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A Conditional Process Analysis of the Teacher Confirmation–Student Learning Relationship

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Students enter college with varying degrees of academic self-efficacy, which influences how they respond to effective teaching behaviors. Teacher confirmation is one behavior that has received increased attention because it is thought to indirectly enhance students' learning by reducing their receiver apprehension in the classroom. Findings from 208 college students supported the hypothesized indirect effects between teacher confirmation and students' perceived learning through reduced receiver apprehension, but conditional process analyses revealed these indirect effects were moderated by students' academic self-efficacy. These findings suggest the effectiveness of teacher confirmation behaviors varies among students, with those who lack academic self-efficacy deriving fewer of the intended educational benefits.

Keywords: Academic Self-Efficacy; Conditional Process Analysis; Receiver Apprehension Model; Teacher Confirmation

Today's college instructors often expect students to regulate their learning experiences by engaging in self-management and monitoring their own performance in the classroom (Caprara et al., 2008). These expectations place a premium on academic self-efficacy (ASE), or the confidence that students have in their own academic abilities

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(Schunk & Parajes, 2002), as a fundamental belief that is needed for learning to occur at the collegiate level. Put differently, ASE is an important student characteristic that is viewed as a precondition for success in college, particularly when instructors expect students to regulate their own learning processes (Zhu, Chen, Chen, & Chern, 2011; Zimmerman, 2008).

Teacher confirmation behaviors represent one strategy that instructors use to encourage students' success and their self-regulation, as it indirectly facilitates learning experiences by reducing students' anxiety and helping them feel better about their academic experiences (Ellis, 2004; Goldman & Goodboy, 2014). Teacher confirmation behaviors are used by instructors to communicatively endorse students as meaningful contributors in the classroom (Ellis, 2000); these behaviors correspond closely with the needs of today's students and provide support for them to succeed, while reducing their apprehension about learning and encouraging self-growth.

To utilize the intended effects of teacher confirmation behaviors, it is likely that students need sufficient levels of ASE to properly benefit from instructors' communicative endorsements (Ellis, 2000). ASE, which refers to a "learner's judgment about his or her ability to successfully attain educational goals" (Elias & MacDonald, 2007, p. 2520), becomes progressively important throughout students' education as it embodies a complex belief system that culminates over years of previous academic experiences and ultimately influences how one will approach and respond to academic hardships (Diseth, 2011). Although other academic beliefs exist, ASE is the most pervasive and influential over students' achievements because it underlies all other cognitive processes. As Bandura (2002) noted, "Whatever other factors serve as guides and motivators, they are rooted in the core belief that one has the power to produce desired effects by one's actions, otherwise one has little incentive to ... persevere in the face of difficulties" (p. 270).

With a growing academic culture that expects college students to regulate their own education (Caprara et al., 2008), ASE has arguably become a condition that must be met if contemporary methods of instruction (e.g., teacher confirmation) are to enhance college students' learning and achievement outcomes (De Feyter, Caers, Vigna, & Berings, 2012; Nie, Lau, & Liau, 2011; Zhu et al., 2011). Therefore, the current study sought to investigate this possibility further by determining if previously discovered indirect effects between teacher confirmation behaviors and students' self-reported learning through receiver apprehension (Ellis, 2004) are conditional upon students' ASE. To guide this investigation, the teacher confirmation literature along with the framework of self-regulated learning (e.g., Schunk & Parajes, 2002; Zimmerman, 2008; Zimmerman & Schunk, 2001) were used to examine the utility of ASE as a conditional or moderating variable that affects the magnitude of the indirect confirmation-learning relationship.

Teacher Confirmation and the Receiver Apprehension Model

Believed by some to be the “greatest single factor ensuring mental development and stability” (Watzlawick, Beavin, & Jackson, 1967, p. 84), confirmation was first introduced in the interpersonal literature as a communicative behavior that embodies the way by which individuals feel acknowledged for their efforts, recognized for their achievements, and appreciated for their contributions (see Dailey, 2010). Drawing on this, Ellis (2000) introduced teacher confirmation as the “transactional process by which teachers communicate to students that they are endorsed, recognized, and acknowledged as valuable, significant individuals” (p. 266). Confirmation in the classroom occurs across three dimensions. The first dimension, *responding to questions*, is evident when instructors answer students’ inquiries in a prompt and timely fashion. By doing this, instructors show a willingness to respond to students, which indicates that they want them to succeed (Ellis, 2000). The second dimension, *demonstrating interest*, occurs when instructors communicate a genuine interest in helping students learn. Instructors who demonstrate this interest to students help to confirm their identity by recognizing students’ contributions to the learning process while also showing an authentic concern about the personal, emotional, and educational well-being of the class (Ellis, 2004). The third dimension, *interactive teaching style*, is demonstrated when instructors adopt a dynamic approach to learning by modifying their behaviors/practices around students’ needs. Instructors who utilize an adaptive teaching style confirm students by engaging in a variety of techniques that ensure understanding while demonstrating a willingness to facilitate an optimal learning environment (Ellis, 2000).

Instructional communication scholars consistently find a positive association between teacher confirmation and college students’ learning outcomes (Ellis, 2000; Goldman, Bolkan, & Goodboy, 2014; Goodboy, Martin, & Bolkan, 2009). Specifically, an experiment by Goodboy and Myers (2008) found that students experience greater motivation, satisfaction, affective learning, and cognitive learning when their instructor utilizes confirmation behaviors in the classroom. These findings coincide with self-report results from Ellis (Ellis, 2000, 2004) who revealed that confirmation relates positively to students’ motivation and perceived learning. Teacher confirmation has also been positively linked with college students’ participation (Sidelinger & Booth-Butterfield, 2010), interest in course material (Campbell, Eichhorn, Basch, & Wolf, 2009), and positive emotional outcomes in the classroom (Goldman & Goodboy, 2014).

One explanation for these relationships places receiver apprehension at the center of the confirmation-learning relationship. Ellis (2004) proposed the receiver apprehension model and argued that confirmation influences college students’ *receiver apprehension*, which refers to the “fear of misinterpreting, inadequately processing, and/or not being able to adjust psychologically to messages sent by others” (Wheeless, 1975, p. 263). In turn, this proposed reduction in receiver apprehension subsequently enhances students’ learning outcomes. Put differently, Ellis predicted that teacher confirmation functions by reducing students’ receiver apprehension (i.e., a mediator)

in the classroom, which allows them to worry less about processing information, and thus letting them allocate greater cognitive resources toward activities that are associated with learning.

Ellis' (2004) model was supported when she discovered that mediation occurred between confirmation, receiver apprehension, and learning, even when controlling for how much students like their class and their instructor. In other words, the receiver apprehension model explains the confirmation-learning relationship (for all three dimensions of teacher confirmation), even after accounting for students' affect in the course. Hsu (2012) discovered similar support for Ellis' model as she found a negative relationship between the confirmation dimensions and students' receiver apprehension. That said, replication of the model's original prediction is needed to advance the framework forward; unfortunately, instructional communication research suffers from a common social science problem in that "there is little evidence for direct or even approximate replication ... [which contradicts] the most basic presumption of science (Kline, 2013, p. 286). Therefore, to replicate Ellis' (Ellis, 2004) original receiver apprehension hypothesis and to examine the indirect effects of teacher confirmation on learning, the first hypothesis is offered:

H1: Receiver apprehension will mediate the relationship between teacher confirmation behaviors (i.e., responding to questions, demonstrating interest, interactive teaching style) and students' perceived learning when holding students' affect constant.

Academic Self-Efficacy and Self-Regulated Learning

The primary focus of this study was centered on determining if the predicted indirect effects of teacher confirmation on students' perceived learning through receiver apprehension are conditional upon ASE or students' belief in their own academic abilities. Researchers primarily study ASE within the context of self-regulated learning (SRL), which occurs when students become "metacognitively, motivationally, and behaviorally active participants [in] their own learning processes" (Zimmerman, 1989, p. 329). Decades of SRL investigations support the importance of ASE as highly efficacious students consistently learn and perform at a higher level than students who doubt their own skillsets (Multon, Brown, & Lent, 1991). ASE has been found to exert a positive influence on students' learning, grades and exam scores, persistence and graduation rates, and job placement after college (see Caprara, Vecchione, Alessandri, Gerbino, & Barbaranelli, 2011). One explanation for these findings is that ASE equips students with the ability to mitigate self-doubt, thus creating greater cognitive resources for learning (Schunk & Parajes, 2002). In other words, students with high levels of ASE think "they can learn well and that they have sufficient cognitive resources to achieve success [because they have] ... lower levels of anxiety" (Nie et al., 2011, p. 740).

Unfortunately, not all students possess a high level of ASE, as efficacy in the academic context varies significantly by individual. Research from the SRL literature suggests that self-efficacy develops or diminishes over the course of a person's lifetime and is often influenced in the academic context by how successfully one adapts to

their educational environment (e.g., K–12, college; Caprara et al., 2008). Beginning in early childhood, students who adapt easily to the demands of their educational system are more likely to be affirmed in their own self-beliefs, whereas students who struggle to navigate through various academic hurdles (e.g., standardized tests, placement exams) are less efficacious. ASE is also heavily dependent upon students' early affective states in school (e.g., disliking classes), persuasion or interactions with others (e.g., receiving support from a teacher), vicarious experiences (e.g., watching a sibling succeed in school), and mastery experiences (e.g., earning good grades; Bandura, 1997). Positive mastery experiences often yield the strongest influence on students' ASE because they provide tangible evidence that students have the needed ability to succeed (Elias & MacDonald, 2007). In other words, when students perform successfully throughout their early educational endeavors, the recognition (i.e., praise) they receive and the outcomes they earn strengthen their confidence.

By the time students reach college, ASE represents a culmination of one's educational experiences; in many ways, this belief embodies how students view themselves, and it becomes the primary condition upon which their academic success is determined (Schunk, 1994). With many instructors embracing autonomy and self-education in their classroom pedagogy (Caprara et al., 2011), the importance of ASE in higher education has become quite evident (Komarraju & Nadler, 2013). Students who lack the necessary belief in themselves often find it difficult to seek help in college from even the best instructors because of growing expectations that success in this context requires a strong degree of independence (Artino & Stephens, 2009); moreover, both students and instructors likely assume that assistance is already available to students through various technological affordances (Caprara et al., 2008). Yet, students who struggle with efficacy are unable to regulate their own learning experiences and often fail to utilize additional resources (e.g., technology) effectively because they are severely hindered by the distrust they have in their own ability to succeed. Conversely, highly efficacious students are able to capitalize on their contemporary advantages because they believe in themselves and can experience success in the classroom even when they are exposed to ineffective instruction (c.f., Nie et al., 2011). As Elias and MacDonald (2007) noted, highly efficacious students can "be successful, even if they do not believe that their faculty members have what it takes to act effectively on their behalf" (p. 2528).

Based on this evidence, Ellis' (2004) receiver apprehension model is likely to function as predicted (see Hypothesis 1), yet the strength of the hypothesized relationships may also vary or be moderated by college students' ASE. In other words, the mechanism underpinning the teacher confirmation-learning relationship may best be understood via a model of moderated mediation (c.f., Hayes, 2015). Specifically, students who struggle with their self-efficacy are likely to derive fewer of the intended academic benefits associated with receiving confirmation in the classroom (i.e., reduced receiver apprehension, increased reports of learning) compared to students who are highly efficacious because they doubt themselves and are unable to take advantage of the resources around them (c.f., Komarraju & Nadler, 2013). In other words, ASE is likely a moderating variable that limits or enhances the utility of teacher confirmation behaviors (i.e., responding to

questions, demonstrating interest, interactive teaching style) on student reports of learning and thus may provide some boundaries by which the hypothesized indirect effects through receiver apprehension in Ellis' (Ellis, 2004) model can be further specified.

Previous findings from the SRL literature (e.g., Nie et al., 2011; Zhu et al., 2011) in addition to related discoveries by organizational psychologists (e.g., Jex & Bliese, 1999; Jex, Bliese, Buzzell, & Primeau, 2001) suggest that self-efficacy moderates the association between various stimuli (e.g., acquiring information) and responses (e.g., learning), with greater outcomes often favoring those who are highly efficacious. One explanation for these findings is that self-efficacy operates as a coping mechanism to protect individuals against psychological stressors and anxiety (Nie et al., 2011). Bandura (1997) argued that when presented with the exact same challenge, individuals with low efficacy and those with high efficacy will differ significantly in how they manage the situation. Specifically, individuals who are highly efficacious look at challenges as opportunities to be overcome, whereas people with lower self-efficacy are more inclined to see challenges as anxiety-inducing obstacles that diminish their possibility of success.

In the classroom, the ability to manage challenges and anxieties specifically helps highly efficacious students to utilize the resources around them, including support from their instructor (Schunk & Parajes, 2002). Conversely, students with low ASE are preoccupied with insecurities and thus are unable to fully benefit from their instructor's efforts to help them learn (Pajares, 1996). One of the most important communicative resources that instructors provide students is confirmation, as it not only addresses rhetorical needs associated with learning (e.g., responding to questions) but also validates students' relational needs by demonstrating that their instructor is interested in their success and is willing to use diverse techniques to enhance their experiences (Ellis, 2000). Confirmation behaviors are thought to indirectly encourage learning by reducing students' receiver apprehension, or the anxiety they experience when processing information (Ellis, 2004). Unfortunately, for students with low ASE, the reduction of their anxiety when receiving confirmatory messages is likely hindered by self-doubt, which only exacerbates their apprehension (c.f., Caprara et al., 2008). On the other hand, highly efficacious students likely benefit more from instructors' confirmation behaviors because these messages coincide with their preexisting belief in self. In short, Ellis' (Ellis, 2004) model is likely conditional upon ASE, in that greater efficacy optimizes the effects of confirmation on students' receiver apprehension, which in turn enhances reports of learning (see Figure 1). Thus, the second hypothesis is offered:

H2: The indirect effects of teacher confirmation behaviors (i.e., responding to questions, demonstrating interest, interactive style) on perceived learning through receiver apprehension will be weaker for students with low ASE than those with high ASE.

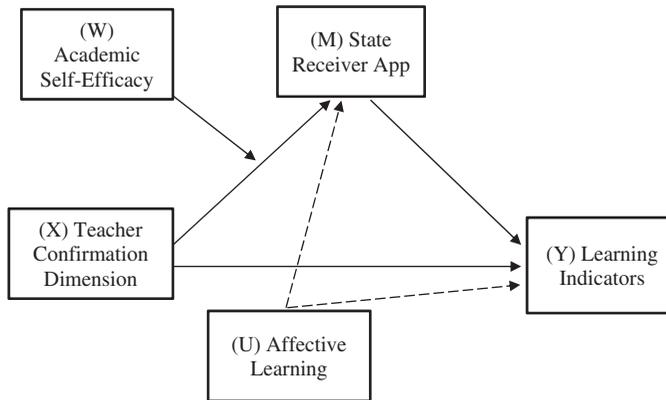


Figure 1. Conceptual diagram of conditional process model (confirmation-learning relationship). *Note.* Conceptual model. The three dimensions of teacher confirmation (i.e., responding to questions, demonstrating interest, interactive teaching style) were examined separately in statistical models. Affective learning was controlled for in all models as a covariate. The original receiver apprehension model (Ellis, 2004) did not specify a moderating variable (W).

Method

Participants

Participants for this study were 208 undergraduate students enrolled in communication courses at a large West Coast university. Participants included 66 men and 142 women whose ages ranged from 18–40 years ($M = 21.58$, $SD = 3.31$). They included 55 first-year students, 4 sophomores, 51 juniors, and 98 seniors. The majority of participants were Hispanic (56.3%) and Caucasian (33.7%); other ethnicities included Asian/Asian American (6.7%) and African American (1.4%). Students reported on their perceptions of the instructor they had immediately prior to the data collection (Plax, Kearney, McCroskey, & Richmond, 1986). Students reported on instructors (127 males, 81 females) from several academic disciplines, including, but not limited to: communication studies (45.2%), psychology (7.2%), and business (7.7%).

Procedures and Instrumentation

After receiving approval from the Institutional Review Board, participants were recruited in their classrooms for data collection via a verbal recruitment script. This recruitment script (a) introduced the study, (b) identified inclusion criteria, and (c) asked the participants to complete an anonymous questionnaire. Participants were instructed to complete a series of instruments in reference to their instructors' behaviors and their own attitudes and learning experiences. The instruments included the Teacher Confirmation Scale, the Academic Self-Efficacy Scale, the Affective Learning Scale, the Receiver Apprehension Scale, and the Cognitive Learning Scale. Means, standard deviations, and reliability coefficients for each scale can be found in [Table 1](#).

Table 1 Means, Standard Deviations, Cronbach Alphas Coefficients, and Pearson Correlation Matrix

Variables	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6
1. Responding to Questions	3.26	0.82	0.87	–					
2. Demonstrating Interest	2.98	0.95	0.90	0.84*	–				
3. Teaching Style	2.68	1.09	0.89	0.75*	0.83*	–			
4. Academic Self-Efficacy	3.80	0.83	0.94	0.61*	0.59*	0.50*	–		
5. Receiver Apprehension	2.35	0.78	0.91	–0.73*	–0.73*	–0.64*	–0.70*	–	
6. Revised Learning Indicators	2.41	0.86	0.84	0.54*	0.56*	0.53*	0.50*	–0.63*	–
7. Student Affect	5.77	1.32	0.95	0.73*	0.72*	0.65*	0.63*	–0.75*	0.58*

Teacher confirmation

Student perceptions of instructors' confirmation behaviors were assessed via the 16-item Teacher Confirmation Scale (Ellis, 2000). The scale consists of three dimensions: responding to questions (5 items), demonstrating interest (6 items), and teaching style (5 items). Responses are solicited using a Likert-format that ranges from 0 (*never*) to 4 (*very often*). Previous Cronbach alpha reliability coefficients for the three subscales have ranged from 0.78 to 0.87 (Ellis, 2000; Goldman et al., 2014; Turman & Schrodt, 2006).

Academic self-efficacy

Academic self-efficacy was assessed by the eight-item Self-Efficacy subscale taken from the Motivated Strategies for Learners Questionnaire (McKeachie, Pintrich, Lin, & Smith, 1986). The scale asks participants to report on their perceived confidence regarding certain classroom tasks. Responses are solicited on a Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Previous Cronbach alpha reliability coefficients ranging from 0.93 to 0.94 have been found for the scale (LaBelle, Martin, & Weber, 2013; Weber, Martin, & Myers, 2011).

Receiver apprehension

The State-Receiver Apprehension Test, originally developed by Schumacher and Wheelless (1997) but modified for classroom use by Ellis (2004), measures students' perceived apprehension in the classroom across 12 items. Responses are solicited with a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Previous Cronbach alpha reliability coefficients for the scale have ranged from 0.90 to 0.91 (Ellis, 2004; Hsu, 2012).

Perceived cognitive learning

Students' self-reported learning was assessed via the seven-item Revised Learning Indicators Scale created by Fymier and Houser (1999). The scale assesses behaviors indicative of cognitive learning with responses solicited on a Likert-type scale ranging from 0 (*never*)

to 4 (*very often*). Previous Cronbach alpha reliability coefficients for the scale have ranged from 0.79 to 0.88 (Fymier & Houser, 1999; Goodboy & Myers, 2008).

Student affect

Student affect toward the course and the instructor was measured using the Affective Learning Scale (McCroskey, Richmond, Plax, & Kearney, 1985). The 12-item instrument was summed into a unidimensional measure (c.f., Ellis, 2004) and responses were solicited via seven-point bipolar adjective scales. Previous Cronbach alpha reliability coefficients for the instrument have ranged from 0.95 to 0.96 (Ellis, 2000, 2004; Goodboy & Myers, 2008).

Data Analysis

Prior to analyzing the study's hypotheses, Pearson correlations were computed to determine the associations among all of the measured variables (see Table 1). To test Hypothesis 1 and validate Ellis' (Ellis, 2004) findings, three mediation models (i.e., one for each dimension of confirmation) were calculated using ordinary least squares path analyses in PROCESS (Hayes, 2013). To examine Hypothesis 2, three conditional process analyses were also modeled using PROCESS. Conditional process analysis extend traditional mediation models by examining boundary conditions, or moderating variables (e.g., ASE), by simultaneously including them with indirect effects like those found in Ellis' (2004) receiver apprehension model; such models allow researchers to account for conditions that may alter the predicted pathways between variables. In other words, conditional process analysis can be used to examine whether the magnitude of an indirect effect is contingent upon (or varies by) the level of another variable (i.e., a moderator; Hayes, 2015). In this study, ASE was used as a first-stage moderator, meaning the hypothesized influence was suspected to alter the relationship between the independent variables (i.e., teacher confirmation behaviors) and the mediator (i.e., students' receiver apprehension; see Figure 1).

Similar to Ellis (2004), student affect was held constant as a covariate in all of the calculated models to control for its potential influence on students' cognitive learning. Indirect effects for the models were calculated with 10,000 bootstrapped samples and 95% bias-corrected confidence intervals (Hayes, 2013). Effect sizes for the mediation analyses were also examined in the form of completely standardized indirect effects (ab_{cs}) and are reported in the tables that follow.

Results

Hypothesis 1 predicted students' receiver apprehension would mediate the relationship between teacher confirmation behaviors (i.e., responding to questions, demonstrating interest, interactive teaching style) and students' perceived cognitive learning while controlling for affect. Results from the three mediation models supported this hypothesis, as the confidence intervals were entirely above zero for each indirect

effect. Responding to questions ($ab = 0.176$ [95% CI: 0.095, 0.282]; $ab_{cs} = 0.140$), demonstrating interest ($ab = 0.143$ [95% CI: 0.076, 0.227]; $ab_{cs} = 0.135$), and teaching style ($ab = 0.081$ [95% CI: 0.039, 0.143]; $ab_{cs} = 0.097$) indirectly influenced perceived cognitive learning through the effect on receiver apprehension. Of the three confirmation behaviors, only teaching style ($c' = 0.131$, $SE = 0.057$, $p < 0.05$) directly influenced student learning.

Hypothesis 2 was a prediction of moderated mediation. Teacher confirmation (i.e., responding to questions, demonstrating interest, teaching style) was expected to indirectly influence learning through a decrease in receiver apprehension, but the indirect effects were predicted to be moderated in that students with high ASE would report greater indirect gains in learning than students with low ASE. To determine if each model yielded significant moderated mediation, the index of moderated mediation (IMM: see Hayes, 2015) was consulted to determine if the indirect effects varied systematically across differing levels of students' ASE.

Results from the three conditional process models supported the hypothesis. Confidence intervals for the IMM did not include zero for any of the three models (see Table 2, 3, and 4), indicating that all conditional indirect effects at values of the moderator (ASE) were significantly different from each other (Hayes, 2015). When teachers were confirming, students reported gains in learning because they experienced less state receiver apprehension; however, these gains were stronger for students who had higher ASE (see conditional indirect effect values).

Discussion

The purpose of this study was to further understand the relationship between teacher confirmation behaviors and student reports of learning by replicating the receiver apprehension model (Ellis, 2004) and examining ASE as a potentially moderating variable. Strong support for the model's foundational premise was found as receiver apprehension mediated the relationship between all three dimensions of teacher confirmation and students' learning. Moreover, the proposed indirect relationships were also found to be moderated by ASE in that students who were more confident in their academic skillset (i.e., high ASE) experienced stronger mediated effects than students who doubted their ability to succeed (i.e., low ASE). These findings have both theoretical and practical implications regarding teacher confirmation and students' ASE.

The current findings support Ellis' (Ellis, 2004) original model and reinforce the theoretical importance of receiver apprehension as an intervening variable between instructors' confirmation efforts and perceived student learning. These results continue to suggest that confirmation is associated negatively with receiver apprehension, likely because these behaviors communicate a genuine care in students' well-being, which in turn supports positive emotional experiences that help students to feel better about the course (Goldman & Goodboy, 2014). Consequently, by reducing receiver apprehension, instructors are able to indirectly enhance student learning in the classroom because they mitigate the "fear that one may not be able to remember the

Table 2 Path Model Coefficients and Conditional Indirect Effects (X = Responding to Questions)

Model	Coeff	SE	t	p	LLCI	ULCI
<i>State Receiver Apprehension</i>						
$F(4, 198) = 117.31, p < 0.001, R^2 = 0.70$						
Constant	4.202	0.394	10.658	< 0.001	3.425	4.979
Responding to Questions	0.135	0.131	1.029	0.305	-0.123	0.392
Academic Self-Efficacy	0.141	0.128	1.101	0.272	-0.111	0.392
Responding to Questions* Academic SE	-0.139	0.038	-3.609	< 0.001	-0.214	-0.063
Affective Learning	-0.183	0.036	-5.069	< 0.001	-0.254	-0.112
<i>Learning Indicators</i>						
$F(3, 199) = 49.089, p < 0.001, R^2 = 0.43$						
Constant	2.462	0.546	4.507	< 0.001	1.385	3.539
State Receiver Apprehension	-0.464	0.098	-4.743	< 0.001	-0.658	-0.271
Responding to Questions	0.078	0.091	0.863	0.389	-0.101	0.257
Affective Learning	0.135	0.058	2.337	0.020	0.021	0.249
<i>Moderated Mediation (Through State Receiver Apprehension)</i>						
IMM = 0.064 (95% CI: 0.031, 0.110)						
Conditional Indirect Effect (ab) _{W = 2.750}	0.114	0.033			0.062	0.194
Conditional Indirect Effect (ab) _{W = 3.250}	0.147	0.037			0.084	0.233
Conditional Indirect Effect (ab) _{W = 3.875}	0.187	0.046			0.108	0.289
Conditional Indirect Effect (ab) _{W = 4.375}	0.219	0.053			0.127	0.339
Conditional Indirect Effect (ab) _{W = 4.875}	0.251	0.062			0.146	0.388

Note. Coefficients are unstandardized. IMM = index of moderated mediation. Conditional indirect effects are estimated at values of the moderator (W = Academic Self-Efficacy) at the 10th, 25th, 50th, 75th, and 90th percentiles. Bias-corrected bootstrapped CIs (10,000 samples) that do not include zero indicate mediation.

Table 3 Path Model Coefficients and Conditional Indirect Effects (X = Demonstrating Interest)

Model	Coeff	SE	t	p	LLCI	ULCI
<i>State Receiver Apprehension</i>						
$F(4, 198) = 121.014, p < 0.001, R^2 = 0.71$						
Constant	4.271	.325	13.130	< 0.001	3.630	4.913
Demonstrating Interest	.157	.122	1.280	.202	-.085	.398
Academic Self-Efficacy	0.054	0.104	0.519	0.604	-0.151	0.259
Demonstrating Interest* Academic SE	-0.124	0.034	-3.690	< 0.001	-0.191	-0.058
Affective Learning	-0.196	0.035	-5.591	< 0.001	-0.265	-0.127
<i>Learning Indicators</i>						
$F(3, 199) = 50.135, p < 0.001, R^2 = 0.43$						
Constant	2.355	0.523	4.501	< 0.001	1.323	3.387
State Receiver Apprehension	-0.433	0.098	-4.407	< 0.001	-0.626	-0.239
Demonstrating Interest	0.122	0.077	1.599	0.111	-0.029	0.273
Affective Learning	0.122	0.057	2.149	0.033	0.010	0.233
<i>Moderated Mediation (Through State Receiver Apprehension)</i>						
IMM = 0.054 (95% CI: 0.026, 0.092)						
Conditional Indirect Effect (ab) _{W = 2.750}	0.080	0.026			0.038	0.142
Conditional Indirect Effect (ab) _{W = 3.250}	0.107	0.029			0.060	0.174
Conditional Indirect Effect (ab) _{W = 3.875}	0.140	0.035			0.081	0.218
Conditional Indirect Effect (ab) _{W = 4.375}	0.167	0.041			0.097	0.258
Conditional Indirect Effect (ab) _{W = 4.875}	0.194	0.048			0.111	0.300

Note. Coefficients are unstandardized. IMM = index of moderated mediation. Conditional indirect effects are estimated at values of the moderator (W = Academic Self-Efficacy) at the 10th, 25th, 50th, 75th, and 90th percentiles. Bias-corrected bootstrapped CIs (10,000 samples) that do not include zero indicate mediation.

Table 4 Path Model Coefficients and Conditional Indirect Effects (X = Teaching Style)

Model	Coeff	SE	t	p	LLCI	ULCI
<i>State Receiver Apprehension</i>						
$F(4, 198) = 104.386, p < 0.001, R^2 = 0.68$						
Constant	4.789	0.269	17.796	< 0.001	4.258	5.319
Teaching Style	0.134	0.119	1.125	0.262	-0.101	0.368
Academic Self-Efficacy	-0.148	0.086	-1.726	0.086	-0.317	0.021
Teaching Style* Academic SE	-0.076	0.030	-2.504	0.013	-0.135	-0.016
Affective Learning	-0.248	0.036	-6.946	< 0.001	-0.318	-0.178
<i>Learning Indicators</i>						
$F(3, 199) = 51.696, p < 0.001, R^2 = 0.44$						
Constant	2.420	0.492	4.917	< 0.001	1.449	3.390
State Receiver Apprehension	-0.435	0.093	-4.689	< 0.001	-0.618	-0.252
Teaching Style	0.131	0.057	2.293	0.023	0.018	0.244
Affective Learning	0.114	0.055	2.054	0.041	0.005	0.223
<i>Moderated Mediation (Through State Receiver Apprehension)</i>						
IMM = 0.033 (95% CI: 0.010, 0.067)						
Conditional Indirect Effect (ab) _{W = 2.750}	0.032	0.021			-0.006	0.078
Conditional Indirect Effect (ab) _{W = 3.250}	0.049	0.021			0.014	0.098
Conditional Indirect Effect (ab) _{W = 3.875}	0.069	0.024			0.031	0.127
Conditional Indirect Effect (ab) _{W = 4.375}	0.086	0.028			0.042	0.154
Conditional Indirect Effect (ab) _{W = 4.875}	0.102	0.033			0.051	0.182

Note. Coefficients are unstandardized. IMM = index of moderated mediation. Conditional indirect effects are estimated at values of the moderator (W = Academic Self-Efficacy) at the 10th, 25th, 50th, 75th, and 90th percentiles. Bias-corrected bootstrapped CIs (10,000 samples) that do not include zero indicate mediation.

information when recall is required for an exam or other assessment of learning” (Ellis, 2004, p. 15).

The results from this study also help to specify the receiver apprehension model by uncovering conditional effects that identify the circumstances under which the model’s indirect relationships maintain, or fail to maintain, their predictive utility (c.f., Hayes, 2015). Students’ ASE moderated the indirect effects of teacher confirmation on learning via reduced receiver apprehension, even when controlling for students’ affect. This conditional relationship came from a first-stage moderator, meaning that its effect influenced the relationship between the independent variable (i.e., confirmation) and the proposed mediator (i.e., receiver apprehension). The negative relationships uncovered between teacher confirmation behaviors (i.e., responding to questions, demonstrating interest, teaching style) and receiver apprehension were stronger for highly efficacious students in comparison to those with lower levels of academic self-efficacy. Put differently, Ellis’ (2004) mediation model that explains the relationship between teacher confirmation behaviors, receiver apprehension, and student reports of learning is optimized for those students who believe in their own abilities but diminishes in utility for those with low ASE.

These findings coincide with previous SRL investigations which suggest that highly efficacious students are more equipped to succeed in contemporary college classrooms because these environments cater to individuals who regulate their own learning behaviors (Elias & MacDonald, 2007). In other words, success in college is often predicated on students’ ability to navigate through autonomous expectations to self-direct their own learning processes, thus belief in one’s self is critical to the achievement of educational goals (Artino & Stephens, 2009). Without this belief, students are likely to struggle in the classroom and may be unable to fully utilize various resources around them (Komarraju & Nadler, 2013), including confirmation they receive from their instructors. Conversely, the positive effect of confirmation may be strengthened for highly efficacious students because they are better situated psychologically to use the benefits (e.g., reduced apprehension) associated with this effective teaching behavior.

These findings may also be interpreted by examining ASE as a coping mechanism (Bandura, 1997). ASE arguably helps students to cope with difficult and challenging situations by providing them with the confidence needed to modify their behavior, particularly in the face of personal and academic tribulations (Schunk & Parajes, 2002). For instance, highly efficacious students may be more inclined to adjust their own behavior (e.g., study habits, note-taking) if their instructor is ineffective to maintain their self-regulation and to achieve their learning goals. On the other hand, students who lack self-efficacy and have little confidence in themselves are unable to adjust to poor instructional methods (e.g., lack of confirmation). As Caprara et al. (2008) noted, “There are no adaptive benefits to being immobilized by self-doubts about one’s capabilities and belief in the futility of effort” (p. 533); in other words, low ASE creates a host of problems for college students to manage which in turn diminishes their opportunities to succeed.

Theoretical and Practical Implications

Theoretically, these results coincide with recent findings from the instructional communication literature that suggest an increasing need to examine students' personal and academic characteristics in conjunction with instructors' communication behaviors as evidence of moderation, moderated mediation, and moderated moderation continues to emerge for these features (e.g., Bolkan, 2015; Bolkan & Goodboy, 2015; Ledbetter & Finn, 2016). Collectively, these investigations, along with emerging theoretical perspectives within the field (e.g., Weber et al., 2011), suggest instructional communication behaviors do not elicit consistent outcomes across all students when individual characteristics are taken into account (c.f., Bolkan, Goodboy, & Kelsey, 2016). For example, Weber et al. (2011) argued that student characteristics (e.g., ASE) have unique effects on college students' learning outcomes in addition to traditional teaching behaviors and course-specific structural issues. This conclusion parallels the current findings as the effects of confirmation behaviors on receiver apprehension differed as a result of students' ASE beliefs. As such, it may be necessary for the field of instructional communication to reconsider its long-standing practice of studying influences of effective teaching behaviors on student learning in isolation. Studying these effects without acknowledging how they might differ as a result of students' individual characteristics may inaccurately and misleadingly imply that instructional communication behaviors function the same for all students (Frymier, 1993).

Granted, the presence of complex relationships and the use of related statistics does little to advance the field of instructional communication on its own; however, when coupled with the growth of original theoretical models (e.g., receiver apprehension model) and systematic lines of inquiry, studies that use these analyses can begin to illuminate the dynamic and interactive relationships that have come to characterize communication that occurs in the classroom. While the current results only extend one of the theoretical explanations by which confirmation is thought to enhance student learning, future investigations should further develop the mechanisms underpinning this dynamic by exploring additional characteristics that moderate and/or mediate the confirmation-learning relationship along with the effects of other instructional behaviors.

Emotional response theory (ERT; Mottet, Frymier, & Beebe, 2006) may be particularly useful in expanding the current results and potentially alternative mechanisms behind effective teaching behaviors. ERT posits that students who experience positive emotions (e.g., joy, hope) in the classroom are more likely to approach and engage opportunities to learn, whereas those who encounter negative emotions (e.g., frustration, anger) will be more inclined to avoid such opportunities. This premise overlaps with the receiver apprehension model (Ellis, 2004) as it assumes the negative emotional experiences associated with anxiety discourages student learning outcomes. ERT may yield a more nuanced perspective behind the psychological effects that are experienced when students process learning anxieties and thus may be a useful framework in understanding additional mediators and moderators associated with classroom communication.

In a practical sense, these findings continue to demonstrate the importance of teacher confirmation behaviors in the classroom. Many of today's college students seek out and expect forms of recognition from their instructor (Thompson & Gregory, 2012). This desire, coupled with changing beliefs about education, may even suggest that teacher confirmation behaviors are taken for granted by college students in contemporary classrooms (Goldman & Goodboy, 2014). Regardless, empirical findings consistently highlight the utility of confirming communication in the promotion of college students' learning because these behaviors are one of the few strategies in which instructors can use to simultaneously meet students' relational expectations, while also satisfying important rhetorical goals (Mottet et al., 2006). That said, the findings from this study also suggest that instructors should work to reduce anxieties that students have about processing material (i.e., receiver apprehension) in addition to promoting a climate that enhances their ASE.

Admittedly, increasing students' ASE in college can be difficult, as this belief develops during students' early educational experiences and throughout childhood (Elias & MacDonald, 2007). That said, SRL research suggests that two instructional techniques can enhance students' ASE on a short-term basis. First, establishing proximal and challenging goals in the classroom can promote ASE by helping students to segment their aspirations into manageable objectives that allow them to assess, monitor, and regulate their own learning progress (Artino & Stephens, 2009). Second, these goals, when combined with honest, specific, and timely feedback, can help students evaluate their strengths and shortcomings, which can foster greater ASE if presented in a constructive manner (Bandura, 1997). When these strategies (i.e., goal-setting and feedback) are used in the classroom, students are better-positioned to feel efficacious (Caprara et al., 2008), which in turn may help them use other resources that are provided to them by their instructor.

Of course, this study was not without limitations. First, this study relied upon students' reports of learning rather than alternative forms of cognitive assessment (e.g., exam scores). Although we controlled for students' affect, which often overlaps with perceived learning and may contribute to possible halo effects (Feeley, 2002), future investigations should determine if the current findings extend to additional assessments of actual learning. Relatedly, future research should continue to replicate the findings from this study and others that utilize similar conditional process analyses since these models and instructional communication theory are still arguably in their infancy. One way in which future studies can extend this line of research is by continuing to evaluate explanatory models that feature proposed moderators/mediators. For example, previous researchers have suggested that the relationship between confirmation and student outcomes may also be mediated by instructors' credibility (Schrodt et al., 2009) and students' understanding of the course material (Schrodt, Turman, & Soliz, 2006). Future investigations should compare the utility of such predictions and determine if they operate the same for all students or if variables like students' ASE alter the effectiveness of teacher confirmation.

Since the inception of the instructional communication field, researchers have sought to understand effective teaching behaviors that foster learning across contexts (Myers, 2010). While this intent has yielded many important discoveries regarding

how instructors use communication in the classroom, this research has often overlooked student characteristics that alter the effects of teaching behaviors on student learning. Students' ASE appears necessary for learning in today's college classrooms and therefore should be taken into consideration when examining instructional behaviors such as teacher confirmation. Students with varying degrees of ASE differ in their response to confirming messages, and it is possible that similar trends extend to other effective teaching behaviors such as immediacy, clarity, and others (Bolkan, Goodboy, & Myers, 2017). As such, instructors and scholars should be cognizant of these differences and modify their techniques around students' needs to provide a more optimal learning environment.

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