular scale generally is determined based on the level of specificity required for a particular study. We opted to use the 12-item Clarity Behaviors Inventory (CBI) developed by Titsworth et al. (2004) because that scale assesses a range of clarity behaviors across distinct channels. Using a 5-point scale, the CBI operationalizes students' perceptions of teachers' oral (e.g., "The teacher verbally stresses important issues presented in the lecture") and written (e.g., "The teacher provides us with a written description of the most important things in the lecture") clarity behaviors. The Cronbach's Alpha reliability estimates were strong, with values of .93 and .92 for verbal and written clarity, respectively.

Classroom emotions scale. Using literature as a test for face validity, items were created to assess students' emotional experiences in their target class. Specific items, shown in Table 1, were written to tap concepts, including perceptions of emotional valence, emotion work, emotion management, social support, and emotional labor. Participants indicated agreement with items using a 5-point Likert-type scale. In addition to analyzing the dimensionality of the scale through an exploratory factor analysis, initial validity was assessed by comparing items with the relevant literature to maintain strong face validity for both individual items and for the factors.

Three criteria were used to determine how many factors to retain in the Principal Axis Analysis: the eigenvalue test (i.e., eigenvalue > 1), visual inspection of the scree plot, and interpretability/face validity of rotated factors. Using the first two criteria, three factors were initially analyzed. As shown by the bold coefficients in Table 1, all but two item loadings met the standard 60/40 criterion; items 10 and 8 were retained with primary loadings just under .60 because their secondary loadings were negligible. Items 6 and 16 were not included in subsequent analyses because of high secondary loadings.

The three factors observed in the Principal Axis Analysis have strong face validity when analyzed in comparison to the literature on emotion in organizational environments. *Emotional support* reflects the extent to which students perceive that their instructor is available and able to provide emotional support about topics that are directly and indirectly related to school. Items on this scale are consistent with a broad range of emotional support behaviors including listening, giving advice, and providing relief from emotional distress (see Miceli, 2009). *Emotion work*, the second factor, assesses the extent to which students must expend emotional energy and perform emotional labor (i.e., faking or feigning emotions) in the classroom. Worth noting is the

Table 1 Rotated Factor Structure of the Classroom Emotions Scale

Item	Emotion Support	Emotion Work	Emotional Valence
9. I can talk with my instructor about my personal problems	**.81**	.01	.13
5. My instructor is willing to discuss my feelings and emotions about school	**.77**	−.18	.16
12. I can count on my instructor when things go wrong with school issues	**.77**	−.15	.22
7. I can count on my instructor when things go wrong in my personal life	**.75**	.02	.13
3. My instructor is willing to help me make decisions about academic issues	**.68**	−.22	.21
13. I CANNOT talk about personal problems with my instructor	**.68**	−.34	.04
1. I get the emotional help and support I need from my instructor	**.68**	−.25	.31
11. My instructor is NOT responsive to my concerns and feelings	**.63**	−.50	.11
6. It is difficult to talk about school-related problems with my instructor	−.55	.53	.01
2. Interacting with this instructor requires a lot of emotional energy	−.09	**.70**	−.32
4. When talking to my instructor I have to conceal or fake my emotions	−.43	**.70**	.03
10. Being in this class required a lot of emotional energy	−.02	**.59**	−.30
8. I wish that I could better express my true feelings with my instructor	−.01	**.58**	−.19
16. The emotions I display in class do not represent my true feelings	−.44	.53	−.12
15. I would generally describe the emotions toward this class as positive	.34	−.31	**.76**
14. I would generally describe the emotions I feel toward my instructor as positive	.34	−.42	**.74**
Eigenvalue	7.60	2.13	1.08
Variance accounted for	44.48%	13.34%	6.75%
Cronbach's alpha	.92	.78	.89

Note. Principal Axis Factoring with Varimax rotation was used.

fact that this factor includes questions related to both emotion work and emotional labor. As noted by Miller et al. (2007), the practical distinction between emotion work and emotional labor "may be unclear . . . many aspects of organizational interaction will be characterized as both emotional labor and emotion work" (p. 236). Finally, similar to Andersen and Guerrero's (1998) cognitive valence theory of emotions, the *valence* factor assesses the extent to which students' view their target classes as generally positive or negative.

Results

Zero-order correlations, means, and standard deviations for all variables are reported in Table 2. All observed correlation coefficients were significant. Positive relationships

Table 2 Correlations, Means, and Standard Deviations for All Variables in the Study

	Encoding CC	Decoding CC	Verb Clar	Writ Clar	Immediacy	Emot Suppt	Emot Work	Emot Valence
Encoding CC	–	.73**	.60**	.40**	.57**	**.47****	**−.53****	**.67****
Decoding CC		–	.57**	.41**	.57**	**.71****	**−.55****	**.72****
Verb Clar			–	.67**	.47**	**.40****	**−.31****	**.46****
Writ Clar				–	.38**	**.26****	**−.25****	**.33****
Immediacy					–	**.37****	**−.44****	**.55****
Emot Suppt						–	−.43**	.58**
Emot Work							–	−.57**
M	26.96	18.92	22.97	22.04	49.19	25.14	9.77	7.40
SD	5.23	4.23	5.72	6.40	8.30	6.54	3.28	2.09

*$p < .05$, **$p < .01$.

were observed between teachers' communication characteristics (immediacy, communication competence, and clarity) and students' perceptions of both emotional support and positive emotional valence. Correlations between these variables and emotion work were all significant but negative—higher levels of immediacy, clarity, and communication competence were associated with students' perceptions of doing less emotion work. The observed findings were consistent with the three hypotheses.

Following the correlations, regression procedures were used to determine whether teachers' communication behaviors were related to students' perceptions of classroom emotions when other variables were held constant. Three hierarchical regressions were performed using the emotion variables as criterion/dependent variables. In each regression, the two emotion variables not used as the dependent variable were entered in an initial step, followed by the teacher communication variables in a second step. Regression coefficients and change statistics are reported in Table 3. Inspection of variance inflation values and tolerance statistics suggested that colinearity levels were acceptable in all three regressions.

For the first regression model, emotional support was regressed onto emotional valence, emotion work, and the five predictor variables. The overall model in the second step was significant, $F\ (7,\ 412) = 65.87$, $p < .05$, $R^2_{\text{ADJ}} = .52$. Analyses of regression coefficients in the second step showed that perceptions of emotional support increased when students perceived the emotional valence of the class as positive and the teacher displayed lower levels of encoding CC and higher levels of decoding CC.

The second regression model included students' perceptions of the overall emotional valence as the dependent variable. The final model accounted for 61% (adjusted) of the variance in emotional valence, which was significant, $F\,(7, 412) = 92.50$, $p < .05$. Based on coefficients in the final step, students perceived the emotional valence of their classes as more positive when they perceived the emotional support level of the class as high, when the emotion work required in the

Table 3 Results of Hierarchical Regressions

	Regression Criterion Variables		
	Emotional Support	Emotional Valence	Emotion Work
Step 1	$R^2 = .35^{\star}$	$R^2 = .46^{\star}$	$R^2 = .34^{\star}$
Emot Support		$\beta = .41,\ t = 10.22^{\star}$	$\beta = -.15,\ t = -3.05^{\star}$
Emot Valence	$\beta = .49,\ t = 10.22^{\star}$		$\beta = -.49,\ t = -10.04^{\star}$
Emot Work	$\beta = -.15,\ t = -3.05^{\star}$	$\beta = -.40,\ t = -10.04^{\star}$	
Step 2	$\Delta R^2 = .18^{\star}$	$\Delta R^2 = .15^{\star}$	$\Delta R^2 = .05^{\star}$
Emot Support		$\beta = .15,\ t = 3.36^{\star}$	$\beta = -.08,\ t = -1.39$
Emot Valence	$\beta = .18,\ t = 3.36^{\star}$		$\beta = -.29,\ t = -4.78^{\star}$
Emot Work	$\beta = -.06,\ t = -1.39$	$\beta = -.18,\ t = -4.78^{\star}$	
Encoding CC	$\beta = -.17,\ t = -2.98^{\star}$	$\beta = .23,\ t = 4.60^{\star}$	$\beta = -.20,\ t = -3.09^{\star}$
Decoding CC	$\beta = .69,\ t = 11.78^{\star}$	$\beta = .28,\ t = 4.70^{\star}$	$\beta = -.13,\ t = -1.70$
Verb Clarity	$\beta = .07,\ t = 1.28$	$\beta = .01,\ t = .06$	$\beta = .13,\ t = 2.23^{\star}$
Written Clarity	$\beta = -.05,\ t = -1.14$	$\beta = -.01,\ t = -.22$	$\beta = -.05,\ t = -.95$
Immediacy	$\beta = -.06,\ t = -1.40$	$\beta = .12,\ t = 2.98^{\star}$	$\beta = -.12,\ t = -2.33^{\star}$

$^{\star}p < .05$.

class was less, and when the teacher displayed greater levels of encoding CC, greater levels of decoding CC, and greater levels of immediacy.

The final regression determined how much of the variance in students' emotion work could be accounted for by a linear combination of the five predictor variables, their perceptions of emotional support in the class, and the overall emotional valence of the class. The final model was significant, $F\ (7,\ 412) = 38.34,\ p < .05$, and accounted for 39% (adjusted) of the variance. Regression coefficients in the final step revealed that four of the predictors were significant. Students reported higher levels of emotion work in their classes when the overall perceived emotional valence of the class was more negative, when the teacher displayed lower levels of encoding CC, higher levels of verbal clarity, and lower levels of immediacy. Patterns of results with the regression analyses were generally consistent with the three hypotheses, although specific relationships did differ across the three dependent variables.

Post Hoc Analyses. Two coefficients observed in the regressions appeared contrary to what was expected: the negative relationship between encoding CC and perceived emotional support and the positive relationship between verbal clarity and emotion work. In light of those findings, we conducted tests to see whether interaction effects were present in the data. Following Aiken and West's (1991) recommendations, we first tested for a significant interaction and, when present, followed the interaction by testing simple slopes at the mean, one standard deviation above and one standard deviation below the mean on centered predictor variables.

For the negative relationship between encoding CC and emotional support, we considered the possibility that decoding CC was interacting with encoding CC. In a typical classroom situation, encoding and decoding CC could be interrelated because as teachers present information (i.e., encoding) they are perhaps less likely to

listen/decode. Thus, encoding CC could function differently depending on how well the teacher displayed decoding behaviors. In this analysis, we included emotional valence as a covariate since it had emerged as a significant predictor in the regression.

The encoding by decoding CC interaction test showed that a small ($R^2 = .01$) but statistically significant ($b = .03$, $t = 3.04$, $p < .05$) interaction effect was present; including the interaction term resulted in a significant model, $F(4, 415) = 118.22$, $p < .05$. Simple slope tests showed that encoding CC had a slope significantly different from zero when decoding CC was at the mean ($b = -.17$, $t = -2.59$, $p < .05$), at $+1$ *SD* ($b = 2.46$, $t = 3.74$, $p < .05$), and at -1 *SD* ($b = -2.79$, $t = -4.03$, $p < .01$). Based on these results, we concluded that encoding CC has a positive effect on students' perceived emotional support from the teacher when the teacher is strong in decoding CC, but a negative effect when the teacher has lower levels of decoding CC. No significant interactions were detected for the relationship between verbal clarity and emotion work.

Study 2

Additional Validity Tests for the Classroom Emotions Scale

Results from Study 1 were obtained using the CES, a newly developed scale. To add further credibility to findings observed in Study 1, and to maximize the utility of the CES for other scholars, a second study was conducted to confirm the dimensionality of the CES and to gather additional validity evidence for the scale.

Using results from the Principal Axis Analysis as a theorized measurement model for the CES, data from a second sample were used to perform a confirmatory factor analysis (CFA). The CFA technique is commonly used to holistically and deductively test a hypothesized measurement model against data to determine goodness of fit. The CFA was conducted using LISREL 8.80, with five indices used to assess model fit: (a) model chi-square, (b) the root mean square error of approximation (RMSEA), (c) the non-normed fit index (NNFI), (d) the comparative fit index (CFI), and (e) standardized root mean square residual (SRMR). Model fit is generally considered acceptable if CFI and NNFI values are above .90 (for close fit, above .95), the RMSEA statistic does not exceed .08 (for close fit, .05), and SRMR is less than .08 (Kline, 2005; MacCallum, Browne, & Sugawara, 1996). To confirm the dimensionality of the CES, at least an adequate model fit should be observed.

H1: A three-factor structure (emotional valence, emotional support, and emotion work) will have adequate fit with the data based on analysis of the various fit statistics.

After testing model fit, two additional steps were taken to generate validity evidence for the CES scale. First, factors on the CES were correlated with four other variables that should be related to students' emotional experiences in classes. As suggested by ERT, students' positive emotional experiences should be positively associated with approach behaviors and perceived learning; alternatively, negative emotional experiences should be inversely related to those perceptions (Mottet et al.,

2006). Using scales assessing students' self-perceived affect, motivation, behavioral indicators of learning, and cognitive learning as *representative* of approach behaviors, assumptions posited by ERT were tested both to provide a substantive test of the theory and to provide criterion-related validity evidence for the CES.

H2: Students' perceptions of emotional valence and emotional support will be positively related to students' perceptions of affect, motivation, cognitive learning, and learning indicators.

H3: Students' perceptions of emotion work will be negatively related to students' perceptions of affect, motivation, cognitive learning, and learning indicators.

In addition to testing criterion validity of the CES, divergent validity for the scale was assessed by calculating a CFA specifying that the three factors on the CES should be distinct from students' overall affect toward the class. If the four-factor measurement model demonstrates adequate fit, evidence of divergent validity will exist for the CES scale.

H4: Items on the CES are distinct from items assessing students' affect toward a class.

Method

Participants and Target Classes. Data were gathered from a second sample of 229 participants from one public university to confirm the dimensionality of the CES and to further analyze validity of the scale. In the sample there were more females ($n = 152$; 66.4%) than males ($n = 77$; 33.6%), the majority ($n = 192$; 83.8%) were Caucasian, and over 51 majors were identified by students. The average age for students in the sample was 18.79 years ($SD = 2.67$) and the average self-reported GPA was 3.24 ($SD = .45$). Similar to the procedures used in Study 1, participants were asked to answer survey items in reference to the class they attended immediately before the class in which they were completing the surveys. When describing the target classes, the mix between male ($n = 104$; 45.4%) and female ($n = 124$; 54.1%) teachers was generally even, as was the mix between courses that were mostly lecture oriented (n = 107; 46.7%) and mostly discussion oriented ($n = 122$; 53.3%). There were over 80 different target classes identified by students, with the most common being large enrollment courses like Psychology 101 and Public Speaking. The class size ranged from 11 students to over 400, with the average being 89.02 ($SD = 108.37$).

Measures. The university's IRB committee approved all procedures. To assess criterion-related validity of the CES, participants also completed the following scales: Affect toward the behaviors recommended in the course ($\alpha = .80$), the subject matter ($\alpha = .80$), the instructor ($\alpha = .89$), likelihood of engaging in recommended behaviors ($\alpha = .92$), and likelihood of enrolling ($\alpha = .97$) in a course with related content (Andersen, 1979); student motivation ($\alpha = .94$; Christophel, 1990); perceived learning/learning loss (Richmond, McCroskey, Kearney, & Plax, 1987); and the revised learning indicators ($\alpha = .83$; Frymier & Houser, 1999). Alpha reliability estimates for the CES in the second sample were slightly smaller in comparison to

those observed in Study 1: emotional support ($\alpha = .89$), emotion work ($\alpha = .60$), and emotional valence ($\alpha = .82$).

Results

Based on Lambda loadings and accompanying z-scores, all items significantly loaded onto their respective latent construct (see Table 4). Considering the standards for model fit reported previously, the three-factor model demonstrated close model fit, $\chi^2(16) = 26.56$, $p < .05$, RMSEA $= .052_{[90\%\ CI = .00:.088]}$, NNFI $= .98$, CFI $= .99$, SRMR $= .03$. The analysis did not indicate a need to correlate any error terms to achieve fit. The CFA provided a holistic and deductive test of the data against an a priori theoretical factor structure and yielded a final model that demonstrated close fit with the data. This finding supports hypothesis 1 and further confirms the dimensionality of the CES.

Correlation coefficients reported in Table 5 show statistical relationships between factors on the CES and each of the affect, motivation, and learning variables. Notably, all but four coefficients were significant. Emotional support and emotional valence had strong positive correlations with the criterion-related variables, whereas emotion work was negatively correlated. Both the consistency and strength of these correlations suggest that the CES is a valid indicator of students' emotional orientations toward their class and instructor, as factors on the scale are strongly related to students' perceptions of affect, perceived learning, motivation, and indicators of learning. Hypotheses 2 and 3 were supported based on the preponderance of evidence.

Table 4 Confirmatory Factor Analysis of the Classroom Emotions Scale

Latent Construct Item	*M*	*SD*	λ	*SE*
Emotional Support				
Item 9	2.61	1.02	.66	.06
Item 5	3.35	1.05	.80	.06
Item 12	3.38	1.05	.68	.06
Item 7	2.62	1.10	.59	.07
Item 3	3.65	1.03	.74	.06
Item 13	3.13	1.11	.68	.07
Item 1	3.39	1.15	.72	.07
Item 11	3.77	1.03	.66	.06
Emotion Work				
Item 2	2.52	1.07	.35	.08
Item 4	1.93	.93	.93	.07
Item 10	2.35	1.08	.29	.08
Item 8	2.49	1.67	.42	.12
Emotional Valence				
Item 15	3.77	1.03	.78	.05
Item 14	3.98	.92	.91	.05

Note. All factor loadings are standardized and significant at $p < .01$.

Table 5 Correlations Between CES Factors and Criterion-Related Variables

Criterion-related variables	*M*	*SD*	CES factors		
			Emotional Support	Emotion Work	Emotional Valence
Affect Toward Behaviors	23.30	4.47	.52**	−.24**	.60**
Affect Toward Content	22.68	4.77	.38**	−.23**	.50**
Affect Toward Instructor	23.32	5.55	.55**	−.39**	.68**
Engaging in Behaviors	21.98	5.84	.39**	−.19**	.48**
Enrolling in Similar Course	18.92	8.06	.16*	−.03	.36**
Motivation	77.23	18.95	.38**	−.21**	.61**
Perceived Learning	5.75	1.61	.10	−.11	.37**
Learning Loss	−.57	1.67	.40**	−.19**	.35**
Learning Indicators	16.75	5.37	.23**	−.05	.48**
M			25.90	9.30	7.75
SD			6.38	3.30	1.80

*$p < .05$, **$p < .01$.

Items on the CES and items used to assess students' affect toward a class were subjected to an additional confirmatory factor analysis to further assess validity of the Classroom Emotions Scale. Each manifest indicator for the CES and affect toward the class measures was loaded onto the respective latent constructs. Inspection of the Lambda loadings and accompanying z-scores indicated that all loadings were significant. Considering standards for model fit reported previously, the final model demonstrated close fit, $\chi^2(28) = 41.43$, $p < .05$, RMSEA $= .045_{[90\%\ CI = .00:.073]}$, NNFI $= .99$, CFI $= .99$, SRMR $= .03$. As with the previous CFA, correlated error terms were not required to fit the model. These results suggest that the three CES factors should be viewed as distinct from the affect variable, thus providing evidence of divergent validity in support of hypothesis 4.

Overall Discussion

Though conventionally viewed as separate, communication, emotion, and learning are intertwined in the classroom (Dewey, 1944). Teachers are the primary agents who help students organize and reorganize experiences that serve future exigencies. Emotional response theory (Mottet et al., 2006) suggests that a variety of teacher communication behaviors contain implicit messages that modify students' emotional reactions; in turn, those reactions influence students' approach-avoidance behaviors in learning situations. The clarity with which teachers present information, their immediacy behaviors, and how they listen and react to students are intuitive, though not exhaustive ways, through which teachers potentially influence students' emotions. Results from both Study 1 and Study 2 show that teachers' behaviors are related to students' emotional responses.

Three hypotheses were advanced in Study 1, each predicting relationships between teachers' communication behaviors and students' emotional reactions to learning.

Correlation tests revealed significant findings consistent with the hypotheses: coefficients reported in the bold cells in Table 2 range in size from .25 to .72 and have an average correlation of .47. Based on a binomial effect size display, when teachers use effective communication behaviors, their students have a 74% chance of having a positive emotional experience in the class; when teachers do not, their students have only a 27% chance of having a positive emotional experience. These results extend ERT by testing a specific hypothesis advanced by the theory (i.e., that teacher nonverbal immediacy would elicit emotional responses from students) and exploring teacher communication competence and teacher clarity as additional variables potentially related to students' emotions.

Regression analyses provided important information about the interrelationships among teachers' implicit messages and students' emotional reactions. As shown in Table 3, emotional valence emerged as a significant predictor in the second step of both regressions in which it was included. In fact, emotional valence was the second strongest predictor for the emotional support variable and the strongest predictor, with a negative relationship, for the emotion work variable. Emotional support and emotion work were unrelated when either was used as the criterion variable. Previous findings suggest that emotion work (i.e., emotional labor) and social support are two distinct constructs. For instance, Tracy's (2005) study of prison guards concluded that both physical and role separation of guards could prevent "hidden transcripts" in which interactants can talk about their emotions with others in a backstage area (p. 276). In classroom settings, where the roles of students and teachers are perhaps more rigid than fluid, it is possible that emotion work occurs independently of emotional support because of role distancing between teachers and students, and even between students. These findings extend ERT by adding information about the relationships among specific types of emotional reactions. Whereas Mottet et al. (2006) highlighted pleasure, arousal, and dominance as specific types of emotional reactions, results of this study suggest that potential emotional responses should be expanded beyond the positive-negative valence to include emotion work and perceived social support.

Of the teacher communication variables, communication competence was strongly related to students' emotional experiences. Specifically, decoding CC emerged as the strongest predictor in two out of the three regressions, having positive relationships with both emotional support and students' perceptions of a positive emotional valence. Research in other specialized settings, like healthcare (see Wanzer, Booth-Butterfield, & Gruber, 2004), showed that effective listening was associated strongly with satisfaction. Similarly, when teachers display decoding CC, students might have positive feelings about the class and, therefore, experience more positive emotions. Perhaps more importantly, they might feel that instructors high in decoding CC are better able to provide emotional support because they listen well.

Whereas decoding CC had consistent findings, results for encoding CC were more puzzling when viewed across the three regressions. Higher levels of encoding CC were associated with lower levels of perceived emotional support, positive

emotional valence toward the class, and less emotional labor. The first of those findings—the negative relationship between encoding CC and perceptions of emotional support—runs contrary to expectation. Post hoc simple slope tests revealed that, for emotional support, encoding CC functioned differently depending on whether the teacher was effective with decoding CC. When the teacher displayed higher levels of decoding CC, encoding CC had a strong positive relationship with emotional support. Contrarily, when teachers were poorer in decoding CC, encoding CC had a strong negative relationship with emotional support. This observed interaction suggests that listening to students' emotional needs in the classroom is perhaps more important than talking clearly, at least in terms of improving perceived emotional support. These findings were consistent with the first hypothesis.

Teacher immediacy emerged as a significant predictor for both emotional valence and emotion work. Higher levels of teacher immediacy were associated with more positive emotional feelings toward the class and less emotion work in the class. According to Mehrabian (1981), immediacy generates perceptions of closeness between people. If the teacher is perceived as immediate, students are more likely to have positive emotions about the class and might feel more open in their communication with the teacher (Mottet et al., 2006), thus requiring less emotion work. This finding is also consistent with substantial evidence documenting positive relationships between teacher nonverbal immediacy and student affect. Thus, results of the regressions were consistent with the second hypothesis.

Generally speaking, clarity did not emerge as a significant predictor when other variables were taken into consideration. Despite evidence that clarity is positively related to satisfaction and affect (Titsworth & Mazer, 2010) and negatively related to receiver apprehension (Chesebro, 2003), these positive effects of clarity did not extend to the emotional reactions analyzed in this study. Verbal clarity did emerge as a significant positive predictor for emotion work, a finding that ran contrary to our prediction. One possibility is that higher levels of verbal clarity reduce ambiguity (see Eisenberg, 1984) to such an extent that students lack the freedom to express a variety of emotions in the classroom. In essence, because the teacher expends significant effort reducing ambiguity, the students could develop what Babrow (2001) calls *problematic integration*, which is a discrepancy between what one thinks will likely happen and the overall evaluation of the event. In fact, other studies of service professions show that extreme certainty, which is likely the outcome of high verbal clarity, is not always what listeners desire (Miller, 2007). Alternatively, extreme clarity could potentially cause students to have higher levels of receiver apprehension, which could increase emotion work by students (see Chesebro & McCroskey, 2001). Although the correlations provided support for the third hypothesis, similar findings were not observed in the regression. Teacher clarity was related to students' emotional experiences; however, that relationship did not hold when other variables were taken into consideration.

Results of Study 2 provided additional validity evidence for the CES. The CES is a viable option for scholars interested in further exploring students' emotional experiences in the classroom. Based on the results of the two studies, items 6 and 16 should be removed, leaving a parsimonious 14-item scale assessing three dimensions of students' emotional experiences in the classroom.

Substantively, results of Study 2 provided additional evidence supporting the assumptions of Mottet et al.'s (2006) Emotional Response Theory. As students develop emotional responses toward learning, those perceptions are related to their approach and avoidance behaviors in the classroom. Students' perceptions of emotional support from the teacher and the perceived emotional valence of the class were positively related to their affect, motivation, and learning indicators; conversely, students' perceptions of emotion work were negatively related to those variables. That is, when students perceive that they engage in higher levels of emotion work, they are perhaps more likely to enact avoidance behaviors, as represented by lower levels of affect and motivation.

Despite these findings, some caveats and directions for future research deserve discussion. First, the present study was unable to determine what effect emotions have on traditional measures of classroom learning, retention, and other systemic metrics of academic success. To more fully explore emotion as a pragmatic knowledge-producing resource, scholarship should work towards connecting self-reports of emotional responses with traditional measures of achievement; such work would further validate assumptions of emotional response theory and would also address Dewey's (1944) contention that the integration of mind/body, public/private, and emotion/reason is important to learning. Second, neither study reported here considered the likelihood that communication and emotion are interdependent. Students might enter a class with strongly positive or negative emotions toward school and, as a result, cause their teachers to change their communication behaviors. Additional research should enact longitudinal designs to more fully illuminate sequences of behaviors unobservable in the current study. Finally, the present study only considers the extent to which teachers influence students' emotions. Future studies should explore how students influence each other's emotions, as well as the emotions experienced by the teacher.

Artificial binaries between emotion and reason, though pervasive, conceal how students and teachers experience learning on a daily basis. Members of a class do experience emotions, and those emotions do vary from one person to another. While the current study provides substantive evidence that teachers' behaviors are related to students' emotional experiences, additional work remains to fully understand the processes through which educational experiences translate into specific emotions (e.g., anger, pride, fear, or happiness) as well as how those symbolic experiences are connected to assessable outcomes. Dewey's (1944) call for engaged learning, through which students learn from the nexus of communication and experience, should compel communication scholars to continue exploring the role of emotion in learning.

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