AN INVESTIGATION OF THE RELATIONSHIP BETWEEN GRADUATE
TEACHING ASSISTANTS’ TEACHING SELF-EFFICACY AND ATTRIBUTIONS
FOR STUDENTS’ LEARNING

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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN GRADUATE TEACHING ASSISTANTS’ TEACHING SELF-EFFICACY AND ATTRIBUTIONS FOR STUDENTS’ LEARNING

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ABSTRACT

Teaching self-efficacy (TSE) refers to teachers’ expectations that they can help students learn (Ashton & Webb, 1986). A significant amount of research has explored the importance of teaching self-efficacy for both K-12 education teachers and graduate teaching assistants (GTAs). Researchers have focused heavily on the relationship between teaching self-efficacy and other relevant variables, such as training and experience; however, researchers have yet to determine the specific relationship between teaching self-efficacy and attributions GTAs make regarding their students’ performance.

The present investigation, which is grounded in self-efficacy (Bandura, 1982, 1986, 1997) and attribution (Weiner, 1986) theories, was an attempt to augment the existing literature. The current research examined the relationship between GTAs’ teaching self-efficacy and the attributions they make regarding their students’ performance. It was hypothesized that GTAs’ teaching self-efficacy would influence the attributions that GTAs make regarding their students’ performance.

A total of 117 GTAs from The University of Akron responded to an online survey. GTAs were randomly assigned to respond to the CDS-II, which is a measure of causal attributions, imagining that their students had done well in their class (n = 58) or had done poorly in their class (n = 59). GTAs also completed the SETI-A, which is a measure of personal teaching self-efficacy, and a demographic questionnaire. Major findings of the study were a) GTAs who endorsed extremely high levels of TSE made
significantly more internal attributions when compared to GTAs with high TSE; b) GTAs’ TSE was significantly positively correlated with ability and effort attributions when GTAs’ students did well in the class; and c) GTAs did not significantly attribute their students’ performance to luck. Exploratory findings revealed that GTAs’ attributions varied based on GTAs’ sex and GTAs’ students’ performance. Implications and limitations of the current study are discussed.
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CHAPTER I

INTRODUCTION

The Problem

Previous research has explored the importance of teaching self-efficacy for graduate teaching assistants (GTAs). Researchers have focused heavily on the relationship between teaching self-efficacy and other relevant variables, such as training and experience; however, researchers have yet to determine the specific relationship between teaching self-efficacy and attributions GTAs make regarding their students’ performance. Thus, the goal of the current project was to take a theory-driven approach to investigating the specific relationship between GTAs’ teaching self-efficacy and the attributions they make regarding their students’ performance. Therefore, this brief summary of the literature is organized into the following sections (1) an overview of self-efficacy theory, (2) a review of the teaching self-efficacy research, (3) a summary of the research on teacher attributions, (4) a statement of the problem, (5) the research questions and hypotheses, (6) the significance of the study, and (7) a summary.

Self-Efficacy Theory

The concept of self-efficacy has garnered much attention since its debut in 1977 (Heppner, Multon, Gysbers, Ellis, & Zook, 1998). The construct of self-efficacy is embedded in Bandura’s (1982, 1986, 1997) social cognitive theory, which argues that
people can exercise control over their thoughts, behaviors, and motivations and therefore can also effect change in themselves through their own effort. The most central and influential mechanism through which people exercise change is self-efficacy (Bandura, 1993). Bandura (1997) defined self-efficacy as “the beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 3). In other words, if people believe that they cannot produce the desired behavior to bring about a particular outcome, they will likely not be motivated to act.

Outcome expectancies and efficacy expectations are the two key components of self-efficacy (Bandura, 1977). Outcome expectancies are a person’s belief that a particular behavior will lead to a particular outcome. Efficacy expectations are a person’s belief that he or she can successfully perform the behavior required to produce the desired outcome. Given the difference between the two parts of efficacy, people can believe that a behavior will bring about a desired outcome, yet doubt their own ability to exercise that behavior. In turn, the strength of people’s belief in their ability to exercise a particular behavior will affect whether they choose to attempt the behavior, how much effort they expend, and how long they persist in the face of challenges. When people attempt a behavior and succeed, their efficacy is increased, but when people attempt a behavior and fail, their efficacy is decreased.

Sources of Efficacy Information

Bandura (1977, 1997) identified four sources of information that influence people’s efficacy beliefs. The first source is performance accomplishments, also called enactive mastery experiences, which have the strongest influence on efficacy beliefs because they are based on personal successful experiences. In other words, they involve
the person actually attempting to carry out the desired behavior. The second source of information comes from vicarious experiences that involve seeing another person successfully execute the desired behavior. However, because this information about efficacy is based on social comparison, it tends to be weaker and more vulnerable to change than performance accomplishments that are based on actual experiences. The third source of efficacy information comes from verbal persuasion whereby people can be convinced through suggestion that they can carry out the desired behavior. Verbal persuasion is also a weaker source of information than performance accomplishments because it does not provide an experiential base for people, but if it is a realistic appraisal of people’s capabilities, it may influence them to exert greater effort and persist longer if difficulties arise. The last and weakest source of information comes from emotional arousal by which people come to associate a particular emotional state with performing particular behaviors. Bandura (1977, 1997) argued that people are more likely to believe in their ability to execute a behavior if they are not overcome with aversive arousal.

Overall, these four sources of information work together to influence people’s efficacy beliefs and vary in their ability to affect efficacy, with performance accomplishments having the greatest impact on efficacy beliefs.

Teaching Self-Efficacy

Self-efficacy theory has been applied to many areas, with Bandura (1993, 1997), himself, applying it to educational settings. For example, he discussed how students’ cognitive efficacy can affect their level of performance on various academic tasks. Furthermore, he applied self-efficacy theory to schools in general by proposing that there is a sense of school efficacy that involves the belief systems of the staff, which operate
collectively. Bandura argued that collective school efficacy can affect the climate of school cultures, how schools function as a social system, and school-level achievement.

On a more individual level, Bandura (1993, 1997) discussed the concept of teaching self-efficacy and its effects on teachers’ general orientation toward the teaching process and their instructional practices. Even before this application by Bandura, the concept of teaching self-efficacy had received a considerable amount of attention in the K-12 teacher education literature. In fact, two Rand Corporation studies in the late-1970s were the first to actually investigate teaching self-efficacy (Armor et al., 1976; Berman, McLaughlin, Bass, Pauly, & Zellman, 1977). The purpose of this research was to evaluate a reading program used in the Los Angeles schools and to evaluate teachers’ use of innovations (as cited in Ashton & Webb, 1986). In these studies, teaching self-efficacy was conceptualized rather specifically as teachers’ beliefs that students have the ability to learn and teachers’ confidence that they have the ability to teach these students effectively. The results of these original studies were fundamental in establishing that teachers’ sense of teaching self-efficacy could influence teacher motivation and student achievement.

In order to stimulate research and determine what variables were related to teaching self-efficacy, Denham and Michael (1981) formulated a model of teaching self-efficacy. Their model proposed that three components work together to influence each other. The three components are: teaching self-efficacy, antecedent conditions (i.e., teacher training, teacher experiences, system variables, personal variables, and attributions), and measurable consequences (i.e., teacher behaviors and student achievement). In speculating about how the three components work together, they
claimed that teaching self-efficacy acts as an intervening variable that mediates the relationship between antecedent conditions and measurable consequences; however, they also allowed for the possibility that many of the antecedent conditions may make a direct contribution to measurable consequences without being mediated by self-efficacy. Their model provided a useful framework for investigating teaching self-efficacy.

In addition to Denham and Michael’s (1981) model of teaching self-efficacy, other researchers attempted to better define the construct. In keeping with Bandura’s (1977, 1997) theory that self-efficacy is made up of both efficacy expectations and outcome expectations, researchers also broke down the concept of teaching self-efficacy into two components. Gibson and Dembo (1984) argued that outcome expectations reflected the degree to which teachers believed that teachers, in general, can overcome external barriers, such as IQ, family background, and school conditions and bring about student learning. This type of efficacy has been termed general teaching efficacy (Ashton & Webb; Ghaith & Yaghi, 1997). The second component of teaching self-efficacy reflecting efficacy expectations is the degree to which teachers believe in their own ability to bring about student learning. This type of efficacy has been called personal teaching efficacy (Ashton & Webb; Ghaith & Yaghi; Gibson & Dembo). Throughout the remainder of this paper, teaching self-efficacy will be used to refer to personal teaching efficacy unless otherwise noted.

Research with both K-12 education teachers and GTAs has attempted to explore the relationship between teaching self-efficacy and the various antecedent and consequence factors proposed by Denham and Michael (1981). For example, studies have shown that for both K-12 education teachers and GTAs, teacher training increases
teaching self-efficacy (Fritz, Miller-Heyl, Kreutzer, & MacPhee, 1995; Prieto & Altmaier, 1994; Prieto & Meyers, 1999; Ramey-Gassert, Shroyer, & Staver, 1996). Moreover, both K-12 education teachers’ and GTAs’ experience in the classroom have been shown to influence teaching self-efficacy (Cannon & Scharmann, 1996; Henson, 2001; Prieto & Altmaier; Prieto & Yamokoski, 2002). Teaching self-efficacy has also been shown to influence teachers’ behavior in the classroom. In fact, research has shown that teachers with a high level of teaching self-efficacy spend more time in whole class instruction while those with low teaching self-efficacy spend more time in small group instruction and seemed flustered by disruptions (Ashton & Webb, 1986; Gibson & Dembo, 1984). Furthermore, research has supported a link between teaching self-efficacy and student achievement (Ashton & Webb; da Costa, 1995).

Teacher Causal Attributions

Despite the research that has investigated the relationships between Denham and Michael’s (1981) proposed antecedent and consequence factors and teaching self-efficacy, very little research has examined the relationship between Denham and Michael’s antecedent condition of causal attributions and teaching self-efficacy. According to Denham and Michael, causal attributions refer to the causes teachers identify for their experiences of success or failure in the classroom. The research regarding teacher attributions has focused primarily on causal attributions teachers make about their students’ performance while ignoring how teaching self-efficacy may play a role in this process.
Weiner’s Attribution Theory

In order to better understand the possible relationship between teaching self-efficacy and teachers’ causal attributions regarding their students’ performance, it is first important to explore the theoretical framework used to examine teachers’ causal attributions. The theory that is most widely used in achievement-related/educational settings is Weiner’s (1976) attribution theory (Graham, 1991). In fact, Denham and Michael (1981) drew most heavily from Weiner’s theory when constructing their model. Weiner (1976) argued that an attribution is a person’s perceived reason given for a particular event. In achievement-related settings, Weiner (1976, 1986) proposed that four causes, which were found to be the most general and salient, are used to interpret the outcome of an achievement-related event. Those four causes are (a) ability, (b) effort, (c) task difficulty, and (d) luck. In other words, in explaining one’s prior success/failure, an individual estimates his or her ability, the amount of effort expended, the perceived difficulty of the task, and the magnitude and direction of luck (Weiner, 1976).

Moreover, Weiner (1976, 1986) argued that the four causes of success/failure vary along three dimensions. The first dimension is the locus of causality, which refers to whether the cause of an outcome is attributed directly to an individual (internal) or to variables outside the individual’s control (external). Ability and effort attributions are internal attributions; whereas, task difficulty and luck are external attributions. The next dimension refers to the stability of causes, which fall along a stable-unstable continuum. Ability and task difficulty are stable; however, luck and effort are variable. The last dimension, controllability, refers to whether the outcome is under an individual’s volitional control. Weiner (1986) argued that effort is under an individual’s control, but
ability is not. He also claimed that whenever people make an external attribution, the event/cause related to the external attribution is uncontrollable, as it is not under the individual’s control.

Weiner (1976, 1986) proposed that in making causal attributions, both the antecedents and consequences of making certain attributions must be considered. For example, past performance is an antecedent people usually rely on when making attributions regarding ability. Weiner (1976, 1986) also claimed that individual differences such as gender could influence attributions. In fact, Alderman (1999) argued that the attributions of women often reflect a lower expectancy pattern where they are more likely to make external attributions (luck) regarding success and more likely to make internal (lack of ability) attributions regarding failure, even when their achievement is higher. Likewise, Campbell and Henry (1999) found that women were more likely to attribute their performance to effort than men were. Nonetheless, Hirschy and Morris (2001) challenged that sex differences in attributional styles are questionable. It therefore appears that there is a need to further clarify the role that gender may play in attributions. In addition to antecedents, Weiner contended that attributions have certain consequences. For example, an individual who ascribes failure to an unstable factor such as effort usually maintains an expectancy of success and, in turn, perseveres to achieve the goal. However, research has indicated that ascription of failure to a stable factor such as ability decreases an expectancy of success, which could decrease behavior related to attaining the goal (Alderman, 2004; Graham, 1991; Weiner). Put another way, when one anticipates that conditions will remain stable, then his/her prior performance at a task will be anticipated again with increased certainty (Weiner). Overall, Weiner’s (1976, 1986) is
the most widely used attribution theory in achievement-related/educational settings. The theory has been widely applied to the research regarding teacher attributions.

*Teacher Attribution Research*

The attributions teachers make regarding their students’ performance have been investigated in a variety of studies; however, these studies have failed to find consistent results. The earlier and more rudimentary studies were conducted in laboratory settings with undergraduate participants playing the role of the teacher and confederates playing the role of the student. Some of this research found support for a self-serving/ego-enhancing bias where teachers take credit for their students’ success, but attribute failure to the students in an effort to maintain their self-image and protect themselves from criticism (Brandt, Hayden, & Brophy, 1975; Miller & Ross, 1975). On the other hand, some early studies failed to find a self-serving/ego-enhancing bias. Instead, support for a nondefensive response where teachers do not place blame on the student or external factors for students’ poor performance has been found (e.g., Ames, 1975).

Because of the inconsistent findings, researchers attempted to improve on the methodological shortcomings of the earlier research by using real teachers and students, comparison groups, and better attribution measures. However, these studies also failed to support a consistent teacher attribution pattern. Some of the research found support for an ego-enhancing/self-serving bias (e.g., McAllister, 1996). However, other studies found support for a non-defensive pattern whereby information-processing variables and value-beliefs about teaching played an important role (e.g., Ross, Bierbrauer, & Polly, 1974). Perhaps one of the reasons that previous studies have failed to find consistent results is their lack of investigation of other instructionally relevant perceptions held by teachers.
One potentially important variable to consider is teaching self-efficacy (Georgiou, Christou, Stavrinides, & Panaoura, 2002; Hall et al.).

Teaching Self-Efficacy and Teacher Attributions

As previously discussed, teaching self-efficacy is an important construct because it has been shown to be related to teacher behaviors and student outcomes (Ashton & Webb, 1986; da Costa, 1995). More importantly, teaching self-efficacy may also be related to the attributions teachers make regarding their students’ performance (Georgiou et al., 2002; Guskey, 1982, 1987; Hall et al., 1992). Unfortunately, only two studies have explored the relationship between teaching self-efficacy and teacher attributions regarding student performance.

First, Guskey (1982) sought to examine variables, such as teaching self-efficacy and grade level, which may account for the discrepancies in teacher attribution patterns across previous studies. Moreover, because he believed that the actual classroom differed dramatically from a laboratory teaching situation, he included only veteran teachers whose perceptions were based on their actual classroom experiences. He asked teachers to complete a teaching self-efficacy measure and an attribution questionnaire in which teachers attributed the cause of their success/failure in the classroom to the four causes proposed by Weiner (1976, 1986).

Guskey (1982) found that both grade level and teaching self-efficacy influenced teacher attributions. He found a significant positive relationship between measures of teaching self-efficacy and the weight assigned to teaching effort for both positive and negative student outcomes. Put another way, teachers with high teaching self-efficacy attributed both success and failure to the effort they put into teaching. This finding is
noteworthy, as it contradicts previous research findings, which suggested that teachers make defensive, external attributions when experiencing failure. As a result, the finding highlights the potential role that teaching self-efficacy plays in influencing attributions. In addition, a significant negative relationship was found between teaching self-efficacy and task difficulty for both positive and negative student outcomes. It appears as though teachers with low teaching self-efficacy view the difficulty of the task as most important in accounting for success and failure. Overall, Guskey argued that teaching self-efficacy influences the attributions teachers make regarding success and failure, but the exact relationship between the two needs to be further investigated.

Second, Hall and colleagues (1992) also attempted to clarify the discrepancies in previous teacher attribution research by investigating teaching self-efficacy. They asked teachers to complete a teaching self-efficacy measure and an attribution measure regarding the reasons for their successful/unsuccessful experiences in the classroom. The researchers hypothesized that teaching self-efficacy would influence attributions such that high efficacy teachers would tend to emphasize attributions that reflected some degree of teacher influence or control.

Their results revealed that teaching self-efficacy did influence teacher attributions regarding student performance. With regard to successful outcomes and personal teaching efficacy, teachers with higher personal teaching efficacy placed significantly greater importance on their ability and characteristics of the program in accounting for students’ success. With regard to failure and personal teaching efficacy, teachers with high personal teaching efficacy placed significantly greater importance on their influence as teachers in accounting for student failure. In other words, teachers with a high level of
personal teaching efficacy were more willing to assume responsibility for student failure than teachers with low levels of personal teaching efficacy. This finding illustrates the importance of considering teaching self-efficacy, as previous research that had only investigated attributions and not other instructionally-relevant teacher perceptions, indicated that teachers tended to blame students and external factors for failure. It would appear from these findings that the relationship is more complex than previous attribution research suggested.

Moreover, with regard to successful outcomes and general teaching efficacy, Hall and colleagues (1992) found that teachers with high general teaching efficacy rated their ability to influence and characteristics of the program as more important in accounting for success. In contrast, teachers with low general teaching efficacy rated home influences as more important in accounting for student success. No significant relationships were found between general teaching efficacy and failure.

Overall, the results of these studies appear to demonstrate that the attributions teachers make regarding their students’ performance vary depending on the teachers’ efficacy beliefs. Teachers with higher levels of personal teaching efficacy tend to attribute both student success and failure to their own influence, which appears inconsistent with a defensive/ego-enhancing attribution pattern. It may be that teachers with high personal teaching efficacy view students who are doing poorly more as a challenge than a threat (Hall et al., 1992). Although these studies could have benefited from using a more comprehensive measure of teaching self-efficacy and from investigating all of four of Weiner’s causal attributions, these findings are extremely important, as they appear to demonstrate that previous research is lacking in its ability to
explain teacher attribution patterns due to the lack of investigation of instructionally relevant teacher perceptions. Researching teaching self-efficacy seems to be a promising route to further clarifying teacher attribution patterns regarding student performance.

Statement of the Problem

An examination of the extant literature reveals discrepancies with regard to teacher attribution patterns about student performance. However, the investigation of teaching self-efficacy, which is an instructionally relevant perception held by teachers, has been shown to be a promising area for future teacher attribution research (Hall et al., 1992). Studies have demonstrated that understanding the relationship between teaching self-efficacy and teacher attributions regarding student performance may help to clarify some of the discrepancies that were found in previous teacher attribution research (Guskey, 1982; Hall et al.). Nonetheless, the existing literature is flawed for several reasons. First, rudimentary measures of teaching self-efficacy were used. Next, Weiner’s (1976, 1986) attribution theory was only partially investigated, as many researchers did not assess all four of the attributional causes. Moreover, in much of the teacher attribution research, experimenters have translated the participants’ attributions into the causal dimensions of internality and externality, but researchers and participants may not make the same classification of attributions into causal dimensions. Last, no studies have investigated the relationship between GTAs’ teaching self-efficacy and their attributions regarding students’ performance.

Because GTAs perform many important duties in the classroom, with many accepting full responsibility for teaching a course (Meyers & Prieto, 2000a; Mueller, Perlman, McCann, and McFadden, 1997; Prieto & Altmaier, 1994), it is important that
theoretically-based and methodologically-sound research be conducted in order to understand how to best train GTAs. Enhancing the training that today’s GTAs receive will likely pay dividends for the next generation of students because almost all professors were once GTAs (Nyquist, Abbott, & Wulff, 1989). Further, it appears as if many GTAs go on to professional academic careers; for example, in the current study, over half of the GTAs reported that they planned on a full-time career in academia. Given these facts, more research is needed to determine how variables, such as teaching self-efficacy and causal attributions, that have been shown to influence classroom behavior, are related to one another. The results of the current study may therefore be useful in the training and supervision of GTAs because the results help to shed light on whether training to enhance teaching self-efficacy and/or change attributional patterns is warranted in order to be confident that GTAs are performing their responsibilities effectively and to be confident that they are well prepared for their future professional endeavors.

Building and improving on previous studies, the present investigation, which was grounded in self-efficacy (Bandura, 1982, 1986, 1997) and attribution (Weiner, 1986) theories, was an attempt to augment the existing literature. The current research examined the relationship between GTAs’ teaching self-efficacy and the attributions they make regarding their students’ performance.

Significance of the Study

Both teaching self-efficacy and teacher attributions have been shown to influence teachers’ behaviors in the classroom. Likewise, teaching self-efficacy has been shown to influence GTAs’ behaviors in the classroom. In fact, teaching self-efficacy and causal attributions can affect GTAs’ motivational behavior (Bandura, 1982, 1986, 1997; Weiner,
1976, 1986). GTAs who have low teaching self-efficacy and those who make external or stable attributions in the face of failure, may not persist in challenging classroom experiences. The literature clearly shows that GTAs have many multifaceted responsibilities, which can certainly pose challenges (Prieto & Altmaier, 1994; Reid, Lewis, & Flores, 2001). Given the recent public outcry for better undergraduate instruction, it is essential that GTAs be prepared to face the demands they may experience in the classroom (Murray, 2002). One way to better prepare GTAs to face these challenges is to better understand the relationship between teaching self-efficacy and teacher attributions. With a better understanding of the relationship between those key variables, interventions can be targeted at increasing teaching self-efficacy or modifying causal attributions. The current research could provide clarification of the relationship between GTAs’ teaching self-efficacy and causal attributions and, as a result, provide essential information regarding how to best intervene and train GTAs for their current and future professional endeavors.

Summary

A great deal of research has explored the importance of teaching self-efficacy. Researchers have focused heavily on the relationship between teaching self-efficacy and other relevant variables, such as training and experience; however, researchers have yet to determine the specific relationship between teaching self-efficacy and the attributions that teachers and GTAs make regarding their students’ performance. The existing teacher attribution research has found discrepancies related to teacher attribution patterns regarding student performance. However, the investigation of teaching self-efficacy, which is an instructionally relevant perception held by teachers, has been shown to be a
promising area for future teacher attribution research (Hall et al., 1992). Therefore, it is essential for more research to be done that investigates the relationship between teaching self-efficacy and causal attributions and that improves upon the methodological shortcomings of previous literature. Moreover, numerous studies (e.g., Prieto & Altmaier, 1994; Prieto & Yamokoski, 2002) have supported the assertion that the same variables that are related to the teaching self-efficacy of K-12 teachers are related to the teaching self-efficacy of GTAs (Prieto & Altmaier), yet no studies have investigated the relationship between GTAs’ teaching self-efficacy and their attributions regarding their students’ performance. Consequently, the present study attempted to improve on the extant literature’s methodological shortcomings and explored the relationship between GTAs’ teaching self-efficacy and their attributions regarding students’ performance.
CHAPTER 2
REVIEW OF THE LITERATURE

Introduction

This study explored the relationship between GTAs’ teaching self-efficacy and their attributions regarding their students’ performance. The goal of this research was to take a theory-driven approach to investigating the specific relationship between GTAs’ teaching self-efficacy and their attributions. Therefore, the review of the literature is organized into the following sections: (1) an overview of self-efficacy theory, (2) an overview of the research regarding teaching self-efficacy, (3) an overview of the research regarding teacher attributions, and (4) conclusions and recommendations.

Self-Efficacy Theory

Self-efficacy has attracted a great deal of attention since 1977 when Bandura first presented the theory (Heppner et al., 1998). The concept of self-efficacy has been extremely influential in helping to understand human behavior. Moreover, according to one comprehensive review, the theory has been applied to many diverse areas, such as smoking cessation, weight loss, exercise compliance, career decision making, choice of college major, and success in math and science (Johnson, Baker, Kopala, Kiselica, & Thompson, 1989). The theory has also been applied to educational settings, with the most relevant application for the current project being teaching self-efficacy. Thus, for the purpose and scope of this review, the domain of teaching self-efficacy as it relates to
teacher education and GTAs will be addressed. However, in order to lay a foundation for understanding teaching self-efficacy, the next section will provide a brief review of general self-efficacy theory.

The Construct of Self-Efficacy

First, it is important to understand Bandura’s original conceptualizations of the self-efficacy construct. The concept of self-efficacy is embedded in Bandura’s (1982, 1986, 1997) social cognitive theory, which argues that people can exercise control over their thought processes, actions, and motivation. Because judgments and actions are in part self-determined, people have the ability to produce change in themselves and their situations through their own efforts. Bandura claimed that it is through mechanisms of personal agency that people make changes that affect their own functioning, and social cognitive theory addresses the ways in which this happens.

Among the mechanisms of agency, “none is more central or pervasive than people’s beliefs about their capabilities to exercise control over their own level of functioning and other events that affect their lives” (Bandura, 1993, p. 18). Self-efficacy involves the ways in which people judge their capabilities, which, in turn, affects their motivation and behavior. In essence, self-efficacy beliefs are critical to understand due to their ability to influence motivation, affect, and action. Bandura (1977) differentiates self-efficacy into two components: outcome expectancies and efficacy expectations. Outcome expectancies are a person’s belief that a particular behavior will lead to a particular outcome. Efficacy expectations are a person’s belief that he or she can successfully perform the behavior required to produce the desired outcome. Thus, people can believe that a given behavior will produce a particular outcome yet doubt their own
ability to produce that particular behavior. As a result, the strength of people’s beliefs about their effectiveness will affect their choice of activities, how much effort they will expend, and how long they will persist at a particular activity in the face of adversity. When efficacy expectations are high, people will try harder and persist longer, thereby gaining corrective experiences, which reinforce their sense of efficacy. However, people who prematurely stop trying will reinforce and perpetuate their self-debilitating efficacy beliefs.

Self-efficacy beliefs also influence causal attributions. People who have high efficacy beliefs usually attribute their failures to insufficient effort, but those who view themselves as inefficacious attribute their failures to low ability, which ultimately affects future performance and motivation. Overall, it is primarily through self-efficacy beliefs that causal attributions affect motivation and performance.

Furthermore, Bandura (1977) posited that efficacy expectations vary in several ways. One way they differ is in terms of the magnitude associated with the level of difficulty of the task being performed. In fact, people may have efficacy for only simple tasks and not more complex tasks. Moreover, efficacy expectations vary in terms of their generality— the extent to which the sense of efficacy can be applied to various situations. In other words, people’s sense of efficacy may be limited to only a few circumscribed situations or it may apply to a broad array. Finally, efficacy expectations vary in terms of their strength, which deals with how easily extinguishable the beliefs are. In the face of failure experiences, people may have efficacy beliefs that are very vulnerable or very stable.
Sources of Efficacy Information

Additionally, Bandura (1977, 1997) identified four sources of information that influence perceived efficacy. The first source of information comes from performance accomplishments, also called enactive mastery experiences. This source of information has the strongest influence on efficacy beliefs because it is based on personal successful experiences. Bandura (1977, 1982, 1997) stated that successes will strengthen perceived efficacy, but failures will lower perceived efficacy, especially if they occur early in the course of events and are not because of lack of effort or external circumstances. Nonetheless, if people only experience easy success then, in turn, they may be easily discouraged by a failure experience. On the other hand, a more resilient sense of efficacy can be established through overcoming obstacles and persevering in the face of difficulty. Difficulties give people the opportunity to improve their capabilities and exercise better control. In fact, Collins (as cited in Bandura, 1997) found that when children with equal mathematical ability were faced with a difficult problem, those children who believed strongly in their abilities chose to re-work more of the problems they failed and did so more accurately than those children who doubted their ability. Thus, a strong sense of efficacy helps people to persevere and also helps them to improve their capabilities and coping behaviors. In addition, the extent to which people will change their efficacy beliefs as a result of performance accomplishments varies due to a myriad of factors, such as the perceived difficulty of the task, the amount of help they received, and the circumstances under which the behavior was performed (Bandura, 1997). Therefore, efficacy beliefs are not simply a reflection of past performance.
Indeed, efficacy beliefs are also influenced by vicarious experiences. This source of information allows people to make inferences about themselves based on observing others performing the desired behaviors. If a model performs the behavior without any adverse consequences, people may come to believe that they, too, can perform the desired behavior if they persist in trying (Bandura, 1977). However, if models with the same perceived level of ability perform the behavior and fail, despite persistent effort, people’s level of self-efficacy is likely to decrease for that particular behavior. Thus, through social comparison, the successes of others who are perceived as similar to oneself exert an influence over one’s own sense of efficacy (Bandura, 1977). The greater the similarity between the observer and the model, the more influential the model’s success or failure experience is on the observer’s sense of efficacy. Nonetheless, because this information about efficacy is based on social comparison, it tends to be weaker and more vulnerable to change than performance accomplishments that are based on actual experiences (Bandura, 1977, 1997).

The third source of information comes from verbal persuasion. Bandura (1977, 1997) believed that people could be convinced, through suggestion, that they can carry out the desired behavior. In other words, people’s sense of efficacy is likely to be bolstered by a significant other expressing faith in their ability to perform a particular behavior rather than expressing doubt. Verbal persuasion is a weaker source of information than performance accomplishments because it does not provide an experiential base for people, but if it is a realistic appraisal of their capabilities, it may influence people to exert greater effort and persist longer if difficulties arise. Verbal feedback is especially influential when it highlights personal abilities and gains in ability
rather than focusing on effort or shortfalls, which tends to lower self-efficacy. Another factor that affects the impact of feedback is the perceived credibility and expertness of the person delivering the feedback. People who are seen as believable and who possess the desired skills themselves are more influential.

The last and weakest source of information comes from the emotional arousal by which people come to associate a particular emotional state with performing particular behaviors. Bandura (1977, 1997) claimed that people are more likely to expect success when they are not overcome with aversive arousal. These somatic indicators are most influential in behaviors that involve physical accomplishment, coping with stress, and health functioning. Because aversively high arousal can hinder performance, efficacy is usually higher when people are not overcome with negative arousal. Thus, in order to increase self-efficacy, stress levels and negative emotional tendencies should be reduced and misinterpretations of bodily states should be corrected (Bandura, 1997).

Overall, these four sources of information work together to influence people’s efficacy beliefs, but vary in their ability to affect efficacy. The sources of information that provide an experiential base, such as performance accomplishments, have the greatest impact on efficacy beliefs. Furthermore, the timing of the information can exert an influence on efficacy. For example, information about performance that occurs early on in the course of events is extremely influential in helping solidify efficacy beliefs. Indeed, a strong sense of efficacy has been linked to many beneficial effects. One area in which beneficial effects of a strong sense of efficacy have been found is education.
Teaching Self-Efficacy

Bandura (1993, 1997), himself, discussed the concept of efficacy as it applies to the educational process, student achievement, and instructional practices. For example, he postulated that students’ cognitive efficacy could affect their performance on various academic tasks. Furthermore, he applied self-efficacy theory to schools in general by proposing that there is a sense of school efficacy that involves the belief systems of the staff, which operate collectively. Bandura argued that collective school efficacy can affect the climate of school cultures, how schools function as a social system, and school-level achievement. On a more individual level, Bandura discussed the concept of teaching self-efficacy and its effects on teachers’ general orientation toward the teaching process and their instructional practices.

The purpose of the present study was to investigate the relationship between GTAs’ teaching self-efficacy and their attributions regarding students’ performance. Relatively little empirical and theoretical research has been conducted concerning GTAs (Prieto & Altmaier, 1994; Prieto & Meyers, 1999). Thus, in order to provide a more comprehensive picture of teaching self-efficacy, the broader literature of teacher education is reviewed along with the GTA literature. Much of the teacher education research has been conducted with individuals who are trained to teach grades K-12. Even though the training is somewhat different, it seems reasonable to speculate that the same variables that are related to the teaching self-efficacy of K-12 teachers are related to the teaching self-efficacy of GTAs (Prieto & Altmaier). Furthermore, previous research conducted on GTAs’ teaching self-efficacy has drawn upon the K-12 education literature (e.g. Prieto & Altmaier; Prieto & Yamokoski, 2002). The next section of the paper
explores some of the original conceptualizations of teaching self-efficacy that are derived from the teacher education literature.

The Construct of Teaching Self-Efficacy

The construct of teaching self-efficacy was first explored in two Rand Corporation studies (Armor et al., 1976; Berman et al., 1977). The purpose of these two studies was to evaluate a reading program used in the Los Angeles schools and to evaluate teachers’ use of federally funded innovations (as cited in Ashton & Webb, 1986). In these studies, self-efficacy was conceptualized rather specifically as teachers’ beliefs that students have the ability to learn and teachers’ confidence that they have the ability to teach these students effectively. Unfortunately, the construct was measured rather crudely with just a two-item dichotomous measure that asked: “When it comes right down to it, a teacher really can’t do much because most of a student’s motivation and performance depends on his or her home environment” and “If I try really hard, I can get through to even the most difficult or unmotivated students” (as cited in Denham & Michael, 1981, p. 45). This measure of teaching self-efficacy was based on Rotter’s locus of control construct (Gibson & Dembo, 1984). However, it is important to note that Bandura (1997) argued that locus of control and self-efficacy are two distinct concepts, with locus of control involving attributions about the causes of particular outcomes and self-efficacy involving the estimation of one’s ability to carry out a particular behavior.

In the evaluation of the reading program, the researchers found that teacher sense of personal teaching efficacy was significantly related to increases in reading achievement (as cited in Ashton & Webb, 1986). Further, in the evaluation of a federally-funded teacher innovation project, the researchers found that teacher sense of
personal teaching efficacy was related to the percent of project goals achieved, the extent of teacher change, improved student performance, and teachers’ use of project methods and materials after the project ended (as cited in Ashton & Webb). These original studies were fundamental in establishing that teachers’ sense of personal teaching efficacy could influence teacher motivation and student achievement.

The Rand studies (as cited in Ashton & Webb, 1986) provided a framework for researchers to examine the concept of teaching self-efficacy. Indeed, after this research was published, many more investigations sought to further define the construct of teaching self-efficacy as well as to develop better measures of the construct to determine to what variables it may or may not be related. Although the original measure of teaching self-efficacy was based on Rotter’s locus of control construct, the studies that followed were largely influenced by Bandura’s self-efficacy theory (e.g., Ashton & Webb, 1986; Denham & Michael, 1981; Gibson & Dembo, 1984). In keeping with Bandura’s theory that self-efficacy is made up of both efficacy expectations and outcome expectations, researchers also divided the concept of teaching self-efficacy into two components. In terms of teaching self-efficacy, Gibson and Dembo argued that outcome expectations reflected the degree to which teachers believed that teachers, in general, can overcome external barriers, such as IQ, family background, and school conditions and bring about student learning. This type of efficacy has been termed general teaching efficacy (Ashton & Webb; Ghaith & Yaghi, 1997). The second component, usually called personal teaching efficacy, reflects efficacy expectations and is the degree to which teachers believe in their own ability to bring about student learning (Ashton & Webb; Ghaith & Yaghi; Gibson & Dembo).
Because teaching self-efficacy has an impact on both teachers and students, the next section discusses a model that has been proposed by Denham and Michael (1981) that addresses how teaching self-efficacy and other variables work together to influence each other and various other factors. After the model has been discussed, research will be presented that examines the influence of the various factors that Denham and Michael proposed.

After conducting a literature review, interviewing experts in the fields of education, sociology, and psychology, and collecting data from approximately 20 teachers, Denham and Michael (1981) proposed their model of teaching self-efficacy, which consists of three major components (see Figure 1).

They first discussed teacher sense of efficacy. Denham and Michael (1981) argued, based on social learning theory and attribution theory, that efficacy is comprised of both a cognitive and affective component. The cognitive component deals with the appraisal of the likelihood that a “normative” teacher can bring about positive changes in students, as well as the teachers’ appraisal of their own ability to bring about such changes. The affective component concerns the pride or shame associated with teachers’ sense of efficacy. The authors contended that teachers may feel particularly proud when they accomplish a task that would be difficult for even the “ideal” teacher, and they may not feel shame when failing to carry out a behavior that would be difficult for even the “ideal” teacher to accomplish.
The next component in the model is antecedent conditions that include teacher training, teaching experiences, system variables, personal variables, and causal attributions. The authors asserted that these variables influence each other. The antecedent conditions appear rather straightforward, but will be explained in a bit more depth. For example, teacher training involves programs that are designed to impart information to teachers about various topics. In terms of teaching experience, the authors argued that this could relate to the success of a teacher in achieving sustained learning in the classroom or to the stage of the teacher’s career. System variables include things
such as support from administrators and peers as well as teacher participation in decision-making. The personal variables deal with factors such as sex, ethnic background, and self-concept of the teacher. Last, causal attributions are the perceived reasons for an unsuccessful or successful teaching endeavor.

The third component is measurable consequences that include both teacher behaviors and student outcomes. Teacher behaviors include things such as classroom behaviors, support for innovation, and professional activities. Student outcomes most often are viewed in terms of student gains in learning but can also be related to student behavioral and affective outcomes.

Denham and Michael (1981) assumed that the variables in their model are measurable. Further, they posited that teacher sense of efficacy is a manipulable variable. In speculating about how the three components work together, they claimed that teaching self-efficacy acts as an intervening variable that mediates the relationship between antecedent conditions and measurable consequences; however, they also allowed for the possibility that many of the antecedent conditions may make a direct contribution to measurable consequences without being mediated by self-efficacy.

One purpose of Denham and Michael’s (1981) research was to provide a model for relating teaching self-efficacy to other variables in an effort to serve as a guide for further research. Certainly, since their model has been proposed, many studies have been done that have investigated teaching self-efficacy. Although it is not the purpose of this chapter to provide an exhaustive review of all of the studies that have been conducted, it is important to discuss the research that has tested the influence of the various factors that Denham and Michael proposed. Because the relationship between teaching self-efficacy
and causal attributions was the focus of the current study, the research regarding the various antecedent and consequence factors of Denham and Michael’s model are first reviewed, followed by a more comprehensive review of the attribution factor, relevant theory, and research.

**Antecedent conditions.** The categories that comprise the antecedent conditions that will be discussed include (a) teacher training, (b) teaching experiences, (c) personal variables, and (d) system variables. First, teacher training is an important variable to investigate because it may serve as a building block for teaching self-efficacy. Teacher training can come in many forms. It can be thought of as the first instruction about teaching that individuals receive prior to doing any professional teaching or it can be thought of as continuing education for experienced teachers. The K-12 education literature has researched both conceptualizations of teacher training.

For example, Ramey-Gassert and colleagues (1996), in a qualitative study of experienced elementary school teachers, investigated the factors that influenced science teaching self-efficacy. Through in-depth interviews with 10 of the participants, they found that those who had a high level of science teaching self-efficacy reported that they had had successful pre-service teacher preparation. However, individuals who had a low level of science teaching self-efficacy reported that they had had negative pre-service teacher training experiences. These findings give some credence to the adage “success breeds success” and highlight the importance of productive initial training opportunities (Ramey-Gassert et al.). Furthermore, this research provides support for the idea that early teacher training is one factor that contributes to teaching self-efficacy.
Investigating the effect of teacher training delivered to experienced teachers, Fritz and colleagues (1995) explored how an in-service teacher training program influenced participants’ feelings of personal teaching efficacy. They sampled 241 participants who took part in an in-service teacher training program designed to instruct teachers on how to implement a new curriculum. The teachers were trained in how to develop activities to build self-esteem, internal locus of control, social skills, and decision-making abilities in the classroom. The researchers believed that the teachers’ teaching self-efficacy could be enhanced through evaluating their personal skills and through practicing effective classroom strategies. They also sampled 111 participants who served as a comparison group who did not participate in the in-service training. Their results revealed that the individuals who participated in the in-service training program did show a significant increase in personal teaching efficacy, but the personal teaching efficacy of individuals in the comparison group declined. Furthermore, for the group who participated in the training, they examined the effects of involvement in implementing the new curriculum. The training group was divided into two groups (low-involvement and high-involvement) based on the degree to which they reported using the new curriculum. The high involvement group used more of the curriculum activities that they learned in the training. The authors found that over time, the training in implementing the new curriculum buffered low-involvement teachers from a decline in efficacy across the school year and increased high-involvement teachers’ sense of efficacy. This study illustrates how in-service teacher training can affect experienced teachers’ sense of efficacy. Together, these studies provide support for Denham and Michael’s (1981) model by demonstrating that training can influence teaching self-efficacy.
In addition to teacher training, the K-12 education literature has also explored how teaching experiences that occur during the preservice stages of teaching as well as those that occur after one has been teaching for a period of time can influence teaching self-efficacy. Demonstrating the importance of early teaching experiences, Cannon and Scharmann (1996) conducted a quantitative and qualitative study of the influence of cooperative early field experiences on 120 preservice elementary teachers’ sense of science teaching self-efficacy. Cooperative early field experiences are formal teaching situations in an elementary science methods course where preservice teachers teach elementary-aged children a science learning cycle. The researchers split the participants into learning groups who observed an instructor teaching several science lessons that incorporated cooperative techniques. Then, using the Science Teaching Efficacy Beliefs Inventory (Enochs & Riggs, 1990) they tested the science teaching self-efficacy of half of the participants directly before and half of the participants directly after their field experiences. They found a main effect for time, suggesting that being able to participate in an early field experience had a positive influence on the science teaching self-efficacy of preservice teachers. The qualitative interview data, which assessed participants’ perceptions of the influence of cooperative learning techniques, supported the hypothesis that the early field experience enhanced their efficacy. Thus, this study provides evidence that early experiences with teaching, even before official student teaching begins, are beneficial, as they serve to increase self-efficacy.

Also investigating teaching experiences, Henson (2001) examined the effects of participatory teacher research that entails a collaborative process in which teachers critically examine their own classes, develop and implement educational interventions,
and test the effectiveness of these interventions. Eleven teachers were divided into groups of 2 to 3 who were trained in how to participate in teacher research, which was designed to be an active and collaborative means for professional development. The groups first brainstormed instructional challenges that were relevant to them (e.g. reducing disruption and facilitating on-task behavior) and then devised a data-based method with which to confirm or disconfirm the groups’ perceptions of these challenges. Following this, they discussed the difficulties they experience when teaching and did a small literature review in an effort to develop interventions to positively impact student behavior and achievement. The groups then carried out a study designed to assess how well their interventions worked to positively impact student behavior and achievement. For example, one group developed a token economy to reduce negative teacher-student interactions. Henson’s results revealed that, over time, both personal and general teaching efficacy showed large gains. Henson argued that the empirical data regarding the effectiveness of the interventions that the teachers employed served as explicit feedback about mastery experiences, which are the most powerful form of self-efficacy information (Bandura, 1977). Although the generalizability of these results is limited because of the small sample and alternative school setting, this unique study shows that teaching experiences, such as participating in teacher research and receiving empirical validation of attempted interventions, seem to have positive influences on teaching self-efficacy. These two studies (Cannon & Scharmann, 1996; Henson) appear to demonstrate that teaching experiences can impact the self-efficacy of novice teachers as well as experienced teachers.
Another way that teaching experience can be viewed is in terms of the number of years of experience that teachers have. Teacher experience in terms of time spent teaching has also been shown to be linked to teaching self-efficacy. In a study of 25 middle and high school teachers with a mean of 6.36 years of experience, Ghaith and Yaghi (1997) found that teachers’ experience was negatively correlated with general teaching efficacy. To put it another way, teachers with more years of experience believed that their ability to affect student learning was limited by external factors, such as students’ home environment or socioeconomic status. This finding is consistent with research that shows that there is some decline in teachers’ sense of efficacy the longer they stay in the profession (e.g., Anderson, Greene, & Lowen, 1988). Further, research also supports the notion that teaching self-efficacy is more likely to increase during preservice training, especially during the first practice teaching episode than it is the longer teachers stay in the profession (Hoy & Woolfolk, 1990). Thus, the literature on teacher training and experience suggests that training can affect teaching self-efficacy, but its impact may vary as a result of teachers’ level of experience.

Overall, actual teaching experiences as well as years in the profession have been shown to be related to teaching self-efficacy. Moreover, Bandura’s (1977, 1997) self-efficacy theory suggests that teaching experiences that occur early in one’s career would have the potential to have the largest impact on one’s sense of efficacy because they provide early information regarding mastery. Thus, making early teaching experiences positive and successful is of great importance.

In addition to the K-12 teacher education literature, the GTA literature has also investigated the effects of teacher training and teaching experience on GTAs’ teaching
self-efficacy. Research has shown that GTAs carry out many of the same responsibilities that K-12 teachers do. In a study of 78 GTAs who held positions in various academic departments, Prieto and Altmaier (1994) found that 44% of the GTAs were primary instructors who held responsibility for all teaching duties, 46% of their sample reported that they assisted a professor’s teaching and lectures, while only 10% indicated that they had little or no direct interaction with students. In a similar study, focusing solely on psychology GTAs, Mueller and colleagues (1997) surveyed 138 faculty members from APA-accredited doctoral programs who answered questions regarding the nature of the GTAs’ responsibilities in their program and the extent of their training. Their results revealed that 52% of faculty members reported that GTAs in their program teach a course with faculty supervision. In a related study, Meyers and Prieto’s (2000a) research with a sample of psychology GTAs found that 38% have full responsibility for teaching courses. Because many of the duties GTAs carry out are similar to those performed by K-12 education teachers (e.g. preparing and grading exams, lecturing), it seems reasonable to speculate that both teacher training and teaching experience variables found to affect K-12 teachers’ teaching self-efficacy would affect GTAs’ teaching self-efficacy in similar ways.

Drawing from Denham and Michael’s (1981) teaching self-efficacy model, Prieto and Altmaier (1994) examined the effects of training and teaching experience on the teaching self-efficacy of 78 GTAs from various academic departments. In this study, teaching experience was defined as number of semesters taught. In order to measure teaching self-efficacy, they adapted the Self-Efficacy toward Teaching Inventory (SETI, Tollerud, 1990). The SETI-A is an appropriate measure of GTAs’ personal teaching self-
efficacy because it assesses efficacy expectations for the tasks that many GTAs carry out. In other words, it assesses the degree to which GTAs feel confident that they can carry out relevant responsibilities, such as delivering lectures and initiating class discussion. The SETI-A assesses four teaching domains: Course Preparation, Instructor Behavior, Materials, and Evaluation and Examination. The internal consistency for the SETI-A ranges from .93 to .94 (Prieto & Altmaier; Prieto & Meyers, 1999; Prieto & Yamokoski, 2002). The results of the study, which provide support for Denham and Michael’s model, revealed two modest positive correlations between (a) previous teaching experience and teaching self-efficacy and (b) previous teaching training and teaching self-efficacy. Thus, GTAs who had previously taught and those who had received some type of training had higher levels of teaching self-efficacy. The results of this study, which are similar to the K-12 education literature, support the notion that GTA training and experience can positively affect teaching self-efficacy.

Extending the aforementioned study, Prieto and Yamokoski (2002) surveyed 149 GTAs across various academic departments to assess the effects of experience, training, and supervision on their teaching self-efficacy. Similar to the previous study, they found a positive correlation between previous teaching experience and GTAs’ scores on the SETI-A. However, when examining previous teaching experiences of GTAs who had primary responsibility for their classes, previous teaching experiences failed to account for a significant amount of variance in the teaching self-efficacy scores. Prieto and Yamokoski postulated that perhaps for this sample, having full responsibility for teaching a class might have had a more significant effect on teaching self-efficacy than previous teaching experiences. They also investigated the effects of supervision and training, but
the results were mixed. Prieto and Yamokoski postulated that the results indicated that GTAs felt more efficacious when they received support for their teaching duties from a single source. They contended that perhaps the multiple sources of information about teaching (training and supervision) were contradictory or perhaps they provided the GTA with an overload of information. These results suggest that teaching experience is associated with higher levels of teaching self-efficacy, but the contributions of supervision and training to teaching self-efficacy of GTAs need to be explored further.

Focusing solely on the teaching self-efficacy of psychology GTAs, Prieto and Meyers (1999) explored the effects of training and supervision. The 176 participants from various psychology departments completed the SETI-A and a demographic questionnaire that assessed their training and supervision experiences. The results of their analyses revealed a main effect for training, but no main effect for supervision and no interaction were found. However, the quality and type of supervision were not explored. Perhaps the quality of supervision has more to do with self-efficacy than just its presence or absence, a relationship the study’s authors said needs to be explored further. Thus, similar to what previous studies reported, GTAs who received formal training had significantly higher levels of teaching self-efficacy than those who received no formal training.

Overall, these studies demonstrate that just as training and teaching experiences affected the teaching self-efficacy of K-12 teachers, these factors also influence the teaching self-efficacy of GTAs, providing further support for the Denham and Michael (1981) model.
Two other antecedent conditions proposed by Denham and Michael (1981) that are important to discuss are system and personal variables. Less research has been conducted on these factors to determine their influence on self-efficacy. The K-12 education literature, which will be reviewed first, has several studies that have investigated these variables. However, very little research with GTAs has investigated these variables. Denham and Michael argued that system variables include such things as support from administrators, support from peers, and teacher participation in decision making. Demonstrating the importance of peer support, Henson’s (2001) study of teachers who participated in teacher research showed that collaboration with colleagues was significantly related to gains in general teaching efficacy. Although collaboration was measured with a single-item questionnaire, the qualitative data from the teacher interviews indicated that all of the teachers viewed working together with their peers as useful. Because general teaching efficacy is concerned with teachers’ ability (in general) to overcome external barriers, perhaps the collaboration provided a source of feedback concerning the effectiveness of other teachers (Henson).

Similarly, da Costa (1995), in a study of 26 elementary school teachers, researched the effects of four collaboration strategies. He found that the teachers who engaged in collaborative consultation, which is a form of working together in which teachers form a nonhierarchical relationship and observe each other in the classroom in an effort to evaluate teaching strategies and implement new ones, had higher personal teaching efficacy than did teachers who engaged in other forms of collaboration, such as those with no direct observation (collaborative consultation without direct observation, collegial consultation, and collegial consultation without direct observation).
Furthermore, pupils in the classes of teachers who used collaborative consultation had significantly higher levels of achievement as measured by their report cards. The results of this study appear to demonstrate the importance of peer collaboration as a means to enhance personal teaching efficacy.

Combining both system and personal variables, Shachar and Shmuelevitz (1997) investigated the effects of teacher collaboration and teacher background variables on teaching self-efficacy. They assessed 121 teachers from various junior high schools in Israel who had participated in a year-long in-service training program regarding cooperative learning methods. Teachers acquired skill in implementing four different cooperative learning methods. Analysis of their data revealed that teachers’ collaborative work with each other seemed to contribute positively to their sense of general teaching efficacy, as measured by a 27-item questionnaire designed by the authors. Thus, similar to Henson’s (2001) results, Shachar and Shmuelevitz also found that collaboration among teachers appears to bolster their confidence in the general effectiveness of teaching.

They also tested what effect personal variables, such as age and years that participants had taught at their present position, had on teaching self-efficacy (Shachar & Shmuelevitz, 1997). Their results showed that the background variables (i.e. teachers’ seniority in teaching, the number of years in present position, and age) accounted for relatively little of the variance in teaching self-efficacy. Thus, it appears as though in this study, system variables were more predictive of teaching self-efficacy than were background (e.g. age) variables.

Similar to the K-12 education literature, Prieto and Yamokoski (2002) in a study of GTAs failed to find any significant differences between male and female GTAs’
teaching self-efficacy or international and US national GTAs’ teaching self-efficacy. Likewise, Prieto and Altmaier (1994) found no significant gender or ethnic differences in GTAs’ teaching self-efficacy. However, Ashton and Webb (1986) argued that personal variables, such as gender, may play an important role in teachers’ sense of efficacy. They claimed that because women have a tendency to attribute their failure to lack of ability, they may develop a lower sense of efficacy when faced with challenging circumstances. Thus, more research that examines the impact of personal variables on teaching self-efficacy would be beneficial, as it may help to clear up debates within the literature.

Certainly, as the aforementioned research shows, system variables can impact teachers’ sense of personal and general teaching efficacy. For example, a factor such as collaboration with colleagues appears to be very potent in its ability to influence self-efficacy, as it may provide teachers with useful self-efficacy information and may, in fact, bolster efficacy. Indeed, as the current review of the literature illustrates, the antecedent conditions of teacher training, teacher experience, and system variables seem to be instrumental in influencing self-efficacy. The exact impact of personal variables on teaching self-efficacy needs to be investigated in more depth to clarify conflicting viewpoints. As stated earlier, the antecedent condition of causal attributions will be reviewed following a discussion of measurable consequences.

*Measurable consequences.* This section will discuss the literature that addresses the relationship between self-efficacy and measurable consequences. Denham and Michael (1981) proposed that measurable consequences could be thought of in terms of teacher behaviors and student outcomes. They hypothesized that a sense of efficacy could affect teachers’ behaviors in the classroom. Gibson and Dembo (1984)
investigated that hypothesis. They observed eight teachers who were found to have either high efficacy \((n = 4)\) or low efficacy \((n = 4)\), as measured by the Gibson and Dembo Teacher Efficacy Scale, which assesses both personal teaching efficacy and general teaching efficacy. The high and low efficacy groups were created by taking into consideration teachers’ scores on both the personal and general teaching efficacy subscales. They observed the teachers’ academic focus and feedback patterns. Their results revealed that teachers who had high personal and general self-efficacy spent more time in whole class instruction while those with low personal and general self-efficacy spent more time in small group instruction and seemed flustered if there were disruptions. They also found that when given an incorrect response, teachers with low personal and general self-efficacy were more likely to give feedback in the form of criticism; whereas, no criticism was observed in the teachers’ classes with high personal and general self-efficacy. Although this study did have some methodological limitations (e.g., small sample and dichotomous categorization), the results indicated that self-efficacy can be linked to teacher behaviors. Furthermore, Woolfolk and Hoy (1990) found that teaching self-efficacy is related to how teachers view management and control of students. They found that teachers with high general teaching efficacy were more humanistic in their approach to student control and management. In other words, they supported student autonomy in solving classroom problems.

In a study of GTAs, Bray and Howard (1980) found that a particular training program enhanced GTAs’ perceptions of their ability to involve students, to create enthusiasm and to prepare exams, thereby increasing their efficacy expectations. In turn,
these GTAs more easily adopted an indirect teaching style, used more praise, incorporated students’ ideas, and questioned more than lectured or criticized.

Taken together, these studies appear to show that distinctions do exist between the teaching behaviors of teachers with low self-efficacy and high self-efficacy. Some themes that emerge are that when compared to teachers with low teaching self-efficacy, teachers with high teaching self-efficacy seem to spend more time on whole group instruction, seem to place more of a focus on learning rather than control, and seem to want to encourage and praise students rather than criticize or embarrass them.

The second measurable consequence that Denham and Michael (1981) discussed was student outcomes. Although student outcomes, such as positive affect and behavior could be measured, research has mainly focused on student achievement. Denham and Michael argued that strong relationships have been found between teaching self-efficacy and student gains in learning. For example, the original Rand studies of teaching self-efficacy supported a link between teachers’ sense of efficacy and student achievement (as cited in Ashton & Webb, 1986). In addition, Ashton and Webb found a positive relationship between teaching self-efficacy and student achievement, which was measured by scores on the Metropolitan Achievement Test. A positive relationship between personal teaching efficacy and pupil achievement as measured by grades was also found by da Costa (1995). Certainly, teaching self-efficacy is an important variable as it has been shown to have an influence on student achievement.

Summary. Denham and Michael’s (1981) model of teaching self-efficacy appears to be a useful mechanism for organizing and thinking about how efficacy is influenced by, and influences, other factors. The current review of the relevant research illustrates
that many of the relationships that Denham and Michael proposed do seem to exist. For example, teaching experiences and training have been shown to have an impact on teaching self-efficacy. Indeed, Bandura’s (1977, 1997) theory would suggest that teaching experiences that occur early in one’s career will have the most impact on self-efficacy. Another conclusion that the literature supports is that system variables, such as peer collaboration and consultation, can influence self-efficacy. Last, teaching self-efficacy is related to student outcomes, such as student achievement. If self-efficacy can have an impact on student achievement then it is vital to understand more about the relationships between teaching self-efficacy and other variables.

Teacher Causal Attributions

Despite the large number of research results that have supported the relationships between Denham and Michael’s (1981) proposed antecedent and consequence factors and teaching self-efficacy, very little research has examined the relationship between Denham and Michael’s antecedent condition of causal attributions and teaching self-efficacy. Denham and Michael suggested that in their model, causal attributions refer to the causes teachers give for their experiences of success or failure in the classroom. Most teacher attribution research has investigated teachers’ causal attributions for their students’ performance (Burger, Cooper, & Good, 1982; Hall, Villeme, & Burley, 1989). Research has supported the notion that both teachers’ causal attributions and teaching self-efficacy affect teachers’ behavior in the classroom (Alderman, 1999; Gibson & Dembo, 1984; Graham, 1991; Woolfolk & Hoy, 1990), but the exact nature of the relationship between these two variables has yet to be fully explored in the literature. In fact, most of the research has focused solely on causal attributions teachers make about their students’
performance while ignoring how teaching self-efficacy may play a role in this process. In order to better understand the possible relationship between teaching self-efficacy and teachers’ causal attributions regarding their students’ performance, it is first important to explore the theoretical framework used to examine teachers’ causal attributions. Next, it is essential to review the existing literature regarding teachers’ causal attributions. Last, in order to better understand the relationship between teachers’ causal attributions and teaching self-efficacy, the extant research is reviewed.

*Weiner’s Attribution Theory*

Although attribution theory has its roots in Heider (1958), who investigated how people interpret events in their everyday lives, and many researchers have since proposed their own attribution theories (e.g. Kelley, 1967), the theory that is most widely used in achievement-related/educational settings is Weiner’s (1976) attribution theory (Graham, 1991). In fact, Denham and Michael (1981) drew most heavily from Weiner’s theory when discussing the role of teachers’ causal attributions.

An attribution is a person’s perceived reason given for a particular event (Weiner, 1976). In achievement-related settings, Weiner (1976, 1986) proposed that four causes, which were found to be the most general and salient, are used to interpret the outcome of an achievement-related event. Those four causes are (a) ability, (b) effort, (c) task difficulty, and (d) luck. In other words, in explaining one’s prior success/failure, an individual estimates his or her ability, the amount of effort expended, the perceived difficulty of the task, and the magnitude and direction of luck (Weiner, 1976). In addition, future expectancies of success and failure are based upon estimates of these four causes.
Moreover, Weiner (1976, 1986) argued that the four causes of success/failure vary along three dimensions. The first dimension is the locus of causality, which refers to whether the cause of an outcome is attributed directly to an individual (internal) or to variables outside the individual’s control (external). Ability and effort attributions are internal attributions, whereas task difficulty and luck are external attributions. The next dimension refers to the stability of causes, which fall along a stable-unstable continuum. Ability and task difficulty are stable; however, luck and effort are variable. The last dimension, controllability, refers to whether the outcome is under an individual’s volitional control. Weiner (1986) argued that effort is under an individual’s control, but ability is not. He also claimed that whenever people make an external attribution, the external event/cause related to the attribution is uncontrollable, as it is not under the individual’s control.

Although Weiner’s (1976, 1986) dimensions may be similar to other psychological constructs, such as Rotter’s internal-external locus of control, Weiner contended that Rotter’s locus of control construct is one-dimensional, whereas, he viewed locus and control as two separate dimensions. Locus refers to whether the cause is internal or external, and control indicates whether the cause is within one’s control. In fact, it is possible in Weiner’s view for a cause to be both internal and uncontrollable, such as one’s ability. Weiner’s view differs from Rotter, who believed that internals control their behavior. Moreover, Weiner added the dimension of stability because he noted that among internal and external causes, some remain constant while others fluctuate, which Rotter failed to take into account. Thus, it is important to note the distinctions between Weiner’s constructs and Rotter’s locus of control construct.
Weiner (1976, 1986) proposed that in making causal attributions, several other factors must be considered. First, in identifying the perceived causes of success or failure, people rely on certain antecedents. For example, if making an attribution regarding ability, people usually rely on estimates of their past performance and social norms. Further, Weiner suggested that causal schemas, which refer to the relationship an individual perceives between an observed event (effect) and the causes of an event, can also influence what attributions are made. For example, an individual may have a causal schema that high ability or hard work will produce success. In contrast, another individual may have a causal schema that both high ability and hard work are needed to be successful. Causal schemas are important because they permit causal deductions to be made (Weiner).

Weiner claimed that individual differences (e.g. race, gender) are also important antecedents to causal attributions. In fact, Alderman (1999) argued that the attributions of women/girls often reflect a lower expectancy pattern where they are more likely to make external attributions (luck) regarding success and more likely to make internal (lack of ability) attributions regarding failure, even when their achievement is higher. Ryckman and Peckman (1987) contended that girls’ attributions follow a learned helplessness pattern. In their research investigating gender differences in attributions for success and failure across different subject areas, they found that girls were more likely to make unstable attributions (e.g. effort) for their success and stable attributions for their failure (e.g. ability) in math/science. Furthermore, Vermeer, Boekaerts, and Seegers (2000) found that girls were more likely to attribute their failure in applied problem solving to lack of ability than were boys. Similarly, Campbell and Henry (1999) found gender
differences in that women were more likely to attribute their performance to effort than men were. Given the aforementioned research, it appears as though girls have a tendency to make internal attributions for failure and external or unstable attributions for success. Nonetheless, Hirschy and Morris (2001) contended that sex differences in attributional styles are questionable. Moreover, Voyles and Williams (2004) failed to find significant differences between girls’ and boys’ attributions for success and failure with using a new computer software program. Certainly, it appears as though there is a need to further clarify the role that gender may play in attributions. Furthermore, although effort and ability are the two most common attributions given for success/failure, the relative importance of each may vary by culture, which is a question that has not been fully resolved in the literature (Alderman; Weiner).

In addition to antecedents, Weiner (1976, 1986) considered the consequences of making certain attributions. He contended that certain attributions affect the expectancy of success. Ascription of an outcome to a stable factor (e.g. ability), rather than an unstable factor, increases the expectancy of success after a success, but decreases the expectancy of success after a failure. In other words, failure attributed to a stable factor decreases the expectancy of success (Alderman, 1999). Moreover, certain attributions influence the affective consequences of success and failure. Pride and shame are maximized when attributions are ascribed internally, but minimized when attributions are ascribed externally (Weiner). Last, causal attributions affect motivational behavior, such as speed of performance and persistence of behavior. For example, an individual who ascribes failure to an unstable factor such as effort usually maintains an expectancy of success and, in turn, perseveres to achieve the goal. However, research has indicated that
Ascription of failure to a stable factor such as ability decreases an expectancy of success, which could decrease behavior related to attaining the goal (Alderman, 2004; Graham, 1991; Weiner). Put another way, when one anticipates that conditions will remain stable, then his/her prior performance at a task will be anticipated again with increased certainty (Weiner).

In sum, the most widely used attribution theory in achievement-related/educational settings is Weiner’s (1976, 1986) theory. He argued that causal attributions are inferred from a variety of antecedents (e.g., past performance, individual differences). Moreover, when people strive to give a reason for a particular event, the most general and salient perceived causes of success or failure include ability, effort, task difficulty, and luck, which vary along three dimensions. These causal attributions influence expectancy of success, affect, and motivational behavior. Weiner’s theory has been widely applied to the research regarding teacher attributions.

Teacher Attribution Research

Next, it is essential to understand the existing literature regarding teachers’ causal attributions. The attributions teachers make regarding their students’ performance have been investigated in a variety of studies. However, these studies have failed to find consistent results. The earlier and more rudimentary studies were conducted in laboratory settings with undergraduate participants playing the role of the teacher and confederates playing the role of the student. Some of this research found support for a self-serving/ego-enhancing bias where teachers take credit for their students’ success, but attribute failure to the students in an effort to maintain their self-image and protect themselves from criticism (Miller & Ross, 1975).
For example, Brandt and colleagues (1975) had undergraduate participants deliver four lectures to a fictitious fourth grade student via a one-way microphone. The participants were given a description of the child, which included a statement regarding whether the student was highly or poorly motivated, as information regarding the student may affect the teacher’s evaluation of the student and the teacher’s evaluation of herself or himself. After each lecture, a test was given to the student and returned to the participant to grade. The experimenters manipulated the test results so that half of the participants taught successful students and half taught unsuccessful students. After the four lectures, the participants completed an evaluative questionnaire regarding student and self (as teacher) characteristics, such as student effort, student skill, teacher’s (i.e., the participant’s) adequacy, and responsibility for student’s performance. The results revealed that the information regarding the student’s motivation did not affect participants’ assignment of responsibility. In other words, participants who were told the student’s motivation was poor did not take less responsibility for the student’s performance. It appears as though the student’s actual performance, rather than information about the student’s motivation, exerted a stronger influence on the participants’ assignment of responsibility. Moreover, participants who taught successful students rated their presentations more favorably and assigned more responsibility for the student’s performance to themselves, which supports a self-serving/ego-enhancing bias where teachers accepted credit when students did well and attributed responsibility externally when students did poorly.

In contrast, other studies have failed to find a self-serving/ego-enhancing bias. Instead, support for a nondefensive response where teachers do not place blame on the
student or external factors for students’ poor performance has been found. In an effort to further investigate patterns of teachers’ attributions, Ames (1975) had 80 female undergraduates teach a child who was a confederate for 15 minutes in an experimental classroom. Following the teaching, the participant was given several pieces of information, which were thought to be able to influence the participant’s attribution of responsibility. First, she was informed regarding the success or failure of the student. Next, she was told about the importance of the student’s performance as either important to the child’s self-concept or unimportant. This variable was manipulated because it was hypothesized that the importance of success would increase the affective significance of the outcome for the teacher, thereby increasing the likelihood that the teacher would make a defensive attribution in an effort to protect her self-concept. Last, researchers manipulated the feasibility of success. The participant was informed that there was a high feasibility of success because the teaching materials had been widely used and tested or was informed that the feasibility of success was unknown because the teaching materials were being used for the first time. After receiving these pieces of information, the participant then attributed responsibility for her own and the child’s performance and evaluated the child. Supporting a non-defensive pattern, Ames found that participants attributed more responsibility to students for success and more responsibility to themselves for failure. Participants in the failure condition rated the task as more difficult; however, they attributed causality of the child’s performance more to themselves than did participants in the success condition. No relationship was found between the feasibility of success and the attribution of responsibility. Further, no relationship was found between the attribution of responsibility and the importance of the
task. In other words, participants who were told the task was very important to the child’s self-concept were no more likely to make defensive attributions. Therefore, the importance of success did not seem to influence the affective significance of the outcome for the teacher.

Ames (1975) argued that instead of taking a defensive stance, the information about the student’s success/failure aroused participants’ value-beliefs about their responsibility for students’ welfare. The teachers evidently had high value-beliefs that teachers are responsible for their students and their attributions supported their value-beliefs. Moreover, Ames provided another explanation for the non-defensive results based on Kelley’s analysis of variance model (1967, 1972). Ames asserted that an information-processing pattern could be used to understand why teachers accept greater responsibility for success than failure. He contended that when teachers lecture across several trials and receive feedback about their students’ performance after each trial, teachers are more likely to alter their teaching strategy if students fail. If teachers change their behavior and students improve, then they have experienced a covariation between their behavior and students’ performance. However, if teachers change their behavior and the students do not improve, no covariation has been observed. The lack of covariation is thought to provide the teacher with information that justifies an external attribution.

Ross and colleagues (1974) also examined teachers’ attribution patterns regarding students’ performance. Unlike previous studies, this study added a comparison group. The comparison group was added to improve previous methodology in which participants did not differ in the extent to which the task was relevant to their self-concept.

Professional teachers (n = 32), who were hypothesized to be more likely to make
defensive attributions because their performance is highly relevant to their self-concept, were compared to undergraduates ($n = 32$), who were thought to be less likely to make defensive attributions because their performance was not as relevant to their self-concept. The participants were asked to teach a list of 25 commonly misspelled words to an 11-year old male confederate student. The participants had 20 minutes to teach the list and were separated from the student via a one-way mirror. Following the teaching session, participants were informed about the success or failure of the student and were asked to complete a series of questionnaires regarding their attributions about the student’s performance and ratings of themselves and the student. The results contradicted an ego-enhancing/self-serving pattern in that the tendency to credit the student for success and blame the teacher for failure was more pronounced among professional than non-professional instructors. In other words, even though the professional teachers’ performance was highly relevant to their self-concept, they were not more likely to make defensive attributions. The authors asserted that their findings raised doubts about the universality of ego-defensive attributions regarding students’ performance. However, this study is not without shortcomings, such as a small sample size and lack of external validity, but it provides evidence that teacher attribution patterns regarding students’ performance are more complex than solely reflecting a defensive bias.

The aforementioned research does not provide a consistent explanation for teachers’ attributions regarding students’ performance. However, one reason that a regular pattern was not found could be the methodological shortcomings of the research. In fact, each of the studies described was conducted in a laboratory setting with undergraduate participants playing the role of the teacher and confederates playing the
role of the student. Certainly, the dynamics operating in a real classroom setting, such as concern for future interactions with students and concern for overall classroom progress, are not present in a laboratory setting (Burger et al., 1982; Guskey, 1982). Further, these studies had small sample sizes and very homogenous samples.

Burger and colleagues (1982) attempted to address one of the previous methodological problems in their research regarding teachers’ attribution patterns by surveying 17 real teachers from five different schools across three times during the school year (November, February, and May). Participants were first asked to rank their students according to their probable success at verbal tasks and then their general academic potential. Because the first ranking occurred in November, teachers had some time to observe their students in order to make an assessment regarding their probable success at verbal task and their general academic potential. The two lists were averaged to arrive at a final grouping of students as high, average, and low rate of success; however, the researchers do not provide an explanation for how the lists were averaged. Two male and two female students were randomly chosen from each of the three groups. At three separate times during the school year, teachers were asked to list separately for each student the reason for his or her academic success/failure and the percentage of time the reasons listed applied. Next, two coders placed the teachers’ attributions into 1 of 12 attributional categories, as defined by Cooper and Burger (1980), such as ability, stable effort, immediate effort, family background, other students, and teacher directions/instructions. The data were analyzed by grouping the 12 attributions into three categories of (a) internal stable attributions (ability, previous experience, acquired characteristics), (b) effort-related attributions (stable effort, immediate effort, attention),
and (c) external attributions (instructions/directions, task, family, other students). It is important to note that the categories used by these authors, although somewhat similar to Weiner’s causal dimensions, do not completely reflect his three causal dimensions of internality, controllability, and stability. Moreover, the last two categories contain attributions that are both stable and unstable.

Results revealed that for both success and failure, factors internal to the student were cited more often than factors external to the student. However, no clear defensive/counter-defensive pattern emerged, as teachers mentioned both factors internal to them and external to them in accounting for failure. For example, teachers cited their instruction and directions in accounting for failure, but also cited attention and immediate effort, which are factors internal to the student, for failure. Nonetheless, one consistent pattern that emerged was that unexpected outcomes, such as failure for a high-rate-of-success student, were attributed more to unstable factors. Overall, this study does have its shortcomings, such as using raters and not participants to code attributions into categories, using limited attribution categories, and providing a sparse description of methodological details. However, the results appear to demonstrate that a consistent teacher attribution pattern regarding students’ performance is unclear.

Also utilizing actual teachers, Tollefson, Milvin, and Thippavajjala (1990) asked 44 teachers from all grade levels (elementary to college) to think of a student who did unsatisfactory work. Teachers were first asked to write a brief description of why the student was doing unsatisfactory work. Then, teachers rated the student based on eight student variables, such as ability, achievement, effort, attention to academic tasks, family involvement, and peer interaction. The teachers’ descriptions regarding why the student
was doing poorly were reliably classified into one of the eight student variables they were asked to rate. When asked about the reasons for the student’s unsatisfactory work, teachers ranked student factors as the most important contributor to the student’s academic patterns. Overall, teachers overwhelmingly selected stable characteristics of the student as the most important factor in accounting for the student’s low achievement. The authors claimed these results support a defensive bias because teachers attributed the student’s failure to factors outside of themselves perhaps in an effort to preserve their self-image.

Despite the advances of using actual teachers and students, these studies are limited because the experimenters translated the participants’ attributions into the dimensions of internality and externality. Yet, researchers and participants may not always make the same classification of attributions. Moreover, even though most of the teacher attribution research is based on Weiner’s attribution theory, most studies do not take into account all three of his causal dimensions (McAllister, 1996). As a result, McAllister sought to explore all three dimensions of Weiner’s theory and allow participants themselves to code attributions into causal dimensions. McAllister explored both students’ and teachers’ attributions for success and failure in two separate studies.

In the first study, undergraduates were randomly assigned to 1 of 3 roles (a) the teacher, (b) the student, or (c) the observer. The teacher was given the task of reading an article and taking notes, which would be used by the student to study for a test. The student was given 15 minutes to study the notes and then took a test on the article. The observer watched both the teacher and the student. The following week, participants were informed of the student’s score, which was randomly assigned as an A or F. Then,
each participant was asked to describe the cause for the grade and rate the cause along Weiner’s three causal dimensions using the Causal Dimension Scale (Russell, 1982). Each participant filled out the questionnaire from his or her own perspective based on the role in the experiment, and also from the perspective of the other two roles based on how he or she thought those participants would respond. The results of Study 1 and Study 2 will be discussed together following a description of Study 2.

In order to have both a laboratory and a naturalistic manipulation, in the second study, McAllister (1996) surveyed college professors, college students, and staff members. Half of the participants were randomly assigned to the A condition and half to the F condition. College professors were asked to think of the last student to whom they gave a grade of an A (or F). Students were asked to think of the last time they received an A (or F) in a course. If students had never received an F, they were asked to think of the last time they had done poorly in a course. Staff members were asked to consider the typical university student who received an A (or F). Then, each participant followed the same procedure as in Study 1 in rating the causes for the grade and completing the questionnaires.

The results of the first study found that participants in the role of the teacher attributed successful outcomes internally. Moreover, successes were viewed as more stable and controllable than failures. Similarly, participants in the role of the student attributed successful outcomes internally. They also viewed successes as more stable and controllable. In terms of failure, both participants in the roles of the teacher and student viewed failure as due to more external, unstable, and uncontrollable factors. Participants in the role of the observer attributed successful outcomes as more internal to the student
and saw successful outcomes as more stable and controllable than failures. Therefore, both student and teacher participants demonstrated a self-serving/ego-enhancing bias in accounting for success and failure. Results of the second study revealed that actual teachers made more internal attributions for success than for failure. Contrary to the results of Study 1, teachers also attributed more responsibility to the student for success than for failure. It would appear that teachers are sharing some of the credit for success with the student. Similar to the results of the first study, teachers and students viewed success as more stable and controllable than failure and students attributed success more to themselves. In terms of failure, the results were the same as in Study 1. Staff viewed successful outcomes as being caused by factors more internal to the teacher, more controllable, and more stable than failures.

Overall, the results of both of these studies supported a self-serving/ego-enhancing bias for both teachers and students. McAllister (1996) argued that the fact that the bias was found in both naturalistic and laboratory settings increases the confidence in the findings. McAllister’s study is an improvement because he tested all dimensions of Weiner’s theory, had participants themselves rate their attributions, and used both experimental and laboratory settings; however, in the real world, teachers must consider a number of outcomes at the same time, not just one, which may influence whether the self-serving bias emerges.

In addition to investigating teachers’ attributions regarding students’ performance, researchers have also explored how these attributions affect teachers’ behaviors in the classroom. Hall and colleagues (1989) surveyed 214 teachers regarding their attributions for their students’ success and failure and how those attributions related to the feedback
practices they used. Teachers were first asked to consider three students who were doing well and consider them as a group as they answered the Teacher Attributions for Academic Performance Scale (TAAPS), a 10-item questionnaire based on Cooper and Burger’s (1980) attribution categories, designed to assess teacher attributions for students’ academic performance. They also completed a 7-item questionnaire, the Feedback on Academic Performance Scale, designed to assess what type of feedback patterns they used to deal with students’ academic performance. After responding to the two questionnaires, they were then asked to complete the measures again, thinking of three students who were doing poorly academically and consider them as a group. Some researchers argue that teachers’ attributions regarding their students’ performance may vary based on whether they consider their students as a group or as individuals (Guskey, 1987); however, Hall and his colleagues do not specify why they asked participants to complete the measures while thinking of their students as a group.

The results showed that factors internal to the student were considered of greater importance in accounting for both academic success and failure. Teachers were also more likely to attribute success rather than failure to factors internal to themselves. These results appear consistent with an ego-enhancing pattern of attributions. Moreover, feedback practices of giving specific information about correct performance, using specific praise, and giving corrective information were correlated with the emphasis teachers assigned to external attributions (to the student) for explaining student success. Thus, teachers’ attributions were found to affect the type of feedback they use in the classroom.
Also investigating teacher attributions and feedback practices, Medway (1979) found that teachers who referred a student for psychological services were more likely to hold the student rather than teaching environment variables accountable for classroom problems. Also, Medway found that when teachers perceived problem students as lacking motivation, they were more likely to give negative feedback in the form of warnings and criticism. In addition, Georgiou and colleagues (2002) examined teachers’ attributions regarding a student who was performing poorly in their class and their behavior toward that student. The results revealed that when teachers attributed the student’s low achievement to ability, they expressed more pity and less anger, but when they attributed the student’s low achievement to lack of effort, more anger was expressed and less pity. Additionally, teachers who were willing to accept some responsibility for the student’s poor performance were more likely to persevere in trying to help the student. These studies are important because they demonstrate that teachers’ attributions regarding their students’ performance ultimately affect the practices they use in the classroom and their behavior toward their students.

Summary. Much research has been conducted on teachers’ attribution patterns regarding their students’ performance. Early studies were flawed by their over-reliance on role-playing teachers and students and lack of external validity. Later studies attempted to eliminate the methodological shortcomings of previous studies by using real teachers, real students, and better attribution measures. Collectively, these studies fail to support a consistent teacher attribution pattern. Some of the research discussed supports an ego-enhancing/self-serving bias (e.g. Brandt et al., 1975; McAllister, 1996) whereby teachers take credit for students’ success, but attribute failure to the student or to other
external factors in an apparent effort to protect their self-image. However, other studies found support for a non-defensive pattern whereby information-processing variables and value-beliefs about teaching played an important role (e.g. Ames, 1975; Ross et al., 1974). Moreover, studies have shown that attributions are important because they affect teachers’ behavior in the classroom (e.g. Georgiou et al., 2002). Perhaps one of the reasons that the studies reviewed have failed to find consistent results is their lack of investigation of other instructionally relevant perceptions held by teachers (Hall et al., 1992). One potentially important variable to consider is teaching self-efficacy (Georgiou et al., 2002; Hall et al.).

**Teaching Self-Efficacy and Teacher Attributions**

As previously discussed, teaching self-efficacy is an important construct, because it has been shown to be related to teacher behaviors and student outcomes (Ashton & Webb, 1986; da Costa, 1995). More importantly, teaching self-efficacy may also be related to the attributions teachers make regarding their students’ performance (Georgiou et al., 2002; Guskey, 1982, 1987; Hall et al., 1992). Unfortunately, very few studies have explored the relationship between teaching self-efficacy and teacher attributions regarding student performance. However, because of the potential importance of this relationship, and given the purpose of the current project, the studies that have been conducted are reviewed.

Guskey (1982) sought to examine variables, such as teaching self-efficacy and grade level, which may account for the discrepancies in teacher attribution patterns across previous studies. Moreover, because he believed that the actual classroom differed dramatically from a laboratory teaching situation, he included only veteran teachers
whose perceptions were based on their actual classroom experiences. Guskey used the locus and stability dimensions of Weiner’s attribution model to provide a framework for his investigation. He asked 184 elementary and secondary school teachers to complete a demographic questionnaire and two additional questionnaires designed to measure attributions and teaching self-efficacy. The attribution questionnaire asked teachers to divide 100 points among four probable causes or reasons for a classroom situation in which they were (a) particularly successful or (b) particularly unsuccessful with a group or class of students. The four probable causes, generated from Weiner’s theory, related to their teaching abilities, the effort they put into teaching, the difficulty of the task (defined as how academically good or poor the students were upon entering the class), and good or bad luck. Teaching self-efficacy was measured using a two-item questionnaire, based on Berman and McLaughlin’s (1977) original conceptualization of teaching efficacy, that teachers rated on a scale from 1 to 7.

The results indicated that teachers tended to make defensive attributions by assigning greater weight to the internal categories (effort and ability) for success than for failure. Moreover, luck was seldom cited as an explanation for either success or failure. In other words, when successful, teachers attributed success to internal factors of ability and effort and made little distinction with regard to the stability of these causes. However, when unsuccessful, teachers attributed failure to external causes, primarily the difficulty of the task, but also to insufficient effort.

In attempting to discover variables that may account for the discrepancies in previous research, Guskey (1982) found that both grade level and teaching self-efficacy influenced teacher attributions. In terms of grade level, teachers at higher grade levels
compared to those at lower grade levels attributed more significance to the difficulty of the task than to factors such as ability or effort in accounting for student failure. More importantly, Guskey found a significant positive relationship between measures of teaching self-efficacy and the weight assigned to teaching effort for both positive and negative student outcomes. Put another way, teachers with high teaching self-efficacy attributed both success and failure to the effort they put into teaching. This finding illustrates the importance of measuring teaching self-efficacy because looking solely at the attribution results, one may make the conclusion that the teachers made defensive attributions with regard to success and failure. However, this result suggests that teaching self-efficacy influenced the attributions that teachers made so that teachers with high teaching self-efficacy made internal attributions even for failure not simply for success. In addition, a significant negative relationship was found between teaching self-efficacy and task difficulty for both positive and negative student outcomes. It appears as though teachers with low teaching self-efficacy view the difficulty of the task as most important in accounting for success and failure. Overall, Guskey argued that teaching self-efficacy and the attribution categories of locus and stability influence each other, but the exact relationship between the two needs to be further investigated. Certainly, Guskey’s research could be improved by using a more comprehensive measure of teaching self-efficacy, but his study clearly demonstrates the importance of considering the relationship between teacher attributions and teaching self-efficacy.

Hall and colleagues (1992) also attempted to clarify the nature of the relationship between teachers’ attributions about student performance and other instructionally relevant teacher perceptions by investigating teaching self-efficacy. They argued that
teaching self-efficacy, or “the perceived ability to help students [,] may play a role in the nature of the attributions that teachers adopt as explanations of their students’ academic behavior” (p. 5). The researchers hypothesized that high efficacy teachers would tend to emphasize attributions that reflected some degree of teacher influence or control.

Hall and colleagues (1992) surveyed 240 teachers from grades 1 to 12. The teacher attributions were measured using the Teacher Attribution for Academic Performance Scale (Hall et al., 1989), which is comprised of 11 attributions that teachers cite to account for their students’ performance. Teachers rate on a 6-point scale how important each attribution is in accounting for the success/failure of their students. Six of the attributions were considered internal (e.g., student ability, typical effort, concentration) and five of the attributions were considered external influences (e.g., task difficulty, teacher influence, peer influence). It is important to note that Weiner’s causal dimensions of stability and controllability were not measured. Teachers completed the scale first thinking of three students who were doing well academically in their classroom and then completed the scale thinking of three students who were not performing well academically in their classroom. Teaching self-efficacy was measured by adapting two items from Berman and McLaughlin (1977) that reflected general teaching efficacy and personal teaching efficacy. The researchers performed a median split on the teaching self-efficacy scores to identify low and high personal teaching and general teaching efficacy groups.

Their results revealed that personal teaching self-efficacy did influence teacher attributions regarding student performance. With regard to successful outcomes and personal teaching efficacy, teachers with higher personal teaching efficacy placed
significantly greater importance on their ability and characteristics of the program in accounting for students’ success. With regard to failure and personal teaching efficacy, teachers with high personal teaching efficacy placed significantly greater importance on their influence as teachers in accounting for student failure. In other words, teachers with a high level of personal teaching efficacy were more willing to assume responsibility for student failure than teachers with low levels of personal teaching efficacy. This finding illustrates the importance of considering teaching self-efficacy, as previous research that had only investigated attributions and not other instructionally-relevant teacher perceptions, had indicated that teachers tend to blame students and external factors for failure. It would appear from these findings that the relationship is more complex than previous attribution research suggested.

Moreover, with regard to successful outcomes and general teaching efficacy, Hall and colleagues (1992) found that teachers with high general teaching efficacy rated their ability to influence, and characteristics of the program, as more important in accounting for success. In contrast, teachers with low general teaching efficacy rated home influences as more important in accounting for student success. No significant relationships were found between general teaching efficacy and failure.

Overall, the results of this study appear to demonstrate that the attributions teachers make regarding their students’ performance vary depending on the teachers’ efficacy beliefs. Teachers with higher levels of personal teaching efficacy tend to attribute both student success and failure to their own influence. In other words, teachers with a high degree of personal teaching efficacy “see themselves as responsible for student learning outcomes regardless of whether those learning outcomes connote success
or failure,” which appears inconsistent with a defensive/ego-enhancing attribution pattern (Hall et al., 1992, p. 14). It may be that teachers with high personal teaching efficacy view students who are doing poorly more as a challenge than a threat (Hall et al.). Indeed, this study could have benefited from using a more comprehensive measure of teaching self-efficacy and from investigating Weiner’s four causal attributions. However, these findings are extremely important, as they appear to demonstrate that previous research is lacking in its ability to explain teacher attribution patterns because of the lack of investigation of instructionally relevant teacher perceptions. Researching teaching self-efficacy seems to be a promising route to further clarifying teacher attribution patterns regarding student performance.

Conclusions and Recommendations

Much research has been conducted on teacher attribution patterns regarding their students’ performance, and several conclusions can be drawn. First, support for an ego-enhancing/self-serving bias whereby teachers take credit for students’ success, but attribute failure to the student or to other external factors in an effort to protect their self-image, was found in numerous studies (e.g. McAllister, 1996; Ross et al., 1974). In addition, in several studies, support for a non-defensive pattern was found whereby information-processing variables and value-beliefs about teaching played an important role (e.g. Ames, 1975; Ross et al.). The existing teacher attribution research has found discrepancies with regard to teacher attribution patterns regarding student performance. However, the investigation of teaching self-efficacy has been shown to be a promising area for future teacher attribution research (Hall et al., 1992). Studies have shown that understanding the relationship between teaching self-efficacy and teacher attributions
regarding student performance may help to clarify some of the discrepancies that were
found in previous teacher attribution research (Guskey, 1982; Hall et al., 1992).

Nonetheless, the extant teacher attribution literature has significant shortcomings.
In fact, many of the early attribution studies used undergraduate participants who played
the role of the teacher and confederates who played the role of the student. Certainly, the
dynamics operating in a real classroom are different than those in a laboratory situation.
The fact that real teachers in real classrooms are able to establish relationships with their
students that those in laboratory settings cannot necessarily affects the attributions that
are made. Some later research (McAllister, 1996; Tollefson et al., 1990) attempted to use
a more naturalistic setting, but there is still a need for research to be done that
investigates real teachers in real classroom settings.

Although much of the teacher attribution research is based on Weiner’s (1976,
1986) attribution theory, many studies failed to take into account all four of his
attributions of ability, effort, task difficulty, and luck. If a complete picture of teacher
attributions regarding student performance is to be found, then the research must be
theory-grounded and comprehensive. As a result, future investigations of teacher
attributions need to take into account all four of Weiner’s causal attributions.

Moreover, even though the research regarding teaching self-efficacy and teacher
attributions extended the existing research in a meaningful way, there is still much room
for improvement. In fact, both of the studies discussed (Guskey, 1982; Hall et al., 1992)
used a rudimentary measure of teaching self-efficacy. More comprehensive measures of
teaching self-efficacy exist and need to be used to further elucidate the relationship
between teacher attributions regarding student performance and teaching self-efficacy.
Last, even though it seems reasonable to speculate, and numerous studies have supported (e.g. Prieto & Altmaier, 1994; Prieto & Yamokoski, 2002), that the same variables that are related to the teaching self-efficacy of K-12 teachers are related to the teaching self-efficacy of GTAs (Prieto & Altmaier, 1994), no studies have investigated the relationship between GTAs’ teaching self-efficacy and their attributions regarding their students’ performance. Certainly, it has been demonstrated in the literature that both teaching self-efficacy and attributions affect teachers’ behavior in the classroom and student outcomes (Alderman, 1999; Gibson & Dembo, 1984; Graham, 1991; Woolfolk & Hoy, 1990). Because GTAs perform a great deal of important responsibilities in the classroom, with some even having full responsibility for teaching a course, it seems essential that the relationship between GTAs’ teaching self-efficacy and attributions regarding student performance be investigated. Consequently, the present study attempted to improve on some of the extant literature’s methodological shortcomings and explored the relationship between GTAs’ teaching self-efficacy and their attributions regarding students’ performance.

Research Questions and Hypotheses

The current study addressed the following broad questions:

1) What is the relationship between GTAs’ teaching self-efficacy and their attributions regarding their students’ performance?

2) Does gender influence the relationship between GTAs’ teaching self-efficacy and attributions regarding their students’ performance?

Hypotheses were generated by taking into account a review of the teacher education and GTA literature and self-efficacy and attribution theories. Because the extant literature has
investigated both Weiner’s causal dimensions and four causal attributions, specific hypotheses were made regarding the relationships among GTAs’ teaching self-efficacy, causal dimensions, and causal attributions. Hypotheses were limited to those that could be reasonably supported by the previous literature. In addition, an exploratory hypothesis regarding the influence of gender on the relationship between GTAs’ teaching self-efficacy and attributions was investigated. The following were the specific hypotheses of the present study.

**Hypotheses**

*GTAs’ Teaching Self-Efficacy and Causal Dimensions.*

1) When most of the GTAs’ students do well in the class, GTAs will make internal attributions, as measured by the CDS-II (McAuley, Duncan, & Russell, 1992), regardless of their level of TSE, as measured by the SETI-A (a measure of GTAs’ personal teaching efficacy) (Prieto & Altmaier, 1994), but when most of the GTAs’ students do poorly in the class, GTAs with higher TSE will make internal attributions while those with lower TSE will make external attributions.

*GTAs’ Teaching Self-Efficacy and Four Causal Attributions.*

2) When most of the GTAs’ students do well in the class, GTAs’ level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will not be significantly correlated to ability attributions, as measured by the CDS-II (McAuley et al., 1992).

3) When most of the GTAs’ students do well in the class, GTAs’ level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will not be
significantly correlated to effort attributions, as measured by the CDS-II
(McAuley et al., 1992).

4) When most of the GTAs’ students do poorly in the class, GTAs’ level
of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will be
significantly positively correlated to ability attributions, as measured by the CDS-
II (McAuley et al., 1992).

5) When most of the GTAs’ students do poorly in the class, GTAs’ level
of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will be
significantly positively correlated to effort attributions, as measured by the CDS-
II (McAuley et al., 1992).

6) When most of the GTAs’ students do poorly in the class, GTAs’ level
of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will be
significantly negatively correlated to task difficulty attributions, as measured by
the CDS-II (McAuley et al., 1992).

7) When most of the GTAs’ students do poorly or do well in the class,
GTAs’ level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will
not be significantly correlated to luck attributions, as measured by the CDS-II
(McAuley et al., 1992).

Exploratory Hypothesis.

8) There will be significant differences in the GTAs’ attributions (ability,
effort, task difficulty, and internality/externality), as measured by the CDS-II
(McAuley et al., 1992), based on GTAs’ sex (men/women), GTAs’ students’
performance (do well/do poorly), and GTAs’ level of teaching self-efficacy, as measured by the SETI-A (Prieto & Altmaier, 1994).

8a) When the GTAs’ students do well in the class, male GTAs will make attributions of ability, effort, and internal locus, as measured by the CDS-II (McAuley et al., 1992), whereas, female GTAs will make attributions of task difficulty, luck, and external locus.

8b) When the GTAs’ students do poorly in the class, male GTAs will make attributions of task difficulty, luck and external locus, as measured by the CDS-II (McAuley et al., 1992), whereas, female GTAs will make attributions of ability, effort, and internal locus.

8c) Male GTAs with higher TSE will make significantly more ability, effort, and internal locus attributions, as measured by the CDS-II (McAuley et al., 1992), than female GTAs with higher TSE.
CHAPTER III

METHODOLOGY

Introduction

Because of the voids that exist in the GTA literature, the need for more research is warranted. Given the call for GTA research that is theory-driven and empirical (Prieto & Altmaier, 1994; Prieto & Meyers, 1999), the present study, which is grounded in self-efficacy and attribution theories (Bandura, 1982, 1986, 1997; Weiner, 1986) and is empirical in nature, sought to better understand the relationship between GTAs’ teaching self-efficacy and the attributions GTAs make regarding their students’ performance. The current study drew heavily on the methodologies used in the K-12 education literature, as this study was one of the first of its kind to investigate this specific relationship.

Statement of the Problem

An examination of the extant literature reveals discrepancies with regard to teacher attribution patterns regarding student performance. However, the investigation of teaching self-efficacy, which is an instructionally relevant perception held by teachers, has been shown to be a promising area for future teacher attribution research (Hall et al., 1992). Studies have demonstrated that understanding the relationship between teaching self-efficacy and teacher attributions regarding student performance may help to clarify some of the discrepancies that were found in previous teacher attribution research.
Nonetheless, the existing literature is flawed for several reasons. First, rudimentary measures of teaching self-efficacy were used. Next, Weiner’s (1976, 1986) attribution theory was only partially investigated, as many researchers did not assess all four of the attributional causes. Moreover, in much of the teacher attribution research, experimenters have translated the participants’ attributions into the causal dimensions of internality and externality, but researchers and participants may not make the same classification of attributions into causal dimensions. Last, no studies have investigated the relationship between GTAs’ teaching self-efficacy and their attributions regarding students’ performance. Building and improving on previous studies, the present investigation, which is grounded in self-efficacy (Bandura, 1982, 1986, 1997) and attribution (Weiner, 1986) theories, was an attempt to augment the existing literature. The current research examined the relationship between GTAs’ teaching self-efficacy and the attributions they make regarding their students’ performance.

Research Questions and Hypotheses

The current study addressed the following broad questions:

1) What is the relationship between GTAs’ teaching self-efficacy and their attributions regarding their students’ performance?

2) Does gender influence the relationship between GTAs’ teaching self-efficacy and attributions regarding their students’ performance?

Hypotheses were generated by taking into account the review of the teacher education and GTA literature and self-efficacy and attribution theories. Because the extant literature has investigated both Weiner’s causal dimensions and four causal attributions, specific hypotheses were made regarding the relationships among GTAs’ teaching self-efficacy,
causal dimensions, and causal attributions. These hypotheses were limited to those that could be reasonably supported by the previous literature. In addition, an exploratory hypothesis regarding the influence of gender on the relationship between GTAs’ teaching self-efficacy and attributions was investigated. The following were the specific hypotheses of the present study.

Hypotheses

GTAs’ Teaching Self-Efficacy and Causal Dimensions.

1) When most of the GTAs’ students do well in the class, GTAs will make internal attributions, as measured by the CDS-II (McAuley, Duncan, & Russell, 1992), regardless of their level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), but when most of the GTAs’ students do poorly in the class, GTAs with higher TSE will make internal attributions while those with lower TSE will make external attributions.

GTAs’ Teaching Self-Efficacy and Four Causal Attributions.

2) When most of the GTAs’ students do well in the class, GTAs’ level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will not be significantly correlated to ability attributions, as measured by the CDS-II (McAuley et al., 1992).

3) When most of the GTAs’ students do well in the class, GTAs’ level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will not be significantly correlated to effort attributions, as measured by the CDS-II (McAuley et al., 1992).
4) When most of the GTAs’ students do poorly in the class, GTAs’ level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will be significantly positively correlated to ability attributions, as measured by the CDS-II (McAuley et al., 1992).

5) When most of the GTAs’ students do poorly in the class, GTAs’ level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will be significantly positively correlated to effort attributions, as measured by the CDS-II (McAuley et al., 1992).

6) When most of the GTAs’ students do poorly in the class, GTAs’ level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will be significantly negatively correlated to task difficulty attributions, as measured by the CDS-II (McAuley et al., 1992).

7) When most of the GTAs’ students do poorly or do well in the class, GTAs’ level of TSE, as measured by the SETI-A (Prieto & Altmaier, 1994), will not be significantly correlated to luck attributions, as measured by the CDS-II (McAuley et al., 1992).

**Exploratory Hypothesis.**

8) There will be significant differences in the GTAs’ attributions (ability, effort, task difficulty, and internality/externality), as measured by the CDS-II (McAuley et al., 1992), based on GTAs’ sex (men/women), GTAs’ students’ performance (do well/do poorly), and GTAs’ level of teaching self-efficacy, as measured by the SETI-A (Prieto & Altmaier, 1994).
8a) When the GTAs’ students do well in the class, male GTAs will make attributions of ability, effort, and internal locus, as measured by the CDS-II (McAuley et al., 1992), whereas, female GTAs will make attributions of task difficulty, luck, and external locus.

8b) When the GTAs’ students do poorly in the class, male GTAs will make attributions of task difficulty, luck and external locus, as measured by the CDS-II (McAuley et al., 1992), whereas, female GTAs will make attributions of ability, effort, and internal locus.

8c) Male GTAs with higher TSE will make significantly more ability, effort, and internal locus attributions, as measured by the CDS-II (McAuley et al., 1992), than female GTAs with higher TSE.

Procedures

Participants

Graduate teaching assistants from various academic departments at The University of Akron were invited to participate in an online survey assessing the relationship between teaching self-efficacy and attributions. Participants were contacted via The University of Akron’s graduate student listserv, which reaches all currently enrolled graduate students. Participants received an e-mail at the end of fall semester and at the beginning of spring semester inviting them to participate in the research study. In addition, the chairs of academic departments at The University of Akron who have GTAs were contacted via e-mail and asked to forward the research invitation to the GTAs in their department through their departmental listservs. Those departments without listservs were mailed the research invitation and asked to distribute it to their GTAs through
campus mail. Thirty chairs were contacted; seventeen chairs reported distributing the invitation through their departmental listservs and three said they mailed the invitations. Four chairs did not think the survey was appropriate for the types of responsibilities their GTAs have and six did not respond to the request. Thus, GTAs were given multiple opportunities to respond to the survey. A total of 264 GTAs responded to the survey, but only 117 provided usable data. Examination of relevant power tables, revealed that a sample of 75 participants was sufficient to detect a moderate effect size with power of .80 and alpha at .05, using the statistical analyses of an ANOVA and zero-order correlations. One hundred sixty participants were needed to detect a moderate effect size with power of .80 and alpha at .05 using a MANOVA (Cohen, 1977; Stevens, 2002).

Demographic Information. There were 40 men (34%) and 77 women (66%) in this sample. Eighty-eight reported being European-American (75%); there were nine Asian American (8%), seven African American (6%), one Native American (1%), and one Hispanic/Latino (1%) GTAs in the sample. In addition, one participant indicated that he/she was multiracial (1%), nine used the category of “other” (8%), and one did not respond to the question. Fifty-eight (50%) reported being between the ages of 20-25, 30 (26%) reported being between the ages of 26-30, 11 (9%) reported being between the ages of 31-35, seven (6%) reported being between the ages of 36-40, four (3%) reported being between the ages of 41-45, one (1%) reported being between the ages of 46-50, and six (5%) reported being between the ages of 51-55. With regard to what type of responsibilities they carried out as GTAs, 50 (43%) reported being primary instructors, 45 (39%) reported being assistant instructors, 17 (15%) reported being general assistants, and five (4%) reported being research assistants. The majority of GTAs were enrolled in
graduate programs in the College of Arts and Sciences \( (n = 80; 69\%) \), with the remainder in descending order, enrolled in programs in The College of Engineering \( (n = 16; 14\%) \), College of Fine and Applied Arts \( (n = 9; 8\%) \), College of Education \( (n = 8; 7\%) \), College of Nursing \( (n = 2; 2\%) \), and one student was enrolled in the College of Polymer Science. Eighty-four \( (72\%) \) participants were aware of the final course grades of the students in the course/section(s) for which they were responsible and 33 \( (28\%) \) were not aware. Sixty-three participants \( (54\%) \) were planning on a full time career in teaching/academia after graduation and 53 \( (45\%) \) were not. One participant did not respond to this question. See Table 1 (p. 82) for a summary of the demographics of the sample.

**Instruments**

*Self-Efficacy Toward Teaching Inventory-Adapted (SETI-A; Prieto & Altmaier, 1994; Tollerud, 1990).* The SETI-A (see Appendix A) was used to measure GTAs’ teaching self-efficacy. The SETI-A is a 32-item self-report measure that assesses the degree to which GTAs feel confident in their ability to carry out certain teaching behaviors. Participants rate their confidence in carrying out each behavior on a Likert scale ranging from 1 (not confident) to 4 (completely confident). Scores can range from 32 to 128. Examples of some of the items are “How confident are you in your ability to…”:

- plan lectures
- draw students into discussions
- respond to individual differences in an inclusive way

The SETI-A (Prieto & Altmaier, 1994) is an adapted version of the SETI (Tollerud, 1990). The original version assesses five teaching domains: Course
Preparation, Instructor Behavior, Materials, Evaluation and Examination, and Clinical Skills Training. However, because the Clinical Skills Training domain examines behaviors that are thought to be important in teaching Counselor Education, but not more general courses, the adapted version of the SETI that eliminates those particular questions was used (Prieto & Altmaier). The SETI-A has been used effectively in other studies of GTA self-efficacy based on Bandura’s theory (Prieto & Altmaier; Prieto & Meyers, 1999; Prieto & Yamokoski, 2002). The SETI-A takes approximately 10-15 minutes to complete.

The internal consistency of the SETI is .94 (Tollerud, 1990). Similarly, the internal consistency for the SETI-A ranges from .93 to .94 (Prieto & Altmaier, 1994; Prieto & Meyers, 1999; Prieto & Yamokoski, 2002). Comparable to other studies, the current internal consistency coefficient for the SETI-A was .94. The SETI demonstrated content validity because items were included based on expert opinion. Factor analysis of the SETI items resulted in one factor that accounts for 35% of the variance (as cited in Prieto & Altmaier).

Causal Dimension Scale-II (CDS-II; McAuley et al., 1992). The CDS-II (see Appendix B.) was used to assess GTAs’ attributions regarding success and failure. Russell (1982) first developed the Causal Dimension Scale (CDS) to measure how individuals perceive causes for an event. The CDS attempted to improve upon a flaw of previous attribution measures by allowing the participant, not the researcher, to translate causal attributions into causal dimensions (Russell). Using the original scale, individuals complete a questionnaire that consists of descriptions of eight different achievement situations followed by nine semantic differential scales. The achievement situations
consist of a successful or unsuccessful outcome and one of Weiner’s causal attributions. For example, the participant is given the following scenario to consider: “Imagine that you have received a very low score in a class. You feel that you received the low score due to your lack of ability” (Russell, p. 1139). Next, the participant would be asked to evaluate the cause of the success/failure on nine semantic differential scales, which assess Weiner’s (1976) three causal dimensions (locus of causality, stability, and controllability). In other words, participants rate on a scale from 1 to 9 to what extent they believed the cause was internal or external by rating the question: reflects on you -- reflects on the situation (Russell). There are three semantic differential scales for each of the three causal dimensions. In order to obtain the total score for each of the three causal dimensions (locus of causality, stability, and controllability), the responses to the three corresponding semantic differential scales are summed. Higher total scores on each of the causal dimensions indicate that the cause is perceived as internal, stable, and controllable.

Russell (1982) found that the three subscales were valid because the largest main effect was found for the dimension the items were designed to assess. For example, the three semantic differential scales designed to assess locus of causality produced significantly different ratings for internal versus external causes. He also reported adequate reliability for each of the scales. Coefficient alphas for the scales are as follows .87 (locus of causality); .84 (stability); .73 (controllability). After establishing the reliability and validity of the measure, subsequent instructions of the CDS were changed to allow participants to list the cause(s) for the success/failure scenario instead of offering them a cause. They then rate the cause(s) using the nine semantic differential scales.
Despite the wide use of the measure, a number of researchers raised concerns about the relatively low internal consistency of the controllability scale and its tendency to correlate highly with the locus of causality scale. In an effort to improve upon the shortcomings of the original measure, McAuley et al. (1992) revised the scale with particular attention given to the controllability dimension. They argued that the wording of the control scale was problematic because it only allowed participants to indicate whether a cause was “controllable by you or other people” or “uncontrollable by you or other people.” However, this does not reflect all of the possible options because, for example, participants may view a cause as something that they have control over, but others do not. Because the original scale did not allow for this and other possibilities, McAuley and colleagues contended that the original control scale should be further differentiated in terms of whether the cause is (a) controllable or uncontrollable by the person and (b) controllable or uncontrollable by other people.

The revised Causal Dimension Scale (CDS-II) dropped the three original control items and added three items representing personal control (i.e. manageable by you--not manageable by you; you can regulate--you cannot regulate; over which you have power--over which you have no power) and three items representing external control (i.e. over which others have control--over which others have no control; under the power of other people--not under the power of other people; other people can regulate--other people cannot regulate). The locus and stability scales remained unchanged.

In order to test the psychometric properties of the revised scale, McAuley et al. (1992) conducted four separate studies across various domains and diverse samples. The results revealed acceptable internal consistencies (Nunnally, 1978) for each of the scales
as follows: locus of causality, .67; stability, .67; personal control, .79; and external control, .82. In addition, a confirmatory factor analysis revealed that a four factor model provided an excellent fit to the data. Because there were strong correlations between the personal and external control factors and the locus of causality factor, between the personal and external control factors, and between the personal and external control factors and the stability factor, McAuley et al. conducted additional tests on the factor structure of the CDS-II to ensure that there was discriminant validity among the scales. A confirmatory factor analysis that combined the three dimensions into two and three factor models was conducted. The results indicated that none of these models fit the data as well as the four-factor model. Therefore, they concluded that personal control, external control, stability, and locus of causality are related but distinct constructs. In addition, Jones and Hastings (2003) found the CDS-II to be a useful measure of causal attributions. They reported internal consistencies for the scales as follows: locus of causality, .79; stability, .80; personal control, .79; and external control, .75. Overall, it appears as though the CDS-II is a reliable and valid measure to assess people’s attributions. The current internal consistency coefficient for the locus of causality scale of CDS-II was .89. The other subscales were not used in the current study.

For the purposes of the present study, several modifications were made to the procedure for answering the CDS-II (McAuley et al., 1992). Participants were randomly assigned to either a success ($n = 58$) (i.e., “most of your students do well in your class”) or failure ($n = 59$) (i.e., “most of your students do poorly in your class”) situation. For each of the four causes (i.e., ability, effort, difficulty of the task of teaching, and luck) participants were asked to do two things. First, they were asked to rate the extent to
which the success/failure was based on the cause, using a 1 to 7 scale. Then participants rated each cause on a series of three semantic differential scales designed to assess Weiner’s locus of causality dimension (e.g., “To what degree does your ability reflect an aspect of yourself?”), where each scale score could range from 1 to 7. In addition, the locus of causality scale was expanded to include one more question: To what degree does your ability reflect “something about you as a teacher” or “something about your students.” Thus, participants responded to five questions related to their ability, then five questions about their effort, and so forth.

In order to determine the total locus of causality score, the participant’s rating on the locus of causality semantic differential scale for each of the four attributional causes was summed. Therefore, participants’ total locus of causality score could range from 16 to 112 (i.e., 4-28 for each of the four causes) with higher scores reflecting more internality. Because there were no specific predictions concerning the other two causal dimensions (stability and controllability), participants were not asked to complete the semantic differential scales designed to assess those two dimensions.

In summary, participants completed a revised version of the 5-item CDS-II (McAuley et al., 1992) four separate times to assess each of the four causes (ability, effort, task difficulty, and luck) while imagining either a successful or unsuccessful outcome.

Demographic questionnaire. Similar to previous research (e.g., Prieto & Altmaier, 1994), participants completed a demographic survey where they were asked to report information such as their age, sex, race/ethnicity, amount of previous teaching
experience, amount of previous teacher training, graduate program, type of GTA responsibility, and knowledge of final course grades (see Appendix C).

Data Collection

GTAs were recruited from the various graduate programs at The University of Akron. GTAs were first contacted during fall semester via an e-mail sent to The University of Akron graduate student listserv, which reaches all currently enrolled graduate students. The e-mail explained the study and invited GTAs to participate. GTAs were made aware of all human participants’ rights and the fact that this study received approval of the Institutional Review Board (IRB) at The University of Akron. In order to participate, GTAs simply had to click on the link in the e-mail that immediately directed them to the online survey. At the same time that the graduate student e-mail was sent, department chairs of the graduate programs with GTAs were contacted via e-mail and asked to distribute a request for their GTAs to participate in this research project through their department’s listserv or departmental mail. In addition to these recruitment attempts, GTAs were contacted again during spring semester via an e-mail sent to The University of Akron graduate student listserv inviting them to participate in the research. Thus, GTAs were given several opportunities to participate in the current study. The survey was administered on the Internet via a secured web site through SurveyMonkey’s server. Because issues of informed consent, confidentiality, and debriefing are different for on-line surveys as opposed to traditional paper-and-pencil surveys (Benson, 2003), after reading the informed consent page describing the study, including its risks and benefits, participants could choose to participate, not to participate, or to have their questions answered via email before they participated. If participants chose to continue,
their consent was implied. The Internet Protocol (IP) addresses of computers on which survey responses were sent were not extracted because they could potentially be used to identify the computers on which surveys were completed. As a result, the data provided by GTAs remained anonymous. Debriefing consisted of a page at the end of the survey explaining the general research questions and goals of the study. Participants were free to terminate the survey at any time.

In terms of the actual survey, GTAs first read the informed consent form and agreed to participate by continuing with the survey. Next, participants read the instructions for completing the survey. Participants first completed the demographic questionnaire and next completed the SETI-A (Prieto & Altmaier, 1994). Then, participants were randomly assigned to one of two conditions in which student performance was manipulated. In one condition, participants were asked to respond to the CDS-II (McAuley et al., 1992) considering the following scenario, “Imagine that most of your students did well in your class.” In the other condition, participants were asked to respond to the CDS-II (McAuley et al., 1992) considering the following scenario, “Imagine that most of your students did poorly in your class.” Therefore, student performance was manipulated. After completing the survey, participants read the debriefing page, which described the study and gave them the researcher’s contact information should they have had any questions. The survey took approximately 25-35 minutes to complete.
Data Analysis

Preliminary analyses. Descriptive statistics were performed for each measure (SETI-A and CDS-II) and for all demographic variables. In addition, Cronbach’s alpha coefficients were reported for the SETI-A and CDS-II.

A zero-order correlation matrix was calculated for the SETI-A total score, locus of causality total score, each attribution score (i.e., ability, effort, task difficulty, luck) and the demographic variables, to examine the inter-correlations of all predictor and criterion variables in this study.

Primary analyses of interest. In order to test Hypothesis 1 (When most of the GTAs’ students do well in the class, GTAs will make internal attributions, regardless of their level of TSE, but when most of the GTAs’ students do poorly in the class, GTAs with higher TSE will make internal attributions while those with lower TSE will make external attributions), a 2 X 2 ANOVA was performed with TSE (extremely high/high) and student performance (do well/do poorly) as the independent variables, and locus attribution (internal/external) as the dependent variable. A median split was performed on the TSE variable. In order to support the hypothesis, it was expected that there would be a significant interaction effect across level of GTAs’ TSE based on students’ performance in the class.

To test hypothesis 2 (When most of the GTAs’ students do well in the class, GTAs’ level of TSE will not be significantly correlated to ability attributions), a zero-order correlation was performed, with the expectation that the correlation would not be statistically significant. Similarly, to test Hypothesis 3 (When most of the GTAs’ students do well in the class, GTAs’ level of TSE will not be significantly correlated to
effort attributions), a zero order correlation was performed, with the expectation that the correlation would not be statistically significant. In order to test Hypothesis 4 (When most of the GTAs’ students do poorly in the class, GTAs’ level of TSE will be significantly positively correlated to ability attributions), a zero-order correlation was performed. A significant positive correlation would support the hypothesis. To test Hypothesis 5 (When most of the GTAs’ students do poorly in the class, GTAs’ level of TSE will be significantly positively correlated to effort attributions), a zero-order correlation was performed. A significant positive correlation would support the hypothesis. A zero-order correlation was performed to test Hypothesis 6 (When most of the GTAs’ students do poorly in the class, GTAs’ level of TSE will be significantly negatively correlated to task difficulty attributions). A significant negative correlation would support the hypothesis. In order to test Hypothesis 7 (When most of the GTAs’ students do poorly or do well in the class, GTAs’ level of TSE will not be significantly correlated to luck attributions), a zero-order correlation was performed with the expectation that the correlation would be non-significant.

A 2 X 2 X 2 MANOVA was performed with TSE (extremely high/high), student performance (do well/do poorly) and sex (male/female) as the independent variables, and attributions (ability, effort, task difficulty, and internality/externality) as the dependent variable to test Hypothesis 8 (There will be statistically significant differences in the GTAs’ attributions (ability, effort, task difficulty, and internality/externality), based on the GTAs’ sex (men/women), GTAs’ students’ performance (do well/do poorly), and GTAs’ level of teaching self-efficacy. Tests of the MANOVA’s assumptions revealed that several assumptions were violated, including lack of homogeneity of covariance and
disproportionality among the cells. Therefore, although Hypothesis 8 was still tested, the results must be interpreted with caution given the violation of statistical assumptions.

As previous research has indicated, GTAs who have less experience may have an inflated sense of teaching self-efficacy. Therefore, there was concern that there would be few GTAs with low TSE (L.R. Prieto, personal communication, June 14, 2005). As a result, disproportionality among the cells was a potential issue. In the event that there was disproportionality among the cells or lack of homogeneity of variance in dependent variables among the cells, contingency plans for data analysis were planned. The contingency plans for analysis of Hypothesis 1 included using TSE as a covariate. An ANCOVA was performed as the median split did not create high/low teaching self-efficacy groups. The contingency plans for analysis of Hypothesis 8 included a) using TSE as a covariate or b) conducting 4 separate ANOVAs with a Bonferroni correction. The alternative analyses were conducted; however, several statistical assumptions were violated. The results are reported and interpreted with caution.

Summary

Chapter III presented the procedures, instruments, and statistical techniques that were used in this study. In order to assess the relationship between GTAs’ teaching self-efficacy and attributions regarding students’ performance, the researcher manipulated student performance and measured GTAs’ teaching self-efficacy and attributions. The quantitative analyses were used to clarify the relationship between GTAs’ teaching self-efficacy and attributions regarding students’ performance.
CHAPTER IV

RESULTS

The significance level for all statistical analyses was set at the .05 level unless otherwise indicated.

Demographic Data

All 117 GTAs were enrolled in various graduate programs at The University of Akron. GTAs reported having previously taught for an average of 2.7 semesters (SD = 2.3; Median = 2; Range = 0-6+). In terms of training, GTAs reported having previously received an average of 1.1 semesters of training (SD = 1.6; Median = 1; Range = 0-6+). The majority of GTAs were currently responsible for only one course (75%) and only one section of a course (72%). See Table 1 for additional descriptive data on the demographic variables of this sample.

Fifty-eight GTAs were randomly assigned to the successful student performance condition and 59 were randomly assigned to the unsuccessful student performance condition. Independent t-tests were conducted on the groups to determine if there were any a priori differences based on age, race, sex, semesters of previous experience, semesters of previous training, number of courses taught, number of sections taught, career goals, type of GTA responsibility, awareness of final grades, SETI-A total score, and locus of causality total score. None of the t-tests was significant. Therefore, the
groups did not have any a priori significant differences on any of the aforementioned variables.

Table 1

Descriptive Data for Demographic Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>40</td>
<td>34</td>
</tr>
<tr>
<td>Women</td>
<td>77</td>
<td>66</td>
</tr>
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</tr>
<tr>
<td>Asian-American/Pacific Islander</td>
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<tr>
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<td>75</td>
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</tr>
<tr>
<td>Native American/Indian/Alaskan Native</td>
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<tr>
<td>Other (please specify)</td>
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<td>8</td>
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<tr>
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<td>26-30</td>
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Table 1 (continued)

Descriptive Data for Demographic Variables

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<td>50-55</td>
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Degree Program College

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<td>Education</td>
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<td>7</td>
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<td>Engineering</td>
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<td>14</td>
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<td>Polymer Science/Engineering</td>
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<td>1</td>
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<td>Fine and Applied Arts</td>
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Academic Career

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<tr>
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<td>54</td>
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<tr>
<td>No</td>
<td>53</td>
<td>45</td>
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GTA Responsibility

<table>
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<th>GTA Responsibility</th>
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<tr>
<td>Primary Instructor</td>
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<td>43</td>
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<tr>
<td>Assistant Instructor</td>
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<td>39</td>
</tr>
<tr>
<td>General Assistant</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>Research Assistant</td>
<td>5</td>
<td>4</td>
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Table 1 (continued)

Descriptive Data for Demographic Variables

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<thead>
<tr>
<th>Variable</th>
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</thead>
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<tr>
<td>Final Grades</td>
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<tr>
<td>Aware</td>
<td>84</td>
<td>72</td>
</tr>
<tr>
<td>Not Aware</td>
<td>33</td>
<td>28</td>
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Measurement Properties

SETI-A. All 117 participants completed the 32-item SETI-A. Regarding the SETI-A total score, participants scored a mean of 105 (SD = 13.8; Median = 107; Range 64-128), which is comparable to that found in other studies of GTAs (Prieto & Altmaier, 1994; Prieto & Yamokoski, 2002). See Table 2 for a comparison of descriptive data across SETI-A studies. For the SETI-A total score, women scored a mean of 105.7 (SD = 13.3; Median = 107; Range 64-128); men scored a mean of 104.1 (SD = 14.9; Median = 105; Range 74-128). Therefore, there were no GTAs who scored in what may be considered the low range of teaching self-efficacy. As a result, the median split for teaching self-efficacy resulted in GTAs with extremely high teaching self-efficacy and those with high teaching self-efficacy.

Table 2

Comparisons of Descriptive Data Across SETI-A Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Prieto &amp; Altmaier (1994)</td>
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<td></td>
</tr>
<tr>
<td>SETI-A total score</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>104.9</td>
<td>14.4</td>
<td>Not reported</td>
</tr>
<tr>
<td>Women</td>
<td>108.1</td>
<td>12.8</td>
<td>Not reported</td>
</tr>
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</table>
Table 2 (continued)

Comparisons of Descriptive Data Across SETI-A Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prieto &amp; Yamokoski (2002)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SETI-A total score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combined Sample</td>
<td>105.3</td>
<td>14.8</td>
<td>61-128</td>
</tr>
<tr>
<td>McCrea (2006)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SETI-A total score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>104.1</td>
<td>14.9</td>
<td>74-128</td>
</tr>
<tr>
<td>Women</td>
<td>105.7</td>
<td>13.3</td>
<td>64-128</td>
</tr>
</tbody>
</table>

CDS-II. A total of 58 GTAs responded to the CDS-II imagining the scenario that most of their students did well in the class, and 59 responded to the CDS-II imagining that most of their students did poorly in the class. GTAs were asked to imagine the successful/unsuccessful scenario and then rate on a scale from 1 to 7 to what extent their students’ performance was because of Weiner’s causal attributions of ability, effort, task difficulty, and luck. See Table 3 for a comparison of descriptive data regarding the causal attributions for the successful and unsuccessful student performance conditions.

After GTAs rated to what extent their students’ performance was due to each of the four causes, they then rated each of the four causal attributions on a semantic differential scale designed to assess locus of causality. In other words, they rated on a scale from 1 to 7 to what extent ability, effort, task difficulty, and luck reflected something about themselves/something about the situation, an aspect inside/outside of them, reflected something about them/others, and reflected something about them as teachers/their students. In order to determine the total locus of causality score, the participant’s rating on the locus of causality semantic differential scale for each of the
four attributional causes was summed. Therefore, participants’ total locus of causality score could range from 16 to 112 with higher scores reflecting more internality. See Table 3 for a comparison of descriptive data regarding the locus of causality attributions for the successful and unsuccessful student performance conditions.

Table 3

Comparisons of CDS-II Scores for Successful and Unsuccessful Student Performance Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful Student Performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability</td>
<td>4.6</td>
<td>1.2</td>
<td>1-7</td>
</tr>
<tr>
<td>Effort</td>
<td>4.7</td>
<td>1.4</td>
<td>1-7</td>
</tr>
<tr>
<td>Task Difficulty</td>
<td>4.1</td>
<td>1.3</td>
<td>1-7</td>
</tr>
<tr>
<td>Luck</td>
<td>2.5</td>
<td>1.4</td>
<td>1-6</td>
</tr>
<tr>
<td>Locus</td>
<td>78.8</td>
<td>10.4</td>
<td>50-96</td>
</tr>
<tr>
<td>Unsuccessful Student Performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability</td>
<td>3.9</td>
<td>1.7</td>
<td>1-7</td>
</tr>
<tr>
<td>Effort</td>
<td>3.7</td>
<td>1.5</td>
<td>1-7</td>
</tr>
<tr>
<td>Task Difficulty</td>
<td>3.6</td>
<td>1.4</td>
<td>1-7</td>
</tr>
<tr>
<td>Luck</td>
<td>1.7</td>
<td>1.4</td>
<td>1-7</td>
</tr>
<tr>
<td>Locus</td>
<td>80.5</td>
<td>9.8</td>
<td>61-108</td>
</tr>
</tbody>
</table>

Tests of Hypotheses

Table 4 presents the intercorrelations among the key demographic, independent, and dependent variables. As Table 4 illustrates, there are statistically significant positive correlations among the four causal attributions of ability, effort, task difficulty, and luck. Moreover, the type of responsibilities GTAs carry out and awareness of students’ final grades are both statistically significantly positively associated with TSE. In other words,
GTAs who assume more responsibility endorsed statistically significantly higher levels of TSE, and GTAs who are aware of their students’ final grades endorsed statistically significantly higher levels of TSE.

Table 4
Intercorrelations of key demographic variables, dependent, and independent variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<tbody>
<tr>
<td>1</td>
<td>GTAtype</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>2</td>
<td>Grades</td>
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<td>1.0</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>TSE</td>
<td>.32**</td>
<td>.43**</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ability</td>
<td>.09</td>
<td>.14</td>
<td>.13</td>
<td>1.0</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>Effort</td>
<td>.01</td>
<td>.09</td>
<td>.05</td>
<td>.60**</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Task</td>
<td>.14</td>
<td>.08</td>
<td>.05</td>
<td>.40**</td>
<td>.41**</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Luck</td>
<td>.05</td>
<td>.08</td>
<td>.05</td>
<td>.19*</td>
<td>.23*</td>
<td>.05</td>
<td>1.0</td>
</tr>
<tr>
<td>8</td>
<td>Locus</td>
<td>.11</td>
<td>.10</td>
<td>.29**</td>
<td>.02</td>
<td>.02</td>
<td>.01</td>
<td>.43**</td>
</tr>
</tbody>
</table>

Note. TSE = teaching self-efficacy; Grades = GTAs’ awareness of final grades; GTA type = GTAs’ type of teaching responsibilities.

Underscored and bolded coefficients are negative.

*Significant at p<.05; **significant at p<.01.

*GTAs’ Teaching Self-Efficacy and Causal Dimensions. The first hypothesis stated that when most of the GTAs’ students do well in the class, GTAs would make internal
attributions, regardless of their level of TSE, but when most of the GTAs’ students do poorly in the class, GTAs with higher TSE would make internal attributions while those with lower TSE would make external attributions. This hypothesis was tested with a 2 X 2 ANOVA with TSE (extremely high/high) and student performance (do well/do poorly) as the independent variables, and locus attribution (internal/external) as the dependent variable. A median split was performed on the TSE variable. It is important to note that because the TSE median was elevated, the median split did not create a high and low group.

Instead, the groups could be better characterized as extremely high teaching self-efficacy and high teaching self-efficacy. The ANOVA revealed no significant interaction effect across level of GTAs’ TSE based on students’ performance in the class. However, a significant main effect for TSE was found ($F[1, 113] = 7.28; p < .01$). TSE explained 6% of the variance in locus of causality scores ($\eta^2_p = .06$). Comparison of mean scores shows that GTAs with extremely high teaching self-efficacy made more internal attributions (82.1) when compared to GTAs with high teaching self-efficacy (77.2). In other words, GTAs with extremely high teaching self-efficacy appeared to make more internal attributions in accounting for their students’ performance.

Because the median split of TSE did not create high and low TSE groups, per the alternative analyses described previously in Chapter III, an ANCOVA was performed with TSE as the covariate, student performance (do well/do poorly) as the independent variable and locus (internal/external) as the dependent variable. The ANCOVA revealed no significant effect of student performance on locus attributions when TSE was controlled. The TSE covariate was significant ($F[1, 113] = 7.35; p < .01$). Therefore,
TSE had a significant effect on GTAs’ locus attributions. Examination of means reveals that GTAs who endorsed extremely high levels of teaching self-efficacy made statistically significantly more internal attributions (82.1) when compared with GTAs with high teaching self-efficacy (77.2) in accounting for their students’ performance.

In addition, because both GTA type of responsibility and awareness of final grades were statistically significantly correlated with TSE ($r = .32$ and $.43$, respectively), both of the variables were used as covariates in follow-up analyses of Hypothesis 1. A 2 X 2 ANCOVA was performed with TSE (extremely high/high) and student performance (do well/do poorly) as the independent variables, locus attribution (internal/external) as the dependent variable, and GTA type of responsibility as the covariate. The ANCOVA revealed no significant interaction effect across level of GTAs’ TSE based on students’ performance in the class when type of GTA responsibility was controlled. The covariate was not significant. However, a significant main effect for TSE was found ($F[1, 113] = 6.4; p < .01$). Another 2 X 2 ANCOVA was performed with TSE (extremely high/high) and student performance (do well/do poorly) as the independent variables, locus attribution (internal/external) as the dependent variable, and GTAs’ awareness of final grades as the covariate. The ANCOVA revealed no significant interaction effect across level of GTAs’ TSE based on students’ performance in the class when GTAs’ awareness of final grades was controlled. The covariate was not significant. However, a significant main effect for TSE was found ($F[1, 113] = 6.1; p < .02$). Thus, even when GTAs’ awareness of final grades and the type of GTA responsibility are controlled, no significant interaction effect across level of GTAs’ TSE based on students’ performance in the class was found.
In sum, the first hypothesis was only partially supported because GTAs’ level of teaching self-efficacy did not significantly affect their locus of causality scores based on students’ performance in the class. Nonetheless, the significant main effect for teaching self-efficacy suggests that GTAs with extremely high teaching self-efficacy made more internal attributions in accounting for their students’ performance.

*GTAs’ Teaching Self-Efficacy and Four Causal Attributions.* In order to test the second and third hypotheses, zero-order correlations were performed to investigate the relationship between GTAs’ level of TSE and ability and effort attributions when students did well in the class. Despite the prediction that GTAs’ teaching self-efficacy would not be significantly related to ability attributions when students did well in the class, the correlation revealed that GTAs’ teaching self-efficacy was significantly positively related to ability attributions when students did well in the class ($r = .34; p < .01$). It appears as though when GTAs’ students did well in the class, GTAs who endorsed higher levels of teaching self-efficacy also tended to make more ability attributions. Moreover, despite the prediction that GTAs’ teaching self-efficacy would not be significantly related to effort attributions when students did well in the class, the correlation revealed that GTAs’ teaching self-efficacy was significantly positively related to effort attributions when students did well in the class ($r = .29; p < .05$). It appears as though when GTAs’ students did well in the class, GTAs who endorsed higher levels of teaching self-efficacy also tended to make more effort attributions. Overall, hypotheses 2 and 3 were not supported, as there were significant positive relationships between GTAs’ teaching self-efficacy and ability and effort attributions when GTAs students did well in the class.
In order to test Hypotheses 4 and 5 (When most of the GTAs’ students do poorly in the class, GTAs’ level of TSE will be significantly positively correlated to ability attributions; When most of the GTAs’ students do poorly in the class, GTAs’ level of TSE will be significantly positively correlated to effort attributions), zero-order correlations were performed. The correlations revealed that GTAs’ teaching self-efficacy was not significantly related to ability ($r = .01, p < 1.0$) or effort attributions ($r = -.15, p < .27$) when students did poorly in the class. Thus, hypotheses 4 and 5 were not supported.

In order to support Hypothesis 6 (When most of the GTAs’ students do poorly in the class, GTAs’ level of TSE would be significantly negatively correlated to task difficulty attributions), a significant negative correlation was expected. The results did not support the hypothesis, as the relationship between GTAs’ teaching self-efficacy and task difficulty attributions was not statistically significant when students did poorly in the class ($r = -.09, p < .49$). Thus, hypothesis 6 was not supported.

In order to test Hypothesis 7 (When most of the GTAs’ students do poorly or do well in their class, GTAs’ level of TSE would not be significantly correlated to luck attributions), a zero-order correlation was performed with the expectation that the correlation would be non-significant. The results supported the hypothesis. The relationship between GTAs’ teaching self-efficacy and luck attributions was not significant when students did well or did poorly in the course ($r = -.04; p < .77; r = -.02; p < .87$, respectively). It appears as though GTAs’ level of teaching self-efficacy was not significantly related to attributions regarding luck.

*Exploratory Hypothesis.* In order to test Hypothesis 8 (There will be statistically significant differences in the GTAs’ attributions (ability, effort, task difficulty, and
internality/externality), based on the GTAs’ sex (men/women), GTAs’ students’ performance (do well/do poorly), and GTAs’ level of teaching self-efficacy (extremely high/high), a 2 X 2 X 2 MANOVA was performed with TSE (extremely high/high), student performance (do well/do poorly) and sex (male/female) as the independent variables, and attributions (ability, effort, task difficulty, and internality/externality) as the dependent variable. A median split was performed on the TSE variable. As stated earlier, because the TSE median was elevated, the median split did not create a high and low group. Furthermore, tests of the MANOVA’s assumptions revealed that several assumptions were violated, including lack of homogeneity of covariance and disproportionality among the cells. Therefore, the results must be interpreted with caution, as the robustness of the findings is questionable.

Contrary to predictions, there were no interactions related to the effects for sex, level of teaching self-efficacy, or student performance condition. Because there were no significant interactions, testing of the follow-up hypotheses was not warranted. However, there was a main effect for GTAs’ sex (Wilks Lambda [4, 106] = .91; p < .05). The partial eta squared effect size for the main effect for sex was .09. The results indicated that the set of GTAs’ attributions (ability, effort, task difficulty, and locus) significantly differed based on GTAs’ sex. This suggests that GTAs’ attributions varied significantly by GTAs’ sex. However, examination of the univariate follow-up tests showed no statistically significant differences in the individual attributions of ability, effort, task difficulty, or locus based on GTAs’ sex. In other words, the main effect was not present for ability attributions (F [1, 116] = 2.0; p < .16), effect size = .02; effort attributions (F [1, 116] = .004, p < .96), effect size = .001; task difficulty attributions (F [1, 116] = 2.5, p
Examination of the cell means revealed that women tended to attribute more of their students’ performance to ability, effort, and locus ($M = 4.4, 4.3, \text{ and } 80.7$, respectively) when compared to men ($M = 3.9, 4.1, 77.8$, respectively); whereas, men tended to attribute more of their students’ performance to the difficulty of the task of teaching ($M = 4.1$) when compared to women ($M = 3.8$). Therefore, it appears as though the overall set of attribution scores is higher for women than for men, but the individual attributions are not statistically significantly different for men and women.

In addition, there was a main effect for student performance (Wilks Lambda $[4,106] = .91; p < .04$), with a multivariate effect size of .09. Univariate follow-up tests indicated the main effect was present for ability attributions ($F [1, 116] = 4.9; p < .04$), effect size = .04; effort attributions ($F [1, 116] = 6.5, p < .02$), effect size = .06; and task difficulty attributions ($F [1, 116] = 4.6, p < .04$), effect size = .04. A comparison of cell means between student performance conditions indicated that GTAs in the successful student performance condition (most of your students did well in the class) made significantly higher ability attributions ($M = 4.4$) than those GTAs in the unsuccessful student performance condition (most of your students did poorly in the class) ($M = 3.8$). Similarly, GTAs in the successful student performance condition made significantly higher effort attributions ($M = 4.6$) than those GTAs in the unsuccessful student performance condition ($M = 3.8$). Finally, GTAs in the successful student performance condition made significantly higher task difficulty attributions ($M = 4.3$) than those GTAs in the unsuccessful student performance condition ($M = 3.7$). Overall, it appears as
though GTAs’ ability, effort, and task difficulty attributions varied based on their students’ performance in the class.

Because the median split of TSE did not create high and low TSE groups, per the alternative analyses described previously in Chapter III, a MANCOVA was performed with TSE as the covariate, student performance (do well/do poorly) and sex as the independent variables and attributions (ability, effort, task difficulty, and locus) as the dependent variable. The MANCOVA also violated several assumptions, including disproportionality among the cells and lack of homogeneity of covariance. Therefore, the results must be interpreted cautiously. The MANCOVA revealed no statistically significant interactions related to the effects for sex or student performance condition when TSE was controlled. Similar to the MANOVA, a main effect was found for GTAs’ sex (Wilks Lambda [4, 109] = .91; p < .05). The partial eta squared effect size for sex was .08. A main effect for student performance condition was also found (Wilks Lambda [4, 109] = .91; p < .05), with a multivariate effect size of .09.

Similar to the MANOVA, examination of the follow-up univariate tests for GTAs’ sex revealed no significant differences in the univariate tests of the individual attributions of ability, effort, task difficulty, or locus based on GTAs’ sex. Univariate follow-up tests indicated the main effect was not present for ability attributions ($F [1, 116] = 2.6; p < .12$), effect size = .02; effort attributions ($F [1, 116] = .16, p < .69$), effect size = .001; task difficulty attributions ($F [1, 116] = 2.3, p < .14$), effect size = .02; or locus attributions ($F [1, 116] = 2.3, p < .12$), effect size = .02. Examination of the follow-up univariate tests for student performance condition showed that GTAs’ attributions of ability, effort, and task difficulty all significantly differed based on GTAs’ students’
performance when GTAs’ TSE was controlled. Univariate follow-up tests indicated the main effect was present for ability attributions \((F[1, 116] = 5.3; p < .03)\), effect size = .05; effort attributions \((F[1, 116] = 7.4, p < .01)\), effect size = .06; and task difficulty attributions \((F[1, 116] = 4.1, p < .05)\), effect size = .04. As was the case above, examination of the cell means showed that GTAs whose students performed well in the class attributed their students’ successful performance significantly more to ability, effort, and the difficulty of the task of teaching than did GTAs whose students performed poorly in the class when GTAs’ TSE was controlled. Overall, even when teaching self-efficacy was controlled, there was no significant interaction between GTAs’ sex and GTAs’ students’ performance.

Another alternative analysis proposed was to conduct four separate ANOVAs with a Bonferroni correction. Therefore, four ANOVAs were conducted with GTAs’ teaching self-efficacy (extremely high/high), GTAs’ sex, and student performance (do well/do poorly) as the independent variables. For each ANOVA, one of the attributions (ability, effort, task difficulty, internality/externality) was the dependent variable. The alpha level was set at .01 given the multiple comparisons; however, none of the results reached significance at the .01 level. Ability attributions \((F[1, 116] = 4.9; p < .03)\), effect size = .04; effort attributions \((F[1, 116] = 6.5, p < .02)\), effect size = .06; and task difficulty attributions \((F[1, 116] = 4.6, p < .04)\), effect size = .04; locus attributions \((F[1, 116] = 3.14 , p < .08)\), effect size = .03.

**Summary**

Hypothesis 1 was only partially supported with results indicating that GTAs who endorsed extremely high levels of teaching self-efficacy seemed to make more internal
attributions when compared to GTAs who endorsed high levels of teaching self-efficacy. Hypotheses 2 and 3 were not supported. In fact, contrary to the predictions, GTAs’ TSE did significantly positively correlate with ability and effort attributions when GTAs’ students did well in the class. These results suggest that higher levels of teaching self-efficacy were significantly associated with higher levels of effort and ability attributions in accounting for their students’ success (i.e., GTAs who endorsed higher levels of teaching self-efficacy also tended to attribute their students’ success in the class to their own effort and their own ability). Hypotheses 4, 5, and 6 were also not supported. When GTAs’ students did poorly in the class, GTAs’ teaching self-efficacy was not significantly related to ability, effort, or task difficulty attributions. Hypothesis 7 was supported by the results, as GTAs’ teaching self-efficacy was not significantly related to luck attributions when GTAs’ students did well or did poorly in the class. Finally, the exploratory hypothesis was not supported as GTAs’ attributions did not statistically significantly differ based on GTAs’ sex, level of teaching self-efficacy, and students’ performance. However, GTAs’ attributions appeared to differ based on GTAs’ sex and based on GTAs’ students’ performance.
CHAPTER V
DISCUSSION

The purpose of this study was to improve and expand upon previous research investigating the relationship between graduate teaching assistants’ teaching self-efficacy and attributions regarding their students’ performance. To do so, this study assessed GTAs’ teaching self-efficacy using the SETI-A (Prieto & Altmaier, 1994), an accepted and reliable measure of teaching self-efficacy for graduate students. In addition, this study also assessed GTAs’ attributions regarding their students’ successful or unsuccessful performance by having them rate the extent to which all four of Weiner’s (1976, 1986) attributional causes played a role in their students’ performance. Moreover, GTAs, themselves, translated each causal attribution into the causal dimension of internality and externality, by rating to what extent each cause reflected something that was internal or external to them. Finally, this study sought to investigate how gender influenced the relationship between GTAs’ teaching self-efficacy and attributions regarding student performance; however, because of violation of statistical assumptions, these latter findings must be interpreted with caution.

Major Findings and Implications

Although the results of this study must be understood in the context of the limitations (e.g. sample, measurement and research design issues), some findings of interest can be reported.
Overall, the majority of research hypotheses in this study were not supported, but several important findings are noteworthy and will be discussed. Likewise, the lack of support for the hypotheses will also be discussed with emphasis on how the current study could be improved. Finally, the potential implications of the results of this study for GTA research and training will be reviewed.

**GTAs’ Teaching Self-Efficacy and Causal Dimensions**

It was expected that when most of the GTAs’ students did well in the class, GTAs would make internal attributions, regardless of their level of TSE, but when most of the GTAs’ students did poorly in the class, GTAs with higher TSE would make internal attributions while those with lower TSE would make external attributions; however, this hypothesis was not supported.

Instead, support for only the influence of GTAs’ teaching self-efficacy on attributions regarding the causal dimension of internality/externality was found. It is important to reiterate that in the current sample of GTAs, teaching self-efficacy was elevated resulting in two groups who could be considered as having high and extremely high teaching self-efficacy. Previous research has demonstrated that novice teachers may have an elevated sense of efficacy because they do not yet have an appreciation for the full complexity of the task of teaching, which could have been the case with the current GTA sample (Hoy & Woolfolk, 1990). Certainly, this limitation must be considered when interpreting the results, as there is ambiguity in distinguishing between the two groups.

The findings suggest that compared to GTAs with high teaching self-efficacy, GTAs with extremely high teaching self-efficacy appeared to make significantly more
internal attributions in accounting for their students’ performance. These results appear to be consistent with previous research (Guskey, 1982; Hall et al., 1992), which found that teachers with high teaching self-efficacy are more likely to make internal attributions in accounting for their students’ performance. Because teaching self-efficacy is defined as the degree to which teachers believe in their own ability to bring about student learning (Ashton & Webb, 1986; Ghaith & Yaghi, 1997; Gibson & Dembo, 1984), it makes sense that GTAs who have extremely high teaching self-efficacy strongly believe in their own ability to bring about student learning and, as a result, appeared to take personal responsibility (e.g. make internal attributions) for their students’ performance.

Nonetheless, previous research demonstrated that teachers with high teaching self-efficacy are more likely to make internal attributions for both their students’ success and failure. The results of the current study showed no significant interaction between GTAs’ level of teaching self-efficacy and their students’ performance. Perhaps because GTAs were asked to simply imagine that their students had done well or done poorly in the class, the situation may not have been ego-involving, which may have made it difficult to know how to respond and, in turn, resulted in a biased report of GTAs’ attributional tendencies (Hirschy & Morris, 2002). Furthermore, the success and failure conditions to which GTAs responded were predetermined. It is possible that some GTAs may not define success in the classroom as having most of their students do well in the class. Similarly, some GTAs may not define failure as having most of their students do poorly in the class. Certainly, if GTAs do not define success and failure as it was defined in the current study, their reported attributions may not accurately reflect their actual attributional tendencies. Indeed, future research should take these factors into
consideration when investigating GTAs’ attributions regarding their students’ performance. One solution would be to have GTAs write about their own successful or unsuccessful experience in the classroom and then complete an attribution measure. Another solution would be to assess GTAs’ attributions regarding success or failure in the classroom immediately after they had experienced either success or failure.

In general, when compared to GTAs with high teaching self-efficacy, GTAs with extremely high teaching self-efficacy appeared to make more internal attributions for their students’ performance. Similar to previous research that found that teachers with high teaching self-efficacy take greater responsibility for teaching outcomes (Ross, 1995), GTAs with extremely high levels of teaching self-efficacy also seemed to take greater responsibility for teaching outcomes, as evidenced by their greater tendency to make internal attributions for their students’ performance.

**GTAs’ Teaching Self-Efficacy and Four Causal Attributions**

Numerous hypotheses were made regarding the relationships between the four causal attributions (e.g. ability, effort, task difficulty, and luck) and GTAs’ teaching self-efficacy based on their students’ successful/unsuccessful performance in the class. However, very few of these hypotheses were supported.

Contrary to the hypotheses, the current study found a significant positive relationship between GTAs’ level of teaching self-efficacy and their ability and effort attributions when their students did well in the class. In other words, GTAs’ higher levels of teaching self-efficacy were significantly positively associated with higher levels of effort and ability attributions in accounting for their students’ success. Weiner (1976, 1986) argued that ability and effort are internal attributions. Similar to previous teacher
attribution research (e.g. Guskey, 1982; McAllister, 1996), it appears as though when GTAs’ students do well in the class, GTAs with higher levels of teaching self-efficacy tend to take credit for their students’ success by attributing the cause of success to their own effort and ability.

The finding that GTAs take credit for their students’ success by making internal attributions may appear to be consistent with a self-serving bias, whereby teachers take credit for students’ success; however, the finding is not completely consistent with a self-serving bias because a self-serving bias involves not only the tendency to take credit for students’ success but also the tendency to attribute failure to the student or to other external factors (McAllister, 1996; Ross et al., 1974). The current study found no significant relationship between GTAs’ teaching self-efficacy and their attributions when their students did poorly. Therefore, based on the current findings, conclusions regarding GTAs’ attribution patterns cannot be drawn.

Consistent with the predictions, GTAs’ teaching self-efficacy was not significantly correlated to luck attributions when their students did well or poorly in the class. This finding is consistent with other research that has found that teachers do not tend to attribute success or failure in the classroom to luck (Guskey, 1982).

**Exploratory Findings**

The current study also sought to explore the role that gender plays in the relationship between GTAs’ teaching self-efficacy and attributions regarding their students’ performance. The hypothesis that GTAs’ attributions (ability, effort, task difficulty, and internality/externality) would significantly differ based on GTAs’ sex, GTAs’ level of teaching self-efficacy, and GTAs’ students’ performance was not
supported. Yet it should be noted that, when testing this hypothesis, several statistical assumptions were violated, including lack of homogeneity of covariance and disproportionality among cells. Therefore, the results must be interpreted with caution.

The results appeared to indicate that the set of GTAs’ attributions (ability, effort, task difficulty, and locus) significantly differed based on GTAs’ sex. This suggests that GTAs’ attributions varied significantly by GTAs’ sex. However, follow-up analyses to determine what contributed to the overall sex differences in the set of attributions revealed that none of the individual attributions of ability, effort, task difficulty, or locus statistically significantly differed by sex. Examination of the means revealed that the overall set of attribution scores was higher for women than for men, but the individual attributions were not statistically significantly different for men and women. Certainly, this finding is interesting; however, more research is needed to clarify the influence of sex on attributions.

In addition, the results revealed that the set of GTAs’ attributions (ability, effort, task difficulty, and internality/externality) significantly differed based on GTAs’ students’ performance. Examination of the follow-up tests of the effect of GTAs’ students’ performance on the individual attributions revealed that GTAs’ attributions of ability, effort, and task difficulty all statistically significantly differed based on GTAs’ students’ performance. A comparison of means between student performance conditions indicated that GTAs in the successful student performance condition (most of your students did well in the class) appeared to make significantly higher ability, effort, and task difficulty attributions than those GTAs in the unsuccessful student performance condition (most of your students did poorly in the class). Therefore, it appears as though
when successful, GTAs’ made significantly higher attributions of ability, effort, and task difficulty than when unsuccessful.

As previously stated, ability and effort are internal attributions. Therefore, GTAs appeared to be taking credit for their students’ successful performance, which seems somewhat consistent with a self-serving bias. However, GTAs also credited their students’ successful performance in their class to the difficulty of the task of teaching, an external attribution, which is somewhat inconsistent with a self-serving bias. One possible explanation for GTAs’ attribution of their students’ successful performance in the class to the external cause of the difficulty of the task of teaching involves how GTAs’ may have perceived the difficulty of the task of teaching. In fact, because GTAs had such elevated levels of teaching self-efficacy, perhaps they did not consider teaching to be a difficult task. As a result, when their students did well, they believed the ease of the task of teaching contributed to their success.

Another important consideration is that GTAs’ attributions of their students’ successful performance to the internal attributions of ability and effort does not alone constitute a self-serving bias. In order for a self-serving bias to be inferred, GTAs’ whose students’ performed poorly in the class would have had to have made statistically significantly higher external attributions, which was not the case. Therefore, although these results are mitigated by the violation of statistical assumptions, it appears as though GTAs’ attributions for their students’ performance are complex and cannot simply be characterized as self-serving or as non-defensive.
Summary of Findings

As stated earlier, many of the hypotheses were not supported; however, it was found that GTAs who endorsed extremely high levels of teaching self-efficacy seemed to make more internal attributions in accounting for their students’ performance in the class when compared to GTAs with high teaching self-efficacy. Moreover, GTAs who endorsed higher levels of teaching self-efficacy also tended to attribute their students’ success in the class to their own effort and their own ability. GTAs’ teaching self-efficacy was not significantly related to luck attributions when GTAs’ students did well or did poorly in the course. Finally, the exploratory findings suggest that GTAs’ attributions (ability, effort, task difficulty and locus) varied based on GTAs’ sex and GTAs’ students’ performance.

Implications

One goal of the current research was to determine if teaching self-efficacy can help to clarify the discrepancies in previous teacher attribution research where both an ego-enhancing/self-serving pattern (e.g. McAllister, 1996; Ross et al., 1974) and a non-defensive pattern (e.g. Ames, 1975; Ross et al.) of attributions were found. However, the results of the current study did not allow conclusions to be drawn regarding the relationship between GTAs’ teaching self-efficacy and attributions for students’ performance, as no significant interaction between GTAs’ level of teaching self-efficacy and students’ performance in the class was found and no significant relationships were found between GTAs’ teaching self-efficacy and attributions when their students did poorly. Nonetheless, GTAs’ teaching self-efficacy appeared to significantly influence their attributions related to the causal dimension of locus (Weiner, 1986). GTAs who
endorsed extremely high levels of teaching self-efficacy made significantly more internal attributions in accounting for their students’ performance than GTAs who endorsed high levels of teaching self-efficacy. Furthermore, GTAs’ higher levels of teaching self-efficacy were significantly associated with higher levels of effort and ability attributions in accounting for their students’ success.

Overall, one pattern that seems to have emerged with regard to the relationship between GTAs’ teaching self-efficacy and their attributions regarding their students’ performance is that GTAs with higher levels of teaching self-efficacy appear to make more internal attributions in accounting for success, as both effort and ability are internal attributions. One question that still remains involves the relationship between GTAs’ teaching self-efficacy and their attributions for their students’ failure, as none of the findings regarding the relationship between GTAs’ teaching self-efficacy and student performance condition of failure were significant. More research needs to explore how GTAs’ teaching self-efficacy affects their attributions with regard to failure in the classroom. As discussed previously, determining how GTAs define failure is of key importance when investigating the relationship between GTAs’ teaching self-efficacy and attributions regarding their students’ failure. In sum, GTAs’ attributional patterns regarding their students’ performance are complex. The results of the current study suggest that GTAs’ attributions cannot simply be characterized as either ego-enhancing (self-serving) or non-defensive. GTAs’ teaching self-efficacy appears to be an important variable in clarifying the exact nature of GTAs’ attributional patterns, as GTAs’ teaching self-efficacy was shown to influence their attributions for their students’ success. Further
examination of how GTAs’ teaching self-efficacy relates to their attributions for both their students’ success and failure is warranted.

Another goal of the current research was to inform GTA training and supervision. Despite the lack of numerous significant findings, some applications for GTA training and supervision exist. One implication for GTA training and supervision relates to the extremely high levels of teaching self-efficacy that were found in this sample of GTAs. Supervisors may have a difficult time interesting GTAs in pedagogical theories and techniques if GTAs strongly believe that they already have the skills necessary to perform effectively in the classroom. Nonetheless, GTAs, especially those who have not had a large amount of experience in the classroom, may underestimate the complexity of teaching effectively. As a result, GTA supervisors and trainers may want to include exercises early in GTA training that reveal the true challenges of being an effective instructor. Microteaching, which is an active learning technique whereby GTAs prepare and deliver a brief lecture and receive feedback, may be an excellent activity for beginning GTAs (Allen & Ryan, 1969; Meyers & Prieto, 2000b). Providing activities that sensitize GTAs to the intricacies of teaching may interest them in learning more about pedagogical theories and techniques.

Another implication for GTA training and supervision relates to GTAs’ attributions for their students’ performance. The current study found that GTAs with higher levels of teaching self-efficacy made significantly higher ability and effort attributions in accounting for their students’ success. Ability and effort vary along Weiner’s (1986) causal dimension of stability with ability being stable and effort being unstable. Weiner argued (1986, 1992) that when one anticipates that conditions will
remain stable, then his or her prior performance at a task would be anticipated again with increased certainty. Applying Weiner’s theory to the present study, GTAs who attributed their students’ success to their own ability are likely to anticipate succeeding in the future; whereas, GTAs who attributed their students’ success to their own effort may not be as certain that they will succeed in the future. The level of certainty regarding future success could influence GTAs’ future classroom behaviors. If they continue to expect success, they may continue to engage in the same behaviors. If GTAs doubt their future success, several consequences may result, including maintaining their current behaviors, exerting even more effort the next time, or exerting less effort the next time, all of which have implications for their performance. Therefore, GTA trainers and supervisors may want to monitor GTAs’ attributions regarding their students’ performance and determine what effect the stability of the attributions has on GTAs’ future behaviors in the classroom.

A final implication for GTA training and supervision involves GTAs’ teaching self-efficacy. Teaching self-efficacy has clearly been linked to teachers’ behaviors in the classroom and student achievement. High teaching self-efficacy has been associated with persisting in the face of failure, accepting responsibility, and setting high goals (Ross, 1995). In the current study, higher levels of teaching self-efficacy were associated with taking responsibility for students’ performance. Certainly, as previous research and the current study suggest, teaching self-efficacy is an important variable. Therefore, more research needs to be done to determine what aspects of GTA training and supervision can enhance the teaching self-efficacy of GTAs in order to help them become more effective teachers.
In addition to the implications for GTA training and supervision, the current study has implications for future research regarding the relationship between GTAs’ teaching self-efficacy and attributions. The implications and suggestions for future research will be discussed throughout the next section regarding the study’s limitations.

**Limitations of Current Study**

This study had numerous limitations, including sample issues, measurement issues, and research design considerations. In this section, each area will be addressed in turn.

**Sample Issues.** The current study was limited by the poor completion rate of the survey. Although 264 GTAs “responded” to the survey, only 117 completed the entire survey. This means that approximately 20% of all GTAs at The University of Akron responded to the entire survey.

There are some post-hoc explanations for the poor completion rate. The first invitation for GTAs to participate may have suffered from poor timing, as the first invitation was sent toward the end of the semester, with GTAs likely preparing for their own and their students’ final exams. Therefore, GTAs may have started to complete the survey, but thought that it was too time consuming and, as a result, terminated without completing the entire survey. Concern regarding the timing of the invitation to participate was taken into consideration, and GTAs were contacted again at the very beginning of the spring semester, which is a more optimal time. However, there was not a significant increase in the number of GTAs who competed the entire survey. Therefore, it is difficult to know exactly what effect the role of timing had on the completion rate.
The completion rate of the survey could have been low because of the nature of the survey (i.e., the type of questions asked). Most GTAs completed the demographic questionnaire and terminated during the SETI-A portion of the survey. Perhaps GTAs, especially those with less experience, did not believe they could accurately answer the SETI-A, even though they were just to provide an estimate of their confidence level in their ability to carry out common classroom responsibilities such as preparing lectures and grading exams. Moreover, GTAs also seemed to drop out during the CDS-II section. Because the CDS-II questions were somewhat similar, only varying in the attributional cause, participants may have thought that they had already answered the questions or they may have become fatigued and discontinued.

Last, the low completion rate could have been the result of some type of computer malfunction, as the survey was online; however, the researcher tested the website numerous times before and during data collection to ensure that the website was working properly. No difficulties were encountered or reported to the researcher. Therefore, it is unlikely that technical difficulties interrupted participants’ completion of the survey. Future research efforts with GTAs could include methods to increase the completion rate of surveys such as offering incentives for completing the entire survey.

Another limitation with regard to the sample was their lack of interaction with students and therefore lack of awareness of students’ final course grades. Almost 20% of the sample did not have direct contact with students, as they classified their teaching responsibilities as general assistants or research assistants, and 28% were not aware of students’ final grades for the courses for which they were GTAs. Furthermore, even
GTAs who classified themselves as having full responsibility for teaching a course, if responding in the middle of their first semester of teaching, have limited teaching experiences and interaction with students. Given their lack of interaction with students, GTAs may have had difficulty answering questions regarding teaching and their attributions about students’ performance if they had no experiences upon which to draw. Even though GTAs were asked to simply imagine that their students had done well/poorly in the course, their lack of having a frame of reference for teaching and interacting with students may have made them believe they were too far removed from the scenario to even know how to respond. Their dearth of interaction with students may explain the lack of variance in the attributional causes, as many participants’ picked the midpoint of the scale for each cause except luck. The lack of variance in the attributional data could certainly have affected the lack of overall significance.

A related concern regarding the sample is that GTAs’ teaching style and interaction with students may vary greatly depending on the department in which they teach and the types of courses they teach (e.g. a lecture/discussion course versus a laboratory course). Although GTAs indicated what types of responsibilities they have in the classroom, it seems reasonable to consider that the type of interaction with students and the type of teaching done in a laboratory course is somewhat different than that done in a lecture/discussion course. Over 80% of the current sample reported that they interacted with students, but it is difficult to determine whether the quality of GTAs’ interaction with students differed depending on the types of courses they taught. Indeed, if GTAs are only superficially interacting with students, their ability to answer questions regarding their attributions about their students’ performance may be compromised.
Certainly, more research could be done that investigates how/if GTAs in different departments interact with students differently. Furthermore, GTAs in different departments may define students’ success and failure differently. In other words, GTAs’ outcome expectations regarding success or failure may vary based on the departments in which they teach. For example, GTAs in some departments might not define failure as most of their students doing poorly in the class, as that might be a common outcome. If GTAs could not define or conceive of success/failure as it was defined in the current study, the results of the study are severely limited. In the current study, GTAs outcome expectations were not measured. Future research would benefit from investigating GTAs’ outcome expectations regarding success/failure and determining if GTAs in different departments have different outcome expectations for success and failure.

Moreover, the representativeness of the current sample to the total GTA population of The University of Akron is limited for several reasons. First, when compared to The University of Akron’s GTA records, female GTAs were generally over-represented and male GTAs were generally under-represented. With regard to GTAs’ race/ethnicity, it is difficult to estimate how generalizable the current sample is to the overall University of Akron GTA population because many GTAs did not report their race/ethnicity in the university’s GTA records. However, based on the university’s records, GTAs were generally proportionately represented with regard to race/ethnicity with the exception of Caucasian GTAs who were somewhat over-represented and African-American and Asian-American GTAs who were somewhat under-represented. In addition, compared to The University of Akron’s GTA records, GTAs in the College of Arts and Sciences were generally over-represented, and those in all of the other colleges
were generally under-represented. Therefore, the current sample is not completely representative of the overall graduate teaching assistant population at The University of Akron. Furthermore, it is important to note that because all of the GTAs in the current sample were graduate students at The University of Akron, the full representativeness of the sample when compared to GTAs across different universities is unknown.

Thus, the nature of the sample posed several limitations, including low completion rate, lack of interaction with students, and lack of representativeness. The obtained sample size limited the types of analyses that could be conducted. Issues of the representativeness of the sample go directly to the ability to generalize these results to the population of GTAs at large. In short, given the limitations with regard to the sample, replication with a larger, representative, and more experienced sample is needed.

**Measurement Issues.** The instruments used in the survey also had several limitations. With regard to the CDS-II, participants were asked to *imagine* a successful or unsuccessful scenario regarding their students’ performance. Because participants were only asked to imagine a scenario and not asked to complete the survey after actually experiencing their students’ successful/unsuccessful performance, GTAs may have been too far removed from the stimulus and unable to assess to what extent each causal factor may have played a role in their students’ performance. Furthermore, the ability to imagine the successful/unsuccessful scenario may have been even more compromised for the GTAs who did not interact with students regularly. Certainly, it seems reasonable to suspect that GTAs may respond differently to an imagined versus an actual scenario.

Another limitation regarding the CDS-II is that the scenario (i.e., imagine that most of your students did well/did poorly in the class) could have been too vague. Even
though previous research has used similar scenarios (e.g. Ames, 1975; Brandt et al., 1975; McAllister, 1996; Ross et al., 1974) and even though participants’ own interpretations of the scenario are key in how they form attributions, the stem “most of your students did well/did poorly” was somewhat vague and could have made it difficult to accurately respond. In future investigations, instead of providing a successful/unsuccessful scenario, researchers might have GTAs imagine and record their own actual successful/unsuccessful student performance scenario and respond considering their self-generated scenario. Last, completing the CDS-II multiple times could have been confusing or annoying, as only the causal attribution changed. As a result, participants may have become fatigued, which could have affected their responses and could have contributed to the poor completion rate.

With regard to the SETI-A, despite their lack of experience, no GTAs had what may be considered “low” teaching self-efficacy. Therefore, the median split did not create high and low groups. Even though the average SETI-A score in the current study was similar to that of other studies (e.g. Prieto & Altmaier, 1994; Prieto & Yamokoski, 2002), not having a high and low group certainly affects the implications of the results. The nature of what extremely high versus high teaching self-efficacy means is unknown. As a result, the conclusions drawn based on the current study are limited by not having a clear distinction between levels of teaching self-efficacy. The SETI-A is a reliable measure of teaching self-efficacy, but more research needs to be done to determine what constitutes high and low teaching self-efficacy among graduate students.

Even though the instruments used in the current study were widely used in previous research, they posed some limitations. Future research in this area may benefit
from having GTAs create their own successful/unsuccessful student performance scenario when completing the CDS-II. Moreover, more research needs to be conducted on the SETI-A to establish norms so that GTAs’ level of teaching self-efficacy is meaningful.

Research Design Considerations. The research methodology for this study employed a successful/unsuccessful student performance scenario as a stimulus, not an actual successful/unsuccessful experience with students. Thus, the external validity of this study was limited by the use of an analogue design. It is probably very different for GTAs to imagine that their students did well/did poorly than it is to actually experience their students’ success/failure. As a result, GTAs’ responses may not reflect how they would actually respond. Furthermore, the current study was conducted online. As a result, it is unknown whether GTAs’ responses were affected by distractions or by other people. Future research should consider the effects of various methodological approaches (i.e., completing CDS-II based on actual, simulated, or imagined successful/unsuccessful student performances; completing survey online versus in person) to see if these conditions affect the quality of responses or scoring range of participants.

Another issue regarding the research design involves the strength of the manipulation of student performance. The current study simply asked GTAs to imagine that most of their students had done well or had done poorly in their class. Because GTAs were only imagining the scenario, it may not have been a powerful enough manipulation to evoke significant differences between the successful and unsuccessful student performance conditions. Furthermore, the lack of experience of the current GTA sample further limits the strength of the manipulation of student performance, as nearly 20% of
GTAs in the current sample had little or no interaction with students, and 28% were not aware of students’ final course grades. Because of their lack of interaction with students and lack of awareness of final grades, GTAs may have had serious difficulty imagining the successful or unsuccessful student performance scenario. In addition, the strength of the manipulation was weakened by the lack of an operational definition of successful/unsuccessful student performance. As stated previously, if GTAs could not define or conceive of success/failure as it was defined in the current study, the manipulation of student performance was severely limited. Certainly, if the student performance manipulation was compromised by the lack of experiencing an actual success/failure, GTAs’ lack of experience, GTAs’ lack of awareness of final grades, or lack of an operational definition of success/failure, the overall strength of the manipulation of student performance was seriously weakened. Future research needs to explore alternative ways to manipulate student performance such as having GTAs, themselves, describe a successful/unsuccessful experience with their class in order to determine what type manipulation is powerful enough to detect differences between successful and unsuccessful experiences in the classroom.

Last, the use of the SETI-A (Prieto & Altmaier, 1994) to assess GTAs’ level of teaching self-efficacy was problematic for the research design. Because the mean SETI-A scores in the current sample were so inflated, range restriction occurred. As a result, the groups could not be characterized as having low or high teaching self-efficacy. In fact, there was not even one full standard deviation difference between the extremely high teaching self-efficacy group and the high teaching self-efficacy group. Therefore, the
distinction between the teaching self-efficacy groups is somewhat arbitrary, which seriously limits the interpretations of the findings.

Future investigations of GTAs’ teaching self-efficacy need to consider how it can best be measured. The SETI-A is the most widely used measure of GTAs’ teaching self-efficacy; however, the current study and other research (e.g. Prieto & Altmaier, 1994; Prieto & Yamokoski, 2002) have shown that GTAs’ scores on the SETI-A tend to be extremely high. One possible reason for this is that GTAs with low teaching self-efficacy may drop out or decline to participate in research assessing teaching self-efficacy. Another reason could be that GTAs’ who have little or no experience may be very naïve regarding teaching and, as a result, overestimate their confidence in their ability to carry out various classroom responsibilities. In fact, research with K-12 education teachers has shown that novice teachers tend to underestimate the complexity of the task of teaching and overestimate their ability to teach effectively (Hoy & Woolfolk, 1990). If the SETI-A produces a restriction of range such that most GTAs who take the measure score highly, then its utility in research attempting to investigate differences between GTAs with high and low teaching self-efficacy is mitigated.

Furthermore, if most GTAs score in the high range, the practical utility of the measure is also questionable. Indeed, if GTAs’ scores on the SETI-A are an overestimation of their ability to carry out various classroom responsibilities, the SETI-A may not provide practical information regarding GTAs’ actual ability to carry out teaching responsibilities. The consistent findings regarding GTAs’ overestimation of teaching self-efficacy highlight the importance of using multiple methods of assessing GTAs’ teaching abilities rather than relying solely on self-reports of efficacy.
Summary of limitations. The most serious limitation of this study was the lack of having distinct high and low teaching self-efficacy groups. The lack of distinct levels of teaching self-efficacy truncates the conclusions that can be drawn from the current study and muddies the interpretations of the findings. Moreover, issues regarding the low completion rate affected the generalizability of the findings and the types of analyses that could be conducted. Limitations with the instruments used also impacted the results of this study, and the research methodology impacted the external validity of the results. The limitations of this study have many implications for future research directions. As mentioned previously, researchers need to include methods to increase the completion rate of surveys such as offering incentives for completing the entire survey. Moreover, the shortcomings of the instruments available for this type of research need to be considered. Various methods of completing the CDS-II need to be investigated, including how the methods influence the overall reliability and validity of the measure. Further research needs to be conducted on the SETI-A to determine norms for GTAs. Last, various methodological approaches need to be explored when investigating GTAs’ causal attributions regarding their students’ performance.

Conclusions

The purpose of this study was to improve on the extant literature’s methodological shortcomings and explore the relationship between GTAs’ teaching self-efficacy and their attributions regarding students’ performance. As discussed, numerous possibilities for potential future research exist regarding GTAs’ teaching self-efficacy and attributions about students’ performance. If GTAs continue to perform important classroom duties and if GTAs pursue careers in academia, then more research needs to be
done in this area. This study has contributed to the literature seeking to understand the relationship between GTAs’ teaching self-efficacy and attributions regarding their students’ performance. This study also sought to offer potential implications and directions for future research and training of GTAs, which investigators must continue to explore through systematic, rigorous empirical research.
REFERENCES


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APPENDICES
APPENDIX A

SELF-EFFICACY TOWARD TEACHING INVENTORY-ADAPTED (SETI-A; PRIETO & ALTIMAIER, 1994; TOLLERUD, 1990)

Please rate how confident you are in your ability to be effective in each of the following teaching skills and behaviors on a scale from 1 to 4. Circle the number that best reflects your confidence level.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>not confident</td>
<td>completely confident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(NC)</td>
<td>(CC)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How confident are you in your ability to...

<table>
<thead>
<tr>
<th></th>
<th>NC</th>
<th>CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. state goals and objectives clearly for class</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. plan lectures</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3. write a course syllabus</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4. plan discussions</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5. plan class exercises</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. select textbooks for the class</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7. select readings for the class</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8. develop student assignments</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. state class grading criteria</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10. deliver lectures</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11. initiate class discussion</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12. draw students into discussions</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>13. communicate at a level that matches students’ ability to comprehend</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14. ask open, stimulating questions</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15. encourage participation of women and minorities in class</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16. respond to individual differences in an inclusive way</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>17. manage student disagreements with instructor</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>18. communicate consistently both verbally and nonverbally</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19. show respect for student ideas and abilities</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20. respond to students’ questions</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>21. respond in a timely manner to student difficulties</td>
<td>NC</td>
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<tr>
<td>---</td>
<td>-------------------------------------------------------</td>
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</tr>
<tr>
<td></td>
<td>22. respond to student emotional reactions in class</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>23. integrate readings and lectures</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>24. construct essay questions that require integration</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>of content, critical thinking, and self-expression</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>25. score and interpret examinations</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>26. evaluate student assignments</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>27. utilize exams as a learning tool</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>28. provide constructive feedback on exams</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>and assignments</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>29. utilize student evaluations</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>30. utilize self-evaluation in teaching</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>31. arrange for constructive peer feedback and</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>suggestions</td>
<td>NC</td>
</tr>
<tr>
<td></td>
<td>32. demonstrate ethical behavior</td>
<td>NC</td>
</tr>
</tbody>
</table>
APPENDIX B

CAUSAL DIMENSION SCALE II (MCAULEY ET AL., 1992)

While imagining yourself in the following scenario, circle the number that best corresponds to your answer:

A) When most of your students do well in your class (i.e., perform above average), to what extent is it due to your ability?

7 6 5 4 3 2 1
extremely somewhat not at all

Now, think about the reason written above (your ability). The items below concern your impressions or opinions of this cause of your students doing well in your class. Circle one number for each of the following questions.

1. To what degree does your ability reflect an aspect of yourself?

A great deal Not at all
7 6 5 4 3 2 1

2. To what degree does your ability reflect an aspect inside of you?

A great deal Not at all
7 6 5 4 3 2 1

3. To what degree does your ability reflect something about you?

A great deal Not at all
7 6 5 4 3 2 1

4. To what degree does your ability reflect something about you as a teacher?

A great deal Not at all
7 6 5 4 3 2 1
While imagining yourself in the following scenario, circle the number that best corresponds to your answer:

B) When most of your students do well in your class (i.e., perform above average), to what extent is it due to your effort?

7 6 5 4 3 2 1
extremely somewhat not at all

Now, think about the reason written above (your effort). The items below concern your impressions or opinions of this cause of your students doing well in your class. Circle one number for each of the following questions.

1. To what degree does your effort reflect an aspect of yourself?
   A great deal Not at all
   7 6 5 4 3 2 1

2. To what degree does your effort reflect an aspect inside of you?
   A great deal Not at all
   7 6 5 4 3 2 1

3. To what degree does your effort reflect something about you?
   A great deal Not at all
   7 6 5 4 3 2 1

4. To what degree does your effort reflect something about you as a teacher?
   A great deal Not at all
   7 6 5 4 3 2 1
While imagining yourself in the following scenario, circle the number that best corresponds to your answer:

C) When most of your students do well in your class (i.e., perform above average), to what extent is it due to the difficulty of the task of teaching?

7 6 5 4 3 2 1
extremely somewhat not at all

Now, think about the reason written above (the difficulty of the task of teaching). The items below concern your impressions or opinions of this cause of your students doing well in your class. Circle one number for each of the following questions.

1. To what degree does the difficulty of the task of teaching reflect an aspect of the situation?

A great deal
7 6 5 4 3 2 1
Not at all

2. To what degree does the difficulty of the task of teaching reflect an aspect outside of you?

A great deal
7 6 5 4 3 2 1
Not at all

3. To what degree does the difficulty of the task of teaching reflect something about others?

A great deal
7 6 5 4 3 2 1
Not at all

4. To what degree does the difficulty of the task of teaching reflect something about your students?

A great deal
7 6 5 4 3 2 1
Not at all
While imagining yourself in the following scenario, circle the number that best corresponds to your answer:

D) When most of your students do well in your class (i.e., perform above average), to what extent is it due to your luck?

7 6 5 4 3 2 1
extremely somewhat not at all

Now, think about the reason written above (your luck). The items below concern your impressions or opinions of this cause of your students doing well in your class. Circle one number for each of the following questions.

1. To what degree does your luck reflect an aspect of the situation?
A great deal Not at all
7 6 5 4 3 2 1

2. To what degree does your luck reflect an aspect outside of you?
A great deal Not at all
7 6 5 4 3 2 1

3. To what degree does your luck reflect something about others?
A great deal Not at all
7 6 5 4 3 2 1

4. To what degree does your luck reflect something about your students?
A great deal Not at all
7 6 5 4 3 2 1
While imagining yourself in the following scenario, circle the number that best corresponds to your answer:

E) When most of your students do poorly in your class (i.e., perform below average), to what extent is it due to your ability?

7 6 5 4 3 2 1
extremely somewhat not at all

Now, think about the reason written above (your ability). The items below concern your impressions or opinions of this cause of your students doing poorly in your class. Circle one number for each of the following questions.

1. To what degree does your ability reflect an aspect of yourself?
   A great deal Not at all
   7 6 5 4 3 2 1

2. To what degree does your ability reflect an aspect inside of you?
   A great deal Not at all
   7 6 5 4 3 2 1

3. To what degree does your ability reflect something about you?
   A great deal Not at all
   7 6 5 4 3 2 1

4. To what degree does your ability reflect something about you as a teacher?
   A great deal Not at all
   7 6 5 4 3 2 1
While imagining yourself in the following scenario, circle the number that best corresponds to your answer:

F) When most of your students do poorly in your class (i.e., perform below average), to what extent is it due to your effort?

7 6 5 4 3 2 1
extremely somewhat not at all

Now, think about the reason written above (your effort). The items below concern your impressions or opinions of this cause of your students doing poorly in your class. Circle one number for each of the following questions.

1. To what degree does your effort reflect an aspect of yourself?

A great deal 7 6 5 4 3 2 1 Not at all

2. To what degree does your effort reflect an aspect inside of you?

A great deal 7 6 5 4 3 2 1 Not at all

3. To what degree does your effort reflect something about you?

A great deal 7 6 5 4 3 2 1 Not at all

4. To what degree does your effort reflect something about you as a teacher?

A great deal 7 6 5 4 3 2 1 Not at all
While imagining yourself in the following scenario, circle the number that best corresponds to your answer:

G) When most of your students do poorly in your class (i.e., perform below average), to what extent is it due to the difficulty of the task of teaching?

7  6  5  4  3  2  1
extremely  somewhat  not at all

Now, think about the reason written above (the difficulty of the task of teaching). The items below concern your impressions or opinions of this cause of your students doing poorly in your class. Circle one number for each of the following questions.

1. To what degree does the difficulty of the task of teaching reflect an aspect of the situation?

A great deal  Not at all
7  6  5  4  3  2  1

2. To what degree does the difficulty of the task of teaching reflect an aspect outside of you?

A great deal  Not at all
7  6  5  4  3  2  1

3. To what degree does the difficulty of the task of teaching reflect something about others?

A great deal  Not at all
7  6  5  4  3  2  1

4. To what degree does the difficulty of the task of teaching reflect something about your students?

A great deal  Not at all
7  6  5  4  3  2  1
While imagining yourself in the following scenario, circle the number that best corresponds to your answer:

H) When most of your students do poorly in your class (i.e., perform below average), to what extent is it due to your luck?

7    6    5    4    3    2    1
extremely somewhat not at all

Now, think about the reason written above (your luck). The items below concern your impressions or opinions of this cause of your students doing poorly in your class. Circle one number for each of the following questions.

1. To what degree does your luck reflect an aspect of the situation?
   A great deal Not at all
   7    6    5    4    3    2    1

2. To what degree does your luck reflect an aspect outside of you?
   A great deal Not at all
   7    6    5    4    3    2    1

3. To what degree does your luck reflect something about others?
   A great deal Not at all
   7    6    5    4    3    2    1

4. To what degree does your luck reflect something about your students?
   A great deal Not at all
   7    6    5    4    3    2    1
Please answer the questions that follow. Please check the appropriate block or fill in the appropriate information.

1. **Age:**
   - 20-25__
   - 26-30__
   - 31-35__
   - 36-40__
   - 41-45__
   - 46-50__
   - 50-55__
   - 55+ __

2. **Race/Ethnicity**
   - African-American/Black___
   - Asian-American/Pacific Islander___
   - Caucasian/White___
   - Hispanic or Latino/Latina___
   - Multiracial___
   - Native American/Indian/Alaskan Native___
   - Other (please specify)________

3. **Sex:**
   - Male __
   - Female__
4. Please indicate the number of semesters of previous experience you have had as a Graduate Teaching Assistant (GTA):
   - 0__
   - 1__
   - 2__
   - 3__
   - 4__
   - 5__
   - 6__
   - 6+ __

5. Please indicate the number of semesters of previous teaching training that you have received as a GTA:
   - 0__
   - 1__
   - 2__
   - 3__
   - 4__
   - 5__
   - 6 __
   - 6+__

6. For how many separate courses (NOT sections of courses) are you currently a GTA?
   - 1__
   - 2__
   - 3__
   - 4 or more___

7. For how many separate sections of the same course are you currently a GTA?
   - 1__
   - 2__
   - 3__
   - 4 or more___

8. Do you plan on a full time career in teaching/academia after graduation?
   - Yes____
   - No____

9. Which description best fits your current GTA responsibilities? (Check one)

   A. ___ Primary instructor (GTA teaches independently)- e.g. choose texts/readings for class, establish course syllabus, develop and/or deliver all course lectures and lab/discussions, construct/administer/evaluate all course exams, establish grading criteria and assign grades, hold office hours to assist students, have students complete evaluations on your teaching.
B. ____ Assistant instructor (GTA supports professor's teaching)-e.g. conduct lab/discussion sections to reinforce/supplement professor's lectures, help in the construction and grading of course examinations and hold office hours to assist students.

C. ____ General assistant (GTA does not teach or deal directly with students)- e.g. help in the construction and grading of course examinations, perform preparatory duties for professor (set up a lab or gather materials for class) and generally have no or very little interaction with students.

D. ____ Research assistant (GTA does not teach or deal directly with students)- e.g. help advisor/professor with a research project, help carry out research experiments, analyze data, have no interaction with students except in the context of doing a research experiment.

10. Are you aware of the final course grades of the students in the course/section(s) for which you are a Graduate Teaching Assistant?
   Yes___
   No___

11. In what general area of study is your degree program? (e.g., Art, History, Chemistry)

    ________
APPENDIX D

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

Office of Research Services and Sponsored Programs
Akron, OH 44325-2102
(330) 972-7666 Office
(330)972-6281 Fax

November 9, 2005
Laura McCrea
4568 Montrose Ave.,
Boardman, Ohio

Ms. McCrea:
The University of Akron’s Institutional Review Board for the Protection of Human Subjects (IRB) completed a review of the protocol entitled “An Examination of the Relationship between Graduate Teaching Assistants’ Teaching Self-Efficacy and Attributions for Students’ Learning”. The IRB application number assigned to this project is 20051104. The protocol was reviewed on November 8, 2005 and qualified for exemption from continuing IRB review. The protocol represents minimal risk to subjects and matches the following federal category for exemption:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information is recorded in such a manner that subjects can be identified, directly or through identifiers linked to subjects; AND (ii) any disclosure of responses outside the research could reasonably place the subjects at risk of civil or criminal liability or be damaging to subjects’ financial standing, employ/ability or reputation

Enclosed is a copy of the informed consent document, which the IRB has approved for your use in this research. In addition, your request for a waiver of documentation of informed consent, as permitted under 45 CFR 46.117(c), is also approved. Annual continuation applications are not required for exempt projects. If you make any changes or modifications to the study’s design or procedures that either increase the risk to subjects or include activities that do not fall within one of the categories exempted from the regulations, please contact the IRB first, to discuss whether or not a request for change must be submitted. Any such changes or modifications must be reviewed and approved by the IRB prior to their implementation. Please retain this letter for your files. If the research is being conducted for a master's thesis or doctoral dissertation, the student must file a copy of this letter with the thesis or dissertation.

Sincerely,

Sharon McWhorter
Associate Director
Cc: James Werth, Advisor
Department Chair
Phil Alien, IRB Chair
The University of Akron is an Equal Education and Employment Institution

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