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Paul Schrodt
Texas Christian University, p.schrodt@tcu.edu

Paul Turman
University of Northern Iowa, paul.turman@sdbor.edu

Jordan Soliz
University of Nebraska-Lincoln, jsoliz2@unl.edu

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Paul Schrodt,[1] Paul D. Turman,[2] and Jordan Soliz[3]

1. Texas Christian University
2. University of Northern Iowa
3. University of Nebraska–Lincoln

Corresponding author – Paul Schrodt, Texas Christian University, PO Box 298045, Fort Worth, TX 76129, USA, email p.schrodt@tcu.edu

Abstract
This study tested two theoretical models of perceived understanding as a potential mediator of perceived teacher confirmation and students' ratings of instruction. Participants included 651 undergraduate students who completed survey measures. Results of structural equation modeling provided greater support for the confirmation process model, whereby students' perceived understanding partially mediated the effects of perceived teacher confirmation on both teacher credibility and evaluations. Further, perceived teacher confirmation accounted for 64% of the variance in perceived understanding, and both confirmation and understanding accounted for 70% and 72% of the variances in teacher evaluations and credibility, respectively. Among the more important implications of this research is the finding that confirming behaviors have both direct and indirect effects on students' ratings of instruction.

Keywords: perceived understanding, perceived teacher confirmation, ratings of instruction

Few can deny the fundamental importance of interpersonal communication in developing and maintaining satisfying and productive teacher-student relationships. As Frymier and Houser (2000) noted, there are a variety of communication skills that can enhance student

learning and motivation in the classroom, the most notable of which include referential, ego support, immediacy, and narrative skills. One interpersonal communication behavior that encompasses both ego support and referential skills, and that has received increased attention in recent years, is teacher confirmation. Defined by Ellis (2000) as "the transactional process by which teachers communicate to students that they are endorsed, recognized, and acknowledged as valuable, significant individuals" (p. 266), teacher confirmation includes interpersonal behaviors that communicate a sincere interest in students, for example, by responding to student questions and comments in ways that invite student interaction and by using a variety of teaching techniques to promote, and evaluate, student progress. Not only is perceived teacher confirmation positively associated with student reports of affective learning (Ellis, 2000) and inversely associated with student receiver apprehension (Ellis, 2004), but Ellis's (2000, 2004) research suggests that perceived teacher confirmation has rather sizable, indirect effects for student reports of state motivation and cognitive learning. Consequently, Ellis's (2000, 2004) research underscores the importance of teacher confirmation to the instructional communication process.

Despite the apparent value of confirming student identities in classroom interactions, much less is known regarding other communication constructs that might mediate the associations among confirming behaviors and instructional outcomes. One possible mediator of confirming behaviors and classroom outcomes is perceived understanding. Defined by Cahn and Shulman (1984) as "the communicator's assessment of his/her success or failure when attempting to communicate with another person" (p. 122), perceived understanding is positively associated with higher teacher credibility and evaluations (Schrodt, 2003), as well as with a democratic-participatory teaching style and students' expected grades (Cahn, 1984a, 1984b). Thus, the primary purpose of this investigation is to test two competing models of perceived understanding as a potential mediator of perceived teacher confirmation and students' ratings of instruction.

In the first model, hereafter referred to as the *linear-sequential model*, we hypothesized that perceived teacher confirmation would predict student reports of perceived understanding, which in turn would enhance instructor credibility and ultimately result in higher teaching evaluations. In the second model, labeled the *confirmation process model*, we predicted that perceived teacher confirmation would have both direct and indirect effects on students' ratings of instruction, with the indirect effects mediated through perceived understanding and with students' ratings of instructions co-represented by students' reports of teacher credibility and evaluations (cf., Schrodt, 2003). Teacher credibility and evaluations were selected as outcome variables in this study for three reasons: (1) credibility has been identified as one of the most important variables affecting the teacher-student relationship (Myers, 2001) and the learning process (Thweatt & McCroskey, 1998); (2) student evaluations are often used to describe and explain perceptions of effective college teaching (Moore, Masterson, Christophel, & Shea, 1996); and (3) both are highly correlated with each other (Schrodt, 2003). Consequently, this study examines these arguments by comparing two theoretical models of perceived teacher confirmation and understanding in the college classroom.

Theoretical Perspective

McCroskey, Valencic, and Richmond (2004) recently advanced a general model of instructional communication that identified six essential components composing the instructional process: (1) the instructional environment; (2) student characteristics (e.g., temperament, intelligence, etc.); (3) teacher characteristics (e.g., temperament, intelligence, etc.); (4) teacher verbal and nonverbal behaviors; (5) student perceptions of the teacher; and (6) instructional outcomes (e.g., cognitive and affective learning, student evaluations, etc.). Although including all six components lies well beyond the scope of this investigation, we focused specifically on testing the associations between three of the components in the model: teacher verbal and nonverbal behaviors (i.e., perceived teacher confirmation behaviors), student perceptions of the teacher (i.e., students' perceived understanding with their teachers), and instructional outcomes (i.e., teacher credibility and evaluations) in the college classroom.

Perceived Teacher Confirmation

Teacher confirmation represents a context-specific application of a much larger confirmation construct. According to Buber (1957), confirmation is the interactional phenomenon by which we discover and establish our identity as humans. Not only did Buber view confirmation as perhaps the most significant feature of human interaction, but Watzlawick, Bavelas, and Jackson (1967) suggested it was the "greatest single factor ensuring mental development and stability" (p. 84). This process of endorsing one's identity occurs through the use of confirming or disconfirming behaviors (Watzlawick et al., 1967). As Cissna and Sieburg (1995) noted, confirming behaviors include (1) an expressed recognition for the existence of others, (2) an acknowledgement of an affiliative relationship, (3) an expressed understanding of another's self-worth, and (4) support for the other individual's experience. Disconfirming behaviors, on the other hand, involve communicating indifference to the other's communication attempts, disregarding another's perception, or disqualifying the other through the use of "name-calling, criticism, blame, and hostile attack" (p. 298).

Although confirmation behaviors have been studied within interpersonal and family contexts for quite some time (e.g., Beatty & Dobos, 1992, 1993; Ellis, 2002; Friedman, 1983; Laing, 1961; Sieburg, 1985), perceived teacher confirmation has only recently emerged in instructional research. For example, Ellis (2000, 2004) recently identified four dimensions of teacher confirmation. First, teachers confirm students by *responding to questions* in such a way that they verbally and nonverbally communicate interest in students' comments and make themselves available for student interaction outside of class. Second, teachers confirm students by *demonstrating interest* in, and communicating concern for, their students. Teachers may also use their *teaching style* to confirm students, in essence, using a variety of techniques and exercises to help students understand material, and finally, teachers can confirm their students by avoiding the use of *disconfirming behaviors*, such as using rude comments that belittle or embarrass students. It is important to note, however, that Ellis's (2000) development of the Teacher Confirmation Scale (TCS) included only the first three dimensions of teacher confirmation because the fourth dimension failed to cross-validate to a second sample of students.

Using the three dimensions of responding to questions, demonstrating interest, and style of teaching, Ellis (2000) discovered that teacher confirmation uniquely explains 30% of the variance in affective learning and 18% of the variance in cognitive learning. Building from this research, Ellis (2004) then assessed the association between students' feelings of confirmation and perceived teacher confirmation behaviors to determine whether those students who reported high levels of teacher confirmation actually felt confirmed. Her results indicated that 61% of the variance in students' feelings of confirmation was attributable to perceived teacher confirmation behaviors. In addition, Ellis reported a rather strong, inverse effect for perceived teacher confirmation on students' state receiver apprehension, which in turn mediated indirect effects for teacher confirmation on student reports of state motivation and cognitive learning.

Overall then, Ellis's (2000, 2004) research has demonstrated the importance of teacher confirmation in the college classroom. Not only does the confirmation construct provide pragmatic utility for instructors seeking to enhance interpersonal relationships with their students, but Ellis's results provide direct evidence to suggest that perceived teacher confirmation is associated with a variety of instructional outcomes, including, at a minimum, cognitive and affective learning as well as student receiver apprehension and motivation. Given that teacher confirmation involves responding to students' questions, demonstrating an interest in students, and using a variety of teaching techniques and communication skills to help students achieve course objectives, it stands to reason that confirmation may facilitate students' perceived understanding.

Perceived Understanding

In the classroom, perceived understanding involves the student's assessment of their success or failure when attempting to communicate with another person, which in the present study is the instructor. While perceived understanding is an important construct across various types of relationships (Cahn, 1986, 1990; Cahn & Frey, 1992; Cushman & Cahn, 1985), it is particularly salient in the teacher-student relationship. Cahn (1984a, 1984b) examined the relationship between student perceived understanding and teaching evaluations in an attempt to determine the relative importance of this construct. When compared with seven other variables typically believed to be relevant to teaching evaluations (e.g., high standards, stimulating, expected grade, teacher clarity), perceived understanding emerged as the most potent predictor of successful teaching evaluations, accounting for 44% of the variance (Cahn, 1984b). Not only do people (or students) who feel understood or misunderstood form general behavioral impressions about their relational partners (or instructors) (Cahn & Frey, 1989), but Cahn and Frey's (1992) research suggests that perceived understanding affects a wide range of perceptual processes, including trust and attraction.

Recently, Schrodt (2003) reported that perceived understanding was strongly associated with students' ratings of teacher credibility and evaluations, so much so that when combined with students' perceptions of instructors' aggressive communication behaviors (i.e., argumentativeness and verbal aggressiveness), perceived understanding emerged as a much more potent predictor of credibility and evaluations than instructors' aggressive be-

haviors. Given that confirming behaviors communicate to students that they are recognized, valued, and appreciated, it stands to reason that perceived understanding might mediate the influence of confirmation, as well as other communication behaviors, on students' ratings of instructions. In other words, the more instructors demonstrate an interest in their students, respond to their questions in an open and inviting manner, and use a variety of teaching techniques to promote student success in learning course material, the more likely students will be to perceive that they can communicate with their instructors successfully. This, in turn, should facilitate higher instructor credibility and higher teaching evaluations.

Teacher Credibility and Evaluations

According to McCroskey and Young (1981), credibility is "the attitude toward a source of communication held at a given time by a communicator" (p. 24), with instructor credibility, in turn, reflecting student attitudes toward the instructor as a source of communication. Historically, ethos/credibility has played a theoretically central role in empirical research on persuasive discourse (e.g., Andersen & Clevenger, 1963; Applebaum & Anatol, 1973; Hovland, Janis, & Kelley, 1953). Building from this tradition, McCroskey, Teven, and their colleagues then applied the ethos/credibility construct to the teacher-student relationship and subsequently developed a measure of teacher credibility that included three dimensions: competence, trustworthiness, and "goodwill" or perceived caring (e.g., McCroskey & Teven, 1999; McCroskey & Young, 1981; Teven & Hanson, 2004; Teven & McCroskey, 1997).

More than a decade ago, Frymier and Thompson (1992) argued that there was little research offering teachers advice on how to increase their credibility in the classroom, yet since their call, instructional communication researchers have devoted substantial efforts toward addressing this void. In particular, instructors who use argumentative messages (Schrodt, 2003), verbal and nonverbal immediacy behaviors (Johnson & Miller, 2002; Teven & Hanson, 2004), affinity-seeking behaviors (Frymier & Thompson, 1992), appropriate amounts of technology (Schrodt & Turman, 2005; Schrodt & Witt, 2006), and who are assertive and responsive (Martin, Chesebro, & Mottet, 1997) and who engage in out-of-class communication with their students (Myers, 2004) are generally perceived as being more credible in the classroom. Given recent scholarly interest in behaviors that enhance credibility, it comes as no surprise, then, that researchers have identified instructor credibility as a critical factor in the learning process: "the higher the credibility, the higher the learning" (Thweatt & McCroskey, 1998, p. 349).

Concurrent with increased interest in teacher credibility is a continuing search for instructor behaviors that enhance student learning and teacher evaluations (McCroskey et al., 2004). As Marsh (1984) noted, student ratings of instruction: (1) provide diagnostic feedback to faculty about the effectiveness of their teaching, (2) provide information for students to use in the selection of courses and instructors, and (3) are one of the measures used in deciding who receives tenure and promotion. If teacher credibility is strongly associated with teacher evaluations (e.g., Schrodt, 2003; Teven & McCroskey, 1997), then one might suspect that communication behaviors that enhance teacher credibility would ultimately lead to higher teaching evaluations.

In general, then, researchers have established clear associations among student reports of perceived understanding, teacher credibility, and evaluations (Cahn, 1984b; Schrodt, 2003) as well as among perceived teacher confirmation behaviors and instructional outcomes such as student learning and motivation (Ellis, 2000, 2004). What remains unanswered, however, is whether teacher confirmation behaviors predict students' ratings of instruction (i.e., credibility and evaluations), and whether such associations are perhaps mediated by students' perceptions that their instructors understand their attempts to communicate in the classroom. Therefore, the primary purpose of our investigation is to compare two theoretical models of perceived teacher confirmation and students' perceived understanding in the college classroom. In the *linear-sequential model*, we hypothesized that perceived teacher confirmation would predict perceived understanding, that perceived understanding would, in turn, enhance teacher credibility, and that higher credibility would ultimately lead to higher teaching evaluations (see Figure 1). In this model, perceived understanding serves as a complete mediator of confirmation behaviors, and consistent with McCroskey et al.'s (2004) general model of instructional communication, credibility operates as both an outcome of instructor behaviors and a predictor of teaching evaluations. In the *confirmation process* model, however, we predicted that perceived teacher confirmation would have both direct and indirect effects on student ratings of instruction (see Figure 2). Contrary to the first model, the process model positions perceived understanding as a partial mediator of confirmation behaviors, and given the strong correlation between teacher credibility and evaluations (e.g., Schrodt, 2003), credibility is positioned alongside with teaching evaluations as co-representations of students' ratings of instruction.

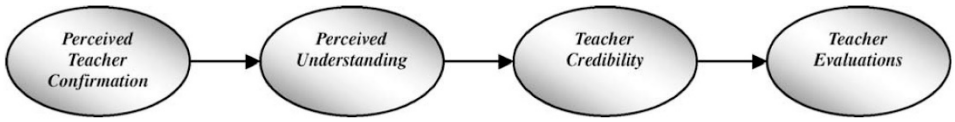

Figure 1. Hypothesized linear sequential model

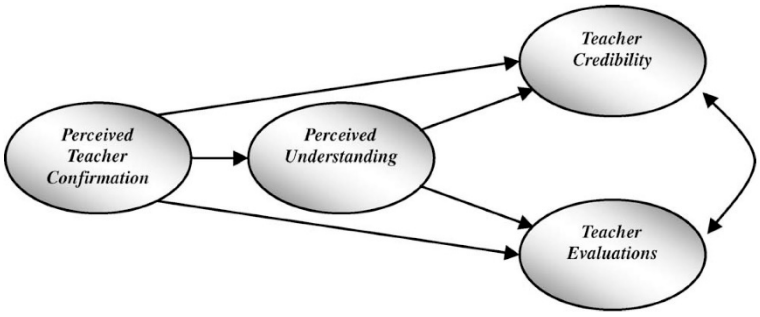

Figure 2. Hypothesized confirmation process model

Method

Participants

Participants were 651 undergraduate students enrolled in basic communication courses at two large, Midwestern universities. Participants included 420 females and 230 males, ranging in age from 18 to 45 years, with a mean age of 19.45 (*SD* = 1.80). Most students classified themselves as "white or Caucasian" (94%), and more than two-thirds of the students were classified as either first-year students (58.2%) or sophomores (25.7%). Since the basic communication courses were part of general university requirements, students from a variety of majors participated. The data were collected during the 12th week of the semester, giving students ample time to assess their instructors' communicative behaviors.

Procedures

Student volunteers were asked to complete a questionnaire containing the measurements and demographic data. All participation took place during regular class time, and students completed the questionnaire anonymously. Consistent with the recommendations of Plax, Kearney, McCroskey & Richmond (1986), students were instructed to complete the research instruments while referencing "the instructor you have in the course which meets prior to this class." This sampling technique has been used successfully in previous research (e.g., Christophel, 1990; Myers & Rocca, 2000; Schrodt, 2003; Wanzer & McCroskey, 1998) and assures that teachers from a wide variety of disciplines are referenced by the students. The survey took approximately 15 minutes to complete, after which students were thanked for their participation and debriefed.

Instruments

Perceived teacher confirmation

Perceived teacher confirmation was operationalized using Ellis's (2000) Teacher Confirmation Scale (TCS). The TCS is a 16-item, Likert-type scale asking students to evaluate the extent to which their teachers exhibited confirming behaviors during the semester. Responses are solicited using a 5-point scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). The TCS measures low-inference behavior across three dimensions:[1] (a) teachers' responses to questions (5 items) (e.g., "My instructor takes time to answer students' questions fully"), (b) demonstrated interest in students and in their learning (6 items) (e.g., "My instructor makes an effort to get to know students"), and (c) style of teaching (5 items) (e.g., "My instructor uses an interactive teaching style"). Previous confirmatory factor analyses have demonstrated evidence of concurrent and discriminant validity, as well as excellent reliability for the TCS (Cronbach's alpha = .95), with previous reliability coefficients for the three subscales ranging from .83 to .85 (Ellis, 2000, 2004). In this study, the three dimensions produced strong reliability with Cronbach's alpha coefficients of .86 for teachers' response to questions, .87 for demonstrating interest, and .86 for teaching style.

Perceived understanding

Student perceptions of understanding were measured using Cahn and Shulman's (1984) Feelings of Understanding/Misunderstanding Scale (FUM). The FUM Scale consists of eight adjectives describing perceptions of feeling understood (e.g., "satisfaction," "relaxation," "comfortableness," etc.), eight adjectives describing perceptions of feeling misunderstood (e.g., "annoyance," "discomfort," "insecurity," etc.), and eight "distractor" adjectives (e.g., "self-reliance," "enviousness," etc.). Although three different versions of the FUM exist (i.e., Trait-General, Trait-Relationship, and State), this study used the Trait-Relationship form, and students were asked to indicate "the extent to which each term describes how you generally feel when and immediately after trying to make yourself understood by your instructor." Responses were solicited using a 5-point, Likert-type scale ranging from 1 (*very little*) to 5 (*very great*).

Although the concurrent and criterion-related validity of the FUM is well documented (Cahn, 1984a, 1984b, 1986; Cahn & Frey, 1992), Grice (1997) critiqued the discriminant validity of the FUM and argued that the scale may be measuring relationship satisfaction instead of perceived understanding. In more recent research, however, Schrodt (2003) responded to Grice's critique, noting several limitations to Grice's analysis and providing further evidence to support the discriminant validity of the FUM. In this study, then, the FUM was used to measure how students generally felt when, and immediately after, talking with their instructors. In previous research, the FUM has demonstrated strong reliability estimates ranging from .86 to .90 (e.g., Cahn & Shulman, 1984; Schrodt, 2003), and in this study, a Cronbach alpha coefficient of .94 for the FUM was obtained.

Teacher credibility

Student ratings of teacher credibility were measured using McCroskey and Teven's (1999) ethos/credibility scale. The instrument is an 18-item, semantic differential scale asking students to evaluate their instructor in terms of specific bipolar adjectives listed on a 7-point scale. Six of the items measure instructor competence (e.g., "Untrained/Trained"), six items measure trustworthiness (e.g., "Honest/Dishonest"), and six items measure goodwill or perceived caring (e.g., "Cares about me/Doesn't care about me"). Responses to negatively worded items were recoded so that higher scores reflected student perceptions of higher teacher credibility. The validity and reliability of the ethos/credibility measure, as well as previous versions of the measure (e.g., McCroskey & Young's, 1981, Teacher Credibility Scale), are well documented, with previous alpha coefficients ranging from .84 to .92 for all three dimensions (Beatty & Zahn, 1990; McCroskey & Teven, 1999; Schrodt, 2003; Teven & McCroskey, 1997). In this study, the ethos/credibility measure produced strong reliability coefficients of .90 for Competence, .84 for Trustworthiness, and .92 for Goodwill, with an overall alpha reliability of .94.

Teacher evaluations

To maximize content and construct validity, student evaluations of their instructors were measured using seven items from a departmental teaching evaluation form at a large Midwestern university (e.g., "Overall, I would rate this instructor: Excellent/Poor," "The instructor's knowledge of the subject matter was: Excellent/Poor," etc.). Responses were

solicited using a 7-point, semantic differential scale and were recoded so that higher scores reflected higher teaching evaluations. In a previous study, Schrodt (2003) tested the factor structure of the evaluation form and reported a single-factor solution with all seven items loading at .68 or higher. The evaluation form has demonstrated a strong reliability with a previous Cronbach alpha coefficient of .91 (Schrodt, 2003), and again, in this study the form produced strong reliability with an alpha coefficient of .92.

Data-Analysis Design

Hypothesized models were estimated with Maximum Likelihood (ML) estimation using LISREL 8.54. Model fit was evaluated with the maximum likelihood chi-squared statistic. Due to the sensitivity of large sample sizes, the non-normed fit index (NNFI), comparative fit index (CFI), goodness-of-fit index (GFI), and root mean square error of approximation (RMSEA) were also examined to assess model fit. Values greater than .90 for the NNFI, CFI, and GFI and less than .08 for the RMSEA indicate an acceptable model fit (Kline, 1998; Rigdon, 1998). All values were standardized prior to evaluating the models.

Results

Preliminary Analysis

Following standard procedures for structural equation modeling, a confirmatory factor analysis of the measurement model was conducted to assess the relationship between indicators and latent constructs prior to testing the hypothesized models. As a latent construct, *perceived teacher confirmation* is signified by three dimensions: responding to questions, demonstrating interest, and teaching style. Likewise, *teacher credibility* is signified by three dimensions: competence, trustworthiness, and goodwill.

Since *perceived understanding* and *teacher evaluations* are measured unidimensionally, items for the measures were parceled into three indicators for each construct. A parcel is "a sum of a subset of items from the scale" (MacCallum & Austin, 2000, p. 215). For example, *perceived understanding* is represented by three parcels, each of which is a sum of randomly selected items from the FUM scale. Compared to using each item of the respective scale as an indicator, parcels possess better psychometric properties (e.g., reliability) and require fewer parameters, thus providing a more parsimonious model (Little, Cunningham, Shahar, & Widaman, 2002; MacCallum & Austin, 2000). Intercorrelations and descriptive statistics for the indicators are provided in Table 1.

Table 1. Intercorrelations and Descriptive Statistics for Indicators

Latent construct and indicator	1	2	3	4	5	6	7	8	9	10	11	12
Perceived teacher confirmation												
1. Responding to questions	—											
2. Demonstrating interest	.82	—										
3. Teaching style	.75	.84	—									
Perceived understanding												
4. Parcel 1	.67	.71	.68	—								
5. Parcel 2	.67	.68	.64	.86	—							
6. Parcel 3	.66	.69	.67	.89	.86	—						
Teacher credibility												
7. Goodwill	.74	.79	.71	.77	.76	.76	—					
8. Competence	.42	.41	.39	.53	.54	.50	.56	—				
9. Trustworthiness	.61	.66	.60	.69	.70	.66	.83	.64	—			
Teacher evaluations												
10. Parcel 1	.70	.70	.63	.69	.66	.67	.73	.57	.66	—		
11. Parcel 2	.69	.70	.65	.67	.63	.67	.68	.51	.61	.86	—	
12. Parcel 3	.69	.70	.62	.65	.64	.63	.72	.50	.64	.83	.82	—
M	3.04	2.85	2.53	3.72	3.74	3.63	4.98	5.71	5.38	5.74	5.24	5.65
SD	.77	.84	.96	.78	.76	.87	1.28	1.21	1.13	1.25	1.46	1.24

Note: All correlations are significant at $p < .01$.

The measurement model demonstrated a moderate goodness of fit, χ^2 (N = 651, 48) = 255.98, p < .001; NNFI = .99; CFI = .99; GFI = .94; RMSEA = .084. However, examination of modification indices suggested a dual loading of *goodwill* on the *teacher confirmation* construct, threatening the validity of the latent-indicator relationships in the measurement model (i.e., *goodwill* would be an indicator of *teacher credibility* and *teacher confirmation*), as well as the distinctiveness of *teacher confirmation* and *teacher credibility* as unique latent constructs.

Further examination of modification indices showed that correlating the residuals of the indicators for teacher credibility (i.e., *competence*, *trustworthiness*, and *goodwill*) would improve model fit. While this modification would not alleviate the problem associated with the dual loading of *goodwill*, it suggests an alternative measurement of teacher credibility. The fact that the residuals for these indicators are highly related suggests that these constructs may not be distinct dimensions of teacher credibility. In fact, in McCroskey and Teven's (1999) investigation of teacher credibility, all of the credibility items loaded on a single factor prior to rotation. Although McCroskey and Teven (1999) argued in favor of using the rotated solution with the three dimensions of credibility, they conceded that the case for a single factor interpretation of the measure was strong. Since our primary goal in this study involved assessing the relationships among latent constructs in the two models rather than validating a measure of teacher credibility per se, domain-representative parceling was chosen as a methodologically conventional method for addressing the dual loading of goodwill onto the teacher confirmation construct (Little et al., 2002).

Following the recommendations of Little et al. (2002) for approaching multidimensional constructs, the items measuring *competence*, *trustworthiness*, and *goodwill* were parceled into three indicators using a domain-representative approach, which involves creating parcels "by joining items from different facets into item sets" (pp. 167–168). Specifically, each parcel contains items assessing each dimension of teacher credibility (i.e., a parcel is an average of two items assessing *goodwill*, two items assessing *competence*, and two items assessing *trustworthiness*). Intercorrelations and descriptive statistics for the domain-representative indicators for *teacher credibility* are provided in Table 2. The measurement model with the domain-representative parcels demonstrated acceptable model fit, χ^2 (N = 651, 48) = 205.08, p < .001; NNFI = .99; CFI = .99; GFI = .95; RMSEA = .074. The final measurement model, which includes loadings for the indicators and the corresponding residuals, is provided in Figure 3.

Table 2. Intercorrelations and Descriptive Statistics for Domain Parcels of Teacher Credibility

Latent construct and indicator	*Teacher credibility* parcel 1	*Teacher credibility* parcel 2	*Teacher credibility* parcel 3
Perceived teacher confirmation			
Responding to questions	.69	.63	.62
Demonstrating interest	.74	.67	.64
Teaching style	.67	.61	.58
Perceived understanding			
Parcel 1	.75	.71	.69
Parcel 2	.73	.72	.71
Parcel 3	.72	.70	.65
Teacher credibility			
Parcel 1	—	—	—
Parcel 2	.86	—	—
Parcel 3	.86	.86	—
Teacher evaluations			
Parcel 1	.74	.70	.70
Parcel 2	.70	.64	.63
Parcel 3	.74	.64	.67
M	5.30	5.39	5.44
SD	1.08	1.18	1.13

Note: All correlations are significant at $p < .01$.

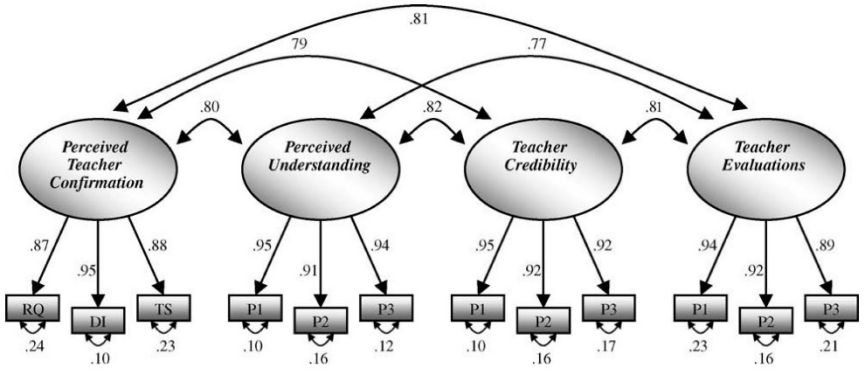

Figure 3. Final measurement model with domain-representative parcels. For teacher confirmation: RQ = responding to questions; DI = demonstrating interest; TS = teaching style. For perceived understanding, teacher credibility, and teacher evaluations, P1, P2, and P3 correspond to the respective parcels. All parameters are standardized and significant at $p < .01$.

Primary Analysis

The primary purpose of this study was to test two competing models of perceived teacher confirmation and students' ratings of instruction to investigate the potential mediating role of perceived understanding. The linear sequential model demonstrated a relatively poor

model fit, χ^2 (N = 651, 51) = 401.62, p < .001; NNFI = .98; CFI = .98; GFI = .91; RMSEA = .099. In fact, the modification indices suggested that model fit would be improved with paths from confirmation to the student ratings of instruction constructs, changes which are reflected in the hypothesized confirmation process model. Hence, the confirmation process model demonstrated a good model fit, χ^2 (N = 651, 48) = 205.08, p < .001; NNFI = .99; CFI = .99; GFI = .95; RMSEA = .074. An alternative to the confirmation process model was tested with perceived understanding serving as a *full* mediator between teacher confirmation and students' ratings of instruction. Removing the direct paths from *teacher confirmation* to *teacher credibility* and *teacher evaluations* produced a significant decline in model fit, $\Delta\chi^2$ (N = 651, 2) = 143.29, p < .05, confirming the original hypothesized confirmation process model. Results for the final confirmation process model are presented in Figure 4.

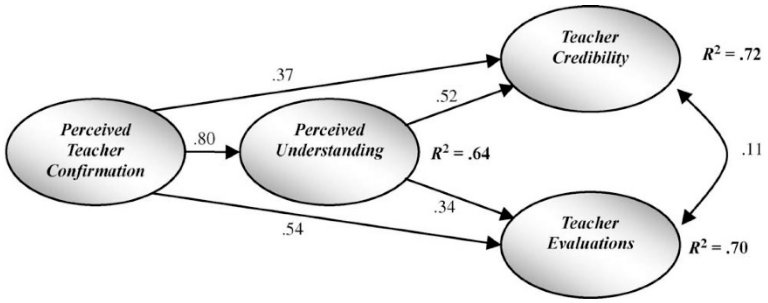

Figure 4. Confirmation process structural model. All parameters are standardized and significant at p < .01.

Positioning perceived understanding as a partial mediator of confirmation behaviors, the *confirmation process model* accounts for substantial variance in both instructional outcome constructs: teacher evaluations (R^2 = .70) and teacher credibility (R^2 = .72). Further support for the significance of teacher confirmation is evident in the significant direct paths to these outcome constructs as well as the variance accounted for in perceived understanding (R^2 = .64). Given the relatively equal effect sizes for the instructional outcome constructs, an examination of the magnitudes of the path coefficients suggests that the mediating role of perceived understanding may be more influential for teacher credibility than teacher evaluations. Specifically, the direct path from teacher confirmation to teacher evaluations (β = .54) is somewhat larger than the path from perceived understanding (β = .34). Conversely, the direct path from teacher confirmation to teacher credibility (β = .37) is somewhat smaller than the path from perceived understanding (β = .52).

Discussion

The principal goal of this research was to test two competing theoretical models of perceived understanding as a potential mediator of perceived teacher confirmation behaviors and students' ratings of instruction. In general, the results support the confirmation process model, whereby perceived teacher confirmation has direct effects for both teacher

credibility and evaluations, as well as indirect effects on both outcomes through students' perceived understanding. Although teacher confirmation produced rather sizable effects for all three variables in the model, the magnitude of the direct effect for students' perceived understanding suggests that perceived understanding plays a key role in connecting teachers' communication behaviors with students' evaluations of classroom instruction. At the same time, perceived understanding serves as only a partial mediator of perceived confirmation, as confirmation produced direct effects for credibility and teaching evaluations as well. Consequently, our results further confirm Ellis's (2000, 2004) contentions that confirmation plays a rather substantial role in facilitating positive teacher-student relationships and, in theory, classroom learning.

Our first hypothesized model (i.e., the *linear sequential* model) predicted that perceived teacher confirmation would lead to students' perceived understanding, that understanding would enhance credibility, and that credibility would lead to higher teaching evaluations. Consistent with McCroskey et al.'s (2004) framework for instructional communication, this model positioned credibility as both an outcome of perceived communication behaviors and a predictor of teaching evaluations. In general, the results provided relatively little support for the linear sequential model, as the modification indices suggested that confirmation had both direct and indirect effects on students' ratings of instruction. In other words, while the rationale behind the linear sequential model of perceived confirmation and understanding was not entirely misguided, the results suggest that an alternative model, the *confirmation process model*, might provide a more complete explanation of the effects that confirming behaviors and perceived understanding have on students' ratings of instruction.

Thus, our second hypothesized model predicted that perceived teacher confirmation would have both direct and indirect effects on students' ratings of instruction, and indeed, such was the case. The results reveal that students' perceived understanding partially mediates the effects of perceived teacher confirmation behaviors on students' ratings of instruction, yet at the same time, such behaviors *directly* enhance teacher credibility and lead to higher teaching evaluations. In other words, when instructors respond to student questions so as to invite further interaction, when they communicate a sincere interest in students, and use an interactive teaching style to foster learning, such behaviors invite student participation and engender feelings of success for students as they attempt to communicate with their instructors. These feelings, in turn, enhance their perceptions of the teacher's credibility and evaluation, though the behaviors themselves continue to exert a direct influence on evaluations of credibility and teaching beyond what is partially mediated by students' perceived understanding with the teacher. Not only are the effect sizes for perceived teacher confirmation rather substantial, but the direct and indirect effects of teacher confirmation are somewhat surprising, given that the confirming behaviors of demonstrating an interest in students and responding to questions in a respectful manner are so closely associated with perceptions of goodwill (or perceived caring) and competence, two dimensions of instructor credibility. Thus, one subtle implication of this research is further clarification of how perceived confirmation behaviors enhance credibility which, based on our results, occurs primarily through instructor behaviors that invite students to communicate and interact with them in the classroom.

In light of continued efforts to document behaviors that enhance teacher credibility (cf., Frymier & Thompson, 1992; Martin et al., 1997; Myers, 2004; Schrodt, 2003) and enhance instructional quality (cf., Ellis, 2004), these results are meaningful both pragmatically and theoretically. Not only do the results highlight specific behaviors useful for inviting student participation and building credibility in the classroom, but theoretically they extend Ellis's (2000, 2004) efforts to apply confirmation theory to the teacher-student relationship. For example, Ellis (2004) found that perceived confirmation had a direct effect on students' state receiver apprehension, which in turn fully mediated the effects of perceived confirmation on students' state motivation and cognitive learning. It may be that perceived confirmation behaviors enhance students' perceptions that they can communicate successfully with their instructors, and that such perceived understanding, in turn, creates a classroom environment that reduces students' anxieties associated with listening to, and processing, new information (e.g., receiver apprehension, see Wheeless, Preiss, & Gayle, 1997). In other words, as students develop healthy teacher-student relationships in safe learning environments, they may be more likely to engage their teachers with questions and comments about course material, which in turn should reduce some of the anxiety they may experience while processing course content and information. Future research might compare the direct and indirect effects of perceived teacher confirmation on perceived understanding and receiver apprehension to more fully explicate the unique and combined associations among these three important constructs.

At the same time, Ellis (2004) reported indirect effects for perceived teacher confirmation on *student outcomes* associated with learning (i.e., motivation, affective, and cognitive learning), whereas our results highlight both direct and indirect effects for perceived confirmation on *instructor outcomes* associated with learning (i.e., credibility and evaluations). In other words, it appears as though confirming behaviors may have more of a direct influence on students' perceptions that they can successfully engage their instructors than on their own motivation and learning, though inevitably, enhanced perceptions of understanding and instructor credibility should ultimately facilitate higher learning (cf., Schrodt, 2003; Thweatt & McCroskey, 1998). Given that each of the constructs examined in this study and in Ellis's (2004) research fits within McCroskey et al.'s (2004) general model of instructional communication, future researchers can examine where confirmation theory intersects with McCroskey et al.'s (2004) general model by exploring the direct and indirect effects of confirming behaviors on both student and instructor outcomes, and by comparing potential mediators of the confirmation process (e.g., receiver apprehension and perceived understanding).

Overall, then, the results of the present study provide a further explanation of how perceived teacher confirmation and students' perceived understanding may influence different aspects of the instructional communication process. Despite the contributions of the study, however, the results should be interpreted with caution given the inherent limitations of the research design. Perhaps the greatest limitation to this line of research is the use of the FUM to measure students' perceived understanding. In the absence of a more valid measure of perceived understanding and consistent with previous instructional research (e.g., Cahn, 1984a,b; Schrodt, 2003), we relied on Cahn and Shulman's (1984) FUM to operationalize students' perceived understanding. Nevertheless, some questions remain

concerning the construct validity of the scale. Specifically, there appears to be a lack of isomorphism between the operationalization of *perceived understanding* using the FUM and the conceptualization of perceived understanding as a theoretical construct. For example, a student may determine that their instructor completely understands their attempts to communicate a grade appeal for an assignment, yet nevertheless is completely unsatisfied with the instructor's decision to deny the appeal, and thus, indicate that they feel "annoyance" and "discomfort" (two items on the FUM) when communicating with their instructor. In this instance, feeling misunderstood, as measured by the FUM, does not provide an accurate representation of perceived understanding as defined by Cahn and Shulman (1984). Although the FUM may measure how positively or negatively students *feel* about being understood or misunderstood by their instructors, it does not necessarily provide an accurate indicator of students' perceptions of their levels of success while communicating with their instructors. Instead, a more valid assessment of perceived understanding might include such items as "My teacher understands the questions that I ask" or "My teacher has difficulty making sense of my comments during class discussions." Consequently, we recommend that future researchers develop a more isomorphic measure of perceived understanding for use in instructional contexts.

In addition to the limitations associated with using the FUM, the use of self-report methods and the homogeneous sample (e.g., predominantly white, undergraduate students) warrants caution, as does the nonexperimental design of the research. Statements of causality based on the results of statistical techniques useful for making causal inferences, such as structural equation modeling, must be treated with caution given the correlational data analyzed in this report. Future researchers might address these limitations by designing full experiments with random samples of students across different education levels to explore the impact that actual confirming and disconfirming messages have on student affect, motivation, and immediate recall. Researchers might also compare teacher temperament with teacher communication behaviors to determine the relative influence of both on classroom outcomes, particularly as each is positioned theoretically in McCroskey et al.'s (2004) general model of instructional communication. Through these types of investigations, instructional communication researchers may further our understanding of how teacher confirmation behaviors and perceived understanding facilitate more positive teacher-student relationships, and, ultimately, higher learning.

Note

1. In her initial development of the TCS, Ellis (2000) identified four dimensions of perceived teacher confirmation (the fourth being *absence of disconfirmation*). In a follow-up study, however, the fourth dimension failed to cross-validate to a second sample of students and, thus, was dropped from further analysis, leaving the three-dimensional factor structure. Recently, Ellis (2004) added the fourth dimension back to the TCS, though upon further review, she provided little justification for doing so. Theoretically, the absence of disconfirming behavior may be sufficient for perceived confirmation but certainly is not necessary for perceived confirmation. In other words, we contend that an instructor who fails to respond well to questions, demonstrate an interest in students, and offer a variety of teaching methods and techniques will not be perceived as a confirming instructor, even though they may avoid the use of disconfirming behaviors. Thus, in this

study, we operationalized perceived teacher confirmation using the original three-factor solution for the TCS.

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