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Reflected Academic Self-efficacy: How Teacher Behavior Influences Self-efficacy in the Classroom

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Reflected Academic Self-efficacy: How Teacher Behavior

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Abstract

Self-efficacy refers to an individual's belief in their ability to complete tasks. The model social cognitive theory provides for studying self-efficacy shows that communicative sources of efficacy expectation yield self-efficacy in individuals by means of cognitive processing. The current study examines these communicative components of self-efficacy in the classroom more closely by marrying social cognitive theory and symbolic interactionism. Analysis of data from a sample of 69 college students found that student perceptions of their teacher's beliefs about their ability in the classroom (*reflected academic self-efficacy*) have a direct relationship to their perceptions of their own abilities (*academic self-efficacy*). More so, the cognitive process of reflected academic self-efficacy mediates the relationship between the nonverbal behaviors of the teacher and the academic self-efficacy of the student. This implies that teacher communication in the classroom is an important factor in facilitating self-efficacy in students because the student's perceptions of the teacher are quintessential in formulating their own self-efficacy.

Keywords: academic self-efficacy, communication, social cognitive theory, symbolic interactionism, nonverbal immediacy

Reflected Academic Self-efficacy: How Teacher Behavior

Influences Self-efficacy in the Classroom

Albert Bandura (1977) put forth the concept of self-efficacy as a pivotal component of human behavioral change. This concept is rooted in a broader social cognitive theory, and refers to an individual's belief in their ability to perform certain tasks effectively (Bandura, 1997). Self-efficacy can be viewed in terms of efficacy expectations, which arise from experiences such as performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal (Bandura, 1977). All of these efficacy expectations come to be as a result of different kinds of intrapersonal or interpersonal communicative situations, making the study of self-efficacy and its facilitation in individuals inherently a study of communication.

Self-efficacy has been shown to predict positive outcomes in a number of domains, including academics (Bandura, Adams, Hardy & Howells, 1980). Multon, Brown & Lent (1991) showed that high levels of self-efficacy were predictive of better grades, as well as more persistence in their major, in this case, the technology and science fields. Outside of the academic realm, high self-efficacy has been shown to indicate higher levels of communication competence (Rubin, Martin, Bruning & Powers, 1993).

Self-efficacy, while still being central to social cognitive theory, also fits into the theory of symbolic interactionism. Symbolic interactionism "advocated an active and creative vision of man" (Gecas & Schwalbe, 1983, p. 78), as opposed to a more passive view, such as Cooley's looking glass self. Cooley (1902) proposed that self-concept was largely influenced by the individual's perceptions of others, who would mirror their perceptions back onto the individual, who would in turn use that information to formulate

their identity. Gecas & Schwalbe (1983) agreed with this premise, but argued that the personal component of self-identity formation was largely ignored. They explored, under the overarching theory of symbolic interactionism, how self-efficacy could and should be used to study self-concept, and even bridge the reciprocity between the self and society. Overall, the synthesis of symbolic interactionism and social cognitive theory reveals communication as a quintessential component of facilitating self-efficacy in individuals.

As shown by the multitude of self-efficacy research by Bandura and his colleagues (Bandura, 1997; Lent & Larkin, 1984; Rubin, Martin, Bruning & Powers, 1993; Pajares & Schunk, 2001), the study of human agency certainly swung to an individual perspective, although the social cognitive theory in which self-efficacy is situated still recognizes the social components that influence behavior. Litrico & Choi (2013) extended the concept of self-efficacy with the exploration of *reflected* self-efficacy in groups. Their research, conducted under the wings of symbolic interactionism, distinguished the perceptions of *other's beliefs* about the individual's ability from their perceptions of *their own* ability.

The research proposed in this paper will follow a similar vein to the research Litrico and Choi (2013) conducted by extending the examination of reflected self-efficacy's impact on self-efficacy to the context of the classroom. Research has already shown how self-efficacy is predictive of positive learning outcomes, both in the academic sphere and otherwise (Bandura, Adams, Hardy, Howells, 1980, Le). Marrying social cognitive theory and symbolic interactionism allows us to examine the communicative sources that act as antecedents in the development of efficacy expectations more closely, in this case, the social components of self-efficacy information.

Although the relationship between reflected self-efficacy and self-efficacy has been shown in the context of group work (Litrico & Choi, 2013), this connection has not yet been made in an educational setting. Linking the relationship between reflected self-efficacy and self-efficacy in the context of the classroom will uncover unexplored yet valuable information about the sources of efficacy expectations in the academic sphere. Discovering more about the sources of efficacy expectations that can arise from interactions between teachers and students will allow teachers to make more informative decisions about how they motivate and facilitate learning with their students.

Literature Review

The following section of this proposal will highlight self-efficacy as seen from a variety of different contexts and theoretical frameworks, including social cognitive theory and symbolic interactionism. This body of research will also set up the structure for this proposal, and indicate the gap that this research will fill.

Symbolic Interactionism

Mead (1934) proposed the theory of symbolic action as an all-encompassing theory of socialization. Blumer (1986) condensed it into three basic premises:

> The first premise is that human beings act toward things on the basis of the meaning that the things have for them. Such things include everything that the human being may include in his world – physical objects, such as trees or chairs; other human beings, such as a mother or a store clerk; categories of human beings, such as friends or enemies; institutions, as a school or government; guiding ideals; such as individual independence or honesty; activities of others, such as their commands or requests; and such situations as an individual encounters in his daily life. The second premise is that the meaning of such things is derived from, or arises out of, the social interaction that one has with one's fellows. The third premise is that these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters. (p. 2)

This theory helps to provide an explanation for how self-efficacy develops (Gecas, 1989). The responsive environment, delineated in premises two and three from the quote above, is an essential component for the development of self-identity, and therefore, for self-efficacy development as well. This begins with a child's family environment. "Parents who provide an environment that stimulates youngsters' curiosity and allows for mastery experiences help to build children's self-efficacy. In turn, children who display more curiosity and exploratory activities promote parental responsiveness" (Pajares & Schunk, 2001, p. 4).

Until Bandura's research began in the mid-1970's, much of the realm of social study was dominated by Cooley's paradigm of the looking glass self (Gecas & Schwalbe, 1983). This view was not intrinsically incorrect, but tended towards an "essentially passive and conformist view of human beings" (Gecas & Schwalbe, 1983, p. 78).

However, the social component of self-efficacy still holds some merit (Litrico & Choi, 2013). This study bridges the gap between symbolic interactionism and social cognitive theory in the context of groups. It provides a way to examine the social sources of efficacy expectations through the construct of reflected self-efficacy, as well as the positive outcomes that occur when there is concurrence between this reflected self-efficacy and an individual's perceived self-efficacy.

Social Cognitive Theory

Self-efficacy, as advanced by Bandura (1977), is an individual's belief in their ability to effectively complete a task. It is the central component of social cognitive theory (Bandura, 1997), which views human action as being influenced by a variety of interactions and experiences. Individuals process these experiences internally, potentially

altering their perceptions of self-efficacy. It is important to distinguish these efficacy

expectations, which measure a belief in one's own ability, from outcome expectations,

which measure one's belief in what they think will happen as a result of their actions

(Bandura, 2012). This is what differentiates self-efficacy from other theoretical

frameworks of human action, such as locus of control. According to Pajares and Schunk

(2001),

> Perceived control is generic; thus, it is meaningful to speak of perceived
> control over learning or performing and over outcomes. Further, perceived
> control is only one aspect of self-efficacy. Other factors that influence
> self-efficacy include perceptions of ability, social comparisons,
> attributions, time available, and perceived importance. (p. 4)

Self-efficacy is also distinct from other concepts of self "in that it is specific to a

particular task" (Tschannen-Moran, Hoy, & Hoy, 1998, p. 210). This makes self-efficacy

a domain constricted variable, and necessities that self-efficacy research be conducted

inside a particular sphere of influence. Thus, studies where self-efficacy is predictive of

certain outcomes is self-efficacy *about* particular skills or actions relative to the area of

study.

The sources of efficacy expectations can differ along the individual and social

levels. People gather "information to appraise their self-efficacy from their actual

performances, their vicarious experiences, the persuasions they receive from others, and

their physiological reactions" (Pajares & Schunk, 2001). Bandura (1977) explains how

emotional arousal can change an individual's perceptions of self-efficacy. "By conjuring

up fear-provoking thoughts about their ineptitude, individuals can rouse themselves to

elevated levels of anxiety that far exceed the fear experienced during the actual

threatening situation" (p. 199).

To illustrate how these social and individual components of efficacy expectations interact with one another, consider a person with acrophobia. Someone with acrophobia may have low self-efficacy when it comes to their ability to hurl themselves from an airplane. Witnessing others skydive safely (a vicarious, primarily social, experience) might lead this individual to think, albeit marginally, that they too could perform such an act.

On the individual level, if this person would happen to go zip lining on a vacation, they might experience an adrenaline rush as a result of the feeling of falling. If they experience that feeling as something pleasurable (an emotional, primarily individual, experience), and also associate it with the act of skydiving, this also might lead them to believe that they would be more able to go skydiving.

In processing both of these examples (vicarious experience and emotional arousal), social and individual experiences might have acted concurrently. Thinking, "Maybe I could do that" when seeing someone land from skydiving in the first experience would also consist of verbal persuasion on the individual level. Hearing someone say, "Now you're ready to skydive, right?" after a run on the zip line would consist of verbal persuasion on the social level in the second experience.

Research has shown that self-efficacy is predictive of positive outcomes in a wide range of contexts, beginning with studies of fear. Bandura (1977) measured how self-efficacy changed over time in ophidiophobic individuals. They received vicarious experiences when others would model holding a snake in their lap. As they accumulated and processed social and internal experiences, Bandura was able to plot how their self-

efficacy increased. He and his colleagues repeated this study a few years later (Bandura, Adams, Hardy & Howells, 1980), and extended it to individuals with agoraphobia.

Self-efficacy research also extends into the social context. Schunk & Pajares (2012) highlighted how efficacy can have this collective or social component:

> Collective systems such as classrooms, teams of teachers, schools, and school districts develop a sense of *collective efficacy* – a group's shared belief in its capability to attain their goals and accomplish desired tasks. Students, teachers, and school administrators operate collectively and individually. As a result, schools develop collective beliefs about the capabilities of their students to learn, or their teachers to teach and enhance the lives of their students, and of their administrators and policymakers to create environments inductive to those tasks. (p. 100)

Rubin, Martin, Bruning & Powers (1993) found that increases in self-efficacy were predictive of communication competence. This study also gave additional support to research that connects social processes with changes in perceptions of self-efficacy, as postulated by Bandura (1977) in his original study.

Studies of self-efficacy have also occurred specifically in context of groups (Litrico & Choi, 2013). Litrico and Choi's research quantified, examined, and emphasized a social component of self-efficacy in social cognitive theory, which they coined as reflected self-efficacy. In their study of groups, reciprocated self-efficacy was an individual's perception of other's beliefs on their ability. This was compared and contrasted with perceptions of the individual's own self-efficacy. The two efficacy constructs were shown to be empirically distinct, but correlated. They also found that groups with congruence in both constructs were able to work together more effectively with less process hindrance.

Academic Contexts. Self-efficacy research has also been conducted extensively in the academic realm (Pajares & Schunk, 2001). However, almost all of the research

conducted in this area focuses on the connection between self-efficacy as reported by students or teachers and specific measureable academic outcomes, such as GPA or teaching strategies. The relationship between self-efficacy and outcomes is an important one, especially in the context of academia. Although it is not the subject of investigation in this research, it does lay the groundwork for investigating the communicative sources of self-efficacy, i.e. how self-efficacy is facilitated in students.

One branch of this line of study involves teacher efficacy, or perceptions of self-efficacy from the teacher's point of view. Tschannen-Moran, Hoy, & Hoy (1998) investigated this construct in detail as it appears in various contexts and frameworks, including social cognitive theory. Their conclusion indicated that teacher efficacy was predictive of positive teaching outcomes.

In the area of academics, the most influential research regarding self-efficacy has focused on positive student outcomes. Studies have identified self-efficacy as positively associated with student's grades, as well as their persistency in science and technology related majors (Lent & Larkin, 1984). Meta-analysis of over a decade of research in social cognitive theory, using a diverse range of scales and spheres of influence (albeit all academically oriented), gives the consensus that self-efficacy in the broad range of academia was generally predictive of student achievement and/or persistence (Multon, Brown & Lent, 1991).

The relationship between academic self-efficacy and positive student outcomes is also evident in frameworks such as the instructional belief's model (IBM). In this model, academic self-efficacy mediates the relationship between teacher behaviors, classroom contextual issues, and student characteristics with learning outcomes (Weber, Martin, &

Myers, 2011). This same framework found academic self-efficacy to be correlated with critical, yet positive, student-teacher interactions over and above less preferred forms of student dissent (LaBelle, Martin & Weber, 2013).

Another study showed how teachers and their behavior in the classroom context were more predictive of student empowerment than the students temperament (Houser & Frymier, 2009) indicating the importance of active vantages for learning situations as opposed to passive perspectives. This is strong evidence that teacher behaviors are an essential component of the learning process, highlighting the need for social awareness from teachers and students alike. Since the relationship between academic self-efficacy and learning outcomes is well established in literature, the study of the communicative or social phenomena that then impact academic self-efficacy via cognition are worthy of research merit as well.

Non-verbal Immediacy. In the context of the classroom, teacher actions and interactions are likely to be a primary source of efficacy expectations for students. These actions and interactions are observed by the students, who then process these social occurrences, and use the outcome of these cognitive processes to help develop their own thoughts and beliefs about their abilities in academia.

Although there is certainly importance to what teachers say in the classroom, "many scholars have argued that nonverbal messages are more pervasive and important than verbal messages" (Andersen, Andersen & Jensen, 1979). Thus, the nonverbal queues that teachers exhibit are an important element of the actions and interactions that students perceive as they develop their beliefs about their abilities in the classroom. In this classroom context, nonverbal immediacy refers to the communicative behaviors of

teachers which minimize the physical and/or psychological distance between them and their students (Andersen, 1979). It is these nonverbal immediacy behaviors, such as smiling, gesturing while talking, or moving about the classroom when lecturing, that reduce the perceived distance between the teacher and the student, at least from the perspective of the student. Much of the research on nonverbal immediacy, much like the research on academic self-efficacy, explores relationships that are not examined by the present study. Nevertheless, these relationships help situate nonverbal immediacy as a source of efficacy expectations in the context of research in the classroom, especially as a perceived social component that is hard at work in the minds of students.

Houser and Frymier (2009) piloted a study which, amongst other hypotheses, predicted that non-verbal immediacy would be predictive of student empowerment. This regression proved significant in their study, showing that the nonverbal behaviors of teachers in the classroom yielded an impact on the student's thoughts about their effectiveness in the classroom. These teacher behaviors are a source of efficacy expectation for the students as they develop their self-efficacy in the classroom. Overall, research regarding academic self-efficacy is well established in regard to learning outcomes, but lacks an explanation for how sources of efficacy expectations are related to perceptions of academic self-efficacy.

General Pattern of Self-efficacy Research

Almost all of the research presented in the previous two sections on symbolic interactionism and social cognitive theory follow a specific pattern. The sources of efficacy expectations are both social and personal. These are processed by the individual and formulated into conscious or subconscious beliefs about their ability to accomplish

tasks or actions in a certain domain. These beliefs and attitudes about one's own ability are then predictive of certain outcomes as a result of said tasks or actions (See *Figure 1*). These outcomes then may then be perceived as sources of new efficacy information, beginning the process once more. The link between self-efficacy and outcomes is well established. The current research research examines the link between sources of efficacy expectations and self-efficacy via cognitive processes.

The pattern as presented Figure 1 was seen in Bandura's (1977; Bandura, Adams, Hardy & Howells, 1980) research on various phobias. Self-efficacy by individuals was predictive of their actual accomplishments, which were then used as sources of efficacy information to be processed, thus altering their level of self-efficacy in that domain. Therefore, research that stems from social cognitive theory provides the base structure for the model above.

Symbolic interactionism also reflects this model for self-efficacy research. Social interactions bring about meanings that individuals then act on, providing more interaction to draw meaning from (Blumer, 1986). In the research conducted by Litrico and Choi (2013), reflected self-efficacy received from a group was seen as the cognitive processing between source of efficacy expectations (group actions or interactions) and self-efficacy for individuals of the group. These two components were then indicative of various group outcomes.

Research that situates itself inside theories such as Social Identity Theory (Guan & So, 2016) or IBM (Weber, Martin, & Myers, 2011) also fit into the pattern for self-efficacy research as provided by social cognitive theory. In both of these research models, observable phenomena constitute the sources of efficacy expectation, fitting into

the first step in the model presented above. The research by Guan and So was able to

identify group associations as predictive of self-efficacy in health related domains of

behavior, which then led to actual health benefits in the participants in their research. The

IBM views teacher behaviors, classroom contextual issues, and student characteristics as

sources of efficacy expectations, with self-efficacy coming between the relationship

between these phenomena and student outcomes. Consequently, both of these research

models that include self-efficacy follow the model presented by social cognitive theory.

Research Gap. Most of the research in the sphere of academics has focused on

the last two components in the general model for self-efficacy research (Lent & Larkin,

1984; Multon, Brown & Lent, 1991; Pajares & Schunk, 2001), i.e. most research

examines self-efficacy as predictive of various student outcomes. However, much of this

research also suggests or emphasizes that teacher behavior or social perceptions in the

classroom (i.e. communicative processes) are also involved in learning outcomes

(Tschannen-Moran, Hoy, & Hoy, 1998; Pajares & Schunk, 2001; Houser & Frymier,

2009; Schunk & Pajares, 2012; LaBelle, Martin & Weber, 2013; Perren, et al., 2017).

The current study tests the relationship between sources of efficacy expectations,

cognitive processes, and self-efficacy. This will be done in a similar vein as Litrico and

Choi (2013) with their study of groups. Much as they constructed and verified the

concept of reflected self-efficacy in the context of groups, this research presents *reflected

academic self-efficacy* (rASE) as the cognitive processing that happens as a result of

perceiving actions and/or interactions in the classroom, as well as *academic self-efficacy*

(ASE) that is likely to impact students in the classroom context. The first hypothesis in

the current study tested if reflected academic self-efficacy and academic self-efficacy are

empirically distinct constructs, similar to the analysis performed by Litrico and Choi (2013) to distinguish between reflected self-efficacy and self-efficacy in the group context.

H1: Reflected academic self-efficacy will be empirically distinct from academic self-efficacy.

Once it is clear whether the cognitive processing students undertake (rASE) is distinct from the beliefs they form about themselves in the classroom (ASE), the present study predicts that these cognitive processes are directly related to the beliefs that result as presented by the model from social cognitive theory.

H2a: Reflected academic self-efficacy will predict academic self-efficacy in students.

The present study presents rASE as a cognitive process that mediates sources of efficacy expectation and ASE. In this model, instructor immediacy will measure the sources of efficacy expectation as perceived by the students, rASE will represent the symbolic interpretation that students go through after experiencing social interactions in the classroom, and ASE will show the formalized outcome of these efficacy expectations on the students beliefs about their ability in the classroom. This differentiates this study from the study by LaBelle, Martin & Weber (2013) which hypothesized a model in which immediacy behaviors failed to directly predict academic self-efficacy. Overall, this mediated model emphasizes the significance of the cognitive processing that students undergo after witnessing communicative phenomena in the classroom context. Since the regression in the previous hypothesis is a component of this model, it is presented as H2b.

H2b: Reflected academic self-efficacy will mediate the relationship between both verbal and nonverbal immediacy in teachers, and academic self-efficacy in students.

Methods

Participants

A total of 69 students were recruited to participate in this study. Seventy four percent of the sample respondents were female. Of the participants, 20 were first year students (29%), 18 were sophomores (26%), 19 were juniors (28%), 11 were seniors (16%), and one was a fifth year senior (1%), covering a broad spectrum of grade levels for generalizability.

Procedures

The participants for this research were recruited through psychology classes at a mid-size college in the Midwest. Students were offered some extra credit for participation in the research, but the identities of the students who chose to participate were protected, as responses to the surveys were submitted anonymously via the internet. Students were also able to cease filling out the survey at any time should the process have become upsetting to them.

Variables

Academic Self-efficacy. The items used to measure academic self-efficacy (ASE) included an adapted eight-item scale from the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, García & McKeachie, 1993). The first revision of this scale was for the construct of ASE. Some of the items on the original scale deviate from the concept of self-efficacy postulated by Bandura because it uses statements such as *I believe I will receive an excellent grade in this class*; "I *can* is a statement of

efficacy. I *will* is a statement of intention" (Bandura, 2012, p. 16). This first revision modified items with this ambiguity to specify *ability* rather than *outcome intention*, i.e. the item shown above became *I believe I can receive an excellent grade in this class*. The second revision was for the scale of rASE. Taking the modified scale from the first revision of the MSLQ, the wording was changed to reflect a student's perception about what their teacher thinks about their ability; *I believe I can receive an excellent grade in this class* becomes *I believe the teacher thinks I can receive an excellent grade in this class*.

  Nonverbal Immediacy. The nonverbal immediacy behaviors (NIB; Richmond, Gorham, & McCroskey, 1987) scale consisted of 14 items with a Likert-type response set (ranging from 1-5, with 5 representing the highest use of nonverbal immediacy behaivors). One of the items, "touches the students in the class," was deemed as inconsistent with the other items and dropped from the analysis. It is possible that norms and perceptions for and of teachers regarding touch in the classroom have changed in the past thirty years since the scale was created.

  The reliability for each scale was tested (ASE, α=.94; rASE, =.96; NIB, =.74), with all the scales showing adequate internal consistency. Because the data collection was administered online, some control questions were inserted in the survey (such as, "please select yes for the following answer") to ensure that participants were filling out the survey faithfully. Responses that did not match the control questions were omitted. Any responses where the survey was not completely filled out were also omitted, as well as any responses where participants submitted only 1s or 7s in the items for rASE or

ASE. This resulted in 25 responses being deleted. See Appendix B for a specific look at the items included for each scale as used in the present research.

Results

The test of the first hypothesis was conducted via a principal component analysis with varimax rotation. The items for rASE and ASE had a Kaiser-Meyer-Olkin measure of .92, and Bartlett's Test for Sphericity indicated $\chi^2(120) = 1149.54$, $p<.001$. The factor analysis confirmed that a two-factor model provided the best fit for the items selected, with 8 of the items from rASE falling on one factor, and the 8 items from the ASE scale on the other. Refer to Table 1 to view the specific factor loadings reported in the analysis. The factor analysis confirmed H1, indicating that rASE and ASE are empirically distinct from one another.

The test for H2a consisted of a linear regression to predict ASE from rASE. A significant regression was found ($F(1,67)=90.14$, $p<.001$) with an R^2 of .54. ASE scores could be predicted by rASE ($\beta=.76$, $p<.001$) using the equation ASE = 1.44 + (rASE * .73). The analysis confirmed support for H2a.

A regression analysis was also used for H2b to examine whether rASE mediated the relationship between NIB and ASE. As noted by Baron and Kenny, for a mediation model to exist, all of the pathways between NIB to rASE, rASE to ASE, and NIB to ASE must be significant, and the pathway for NIB to ASE must be non-significant when rASE is introduced into the model. Results from the data indicated that NIB was predictive of rASE ($\beta=.37$, $p<.01$), and the test for the relationship between rASE and ASE was conducted in H2a ($\beta=.76$, $p<.001$). The relationship between NIB and ASE was also significant ($\beta=.30$, $p<.05$), but only without rASE included in the model ($\beta=.02$, $p=.80$).

These analyses indicate support for H2b, that rASE fully mediates the relationship between NIB and ASE (see Figure 2).

Discussion

The purpose of the present study was to examine the social and cognitive forces that predicate self-efficacy in the context of the classroom. The model for researching self-efficacy as presented by social cognitive theory suggested that sources of efficacy expectation would result in cognitive processes which in turn yield self-efficacy in individuals. For this study, nonverbal immediacy behaviors (NIB) represent a source of efficacy expectation, reflected academic self-efficacy (rASE) indicated the mental processing, and academic self-efficacy (ASE) signifies the resultant self-efficacy as suggested by Bandura's (1977) theory.

Because the scales for rASE and ASE are so similar, the first hypothesis tested the empirical differences between the two measures. The second hypothesis (H2a) then examined the relationship between these two scales, specifically examining whether rASE was predictive of ASE. The third hypothesis (H2b) extended the relationship between these variables, including NIB in a way that remains consistent with other literature on self-efficacy, in this case, testing whether the symbolic interpretation that happens in rASE mediates the relationship between the observed teacher NIB and the subsequent student ASE.

Hypothesis 1

The factor analysis in H1 used a principal component analysis with varimax rotation to determine whether rASE and ASE were distinct from one another. The resulting component matrix generated factor loadings which indicated that the items from

each scale did fit into separate categories. This matches the distinction found by Litrico and Choi (2013), where reflected self-efficacy was compared and contrasted against self-efficacy in the group context. The findings from the present hypothesis are significant because they indicate that there is a distinction between the cognitive processes that take place in a student's head and their resultant beliefs about their ability in the classroom context.

Hypothesis 2a

To test the relationship between rASE and ASE, especially after knowing that the two constructs were empirically distinct from H1, a linear regression was used. Results indicated that rASE was significantly predictive of ASE. This demonstrates the link between what students think and what they believe about their abilities. It also provided the foundation for the last hypothesis.

Hypothesis 2b

H2b expands the model from H2a by labeling rASE as a mediator between NIB and ASE. This model fits directly into the model presented by research within social cognitive theory, with NIB as a communicative source of efficacy expectation, rASE as the cognitive processes that students undertake after experiencing communicative phenomena in the classroom, and ASE as the constructed beliefs the students form about their abilities in the classroom. The results of testing this mediated model in H2b indicated that full mediation did occur. This is a significant finding because it provides a wealth of information about how self-efficacy is facilitated. Whereas much of previous research on self-efficacy has investigated the *what* and *why* of academic self-efficacy in relation to certain academic outcomes, the present study, and more specifically, the

findings from this hypothesis, expose the dynamics behind *how* academic self-efficacy even comes to be in the first place.

Investigating the *how* of academic self-efficacy facilitation has meaningful implications for teachers in the classroom. Yes, it is important *what* teachers do and say in the classroom, and it is important that they know *why* they are behaving in certain ways, but *how* they do and say these things is important as well. How teachers communicate with students in the classroom when they can be seen by their students is important precisely because these student perceptions are more indicative of academic self-efficacy than just the face value of their actions. The perceptions teachers convey via nonverbal immediacy behaviors to students, and the consequential cognition that takes place, illustrate a communicative link between teacher conduct and self-efficacy in the classroom. This link is valuable information for not only teachers, but for anyone who is tasked with overseeing the growth of other individuals. Practitioners, coaches, and managers who make a conscious effort to remain aware of how they are being perceived will be better able to present themselves in a way that communicates a belief in the abilities of those around them. With the perceptions of others in mind, the present study suggests that intentional communicative behaviors on the part of these leaders will then promote higher measures of self-efficacy in those they are trying to lead.

The mediated model confirmed in H2b also has implications for other theories such as IBM and social identity theory. For the IBM, this mediated model gives an explanation for the relationship between first order constructs (i.e. teacher behaviors or student characteristics which constitute sources of efficacy expectation) and second order constructs (in this case, academic self-efficacy). Not only does a mediated model, such as

the one in H2b, reiterate the fact that there is a connection between these two orders of constructs, but it also sheds light on how this relationship takes shape in the first place. A similar contribution can be submitted for social identity theory, specifically for the classroom context. Social Identity Theory in the classroom observes how students generate "us-versus-them" type mentalities in relation to their teachers or instructors. The results from the mediated model in H2b reveal how student's positive or negative attitudes towards their teachers stem from cognitive processing as a result of their perceptions in the classroom.

Limitations. Some limitations are inherent in this study. The data collection used a convenience sample of college students in psychology classrooms. This might limit the external validity of the findings presented here to classrooms that are either above or below the college level, but could be mitigated in the future by sampling from a broader range of students, including high school and grade school students. Second, the sample size of the present study was rather small. The number of participants still provided enough data to find significant findings in all of the hypotheses, but future research that follows could use a larger sample size to find stronger effect sizes or relationships between variables.

Future Research. Any research that follows a similar vein as the present study should continue to follow the model presented by social cognitive theory in Figure 1. This ensures that any such research would fit into the body of literature that already exists on self-efficacy. Exploration here could examine how other communicative phenomena, such as teacher temperament, are perceived by students as they formulate their academic self-efficacy. More research could also look at how different kinds of teacher training

(e.g. training with an emphasis on interpersonal communication strategies versus training with an emphasis on rigorous formal and/or summative assessment techniques) generate various levels of academic self-efficacy through cognitive processes on the part of the students.

Future research could also longitudinally examine how rASE mediates NIB and ASE over the course of an entire semester. It may be that student perceptions of their teacher are much more important during the first week of classes when they are meeting their teachers for the first time. Or, that continued exposure to a teacher's nonverbal immediacy behaviors will establish a stronger impact on a student over time. Although the present study did find that student perceptions were of value, in the future, administering tests at periodic intervals throughout the semester might give more light to how self-efficacy is framed in the minds of students vis-à-vis teacher behaviors.

The concepts of rASE and ASE could also be extended to other learning situations found outside the classroom, such as in a workplace-training environment or an athletic team. Broadening the domain of self-efficacy research to these contexts might reveal more about how the perceptions of instructors, managers, and coaches by learners, employees, and athletes help shape their beliefs about their abilities in these fields.

Conclusion

Although most of the previous research on self-efficacy in the classroom context focused in on the relationship between self-efficacy and empirical student/teacher outcomes, this study examined the other side of the self-efficacy model as seen in social cognitive theory research, that is, how self-efficacy comes about in students as a result of teacher communication behaviors. The present research found a distinction between the

symbolic interpretation of communicative phenomena in the classroom and the self-efficacy that came about as a result of these cognitive processes. Consequently, it was also found that these cognitive processes significantly predicted the self-efficacy as reported by the participants.

The heuristic value of this study lies in the confirmation of the mediation model due to how it can advance future research on self-efficacy and other models investigating communication processes in academic settings. Here, the relationship between the communicative occurrences in the classroom and academic self-efficacy was found to be mediated by the interpretation of teacher immediacy through the reflected academic self-efficacy construct. This highlights the significance of student perceptions in the classroom, especially in lieu of teacher nonverbal immediacy behaviors. What teachers do and say in the classroom is important, but how they do or say it, given the importance of student perceptions necessary for accruing high academic self-efficacy (which, in turn, has overwhelmingly been shown in previous research to then result in positive student outcomes, such as high grades), is also a critical factor for teachers to consider.

Teaching requires an understanding of the relationship between the factors in the classroom environment that promote learning and learning itself. It is, like other professions with an emphasis on fostering growth and development, a profession of facilitation. Farmers provide a great example of this relationship. They do not directly make their plants grow, rather, they are responsible for setting up the conditions for growth as best as they possibly can for their crops. Teachers are similar in this way, as they do not, and cannot force their students to learn. What they can do is nurture the conditions for learning in their classrooms as best as they can so that their students can

grow. Teacher communication behaviors, because students perceive them and use them to develop their self-efficacy in the classroom, are a crucial component in cultivating this classroom setting. With an acute understanding of the learning environment and how it is perceived by students, teachers will be able to develop the conditions for learning through *how* they communicate themselves in the classroom, as well as through what they do and say. When this happens, teachers may find that their students, much like the crops of the farmer, will yield boundless growth and potential.

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Appendix A

Table 1

The scale items used to measure rASE and ASE, and their factor loadings.

		Factor Loading	
Factor	Item	1	2
ASE	I believe I can receive an excellent grade in this class.	.361	**.809**
	I'm certain I can understand the most difficult material presented in the readings for this course.	.278	**.812**
	I'm confident I can learn the most basic concepts taught in this course.	.400	**.655**
	I'm confident I can understand the most complex material presented by the instructor in this course.	.262	**.776**
	I'm confident I can do an excellent job on the assignments and texts in this course.	.410	**.736**
	I believe I can do well in this class.	.389	**.807**
	I'm certain I can master the skills being taught in this class.	.327	**.801**
	Considering the difficulty of this course, the teacher, and my skills, I am certain I can accomplish the objectives for this course.	.400	**.759**
rASE	I believe the teacher thinks I can receive an excellent grade in this class.	**.798**	.412
	The teacher seems certain I can understand the most difficult material presented in the readings for this course.	**.808**	.304
	The teacher seems confident I can learn the most basic concepts taught in this course.	**.833**	.315
	The teacher seems confident I can understand the most complex material that they present in this course.	**.851**	.308
	The teacher seems confident I can do an excellent job on the assignments and texts in this course.	**.873**	.358
	I believe the teacher thinks I can do well in this class.	**.792**	.385
	The teacher seems certain I can master the skills being taught in this class.	**.823**	.431
	Considering the difficulty of this course, the teacher, and my skills, I believe the teacher thinks I can accomplish the objectives for this course.	**.705**	.482

Note. Factor loadings for each of the items are indicated by a **bold** font.
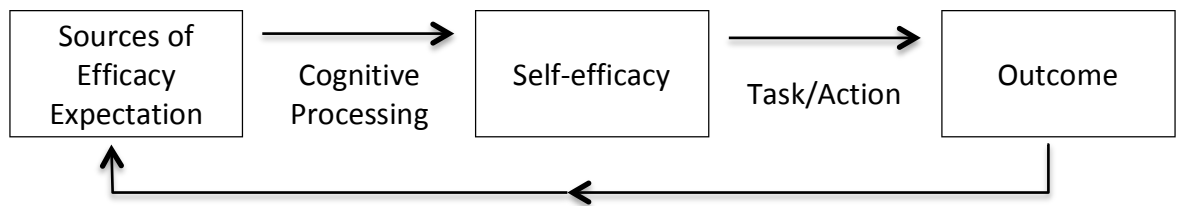
Figure 1. A model of self-efficacy as situated in previous research.

REFLECTED ACADEMIC SELF-EFFICACY30
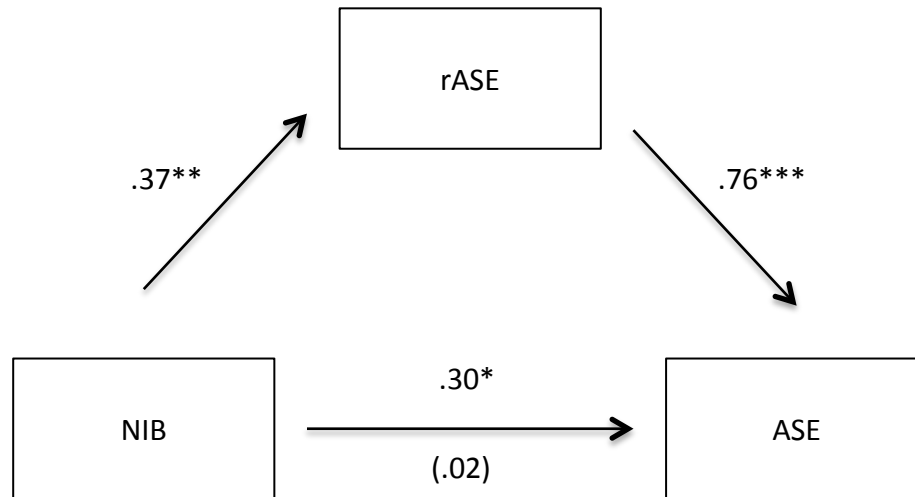
*p < .05. **p < .01. ***p < .001

Figure 2. Hierarchical regression results as tested in the mediation model from H2b.

Appendix B

Original MSLQ for Academic Self-efficacy

	Not at all true of me			Some what true of me			Very true of me
	1	2	3	4	5	6	7
1. I believe I will receive an excellent grade in this class.	☐	☐	☐	☐	☐	☐	☐
2. I'm certain I can understand the most difficult material presented in the readings for this course.	☐	☐	☐	☐	☐	☐	☐
3. I'm confident I can learn the most basic concepts taught in this course.	☐	☐	☐	☐	☐	☐	☐
4. I'm confident I can understand the most complex material presented by the instructor in this course.	☐	☐	☐	☐	☐	☐	☐
5. I'm confident I can do an excellent job on the assignments and texts in this course.	☐	☐	☐	☐	☐	☐	☐
6. I expect to do well in this class.	☐	☐	☐	☐	☐	☐	☐
7. I'm certain I can master the skills being taught in this class.	☐	☐	☐	☐	☐	☐	☐
8. Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.	☐	☐	☐	☐	☐	☐	☐

MSLQ Scale: Revised for ASE

	Not at all true of me			Some what true of me			Very true of me
	1	2	3	4	5	6	7
1. I believe I can receive an excellent grade in this class.	☐	☐	☐	☐	☐	☐	☐
2. I'm certain I can understand the most difficult material presented in the readings for this course.	☐	☐	☐	☐	☐	☐	☐
3. I'm confident I can learn the most basic concepts taught in this course.	☐	☐	☐	☐	☐	☐	☐
4. I'm confident I can understand the most complex material presented by the instructor in this course.	☐	☐	☐	☐	☐	☐	☐
5. I'm confident I can do an excellent job on the assignments and texts in this course.	☐	☐	☐	☐	☐	☐	☐
6. I believe I can do well in this class.	☐	☐	☐	☐	☐	☐	☐
7. I'm certain I can master the skills being taught in this class.	☐	☐	☐	☐	☐	☐	☐
8. Considering the difficulty of this course, the teacher, and my skills, I am certain I can accomplish the objectives for this course.	☐	☐	☐	☐	☐	☐	☐

MSLQ Scale: Revised for rASE

	Not at all true of me			Some what true of me			Very true of me
	1	2	3	4	5	6	7
1. I believe the teacher thinks I can receive an excellent grade in this class.	☐	☐	☐	☐	☐	☐	☐
2. The teacher seems certain I can understand the most difficult material presented in the readings for this course.	☐	☐	☐	☐	☐	☐	☐
3. The teacher seems confident I can learn the most basic concepts taught in this course.	☐	☐	☐	☐	☐	☐	☐
4. The teacher seems confident I can understand the most complex material that they present in this course.	☐	☐	☐	☐	☐	☐	☐
5. The teacher seems confident I can do an excellent job on the assignments and texts in this course.	☐	☐	☐	☐	☐	☐	☐
6. I believe the teacher thinks I can do well in this class.	☐	☐	☐	☐	☐	☐	☐
7. The teacher seems certain I can master the skills being taught in this class.	☐	☐	☐	☐	☐	☐	☐
8. Considering the difficulty of this course, the teacher, and my skills, I believe the teacher thinks I can accomplish the objectives for this course.	☐	☐	☐	☐	☐	☐	☐

Nonverbal Immediacy Behaviors (NIB) Scale

	Never				Very Often
	1	2	3	4	5
1. Sits behind desk while teaching.	☐	☐	☐	☐	☐
2. Gestures while talking to the class.	☐	☐	☐	☐	☐
3. Uses monotone/dull voice when talking to the class.	☐	☐	☐	☐	☐
4. Looks at the class while talking.	☐	☐	☐	☐	☐
5. Smiles at the class while talking.	☐	☐	☐	☐	☐
6. Has a very tense body position while talking to the class.	☐	☐	☐	☐	☐
7. Moves around the classroom while teaching.	☐	☐	☐	☐	☐
8. Sits on a desk or in a chair while teaching.	☐	☐	☐	☐	☐
9. Looks at a board or notes while talking to the class.	☐	☐	☐	☐	☐
10. Stands behind podium or desk while teaching.	☐	☐	☐	☐	☐
11. Has a very relaxed body position while talking to the class.	☐	☐	☐	☐	☐
12. Smiles at individual students in the class.	☐	☐	☐	☐	☐
13. Uses a variety of vocal expressions when talking to the class.	☐	☐	☐	☐	☐

Note. One item, labeled "touches the students in the class", was removed from the scale.