ASSESSING UNDERGRADUATE STUDENT-TEACHER RELATIONSHIP
FACTORS USING WORKING ALLIANCE AND INTERPERSONAL INFLUENCE
THEORIES

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ASSESSING UNDERGRADUATE STUDENT-TEACHER RELATIONSHIP FACTORS USING WORKING ALLIANCE AND INTERPERSONAL INFLUENCE THEORIES

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ABSTRACT

The purpose of this study was to test the applicability of working alliance theory (Bordin, 1979; Castonguay, Constantino, & Grosse Holtforth, 2006) and interpersonal influence theory (Strong, 1968) as ways to articulate an empirically informed model of student-teacher relationships in order to extend the current body of knowledge on effective teaching practices and philosophies. Working alliance theory has previously been adapted to supervisory, advisory, and therapeutic group relationships with success. Several authors (e.g., Koch, 2004; Meyers, 2008) have discussed how working alliance theory may fit into a model of student-teacher relationships. This study tested this line of reasoning by providing an empirical evaluation of student-teacher working alliances. In addition, this study examined Strong’s (1968) interpersonal influence theory, which has been used to successfully explain hierarchical elements in counseling relationships. In order to thoroughly test these theories, they were first examined separately, and then tested together as complementary theories. Results suggested that the combination of the working alliance theory and the interpersonal influence theory results in an interpretable solution that accounts for significant amounts of variance. The resulting final measurement scale, called the Student-Teacher Relationship Inventory (STRI), was based on items derived from both theories. In addition, preliminary predictive validity of the STRI was examined by comparing the STRI to four student outcome measures: (a)
student self-efficacy, (b) satisfaction with course and teacher, (c) student participation in learning, and (d) course performance. Consistent with previous findings, the STRI scores were positively correlated with self-efficacy, satisfaction, and participation in learning. STRI scores were not correlated with overall course performance.
DEDICATION

This study is dedicated to all of the formal and informal teachers in my life who have challenged and supported me throughout my education. I am only able to accomplish this because of the perseverance and dedication of you.
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CHAPTER I

STATEMENT OF THE PROBLEM

Universities and colleges are being called upon by the various constituencies (i.e., parents, employers, legislators, state boards) to be more accountable for undergraduate student learning and achievement (Education Commission of the States, 2009). This demand for accountability has led scholars in the education field to investigate what factors contribute to successful learning (e.g., Chickering & Gamson, 1987). One factor that has received considerable attention is the interpersonal dynamic that develops in classrooms between teachers and students. Lowman stated that “the interpersonal dealings of students and instructors—many of them emotional, subtle, and symbolic—strongly affect student morale, motivation, and learning” (1984, p. ix). Lowman’s voice stands among many (e.g., Brookfield, 2006; Buskist & Saville, 2004; Lamport, 1993; Meyers, 2008; Wilson, 2006) who suggest that the relationships between students and the teacher is a central component to creating a positive classroom experience and greater learning.

Several independent empirical studies (Benson, Cohen, & Buskist, 2005; Christophel, 1990; Frymier, 1994; Gorham, 1988; Wilson & Taylor, 2001) have found connections between positive undergraduate student-teacher relationships and various learning outcomes. However, these studies are often conducted outside of the framework of a theoretical model. Various worthwhile models and guidelines on being an effective
teacher have been presented in the educational literature (e.g., Brookfield, 2006; Chickering & Gamson, 1987, 1999; Lowman, 1984; 1995); however, there are currently no extant theories by which student-teacher relationships can be directly understood and evaluated. By examining the relationship on its own, we can more clearly understand the dynamic underlying the student-teacher relationship. Better understanding of the student-teacher relationship can lead to insight into better ways to foster and evaluate it. A unified theory on student-teacher relationships would provide a framework for understanding the results of various empirical studies, establish consistency in the current body of literature and provide guidelines for future research (Buskist, Sikorski, Buckley, & Saville, 2002; Meyers, 2008; Strong, 1991).

The disciplines of counseling and clinical psychology have devoted much time and research to the issue of relationship dynamics (Horvath, 2006) and its influence on client outcome. Scholars have suggested that there are commonalities between teaching and counseling that may allow for cross-discipline use of some of these relationship-based theories (Forsyth, 2003; Koch, 2004; Meyers, 2008; Robertson, 2000; Wool, 1989). For example, both counseling and teaching are helping relationships at their core (Robertson, 2000): counselors help clients solve personal issues, while teachers help students learn. Along the same notion, the outcome for both teaching and counseling is change of some type (e.g., increased knowledge, skill development, personal growth and development; Bordin, 1979; Rogers, 1957; Wool, 1989). Finally, both types of relationships share common elements such as goal setting, the use of successive tasks to meet goals, and an affectionate bond between the interested parties (i.e., teacher and student; counselor and client). The commonality between teaching and counseling would
suggest that a counseling theory about relationships may be applicable to help understand the relationship between students and teachers (Buskist, et al., 2002; Forsyth, 2003; Koch, 2004; Meyers, 2008).

Within counseling psychology, one of the most widely used theories explaining relationship dynamics is the working alliance (Samstag, 2006). Although there are different theories and definitions for the working alliance, in general the “alliance represents interactive, collaborative elements of the relationship (i.e., therapist and client abilities to engage in the tasks of therapy and to agree on the targets of therapy) in the context of an affective bond or positive attachment” (Castonguay, Constantino, & Grosse Holtforth, 2006, p. 272). Empirical research has established a link between a good working alliance and positive counseling outcomes, such as symptom reduction and achieving therapeutic goals (Horvath & Bedi, 2002; Steering Committee, 2002). Because the working alliance has a strong theoretical background and a solid research base, it has been extended to and empirically studied in other types of relationships such as therapeutic groups (Bourgeois, Sabourin, & Wright, 1990; Brown & O’Leary, 2000; Castonguay, Pincus, Agras, & Hines, 1998; Gillaspy, Wright, Campbell, Stokes, & Adinoff, 2002) supervisor-supervisee relationships (Bahrick, 1989; Bordin, 1983; Efstation, Patton, & Kardash, 1990; Ladany, Ellis, & Friedlander, 1999), and advisor-advisee relationships (Schlosser & Gelso, 2001; Schlosser & Kahn, 2007). The working alliance has also been applied theoretically to student-teacher relationships (Bordin, 1979; Koch, 2004; Meyers, 2008).

However, the working alliance theory alone does not necessarily account for all of the components in an undergraduate student-teacher relationship. The working alliance
theory fails to address non-collaborative elements inherent in an undergraduate student-teacher relationship, such as the evaluation of the student by the teacher (i.e. grades), and unilateral design of the course by the teacher. These elements in the undergraduate student-teacher relationship add hierarchical elements to the relationship. Therefore another theory may be needed to supplement the working alliance theory in order to adequately account for the non-collaborative elements present in student-teacher relationships. The interpersonal influence theory (Strong, 1968) is a counseling psychology theory that examines elements that are needed for hierarchical relationships to work efficiently. Examining the working alliance and interpersonal influence theories together may lead to a thorough understanding of undergraduate student-teacher relationships. In addition, no study to date has empirically tested the student-teacher relationship using a specific theory. Building on previous research (Bordin, 1979; Koch, 2004; Meyers, 2008; Strong, 1968) this dissertation will undertake the tasks of using working alliance theory and interpersonal influence theory to create a model of student-teacher relationships and to test this model empirically.

The purpose of Chapter one is to introduce the research question that is addressed in the present study and provide an overview of the theory and research relevant to this question. As such, this chapter reviews the relevant literature on interpersonal connections in college classrooms between students and teachers and establishes the advantage of developing a clear and concise model detailing student-teacher relationships. More specifically, this chapter will introduce the connection between student-teacher relationships and positive student outcomes in order to provide an understanding as to why it is important to examine this issue. A brief review of current educational models
will establish where the gaps are in the literature and provide rationale for looking outside of the educational literature for a new model of student-teacher relationships. Two counseling theories, Bordin’s theory of working alliance (1979) and Strong’s interpersonal influence theory (1968) will be examined and rationale will be provided for their potential applicability to undergraduate classrooms. This chapter concludes with an outline of the research questions that will be addressed in the present study.

**Educational Literature**

The duties and responsibilities of teaching at a college level have changed throughout the years. In fact, there was a transition among teaching manuals in the twentieth century wherein teaching was viewed as transmitting “the sum of the world’s knowledge” to using teaching to help students mature and develop (Raushenbush, 1950, p. 24). Schneider believed that teachers “may no longer merely teach ‘subjects’ and dates and names of men and books” (1938, p. 8), but it is now their mission to also foster student development in addition to teaching facts and theories. Tead (1949) believed that student development occurred best in the context of positive student-teacher relationships. Building positive relationships with students is now viewed as a necessary method in effective teaching.

This focus on creating positive relationships within classrooms has continued in many of the popular teaching manuals of today (e.g., Brookfield, 2006; Buskist, et al., 2002; Buskist & Saville, 2004; Forsyth, 2003; McKeachie, 1999; Schoenfeld & Magnan, 1994). Schoefeld and Magnan (1994), for instance, emphasized the importance of making connections with students on the first day of class in order to improve student motivation and appreciation of subject matter. Similarly, in *The Professor’s Guide to*
Teaching Psychological Principles and Practices (Forsyth, 2003) there is extensive focus on different methods to improve rapport with students and a discussion about how these positive relationships improve student behaviors such as academic ethics. Corlett (2007) suggested that building a positive relationship will increase student’s desire to be in class and will lead to greater acceptance of consequences from the teacher.

In Buskist and colleagues’ chapter on Elements of Master Teaching (2002), creating positive relationships is embedded in many of the qualities of becoming a “master teacher” (p. 27). Although the authors avoided a specific definition of a master teacher, they reported that the characteristics of being approachable, genuine, humorous and respectful are emphasized by individuals considered master teachers. Buskist and colleagues suggested that these characteristics “contribute to the development of rapport between student and teacher similar to that formed in psychotherapy between therapist and client” (p. 28-29). These personal characteristics suggest that master teachers place emphasis on the development of a relationship with students. Buskist and colleagues add that effectively managing classrooms for master teachers includes creating “an atmosphere of participation, sharing, and playful learning” (p. 29). Students agree that master teachers focus on creating positive relationships within the classroom. For example, Buskist et al. (2002) asked 916 undergraduates to rank order 28 qualities considered central to being a master teacher. They concluded that the top ten qualities reflected a “desire to learn knowledge within the context of a personal, empathetic, and supportive relationship” (p. 37). Clearly, students are likely to judge the effectiveness of teaching on the quality of the relationship as well as the presentation of the material.
The student-teacher relationship is sometimes referred to in professional literature as *rapport* (e.g., Benson, Cohen, & Buskist, 2005; Buskist et al., 2002; Buskist & Saville, 2004; Heckert, Latier, Rignwald, & Silvey, 2006). Buskist and Saville (2004) have defined rapport as “a positive emotional connection among students, teacher, and subject matter that emerges from the manner in which the teacher constructs the learning environment” (p. 152). In a qualitative study, examining “several hundred” (p. 152) students’ experiences of rapport in classrooms (Buskist & Saville, 2004), undergraduates reported that positive student-teacher rapport increased their enjoyment of the teacher and subject, motivated them to attend class more often, and to pay closer attention in class. In a follow-up study, students reported that they were significantly more likely to study for class, attend office hours, email the professor, take another class from the professor and take another class in the subject if positive rapport existed in the classroom (Benson, Cohen, & Buskist, 2005). Positive rapport also decreased the likelihood of students dropping the course. These student behaviors are desirable outcomes to teaching and will be examined further in the current study.

Although no study has tested a specific model of student-teacher relationships, other studies have shown significant correlations between positive student-teacher relationships and students’ overall evaluation of a class (Heckert et al., 2006; Moore, Masterson, Christophel, & Shea, 1996), interest in content (Benson, Cohen, & Buskist, 2005; Heckert et al., 2006), participation in class (Forrester-Jones, 2003), higher projected grade (Heckert et al., 2006; Wilson, 2006), student perceptions of learning (Christensen & Menzel; 1998; Gorham, 1988), and better attitude toward the teacher and course (Buskist & Saville, 2004; Wilson, 2006). In a review of pertinent literature on
college student outcomes, positive student-teacher relationships correlated with academic achievement, satisfaction with college, intellectual and personal development, and decreased attrition (Lamport, 1993). In another study examining the factors associated with persisting at a school or leaving, Gerdes and Malinckrodt (1994) found that informal contact with faculty differentiated the academically successful students who persisted from those who left the school prior to graduation (either due to dropping out or transferring). Good student-teacher relationships have also been found to correlate inversely with academic dishonesty (Stearns, 2001) and absenteeism (Rocca, 2004).

This body of research suggests that interpersonal dynamics in classrooms do impact a variety of desired student behaviors and attitudes. Although this research offers suggestions to teachers regarding the importance of addressing relationship dynamics, the current status of the literature on student-teacher relationships is “a blend of musings of experienced and astute teachers with a dash of formal research” (Buskist et al., 2002, p. 28). A unifying theory on student-teacher relationships would provide a framework for understanding the previous research and guiding future empirical endeavors (Strong, 1991). An established theory will also provide researchers with clear definitions of the variables involved in student-teacher relationships, which may provide the consistency needed for the field to move forward. In addition, theories are “the bridge between research and practice” (Strong, 1991, p. 208); therefore an established universal theory on student-teacher relationships will help practitioners (i.e., teachers) understand how to improve their relationships with their students, and with it the quality of the learning experience.
As previously mentioned, no theory currently in the field of education focuses exclusively on student-teacher relationships; however some efforts (e.g., Brookfield, 2006; Chickering & Gamson, 1987; Lowman, 1984) have been made to provide a unified model on effective teaching, which contain components associated with student-teacher relationships. Examination of these components can provide background and direction in creating a unified model that focuses exclusively on student-teacher relationships.

Among the most frequently cited models of effective teaching are Chickering and Gamson’s (1987, 1999) seven principles of good practice in undergraduate education, Brookfield’s (2006) skillful teacher, and Lowman’s (1984; 1994; 1995) two dimensional model of effective college teaching. These three models are similar in that they each include a component related to student-teacher relationship dynamics (e.g., student faculty contact, authenticity, and interpersonal rapport). However, each model is designed as a guideline for effective teaching as opposed to a unifying theory that lends itself to empirical validation. The models also lack the ability to address specific aspects of student-teacher relationships and how those aspects may relate to student learning outcomes. In addition, the definition of the student-teacher relationship is often broad (e.g., frequent contact, authenticity) and does not translate well into measurable variables.

The lack of consistent measurable variables leads to another difficulty by not pointing to a way to study the construct empirically. Without a way to measure student-teacher relationship variables consistently it is difficult to make generalizations from the research and move forward in understanding classroom relationship dynamics. According to Strong (1991), an effective theory is defined as a “representational model of the reality posited to underlie and cause the phenomenon of interest” (p. 205). The
ability to make predictions based on a theory, and to measure the variables within the
teaching that can move the field forward. While these models highlight elements that enhance
teacher relationships impacts desired outcomes. One potential theory that may help overcome
these shortcomings of lack of specificity, consistency, measurability, and predictability is
the working alliance theory (Bordin, 1979).

**Working Alliance**

Considering the fact that the educational literature currently does not have a
comprehensive, demonstrable model with which to understand and measure student-
teacher relationships, looking outside the teaching literature to other fields that are
concerned with relationship dynamics may provide a useful theory. The fields of clinical
and counseling psychology have placed theoretical and empirical attention on
relationships, especially didactic relationships, which have parallels with relationships
between students and teachers. The working alliance has been explored by counseling
and clinical theorists since the early writings of Freud (Greenson, 1965/1990), and
although it has not always been identified using the term *working alliance* it is often a
core element in counseling theories (Norcross, 2002). Empirical support for the utility of
the working alliance in counseling has been established (Steering Committee, 2002).
After reviewing the available evidence, a task force from the American Psychological
Association considers the working alliance “demonstrably effective” (Steering Committee, 2002, p. 441) in producing successful outcomes in therapy. Meta-analytic studies (Horvath & Bedi, 2002; Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000) show small effect sizes ranging from .21 to .26 in studies between the working alliance and positive outcomes in therapy (e.g., symptom reduction and improved functioning). Clearly, research suggests that the working alliance is powerful in counseling dyads. It is possible that the working alliance may also explain a significant portion of the link between positive student-teacher relationships and student learning outcomes.

There are many theories of the working alliance from which to choose. One of the most influential theories is Bordin’s theory of working alliance (1979; Safran & Muran, 2006). Bordin described the working alliance as collaboration between an individual seeking some type of change and an individual who is acting as an agent of change. He formulated three dimensions to the working alliance: bond, agreement of goals, and agreement of tasks. A bond is the level of trust and attachment that exists within the dyad. Bordin stated that the composition of the relationship would determine how deep the level of trust and attachment is; however a basic level must be achieved for all effective working alliances. The latter two dimensions emphasize the collaborative nature of the relationship between the agent of change and the individual seeking change. Bordin postulates that the cornerstone of effective work is an agreement on what needs to be changed (i.e., goals) and how that change is likely to occur (series of tasks).

Many authors suggest that Bordin’s three dimensions could translate directly to the classroom setting (Buskist & Saville, 2004; Koch, 2004; Meyers, 2008; Robertson,
2000; Wool, 1989). As previously stated, research supports the idea that rapport between teachers and students enhance student motivation, which in turn impacts student attitudes and behaviors that contribute to learning. This is similar to the bond dimension in Bordin’s theory of a working alliance. The Goals dimension parallels objectives that teachers establish and at times collaborate with the students to create at the start and throughout the class. Additionally, students will establish individual goals for the class, which may involve an increase of knowledge, skill development, and/or personal growth. The more that the student’s individual goals are in line with the class objectives, the more likely he or she is to have higher academic achievement (Meyers, 2008). Similarly, the tasks dimension parallels the tasks that are typically written out in a syllabus which clearly states the expectations of teacher and student. Although the teacher typically sets the tasks, some research suggests that active involvement by students in choosing what tasks they wish to complete (i.e., if they are given a choice between similar projects) can enhance their motivation in courses (Koch, 2004; Weimer, 2002). Clearly, Bordin’s dimensions of a working alliance seem to map onto typical classroom dynamics, making an examination of its applicability as a framework for student-teacher working alliances compelling.

There may be several other advantages to using Bordin’s (1979) theory as a model for student-teacher relationships. First, Bordin purposefully defined the working alliance in general terms because he believed it could be applied to a multitude of different relationships, including student-teacher relationships. Second, Bordin’s working alliance theory has already been used as a foundation for applying the working alliance to supervision (Bahrick, 1989; Bordin, 1983; Ladany, Ellis, & Friedlander, 1999),
advising dyads (Schlosser & Gelso, 2001), and therapeutic groups (Bourgeois, Sabourin, & Wright, 1990; Brown & O’Leary, 2000). Applying the theory to student-teacher relationships would be an anticipated extension of this previous work. In fact, theoretical articles have already been published outlining how Bordin’s theory of the working alliance can be applied to graduate (Koch, 2004) and undergraduate (Meyers, 2008) classrooms. Finally, Bordin’s theory has been used to create an assessment instrument, the Working Alliance Inventory (WAI) that has shown acceptable psychometric properties (Horvath & Greenberg, 1989; Martin, Garske & Davis, 2000). The WAI has been adapted to supervision relationships (Bahrick, 1990; Ladany, Ellis, & Friedlander, 1999) and group work (Brown & O’Leary, 2000). The WAI could extend the current educational literature by providing guidelines for a constructive measure of student-teacher alliances.

However, there may be some important limitations to solely using Bordin’s theory to investigate student-teacher working alliances. First, the theory fails to account for the evaluative nature of the teaching environment (Meyers, 2008). Although there are evaluative components involved in counseling, Bordin’s theory of the working alliance does not address them. In a classroom setting the teacher is clearly in an evaluative position over the student. In the counseling setting, the client often determines the criteria for success (i.e., the client identifies when they are feeling better); however in a classroom setting it is the teacher who determines who succeeds (i.e., passes) and who does not. There must be some component within a student-teacher relationship model that addresses student perceptions of this evaluative process.
A second limitation of Bordin’s theory may be the failure to include a dimension associated with expertness and competence. Services are received with more confidence if the professional is perceived as competent. For example, doctors who have their degrees and certifications hanging on the wall of their office are seen as more competent by their patients (Strong, 1968). The teacher needs to be perceived by the students as being “well versed in the content of their courses” (Buskist, et al., 2002, p. 28). In many ways the student-teacher relationship is established first as a business relationship: the student is paying money (tuition) to receive services (learning) from the teacher. If the teacher is not perceived as competent to perform the services then students may feel cheated, which can impact the working alliance (Brookfield, 2006). It is important to note that the variable of interest is the perception of competence of the teacher by the students. It is assumed that the students have limited experiences within the field of study; therefore they do not have the knowledge to determine actual competence of the professor. However students can still draw conclusions of competence based on other variables such as the professor’s confidence in class, consistency with other courses and professors in the field, ability to answer student questions, and information provided beyond the assigned textbook.

A third related potential limitation of Bordin’s theory is that it places a strong emphasis on the collaborative nature between the two parties. However, there is likely less collaboration between teacher and student on goals and tasks than there is between client and counselor, since the teacher typically establishes the goals (i.e., objectives) and tasks (i.e., assignments) of a class before even meeting the students. Although experts suggest that active collaboration in classrooms increases student learning (Chickering &
Gamson, 1987; McKeachie, 1999; Meyers, 2008; Weimer, 2002), the core of the relationship is still hierarchical in nature because the teacher must make many decisions without the students’ input.

Since Bordin’s theory of working alliance (1979) fails to account for issues of evaluation, expertness, and hierarchy, using another theory that takes these issues into account might help more thoroughly explain student-teacher relationships. One theory that may help address the limitations of Bordin’s theory is Strong’s (1968) interpersonal influence theory. Strong’s theory focuses on the dimensions that influence opinion change within the counseling relationship. Strong believed that clients were more apt to change their opinions if the counselor first established him/herself as a credible expert. This focus on established credibility within the dyad may help address the limitations of Bordin’s theory of working alliance to explain student-teacher relationships more completely.

**Interpersonal Influence Theory**

Strong’s (1968) interpersonal influence theory suggested that in order for counselors to effectively persuade their clients to change they must present three characteristics: expertness, trustworthiness, and attractiveness. Expertness is defined as someone who is “a source of valid assertions” (p. 216), while trustworthiness is defined as an altruistic interest in performing the duties associated with the individual’s social role. According to Strong, these components define credibility. The third characteristic, attractiveness, is defined as “perceived similarity to, compatibility with, and liking for the influence recipient [i.e., student]” (p. 216). Strong asserts that if all three characteristics are perceived by the recipient (i.e., student) then the ability of the communicator (i.e.,
teacher) to influence change will be enhanced. In the current study, change is defined by amount of learning and student growth that occurs; therefore according to Strong’s theory, student learning should be increased if the teacher is perceived as credible (i.e., a trustworthy expert) and attractive (i.e., compatible with the students) by the students.

Strong’s theory (1968) of interpersonal influence appears to address some of the limitations of Bordin’s theory of working alliance (1979). First, the component of trustworthiness indirectly addresses the issue of student evaluation. Strong stated that trustworthiness is a function of four attributes: (a) reputation for honesty, (b) social role, (c) sincerity and openness, and (d) perceived lack of motivation for personal gain. If a student perceives that a teacher exemplifies the characteristics associated with trustworthiness, then they will assume fairness in terms of their evaluation (Strong, 1968).

Second, Strong’s theory (1968) appears to address directly the failure of Bordin’s theory (1979) to include a variable to account for the students’ perceptions of the teacher’s field expertness and competence. Strong’s first characteristic in his theory is expertness. Strong asserts that expertness is displayed through behavior and “objective indexes” (p. 221) such as diplomas, certifications and memberships in professional organizations. In most courses, teachers establish their credentials within the first couple of class periods (e.g., placing their degree titles on the syllabus, talking about their qualifications for teaching the course). Strong suggested that expertness is displayed through organization. Evidence for the importance of teachers displaying organization
and structure in courses has been found in separate studies (Buskist et al., 2002; Lowman, 1994).

Finally, Strong’s theory (1968) is designed to address hierarchical relationships (as opposed to collaborative relationships, as emphasized by Bordin, 1979), in which one individual is trying to influence another individual through his/her perceived position. Although teachers are not trying to induce specific changes like counselors often are, they are clearly in a higher status position and are trying to influence the students to learn. This learning influence is likely to be more readily accepted if the students “feel confident they are learning something significant” (Brookfield, 2006, p. 55). If the students feel that the course material is irrelevant or the teacher does not know what he/she is doing, they are less likely to engage in learning behaviors (Buskist et al., 2002). Strong’s theory addresses this issue by accessing whether the student perceives that the teacher knows what he/she is doing (i.e., whether the teacher is perceived as a trustworthy expert).

Theories can be complementary to each other instead of competing with each other (Gaston, 1990). Combining Bordin’s theory of working alliance (1979) with Strong’s interpersonal influence theory (1968) has already seen some success in explaining supervisory and advising working alliances (Efstation, Patton, & Kardash, 1990; Schlosser & Gelso, 2001). The current study seeks to expand the literature focusing on student-teacher relationships by assessing the applicability of the theories of Bordin and Strong to the classroom. Since there have been no empirical tests of student-teacher relationships using these theories, the focus of this study will remain exploratory. Therefore, there are no a priori assumptions about whether one theory explains student-
teacher relationships better than the other, or whether the best fit is a blend of the two theories. Using exploratory questions to direct the research will maintain the theory-driven nature of the current study while anticipating the pragmatic issues involved with using a concept that was developed in one setting (i.e., counseling) in a different setting (i.e., teaching).

**Research Questions**

The present research attempted to integrate the educational and clinical/counseling literatures to explore a parsimonious, theoretically and empirically informed model for understanding student-teacher relationships and their impact on student outcomes. These efforts took the form of developing a quantitative measure based on the dimensions postulated by Bordin’s theory of working alliance (1979) and Strong’s interpersonal influence theory (1968). This measure was used to explore the dimensional nature of student-teacher relationships and determine how aspects of this relationship may impact student learning outcomes. The current study specifically addressed the following questions:

1. Is there a dimensional nature to the student-teacher relationship and if so, to what degree are these dimensions representative of existing theory(s)?

2. How does the student-teacher relationship relate to student outcomes such as (a) self-efficacy, (b) satisfaction with course and teacher, (c) student attitudes and behaviors, and (d) overall performance in the classroom?

The dimensional nature of student-teacher relationships was explored through analysis of the factor structure of a quantitative measure of student-teacher relationships. This measure was created for this study based on previous measures of the working
alliance (Efstation, Patton, & Kardash, 1990; Horvath & Greenberg, 1989; Schlosser & Gelso, 2001) and a measure associated with Strong’s interpersonal influence theory (Barak & LaCrosse, 1975); while being informed by theoretical conceptualizations of the working alliance (Koch, 2004; Meyers, 2008) and interpersonal influence theory.

Chapter two further explores using working alliance theory and interpersonal influence theory to explain student-teacher relationships by examining the educational and counseling literature in greater detail. This examination includes critiquing the various teaching models and guidelines that have been developed in order to establish the current state of the field. Similarities between counseling and teaching are examined in order to provide a rationale for applying the working alliance theory and interpersonal influence theory to student-teacher relationships. The history of working alliance theory is also examined in order to establish why Bordin’s theory of the working alliance (1979) is the most appropriate working alliance theory for this population. Strong’s interpersonal influence theory (1968) is examined and a rationale is given for why it could compete with or complement Bordin’s theory of working alliance. Chapter two also provides a rationale for developing a new scale for measuring student-teacher relationships that is based on Bordin and Strong’s theories. Chapter two ends by stating the specific hypotheses under investigation.
CHAPTER II

REVIEW OF THE LITERATURE

Chapter one discussed how teaching guidelines (e.g., Chickering & Gamson, 1987), teaching models (e.g., Brookfield, 2006; Lowman, 1984), and empirical research (e.g., Buskist & Saville, 2004, Gorham, 1988; Heckert et al., 2006; Wilson, 2006) have supported the importance of student-teacher relationship dynamics in learning outcomes. In general, the more positive students perceive their relationship with the teacher, the more likely they are to enjoy the course (e.g., Heckert et al., 2006), complete classroom tasks (e.g., Benson, Cohen, & Buskist, 2005), ask for help when needed (Benson, Cohen, & Buskist, 2005), perceive that they are learning (Gorham, 1988; Wilson, 2006), and seek out additional learning opportunities (e.g., take another course from the teacher or department; Benson, Cohen, & Buskist, 2005). In addition, reports of a good student-teacher relationship have been shown to impact attrition and graduation rates (Gerdes & Malinckrodt, 1994; Lamport, 1993). Although the benefits of a positive student-teacher relationship have been established, research in this field has suffered from the lack of an overarching model within which to understand the research and guide future empirical undertakings (Buskist, Sikorski, Buckley, & Saville, 2002; Gorham, 1988; Strong, 1991). Establishing an overarching model in order to explain the roll of student-teacher relationships in student outcomes would provide a framework and consistency to the literature (Meyers, 2008).
Chapter one outlined how working alliance theory and interpersonal influence theory may be used to explain student-teacher relationships. Working alliance theory is generally viewed as empirically sound (Gelso, 2006; Steering Committee, 2002) and has been correlated consistently with reduced symptomatology and improved client functioning in counseling research (Martin, Garske, & Davis, 2000). Research has supported the working alliance’s extension to supervisory (e.g., Ladany, Ellis, & Friedlander, 1999), graduate advisory (Schlosser & Gelso, 2001) and therapeutic group (Gillaspy, Wright, Campbell, Stokes, & Adinoff, 2002) applications. Several authors have suggested that the working alliance could be applied to classroom settings (Bordin, 1979; Koch, 2004; Meyers, 2008; Robertson, 2000; Wool, 1989). Interpersonal influence theory has been used with working alliance theory to explain supervisory relationships (Efstation, Patton, & Kardash, 1990), and may account for the hieratical nature involved in student-teacher relationships in a way that Bordin’s theory of the working alliance cannot. Chapter one stressed that although researchers have written theoretical articles suggesting that the working alliance could be adapted for classroom settings, to date there is no empirical study that specifically applies and tests the concepts of the working alliance on the student-teacher relationship and subsequent class outcome. Chapter one ended by stating that the purpose of the current investigation is to examine whether the working alliance theory, supplemented by interpersonal influence theory, can be applied to an undergraduate classroom setting.

Chapter two further elaborates on the important components underlying the empirical question of whether the working alliance concept from counseling psychology can be applied to undergraduate classroom settings. Specifically, this chapter will start
by examining the different models and guidelines of effective teaching that are currently available in the literature. This chapter will focus on three particular models: Chickering and Gamson’s (1987) seven principles for good practice in undergraduate education, Brookfield’s (2006) model for being a skillful teacher and Lowman’s (1984) model for being a master teacher. These models were chosen based on their perceived importance to the educational field, as well as their unique contribution to understanding how student-teacher relationships may impact student variables. The similarities and differences among the concepts and terminology will be discussed in order to properly assess the current status of the educational literature.

The chapter will continue with a review and critique of the recent student-teacher relationship research, which generally falls under the two broad categories of rapport and immediacy behaviors. Rapport is defined differently in various studies; however it generally refers to the harmonious connection that involves mutual trust and affinity that can be developed between students and teachers (Benson, Cohen, & Buskist, 2005). Immediacy behaviors refer to verbal and nonverbal teacher behaviors that communicate “physical and psychological availability” toward students (Wilson & Taylor, 2001, p. 136). Both lines of research have connected positive student-teacher relationships with positive student outcomes; however neither line of research use a consistent model of student-teacher relationships to guide the research. The lack of consistency in the research is the biggest critique of the current state of the literature and is the rationale for trying to apply the working alliance theory to student-teacher relationships.

The chapter next discusses the development and definition of working alliance theory with a focus on Bordin’s theory of working alliance (1979). The chapter will
explicitly state how Bordin’s theory of working alliance can apply to student-teacher relationships and what elements in those relationships Bordin’s theory does not account for. Strong’s theory of interpersonal influence (1968) will then be examined with a focus on how it can account for the elements in a student-teacher relationship that Bordin’s theory does not address. Bordin and Strong’s theories may be the most applicable to classroom settings, either as stand alone theories or as an integrated theory. A brief history of relevant working alliance outcome studies is explored in order to provide evidence for the empirical strength of the working alliance theory. In order to justify the use of the concept of the therapeutic working alliance to teaching, previous applications of the working alliance to settings beyond individual therapy are examined including supervision (Bahrick, 1989; Efstation, Patton, & Kardash, 1990; Ladany, Ellis, & Friedlander, 1999), advising (Schlosser & Gelso, 2001; Schlosser & Gelso, 2005; Schlosser & Kahn, 2007), and therapeutic group work (Bourgeois, Sabourin, & Wright, 1990; Brown & O’Leary, 2000; Sexton, 1993). Extending the above research, the similarities between teaching and therapy are examined in order to provide a rationale for the current application. Many authors (Bordin, 1979, Meyers, 2008; Koch, 2004; Robertson, 2000; Wool, 1989) have articulated these similarities, and the current study will build upon their ideas.

The literature review ends with a brief discussion of different working alliance scales and student-teacher relationship assessments that have been used in previous studies. These assessments will form the basis for a new measurement device designed specifically for this study to measure the working alliance between teachers and students in undergraduate classrooms. Finally the chapter will end with a delineation of the
specific questions that will be addressed in the current study regarding the applicability of
the working alliance to undergraduate classrooms and how student-teacher working
alliance may impact student outcomes such as learning, motivation and self-efficacy.

**Teaching Models**

Conceptualizations of effective college teaching have matured over the years
(Raushenbush, 1950). Researchers and authors have attempted to examine what
components constitute effective college teaching. The majority of guidelines and models
on effective teaching contain some reference to the importance of student-teacher
relationships in creating a healthy learning environment. These models will be reviewed
here, with specific attention paid to how they conceptualize student-teacher dynamics and
how these theories compare with each other and to working alliance theory.

**Seven Principles of Good Practice in Undergraduate Education**

Scholars in the field of educational reform formed a task force in 1986 whose
mission was to generate principles of good practice for undergraduate education
(Chickering & Gamson, 1987). This task force developed seven principles based on the
available research on teaching and learning. These principles are often cited as the
foundation in building positive classroom environments (Forsyth, 2003). The first
principle was frequent student-faculty contact. The authors suggested that “frequent
student-faculty contact in and out of classes is the most important factor in student
motivation and involvement” (Chickering & Gamson, 1987, p. 3). Although the authors
did not distinguish between quality and quantity of contact, it is likely that even a small
amount of student-teacher interaction can result in an important relationship. The other
six principles are (a) encouraging cooperation among students, (b) encouraging active
learning, (c) giving prompt feedback, (d) emphasizing time on task (time management strategy), (e) communicating high expectations, and (f) respecting diverse talents and ways of learning. Although these principles do not address student-teacher relationships directly, they are factors (e.g., respect, prompt feedback) that are consistent with developing a positive relationship between students and the teacher. Since the report was one of the most popular attempts to integrate educational knowledge and research into a summative guideline for teachers, it is important to note how student-teacher relationship factors (e.g., contact, respect, feedback) are interwoven throughout the principles. This focus on interaction between students and teachers was a catalyst for the resulting education reform that encouraged colleges and universities to reexamine their teaching philosophies and practices (Chickering & Gamson, 1999).

Since the development of the seven principles, research focusing specifically on the first principle (frequent student-faculty contact) has been sparse. Kuh, Pace, and Vesper (1997) investigated whether student-faculty contact, active learning, and cooperation among students would impact desired student outcomes, such as academic gain and personal development. The sample consisted of 5,466 unmarried first or second year undergraduate students who lived on campus. The authors specifically chose lower division students because they were less likely to be specifically engaged in a major field of study, and therefore would be more likely to put forth effort on broad academic tasks. The authors divided their sample into six groups stratified by type of degree granted at the institution (baccalaureate \( n = 19 \), masters \( n = 27 \), or doctorate \( n = 29 \)) and gender. To avoid sample size problems the authors ensured that there would be exactly 911 students per group. No other demographic information was given for the students.
Results found that student-faculty contact accounted for significant variance in academic gain (defined as scores on a general education test and improvement in intellectual skills such as writing and quantitative thinking) only in males at institutions that granted master’s degrees. Although direct contact did not account for significant variance in other samples, students’ perception of the personal-social environment (the perceived quality of relations among peers, faculty, and administrators) was a significant predictor of academic gains in all six samples. These results suggest that while amount of contact between faculty and students may not be important to increased learning, the relational atmosphere of a department can impact the amount of student learning that occurs. Relational atmosphere may be a better measure of student-teacher relationships than student-faculty contact because it takes into account the quality of the interactions, not just the quantity. Unfortunately the measure of academic gain used in the above study was broad, so the actual impact of the relational atmosphere to student learning is questionable.

The seven principles were designed to be a guide for undergraduate educators, not a complete model of effective teaching. The principles were written in broad language and the research used to justify their inclusion was not clearly identified (Chickering & Gamson, 1987). While the guidelines can be credited with inspiring interest in examining student-teacher relationships, direct research examining the principles has been limited, especially with regard to the impact of frequent student-faculty contact. Therefore, although the seven principles can stimulate thinking about effective teaching, because they lack definitional clarity and the concepts are broad, the principles cannot function as a standalone model underlying research into interpersonal classroom
dynamics. Perhaps the most important legacy of the seven principles is how they inspired researchers and educators to focus on student-teacher relationships and the impact they can have on student outcomes (Chickering & Gamson, 1999)

Lowman’s Two Dimensional Model of Effective College Teaching

Lowman (1984) proposed a model of effective teaching that included two dimensions: intellectual excitement and interpersonal rapport. Lowman contends that the higher the teacher is on each dimension, the more effective he/she will be. Intellectual excitement has two components: clarity of delivery and the ability to create an “emotional impact” (p. 10) when delivering the material. Clarity of presentation, according to Lowman, includes organizing material so that it focuses on “early observation, essential milestones, key assumptions, and critical insights” (p. 11), as well as explaining a complex subject in a simple manner so that the students who have little background in the subject are able to follow and understand. In addition, in order for students to become “intellectually excited,” the instructor should consider him or herself a “performer” and use his or her voice, gestures and movements to “convey a strong sense of presence” (p. 12) and stimulate a sense of excitement and understanding in the students. If there is a high level of intellectual excitement, students should look forward to attending the class and may even talk about the classroom throughout his or her day.

According to Lowman (1984), the second dimension, interpersonal rapport, is more controversial than the first because some professors do not believe it is an important element to teaching. This dimension refers to the instructor’s awareness and management of interpersonal dynamics in the classroom in a way that promotes motivation, enjoyment, and independent learning. To achieve a high level of this
dimension, the teacher should avoid the stimulation of negative emotions such as anxiety and anger, particularly toward the teacher; and, he or she should promote positive feelings such that the students feel respected and efficacious. Achieving a high level of this dimension would mean that the teacher would show significant interest in the students as individuals and would encourage collaboration in some classroom activities (i.e., voting on some classroom policies). Lowman suggested that the students would feel positive or affectionate toward the teacher and some may even identify with the teacher. Lowman further suggested that this dimension is influenced by outside interactions as well as classroom interactions and it is a primary motivating factor for students.

Lowman (1984) based his model on interviews and direct observations of 25 exemplary instructors who were nominated by their colleagues and described as “superb classroom instructors” (p. x). The interviews were designed to assess their teaching philosophies, specific techniques and attitudes they held about teaching. Lowman (1994) then expanded and tested his model by examining over 500 different teaching award nominations from a large southeastern university. These nominations were written predominantly by undergraduate students between the years 1989 and 1991; and were used to nominate both faculty and graduate teaching assistants. Lowman theorized that the words and phrases found within the nominations would accurately describe an effective teacher. He found that 39 descriptors were used more than ten times and he mapped these characteristics onto his two dimensional model. In order to represent the data appropriately he divided the dimension of interpersonal rapport into interpersonal concern and effective motivation. He also included two more dimensions—commitment to teaching and “general positive descriptors” designed as a catch-all dimension for
words such as “excellent” and “outstanding.” He set up a table in the center of a plaza that was frequented by undergraduate students and solicited responses by giving students a chance to win a free pizza for filling out an evaluation packet about three teachers. Over a four-week period 198 undergraduates filled out questionnaires and were asked to think of three professors—one they considered “very good,” one they considered “very poor” and finally an “average” professor. No other demographic information on the students was reported. For each professor students were asked to mark which of the 39 descriptors that professor possessed. Significant differences in the number of descriptors marked were found between all three categories, with “very good” professors possessing the most descriptors and “very poor” possessing the fewest. Based on these data, Lowman theorized that these descriptors, and consequently the dimensions they represent, accurately differentiate between good, average, and poor teachers.

Lowman’s model specifically addresses student-teacher relationships by incorporating the dimension of interpersonal rapport; however the theory has only been tested narrowly. To date, there has been no confirmatory analysis of the factors suggested by Lowman. Lowman’s conclusion is based on interviews and one study examining mean differences between descriptive statements. More advanced statistical analyses, such as confirmatory factor analysis or structural equation modeling, should be employed in order to test the empirical validity of his model. In addition, Lowman’s goal was to develop a model to describe exemplary teaching, not a model describing the dimensions involved in a student-teacher relationship. To this end, the model provides a good framework for examining effective teaching; however it appears to fall short in providing a framework for understanding student-teacher relationships. However,
Lowman does provide a more complex and richer way of describing student-teacher interactions in his definition of interpersonal rapport in comparison to the simplistic nature of the seven principles. Lowman expanded the understanding of student-teacher interactions by defining it as a dynamic interplay between individuals. The current study intends to define the student-teacher relationship in a similar fashion—as multidimensional.

**Brookfield’s Skillful Teacher**

Brookfield (2006) used a different method than Lowman (1984) to develop his model of effective teaching. Instead of examining exemplary teachers, he investigated thousands of Critical Incident Questionnaires (CIQ) from students across the country and from different disciplines. Brookfield does not give any information in his book on specific demographic information of the students, or on how he collected the CIQs. The CIQ is an instrument designed to be a “running commentary on the emotional tenor of each class” (p. 41). It is a survey consisting of five questions given to students during the last class session of each week. The themes of the answers are then discussed with the class during the first day of class on the following week. The questions focus on what events during the week were most (a) engaging, (b) distancing, (c) affirming, (d) puzzling, and (e) surprising. By focusing on these emotional reactions to classroom events the CIQ allows students to critically analyze their learning experiences.

Based on his analysis, Brookfield (2006) proposed that there are two clusters of preferred teacher characteristics: credibility and authenticity. Credibility is the “perception that the teacher has something important to offer [. . . and] it will benefit the student considerably” (p. 56). According to Brookfield, students perceive the teacher to
be credible if he/she possesses the expertise and experience to teach the particular subject. Students also base credibility on the ability of the teacher to convey the rationale for the design and implementation of the course. Authenticity, on the other hand, is the perception that the teacher is trustworthy in his/her attempts to help the students learn. This quality stems from displaying congruence between what is said and done in the classroom, as well as being responsive toward student needs. Brookfield suggested that authenticity is also assumed if teachers demonstrate full disclosure of their criteria, expectations, agendas, and assumptions that guide their teaching. This disclosure leaves very little room for surprises. The final criterion for authenticity is for the teacher to appropriately reveal aspects of him/herself in order to be known as a real person, and not just a role in the institution (i.e., the college professor). This includes using anecdotal information to illustrate concepts and applications of information, as well as normalizing student struggles. Brookfield asserted that the most effective teachers strive to balance credibility-inducing behaviors with authentic behaviors.

Brookfield’s model provides a good starting point in determining what teacher behaviors and characteristics are important to a successful learning environment because his model is based on a qualitative analysis of student feedback. Although Brookfield does not specifically provide data in his book, *The Skillful Teacher: On technique, trust and responsiveness in the classroom* (2006), it is clear that his model is based on his observations and conversations with his students. This type of qualitative investigation is gaining popularity among researchers (Haverkamp, Morrow, & Ponterotto, 2005) because it potentially provides a richer description of the experiences, without constraining responses (Schlosser, Knox, Moskovitz, & Hill, 2003). However,
Brookfield did not report a specific empirical method for analyzing these qualitative data (i.e., consensual qualitative research, grounded theory; Haerikamp, Morrow, & Ponterotto, 2005) and to date, there have been no empirical investigations specific to Brookfield’s model. Without empirical tests of the model, it is difficult to make conclusions about the appropriate fit of the model to real life. Empirical tests of this model are further stalled by the lack of instrumentation development that is necessary to appropriately examine the concepts of credibility and authenticity. In addition, the same critique of Lowman’s model applies to Brookfield’s model: it is a model detailing how to be an exemplary teacher, not a model for describing the components of student-teacher relationships. Although this model provides more emphasis on the student-teacher relationship than the previous models examined, it still lacks the ability to serve as an overarching theory with which student-teacher relationships can be examined.

Brookfield’s model did introduce an important relationship variable between students and teachers: credibility. Brookfield (2006) suggested that although teachers who are seen as weak in credibility are often well liked (if they are high in authenticity), the classrooms are seen as places where very little learning occurs. The current study seeks to understand the dimensions involved in student-teacher relationships in order to later apply this understanding to improving student outcomes. Since learning is one of the most important outcomes, then credibility may be an important factor in fully understanding how student-teacher relationships impact student outcomes. Therefore, credibility must be explored as a potential variable associated with student-teacher relationships.

**Summary of Problems Associated with Teaching Models**
Although each educational model has helped further the understanding of student-teacher relationships, all of the models are focused on describing effective teaching, not on describing the student-teacher relationship. Although detailing effective teaching is important, the current study chooses to narrow the focus of classroom interactions specifically to the student-teacher relationship. A specific student-teacher relationship theory would provide for a more comprehensive understanding of how student-teacher relationships relate to student learning and development outcomes. Other barriers also exist for using the teaching models as a framework for understanding student-teacher relationships. For instance, each of the models lacks appropriate empirical backing in order to provide evidence for the validity of the dimensions theorized. For each model, the definition of the student-teacher relationship is often broad (e.g., frequent contact, interpersonal rapport, authenticity) and has not been translated into measurable variables. The authors provide definitions for the variables, but do not attempt to objectify them in the form of an instrument that can be used to measure the variables and the relationship. Without a way to consistently measure these variables it is difficult to make generalizations from the research and validate the assumptions that the theories make (i.e., that effective teaching is defined as credibility and authenticity; or that effective teaching involves seven principles) in order to move forward in understanding student-teacher relationship dynamics. According to Strong (1991) an effective theory is defined as a “representational model of the reality posited to underlie and cause the phenomenon of interest” (p. 205). The ability to make predictions based on a theory; and to measure the variables within the theory, are essential components for science to progress. The inability of each of the models to address these concerns is a major drawback for using
any of them as a basis for a student-teacher relationship model. Some atheoretical research on student-teacher relationships has been conducted. By critiquing the results of these studies the current investigation may be able to determine which student-teacher relationship components are important to examine.

**Relationship Factors in Teaching**

The focus on creating positive classroom environments through promoting interpersonal factors is reflected in many of the manuals and compilations on best practices on teaching (e.g., Buskist, et al., 2002; Buskist & Saville, 2004; Corlett, 2007; Forsyth, 2003; McKeachie, 1999; Schoenfeld & Magnan, 1994). Corlett (2007) suggested that a positive classroom environment is dependent on developing good rapport between the teacher and students. She stated that good rapport was necessary because it will not only motivate students, but will cause them to accept consequences from the instructor with fewer objections. In the book *Mentor in a manual: Climbing the academic ladder to tenure*, Schoenfeld and Magnan (1994) suggested that the first day of class should be spent fostering connections between and with students. Fostering connections should provide a foundation for student motivation throughout the semester.

William McKeachie’s *Teaching Tips* (1999) is one of the most widely used manuals on teaching. McKeachie expanded the role of the teacher beyond that of an expert disseminating knowledge. He stated that “helping students with problems with your course, advising students about academic programs, and psychological counseling about personal problems” (p. 248) are important functions of teaching. “You can supplement their [students’] course-related learning with personalized learning that facilitates their adjustment to college.” (p. 252). According to McKeachie, student-
teacher relationships are especially important for first year students, “This time, when students are making big strides toward greater independence from family and are trying to seek out models who can represent innovations of the adult role to which they aspire, is a time when there should be opportunities for close relationship with faculty members” (p. 253). McKeachie’s writing clearly sets up precedence that being a good teacher includes developing an appropriate relationship with students.

When interviewed teachers report that they put a lot of thought into their relationships with students and how that impacts the learning environment. Four individual interviews, over the span of three years, were conducted with 22 faculty members from three different universities in the Maritime provinces of Canada focusing on teaching philosophies (Cranton & Carusetta, 2004). Faculty came from 13 different disciplines, 13 were female, and seven were considered new faculty who were in their first or second year of teaching. The interviews were semi-structured and the researchers reported that interview questions were often directed by the participant’s responses, resulting in variation in the content of the interviews. However, even though variation existed within the interviews, the student-teacher relationship was the most talked about subject. Results suggested that although specific teaching techniques varied (e.g., the boundaries that teachers set) the student-teacher relationship is an area of inquiry for all teachers, regardless of amount of teaching experience.

The above research suggests the importance of student-teacher relationships to teachers, and other empirical research has linked student-teacher relationships more directly to student learning and development outcomes. This chapter will now focus on
examining research related to classroom rapport and immediacy behaviors, two of the most widely researched classroom relational concepts.

Classroom Rapport

Buskist and Saville (2004) characterized rapport building as both a *process* that involves the instructor and students engaging in several activities, as well as an *outcome* that emerges when the appropriate components are involved. According to Buskist and Saville, there are two key activities that have to occur during the process of rapport building: the teacher invites the students in a warm and friendly way to join the “community of learning” (p. 150) and the teacher adopts the above attitude (i.e., the classroom is a community characterized by warmth and learning) everyday regardless of personal circumstances. The outcome of rapport is defined as “a positive emotional connection among students, teacher, and subject matter” (p. 152).

Positive rapport with the teacher has been linked to a positive overall evaluation of the class by the student and more interest in content (Heckert, Latier, Rignwald, & Silvey, 2006), more active student participation in learning (Benson, Cohen, & Buskist, 2005) and greater academic honesty (Stearns, 2001). Stearns surveyed 1,369 students from a variety of courses at a large college in the West. Ages of the participants ranged from 16 to 65, with the majority being traditional college age between 18 and 22. College classes were equally represented, 26% freshman, 20% were sophomores, 28% were juniors, 24% were seniors and less than 1% were graduate students. Students reported 38 different college majors and the majority of the sample were female (57%). Students reported on various acts of academic dishonesty and their feelings toward their professor. Stearns found that students with higher academic dishonesty scores had lower
scores on liking, respecting, and having rapport with the teacher as compared to students with lower academic dishonesty scores. Although these results are only correlational, they suggest a link between feelings toward the teacher and academic honesty.

Buskist and colleagues (2002) asked undergraduate students (N = 916) enrolled in a large introductory psychology course and faculty members (N = 118) from a large southeastern university to rank 28 teacher qualities in order of importance. The undergraduates included 413 men and 503 women; and the majority of students were freshmen or sophomores (78%). The majority of faculty members were men (75%) and they were chosen based on a random sampling from the university phone directory. The faculty members represented a wide range of disciplines. The top ten student-ranked qualities reflected more rapport characteristics (e.g., understanding and approachable/personable), while the faculty’s rankings reflected more task orientated behavior (e.g., knowledgeable about the topic and promoting critical thinking). The focus on task-orientated behaviors by the faculty may be due in part to the large percentage of male faculty members participating in the study; however the authors did not consider whether gender could account for this difference. In a qualitative study of several hundred undergraduate students (no further demographic information is available) Buskist and Saville (2004) reported that better rapport increases students’ enjoyment of the teacher and subject matter; motivates them to come to class more often and to pay attention in class.

Following up on Buskist and Saville’s (2004) qualitative study, Benson, Cohen and Buskist (2005) asked 202 undergraduate students enrolled in an introductory psychology course about their experiences with rapport in various classrooms. Eighteen
percent reported that they had never experienced rapport with a college instructor and were excluded from the sample, leaving 166 participants. The majority of participants were female (n = 97) and sophomore (n = 107), and the average age was 20.05 years. Only 15% of participants reported experiencing rapport with more than half of their instructors. Students were also asked how likely they were to engage in various behaviors in classes where rapport was or was not established. The authors found that the likelihood of attending class, paying attention, studying for class, enjoying the subject, enjoying the professor, attending office hours, e-mailing the professor, taking another class from the professor, and taking another class in the subject was higher in the classes in which rapport was established as compared to classes with no rapport. In addition students were less likely to drop a class where they reported having rapport with the instructor. These positive student behaviors are desired outcomes in a classroom. The current study will adapt Benson and colleagues’ questionnaire to create a Participation in Learning Scale in order to measure student behaviors and attitudes. More information about the adaptation of these items will be given in Chapter 3.

Although the Benson et al. (2005) study suggested that rapport may impact several desired student behaviors, there are two major limitations to their study. First, rapport was defined by using two different dictionary definitions “a relation; especially one of mutual trust or emotional affinity” and “a relation; connection; an especially harmonious or sympathetic relation” (p. 237). Using dictionary definitions (as opposed to theoretical conceptions) may have been too imprecise because it is likely that “rapport” is encompassed by several different dimensions, beyond what the dictionary definitions provided. Second, students were questioned about rapport using a forced choice method
(i.e., Have you experienced rapport?). This is a simplistic way of conceptualizing rapport, which likely exists on a continuum. For example, students are likely to experience some level of rapport with at least some teachers; however there would be only a small sample of teachers that students would classify has having a strong “connection” or “emotional affinity for.”

Avoiding the definitional limitations of Benson et al.’s study, Heckert and colleagues (2006) defined rapport as a continuous variable that was operationalized by responses on a series of seven 7-point likert scale items: (a) teacher availability during office hours, (b) teacher availability outside office hours, (c) enthusiasm, (d) concern, (e) sense of humor, (f) encouragement, and (g) recognition of confusion. The authors asked students (N = 463) from 26 different student organizations at a mid-sized, selective public liberal arts and sciences university to evaluate one of their current professors, standardized as either the professor in the first class of the week or in the last class of the week. The majority of the sample was female (64%) and Caucasian (89%), and represented a range of class levels (99 freshmen, 125 sophomores, 132 juniors, and 98 seniors). The average cumulative GPA was 3.28 (1.75-4.0), and the average ACT score was 27.4 (15-34). Rapport correlated positively with overall evaluation of the class [r = 0.61 (p < .001)] and student-reported pedagogical skill of teacher [r = .45 (p < .001)].

Although the Heckert et al. (2006) used a more complex definition of rapport than the Benson et al. study, there are still two noteworthy limitations in this work. First, the scale used to assess rapport was only a measure of teacher behaviors. A student-teacher relationship likely encompasses feelings between the student and teacher, which can not be access through a purely behavioral measure. In order to access a more thorough
understanding of student-teacher relationships there may need to be items measuring feeling-related data. The second limitation of the study is its atheoretical nature. Although Lowman’s two dimensional model of effective teaching (1984) is mentioned in the introduction, it is only used as a general guide for determining potential variables. The results of the study were not conceptualized in terms of an overall model and therefore it is difficult to assess how these results are related to other findings about rapport and classroom outcomes. The current study seeks to avoid this limitation by using the working alliance theory and interpersonal influence theory as its framework for investigating student-teacher relationships.

Although the above studies (Benson et al., 2005; Buskist, et al., 2002; Buskist & Saville, 2004; Heckert et al., 2006) suggested promising empirical evidence for the importance of rapport in creating a constructive classroom experience, the current status of rapport research has been described as a “blend of musing of experienced and astute teachers with a dash of formal research” (Buskist et al., 2002, p. 28). The field lacks a consistent definition of “rapport” as well as consistent and tested assessment devices. In addition, although rapport may be related to the students reporting more satisfaction in the class and participating more (e.g., attending class and teacher office hours, studying more), there is only speculation that rapport is related to learning outcomes, such as improved understanding of the material, better grades, or improved self-efficacy or mastery of content skills and knowledge.

**Immediacy Behaviors**

The concept of rapport has also been researched in the educational psychology literature; where it is often referred to as “immediacy behaviors” (Mehrabian, 1969;
Wilson & Taylor, 2001). Immediacy behaviors are defined as verbal and nonverbal behaviors that increase physical and psychological availability (Mehrabian, 1969). This closeness generally communicates more affinity and a positive attitude between individuals. Although there are some definitional differences between “rapport” and “immediacy behaviors,” they both include liking, caring and trusting feelings between the teacher and students.

Gorham (1988) was one of the first authors to attempt to operationalize immediacy behaviors by asking undergraduate students to list behaviors that characterized their best teachers. The resulting list (after being adjusted based on relevant literature; Richmond, Gorham & McCroskey, 1987) included 30 items and was named the Immediacy Behavior Scale (IBS). Gorham gave the IBS to students (N = 387) enrolled in a non-required communications course at a small eastern university. This course was chosen in order to provide a full range of student demographics (class size, year in school, relevance to major). Gorham asked the students to fill out the survey based on “the teacher in the last class you had before coming to this class.” Approximately half the students were male (although no specific percentage was given in the study), and Gorham reported that about half the teachers described were from the students’ major, while the other half were from nonmajor courses. The data reflected various class sizes: 122 from small classes (1-25 students), 144 from midsized classes (26-50 students), and 121 from large classes (more than 50 students). No other demographic information is available for the participant sample.

Gorham found that both verbal and nonverbal immediacy behaviors positively correlated with student perceptions of learning ($r = .38$ and $r = .41$, $p < .0001$,
respectfully), attitude toward teacher and course \( (r = .46 \text{ and } r = .57, p < .0001) \), and behavioral intentions \( (r = .51 \text{ and } r = .54, p < .0001) \), such as likelihood to complete course requirements, likelihood to take a similar course and likelihood to take another course from that teacher. In order to test cognitive learning, the author asked the students on a scale of 0-9 how much they learned in the class and how much they could have learned if they had the ideal teacher. The author obtained a “learning loss” score by subtracting the “actual learning” the students reported from the “ideal learning” score reported. The author suggested that this measure was a more accurate depiction of cognitive learning than grades or standardized tests, which can be confounded by attendance, participation, student preparation, motivation, short-term memory recall, writing skills and test anxiety. Gorham found that learning loss correlated negatively with immediacy behaviors, which means that as immediacy behaviors increased, the students’ perceived amount of learning was closer to their perceived amount of learning with an ideal teacher. This finding makes intuitive sense because as the students perceive more immediacy behaviors, they also feel the level of learning was closer to their ideal level. Gorham also found that immediacy behaviors accounted for almost 19.3% of the variance in perceived learning, 31.4% of the variance in perceived learning loss and 38.5% of the total affect (which included measures of attitude toward content, behaviors recommended and course instructor, as well as likelihood of engaging in behaviors recommended by instructor, enrolling in a similar course, and taking another course from instructor).

Gorham’s (1988) study suggested that immediacy behaviors impact students’ perceptions of learning, as well as their reported affective attitudes and behavioral
intentions. However, it is less clear whether immediacy behaviors impact actual
cognitive learning. Although the author makes a compelling argument for not using
grades or standardized tests to measure cognitive learning, the “learning loss” score still
presents problems in interpretation because of the way it is worded. The learning loss is
based on the students’ reported differences between what they think they have learned
and how much they could have learned given their idea of the ideal teacher. Therefore
the learning loss score should decrease the closer that the actual teacher is to the
perceived ideal teacher (i.e., if the actual teacher is perceived as the ideal teacher than the
learning loss would be zero). Gorham defined immediacy behaviors as those behaviors
that characterize the “best” teachers. Therefore as the immediacy behaviors displayed by
the teacher increase, the students are likely to view the teacher as closer to their ideal
teacher and the learning loss will decrease. By definition, immediacy behaviors should
always correspond negatively with learning loss. Because the definitions of learning loss
and immediacy behaviors are intertwined, the current study prefers to use a more
objective measure of learning rather than learning loss.

Extending Gorham’s research (1988), Christophel (1990) examined the
relationship of immediacy behaviors to student motivation. Christophel kept several
things consistent from the Gorham (1988) study including using (a) the Immediacy
Behavior Scale, (b) the “learning loss” formula and a one-item question asking about
perceived learning in order to measure cognitive learning, and (c) six attitude and
behavioral questions in order to measure what she and Gorham called “affective learning.”
Christophel included trait and state motivation scales that asked students to rate
themselves on a scale of 1-7, between 12 bipolar adjectives (for example
motivated/unmotivated, interested/uninterested). Christophel hypothesized that trait motivation and immediacy behaviors would impact state motivation (motivation specific to one course), which in turn, would impact cognitive and affective learning.

Students (N = 562) were given the IBS, learning loss, affective learning, trait motivation and state motivation scales in a variety of courses and asked to rate the teacher and class immediately proceeding the class in which they served as subjects. The author stated that this provided a wide range of student and class characteristics; however specific participant demographics were not given. The courses represented nine different colleges, with the majority representing Arts and Science, and the data were equally disturbed between small, midsize and large classrooms (again specific data were not given). Results were consistent with Gorham’s (1988) study in which immediacy behaviors were positively correlated with attitude toward course/teacher, affective learning, and perceived learning; while being negatively correlated with “learning loss.” Christophel also found that state motivation was significantly related to immediacy behaviors, learning, attitude, and behavioral intentions, as hypothesized. Although trait motivation scores were also significantly correlated with cognitive and affective learning, state motivation scores were found to be more predictive, suggesting that the typical motivational characteristic of a student can be enhanced or offset by state motivation created in a classroom. The results of Christophel’s study suggest that student-teacher relationships impact learning outcomes both directly and indirectly through increasing motivation.

Research on immediacy behaviors continued to grow after Gorham (1988) and Christophel’s (1990) initial investigations. Immediacy behaviors have been connected to
lower absenteeism (Rocca, 2004); positive student evaluations for course, instructor, and subject (Moore, Masterson, Christophel, & Shea, 1996); and student projected grade (Wilson, 2006). The positive connection between immediacy behaviors and perceived cognitive learning has been found across cultures (Johnson & Miller, 2002) and ethnicities (Sanders & Wiseman, 1990). Although there is substantial evidence connecting immediacy behaviors with positive student outcomes, there are some critics (Wilson, 2006; Wilson & Taylor, 2001) who argue that by only measuring behaviors, valuable information about how the students interpret those behaviors is lost.

In her 2006 study, Wilson concluded that the perception of the teacher’s attitude toward students may be a better predictor of student outcome than immediacy behaviors, as measured by a short form of the Immediacy Behavior Scale (IBS; Gorham & Christophel, 1990). Wilson asked students (N=1,572) from a large undergraduate liberal arts university in the Southeast to rate their teachers (N=44) on 23 immediacy behaviors, using a scale from 0 (never) to 4 (very often). The majority of participants were female (n = 886) and the age of participants ranged from 17 to 48 (Mean = 20.15). Participants came from 61 different courses and the author reported that the “data set represented a wide ranges of levels” (p. 92), but did not provide any other demographic details. Students’ perceptions of the teacher’s attitude were assessed with three 5-point Likert scales asking (a) whether the teacher showed genuine concern for the students, (b) how often the teacher demonstrated a positive attitude, and (c) how often the teacher wanted students to succeed. These questions access the emotional relationship that exists between students and the teacher, as opposed to just the amount of teacher behaviors. Wilson used these criterion variables (immediacy behaviors and perceptions of teacher
attitude) to predict four student outcomes: student motivation, student projected grade in the course, student’s attitude toward the course, and student’s attitude toward the instructor.

In a multiple regression analysis, the students’ perceptions of the teacher’s attitude accounted for significant variance in all four outcomes (58% of student motivation, 12% of projected grade in course, 24% of attitude toward course, and 60% of attitude toward instructor). In addition, when scores on the immediacy behaviors measure were added to the equation in step two, they accounted for a small, but significant, amount of variance in all four outcome variables above and beyond the variance accounted for by student perceptions of teacher’s attitudes ($\Delta R^2 = 3\%, 2\%, 4\%$ and 2%, respectfully). However, post-hoc analyses suggested that when the equation was reversed, the student perceptions account for significantly more variance above and beyond immediacy behaviors ($\Delta R^2 = 20\%, 3\%, 10\%, 19\%$, respectfully, original $R^2$ values were not reported). These results suggest that in order to present a comprehensive view of student-teacher relationships, an assessment must take into account teacher behaviors and student emotions toward the teacher. These results have direct application to the current study, suggesting that measuring both student perceptions of the relationship and teacher behaviors would provide more predictive power. The current study will be careful to use scale items that access both direct behaviors and student perceptions of behaviors.

The literature on immediacy behaviors provides examples of how elements within the student-teacher relationship can be measured using more continuous (as opposed to forced-choice dichotomous) assessments. Research in this area has also used advanced
statistical procedures (e.g., multiple regression) to identify how certain behaviors are related to student outcomes. However, the majority of the research has measured cognitive learning through one or two self-reported questions. Although these questions (termed learning loss) may be an accurate reflection of learning, the definition used for immediacy behaviors is confounded with the definition of learning loss. The measurement of learning loss can only be useful if compared to constructs in which the definitions are not intertwined. In addition, the typical measure used, the Immediacy Behavior Scale (IBS; Gorham, 1988), may be missing valuable information by only measuring teacher behaviors, neglecting the feelings associated with student-teacher relationships. Behaviors can be interpreted differently by different students; therefore measuring both teacher behaviors and how a student feels toward a teacher would be a more accurate measure of the relationship (Wilson, 2006).

Research on student-teacher relationships has generally led to the consistent finding that the quality of the relationship can impact student outcomes like motivation, attitude, and behaviors. However, this research does not have any unifying theory or consistent method for measuring these concepts. Reviewing research in other disciplines concerned with understanding relationships, such as counseling psychology, may lead to a potential unifying theory for student-teacher relationships. One promising concept is working alliance theory (Koch, 2004; Meyers, 2008) and the interpersonal influence theory (Strong, 1968).

**Relational Theories in Counseling Psychology**

The working alliance has arguably become one of the most influential and important concepts in current counseling theory (Castonguay, Constantino, & Grosse
Holtforth, 2006; Gelso, 2006; Samstag, 2006). Compilations of working alliance theory and research have been published (i.e., Horvath & Greenberg, 1994), as well as numerous empirical and theoretical articles and special sections in flagship journals (i.e., Gelso, 2006). In addition, there have been many different assessment devices created to measure the working alliance (e.g., Horvath, 2006; Martin, Garske & Davis, 2000) as well as manuals, textbooks and training programs devoting time and space to this topic. The division 29 task force on empirically supported therapy relationships listed alliance as a demonstrably effective element in the therapeutic relationship (Norcross, 2002), giving the working alliance credibility as an effective component of counseling. Meta-analyses have also shown a small, but significant, effect size (.21-.26) between the working alliance and therapeutic outcome.

The working alliance has been conceptualized in different helping relationships, including supervision (Bahrick, 1989), advising (Scholosser & Gelso, 2001) and teaching (Robertson, 2000). However before exploring how the working alliance can be applied to different helping relationships, a historical review of the different ways it has been defined and conceptualized is important (Gaston, 1990; Horvath, 2006). Although there is not enough space for the full history of the working alliance theory to be explored here (see Gelso, 2006; Horvath, 2006), the following is a brief review of the major theorists and conceptualizations of working alliance theory that are most applicable to the current study’s purpose of developing a theory of student-teacher relationships.

**Greenson’s Working Alliance Theory**

The initial concept of the alliance as an important factor in therapy originated from psychoanalytic writings. Although writings about the importance of the relationship
have been traced back to Freud (Greenson, 1965/1990; Horvath, 2006), Greenson (1965/1990) was one of the first writers to use the specific term “working alliance.” He suggested that lack of progress in patients after adequate time for change was due to an inability to establish or maintain a durable working alliance. He defined working alliance as the “relatively rational, non-neurotic rapport which the patient has with his [her] analyst” (p. 152), and suggested that it was essential in order for analysis to work. It is important to note that prior to Greenson, most psychoanalysts viewed relational elements as a neurotic re-conceptualization of previous client relationships (most often, parental relationships). It was groundbreaking for Greenson to suggest that a portion of the relationship between analyst and patient was healthy and based on present circumstances, not past relationships. Future working alliance theorists would expand the notion of the healthy counseling relationship; however Greenson’s definition is important because he was one of the first theorists to write about healthy aspects of client and counselor relationships.

Rogers’ Theory of Psychotherapeutic Change

Rogers (1957) advanced the notion of a healthy counseling relationship by basing his theory of psychotherapeutic change on the importance of the therapist-client relationship. In contrast to Greenson, he suggested that having a strong relationship was not only necessary for change to occur, but sufficient as well. Rogers said that change occurs when the therapist genuinely has empathy, unconditional positive regard and congruence (genuineness in the relationship) and communicates these affective and cognitive experiences to the client. This environment, which may be seen as
synonymous with a working alliance, would allow clients more clarity when looking at their problems and they would begin to change as a result. Rogers’ theory is important to the current study because he was one of the first theorists to extend the working alliance to other disciplines. He suggested that the “therapeutic relationship is seen as a heightening of the constructive qualities which often exist in part in other relationships [. . .] educational institutions or programs frequently aim at development of character and personality as well as at intellectual skills” (p. 101-102). Rogers suggested that the characteristics that provide a good environment for therapy can also work to create a positive environment in educational settings. He even suggested that the theory could serve as a “very tentative criterion against which to measure the program,” (p. 103) referring to educational, correctional, military, or industrial programs aimed at creating constructive changes.

**Bordin’s Theory of Working Alliance**

Greenson (1965/1990) was the first to suggest that healthy aspects of the counseling relationship may be important to therapeutic outcome. Rogers (1957) expanded this notion by theorizing that a healthy relationship was the agent of change in therapy and focused on the *therapist* behaviors that created a strong positive relationship. Bordin’s (1979) theory of the working alliance built directly from Greenson and Rogers by examining how the client and counselor collaborate to create a positive relationship that impacts therapeutic outcomes.

Several authors suggest that Bordin’s theory (1979) has been the most influential in the field because it separated the conceptualization of the working alliance from theoretical orientation (Crits-Christoph, Connolly Gibbons, & Hearon, 2006; Hatcher &
Barends, 2006; Horvath & Greenberg, 1989; Horvath & Symonds, 1991; Safran & Muran, 2006). Bordin defined the working alliance using generic terms that he believed existed in all relationships, regardless of theoretical orientation of the counselor. He defined the working alliance as collaboration between an individual seeking some type of change with an individual who is acting as an agent of change. According to Bordin, this collaboration includes three aspects: (a) a mutual agreement on goals, (b) an agreement on the tasks to reach those goals, and (c) an established bond between the individuals. A mutual agreement on goals occurs when there is a basic level of understanding and agreement between the individuals on the principles that are involved in the change process, specifically what the intended change will be. Bordin suggested that determining the appropriate change goal is the key for actual change to occur. Client understanding and endorsement of task relevance is the second component to Bordin’s theory of working alliance. Although the counselor is primarily responsible for choosing the appropriate task, it should be based upon the agreed upon goal and the client should understand how the tasks will lead to accomplishing the change goal. Creating a close emotional bond between the individuals is the final component to Bordin’s theory. The bond aspect is defined as the liking, caring and trusting feelings that the participants share for each other. Bordin described this component in generic terms because he believes that relationships will have different degrees of closeness, depending on what is entailed in the relationship.

There are several reasons why Bordin’s theory of the working alliance may serve as a viable framework within which to conceptualize and assess student-teacher working alliances. First, Bordin’s generic terminology and components allows the working
alliance to be applied to various settings and relationships. For example, although his article was addressed to the counseling community he made it clear that the working alliance was appropriate for other settings by stating, “the concept of the working alliance would seem to be applicable in the relation between student and teacher, between community action group and leader, and, with only slight extension, between child and parent” (p. 252, italics added). Bordin’s theory has inspired theoretical and empirical investigations addressing how the working alliance can be adapted to multiple settings. Four years after writing his initial theory, Bordin wrote an article extending his working alliance model to supervisor and supervisee dyads as a “natural next step” (Bordin, 1983, p. 35). Empirical investigations of using Bordin’s theory of the working alliance in supervisory relationships followed (Bahrick, 1989; Ladany, Ellis, & Friedlander, 1999). Theoretical extensions of Bordin’s work to teaching have been published in recent literature (Koch, 2004; Meyers, 2008; Robertson, 2000). These articles focus on how Bordin’s three elements correspond to elements in undergraduate classrooms. Finally, Bordin’s theory has been the basis for measurement devices of the working alliance (Bahrick, 1989; Horvath & Greenberg, 1989). In order for a theory to be beneficial for practitioners and researchers there must be a way of measuring the concept (Strong, 1991). By using Bordin’s theory as a framework for student-teacher working alliances the current study may be able to use the already developed measurement devices as a basis for a new measure of student-teacher working alliances. These four reasons (generic terminology, extensions to other settings, existing literature already extending the theory to teaching, and existing measurement scales) are the main reasons that the
current study will examine Bordin’s theory of the working alliance as a framework for understanding student-teacher working alliances.

There are three noteworthy limitations to only using Bordin’s theory to investigate student-teacher working alliances. First, the theory fails to account for the hierarchical nature of the teaching environment. In a classroom setting, the teacher is clearly in charge of leading the classroom. Bordin’s theory focuses on the collaborative nature of the relationship between the individual seeking change (in the case of a classroom, this would be the student who is seeking the change of knowledge) and the individual acting as the agent of change (e.g., the teacher); however there is less collaboration in a classroom setting than in a counseling setting. In a counseling setting, the client and counselor often use several initial sessions to establish goals and a treatment plan (i.e., tasks); however a teacher typically establishes goals (i.e., objectives) and tasks (i.e., assignments) prior to meeting the students, reducing the amount of collaboration that can occur between student and teacher. In addition, while counseling sessions can often be flexible in terms of number of sessions and how the treatment plan is executed; the classroom typically has a finite number of sessions, which makes deviations from the plan (e.g., syllabus) less likely. The time limit associated with a semester class causes the relationship between student and teacher to be more hierarchical than a counseling relationship, because the teacher makes more unilateral decisions in order to keep the course on track.

A second limitation of using Bordin’s theory of the working alliance to understand student-teacher relationships is the theory’s inability to account for the evaluative nature of student-teacher relationships. One of the primary duties of a teacher
is to establish criteria for successful learning and to evaluate each student on those criteria (i.e., grades). In contrast, clients often determine the criteria for success in counseling (i.e., the client knows when they are feeling better) and the counselor has less evaluative responsibilities. Although Bordin (1994) suggested that a strong working alliance can make evaluations smoother and reduce tension often caused by evaluations, his theory does not directly account for how the evaluative process changes the relationship between individuals.

A third limitation of Bordin’s theory is the failure to include a dimension associated with expertness and teacher competence. Again, this limitation is related to the above issues of accounting for an evaluative, hierarchal relationship between students and teachers. In order for students to accept the status that the teacher holds in a classroom (i.e., directing all the tasks, evaluating students) they must see the teacher as a competent expert who can teach them something valuable (Brookfield, 2006; Buskist et al., 2002). After all, the student-teacher relationship begins as a business relationship, in which the student pays money (i.e., tuition) in order to learn a set of skills (e.g., student’s major, course’s objectives) from a specified individual (i.e., the teacher). If the student perceives that the teacher has not mastered the skills and knowledge requested by the student, then he/she may feel cheated by the system (Brookfield, 2006). Bordin does not directly address the issue of competence or expertness in his theory. Based on the importance of this issue to the student, it may be beneficial to account for student perceptions of expertness.

Other researchers have put forth counseling theories based on relational components that are not specifically connected to a particular theoretical orientation.
Supplementing Bordin’s theory of the working alliance (1979) with components from another relational theory in order to address the power imbalance in student-teacher relationships may improve the theory’s ability to serve as a guiding framework for understanding student-teacher relations. Other authors have combined Bordin’s theory with Strong’s theory of interpersonal influence (1968) in order to account for differences between counseling dyads and other types of relationships, such as supervision (Efstation, Patton, & Kardash, 1990), and advising dyads (Scholosser & Gelso, 2001). This adjustment to Bordin’s theory may also be appropriate when addressing student-teacher relationships.

**Strong’s Theory of Interpersonal Influence**

Strong (1968) approached therapeutic change from a different perspective than the other theorists discussed thus far. He used the social psychology literature on opinion change and cognitive dissonance to create his model of change for therapy. The model consisted of two phases in which cognitive dissonance is created and then resolved through attitude and behavioral change. In the first phase, the counselor enhances his/her persuasiveness through increasing his/her credibility and attractiveness. This first phase is similar to working alliance theories because it focuses on the perceptions that the client has about the counselor and the resulting relationship between them. This perception is created by the counselor convincing the client that he/she is credible by proving to be trustworthy and an expert; as well as enhancing his/her “attractiveness” by emphasizing his/her similarity to the client, and conveying his/her “liking” (p. 219) for the client. This establishes a relationship based on the counselor demonstrating three characteristics: expertness, trustworthiness, and attractiveness.
Expertness occurs if an individual is viewed as a valid source of information. According to Strong (1968), expertness can be achieved through (a) objective evidence such as specialized training, diplomas, or certificates; (b) behavioral evidence such as presenting rational and knowledgeable arguments in a confident manner and (c) maintaining a reputation as an expert. Trustworthiness on the other hand is established through four things: (a) maintaining a reputation as honest; (b) holding a particular social role that inherently assumes the individual should be trusted, such as a doctor; (c) the individual’s display of sincerity and openness; and (d) the perception of altruistic motivation. The combination of these attributions establishes the individual’s perceived trustworthiness. The third characteristic that must be established is attractiveness. In this theory, attractiveness refers to how much the client is drawn toward the counselor. This connection is established through a feeling of liking, similarity and compatibility. Strong asserted that the stronger the attractiveness of the perceived authority, the more influential that authority member will be.

Establishment of the above three characteristics causes the client to become invested in therapy, at which point phase two can begin which consists of counselor attempts to convince the client to make changes that are in line with the therapeutic goal. This is where cognitive dissonance comes in. The counselor aligns with the change, while the client continues to act/feel/think in the same way as when the client started counseling (i.e., there is a discrepancy between the opinion of the counselor and that of the client). The counselor’s statements at this point should be influential because the counselor has established him/herself as a credible and attractive authority member with whom the client would like to be aligned. In order to reduce the cognitive dissonance the
client chooses to align themselves with the established authority (and by default, with the intended change), thus creating change in the client. In essence, the establishment of phase one has allowed the change to occur in phase two. Equating this situation with the teaching situation, Strong’s theory suggests that learning (e.g., the desired change) will occur only if the teacher first establishes that he/she is a trustworthy, expert source that students can relate to.

Strong’s theory of interpersonal influence (1968) appears to address the three limitations of Bordin’s theory of the working alliance (1979) previously discussed in this chapter. The first limitation of Bordin’s theory of not accounting for the hierarchical nature of student-teacher relationships is attended to by the underlying goal of Strong’s theory. The point of establishing a relationship in Strong’s theory is to increase one person’s persuasive power over another person. Based on this goal, Strong is trying to create a hierarchical relationship between the two participants; therefore his theory is designed specifically for hierarchical relationships like those of students and teachers. Strong’s theory also directly addresses the limitation of Bordin’s theory not accounting for the students’ perception of competence and expertness of the teacher. One of Strong’s characteristics that must be established for an effective relationship is expertness. Although the final limitation of Bordin’s theory, (e.g., accounting for the evaluative environment), is not addressed directly by Strong’s theory, it does account for it indirectly. Evaluation by an authority is better received if that authority is perceived as credible. Strong defines credibility as a combination of trust and expertness (two of his three components for an effective counseling relationship). Credibility of the teacher is likely an important factor which impacts how evaluations are received by students (Chory,
By measuring the students’ perception of teacher credibility, Strong’s theory accounts for the impact that evaluations have on student-teacher relationships. By addressing the issues of hierarchy, expertness, and evaluation, Strong’s theory may help Bordin’s theory of the working alliance bridge the gap between counseling and student-teacher relationships.

Based on the above review, working alliance theory (supplemented by interpersonal influence theory) appears to be applicable to student-teacher relationships; however before exploring how the theory may be adapted, it is important to establish the working alliance as an empirically supported theory. In general, meta-analytic studies tend to show that the working alliance is a consistent predictor of positive therapeutic outcome (generally defined as symptom reduction or goal attainment; Horvath & Bedi, 2002; Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000).

**Empirical Outcome Studies of Therapeutic Working Alliance**

Research on the working alliance and therapeutic outcomes has expanded since the middle 1970s (Luborsky, 1994). The majority of the research has focused on what factors, such as type of therapeutic treatment or time of measurement, leads to more accurate outcome predictions. In addition, the number of measurement scales created to assess the working alliance has increased significantly since the 1970s; therefore substantial research has focused on which type of scale leads to the best predictions.

In an analysis of research from 24 studies ranging from 1978 to a data set in press, Horvath and Symonds (1991) provided one of the first meta-analyses of working alliance research. The overall effect size of the working alliance was .26. In conventional terms, this is deemed as a small effect size (Cohen, 1988, as cited in Pedhazur & Schmelkin,
1991); however it should be noted that large effect sizes (.8 and higher) are rarely observed in sociobehavioral research, therefore although the size is considered statistically “small” it is still viewed as significant. In addition, Horvath and Symonds (1991) noted that there was a lot of variability between the studies (effect sizes ranged from -.04 to .64). This variability may be explained by differences in working alliance scales used, different dependent measures chosen, clinical treatment differences, and variations among client factors. In addition to determining the first overall effect size of the working alliance to therapeutic outcome, Horvath and Symonds (1991) determined that:

1. Patient and observer ratings of alliances have greater effect sizes than therapists’ ratings of alliance.

2. Therapeutic orientation of the counselor was not related to how predictive alliance scores are to outcome.

3. Length of treatment was also not related to how predictive alliance scores are to outcome.

4. Time of measurement made a small difference—early and late therapy measurements had slightly greater effect sizes, compared to studies that took an average (summed across multiple sessions, typically in the middle phase of therapy) alliance score.

5. Effect sizes were relatively homogeneous if the instruments were within the same cluster of assessments (i.e., were developed by the same research team at the same facility); however when the effect sizes were compared between the clusters of instruments, there was considerable heterogeneity.
In summary, Horvath and Symond’s meta-analysis suggested that there is a small, but significant, effect size between the working alliance and therapeutic outcome. This effect can be impacted by the type of measurement scale used, who is supplying the information (i.e., observer, patient or therapist) and when the measurement occurs (beginning or end of therapy verses an average of sessions or the middle phase of treatment). Based on Horvath and Symond’s findings the current study will (a) be cautious when adapting measurement scales to be used in classrooms, (b) use student working alliance scores which may be more predictive than teacher working alliance scores, and (c) collect data at the beginning or end of courses, as opposed to the middle of the semester.

Due to a substantial increase in the empirical literature on the working alliance, Martin, Garske, and Davis (2000) updated Horvath and Symonds’ original meta-analysis (1991) and reviewed 79 studies between the working alliance and therapeutic outcome (including the original 24 in Horvath and Symonds’ study). In their review, the overall effect size of the working alliance was .22 (similar to Horvath and Symond’s finding of .26). Martin and colleagues also found that the most common rater used in research was the client, suggesting that researchers used the knowledge from the previous meta-analysis (Horvath & Symonds, 1991) that suggested that client ratings were the most predictive source.

Horvath and Symonds’ (1991) original study suggested that outcomes may vary based on the type of working alliance measurement scale used. Martin and colleagues (2000) sought to better understand this variability and examined specific statistical differences between clusters of assessment instruments. These clusters were based on
where the instruments were developed and who was the main developer. They compared internal, interrater, test-retest, and overall reliability of each of the clusters of assessment instruments and found all to have acceptable reliability (.55-.92). Of the entire cluster of instruments that have studies examining all three types of reliability (internal, interrater and test-retest) the best overall reliability was the Working Alliance Inventory scales (developed by Horvath and colleagues and based on Bordin’s theories). In addition, the Working Alliance Inventory scales were most often used in the samples, and Martin and colleagues suggested that they are “likely to be appropriate for most research projects” (p. 447). Based on this study, the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) appears to be the measurement scale that would be the most suited for adaptation to student-teacher working alliances.

In a follow-up meta-analysis two years later, Horvath and Bedi (2002) examined the same studies as Martin, Garske, and Davis (2000) with the addition of a few new studies; and found a similar effect size (.21). Additionally, Horvath and Bedi (2002) examined whether the time in therapy when the alliance is measured (such as the beginning, middle or end of therapy) made a difference in the accuracy of outcome prediction. Similar to the results found by Horvath and Symonds (1991), they found that later alliance measurements were the most predictive of outcome, which they suggested was related to therapy benefits. That is, a client who has reaped the benefits of therapy may be more inclined to agree that he/she had a good working alliance with his/her therapist (i.e., “I feel good, therefore the therapy must have been good”). Alliance scores taken during the middle phase of therapy were the least predictive, which may be a function of the fact that the middle phase of therapy is often called the “working stage” in
which the client may be experiencing the most conflict internally and with the therapist. Therefore having a strained working alliance at this time may not be predictive of final therapeutic outcome. Finally, Horvath and Bedi examined whether amount of therapist training impacted alliance scores, and found that there were no significant differences. Therapists who were in the beginning of their career were just as likely to develop good working alliances with their clients as more seasoned professionals.

In general, the above meta-analysis studies showed a consistent effect size (.21-.26) between the working alliance and therapeutic outcome. This observation provides evidence that working alliance theory is related to therapeutic outcome, and the consistency of the findings suggests that working alliance theory can also be useful in predicting outcomes for other relationships, such as student-teacher relationships. In addition, the meta-analytic findings suggest that the type of alliance scale used and the treatment time at administration (i.e., early, middle, late treatment phase) impact the predictive significance. Based on Martin, Garske and Davis’ (2000) findings the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) is the more reliable and popular instrument used in research studies and is likely to be applicable for use in the current study. The meta-analytic studies also suggest that student ratings (Horvath & Symonds, 1991) taken toward the end of the course (Horvath & Bedi, 2002) will be the most predictive of learning outcomes. Finally, Horvath and Bedi (2002) suggest that experience does not seem to make a difference in terms of forming working alliances; therefore there should be no difference in student-teacher working alliance between classes led by faculty members and those led by graduate assistants. These findings provide some guidelines for the current study. At the same time, there are many
differences between individual counseling and teaching; therefore it is still uncertain how working alliance theory and research will apply to teaching. It is valuable to examine how working alliance theory has been adapted to other settings that share some characteristics with teaching. The following section will review the literature on supervisory, advisory, and therapeutic group working alliances.

Extensions of the Working Alliance to Other Settings

Working alliance theory has been applied to supervision (Bahrick, 1989; Bordin, 1983; Ladany, Ellis, & Friedlander, 1999), advising dyads (Schlosser & Gelso, 2001), therapeutic groups (Bourgeois, Sabourin, & Wright, 1990; Brown & O’Leary, 2000), and teaching settings (Koch, 2004; Meyers, 2008).

Application of the Working Alliance to Supervision Dyads

As mentioned previously, Bordin applied his theory of the working alliance to supervisor-supervisee dyads (Bordin, 1983). Bordin maintained that the same three components that are important for counseling working alliances are also important for supervisory working alliances. In his article, Bordin outlined how the components of bond, task agreement and mutual goals translate in a supervisory relationship. Although the goals and tasks in supervision are different from counseling, Bordin asserted that establishing them through mutual collaboration would still be important, and would lead to a better working alliance. In addition, Bordin suggested that developing a bond between supervisor and supervisee was as important as developing a bond between client and counselor, especially because the supervisory bond would address the issue of evaluation. Bordin acknowledged that supervisory relationships, unlike counseling relationships, must deal with explicit evaluations, which ensure proper client care, as well
as to help the supervisee grow (Bernard & Goodyear, 2004). These evaluations create an “up-down factor” (p. 39). Bordin suggested that establishing a proper working alliance will help counteract the tension that may be created by this unequal relationship, and facilitate effective evaluations, “with a well established working alliance, each of us [referring to supervisor and supervisee] usually feels free to give both adverse as well as favorable feedback” (p. 40). Unfortunately, Bordin did not offer any empirical data to support the assertions that a strong working alliance as defined by his theory would address the evaluative issues involved in supervision and that his working alliance theory is a good fit for supervisory relationships. However, other researchers did extend his working alliance theory to supervisory relationships through empirical research (Bahrick, 1989; Ladany, Ellis & Friedlander, 1999).

Bahrick (1989) was one of the first authors who set out to find empirical evidence for Bordin’s theory on supervision. She adapted the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) to use with supervisors and supervisees by making appropriate word changes. For example, the terms “therapist” and “client” were replaced with “supervisor” and “supervisee.” Bahrick asked 17 trainees in their first, second or third semester of counseling, who were paired with ten different supervisors, to complete parallel forms of the Working Alliance Inventory/Supervision (WAI-S). Forms were completed after the third, fifth, and ninth supervision sessions. Of the 17 trainees, the majority (n = 13) were female. Nine supervisors were advanced graduate students who held a Master’s degree and three of them were post-internship. The remaining supervisor was a faculty member. The majority of supervisors were female (n = 7) and four
supervisors supervised more than one trainee in the study. No other demographic information was available for the trainees or supervisors.

Bahrick hypothesized that providing a role induction exercise to the supervisees would strengthen the working alliance between supervisee and supervisor. The role induction exercise was a seven minute audiocassette describing a model of conceptualizing supervisory roles and goals (Bernard, 1979). The exercise was designed to provide trainees with examples of expectations, goals and tasks in supervision. Bahrick believed this would strengthen the working alliance by prompting trainees to pay more attention to the goals and tasks in supervision (two of the three components in Bordin’s theory of the working alliance). Half of the trainees were provided this audiocassette after the first supervision session and encouraged to discuss the issues with their supervisor.

Results suggested that the role induction exercise did not create a stronger working alliance in the dyads that completed the role induction. Although dyads exposed to the role induction did report higher agreement between supervisor and supervisee on tasks subscale, goals subscale, and the global working alliance score initially, they did not report higher scores than the dyads not exposed to the role induction. In addition, the agreement on WAI-S scales between supervisors and supervisees in the experimental group was no longer significant when measured after the ninth supervision session (e.g., long-term measure). Interestingly, Bahrick (1989) did find that during the last measurement phase (ninth supervision session) the control group had significant agreement between supervisor and supervisee on the bond subscale score and this correlated significantly with higher overall evaluations of supervision from the
supervisees. The experimental group did not have significant agreement on the bond scale at any time during the experiment and the evaluations of supervision were much lower from those supervisees. This suggests that the bond element in the working alliance may make significant contributions to the overall evaluation and enjoyment of supervision by the supervisee.

Unfortunately there are two main conceptual issues with Bahrick’s (1989) design that limit the conclusions that can be drawn. First, Bahrick only made minor wording changes to the Working Alliance Inventory, failing to address whether the individual items were applicable to supervisory relationships. For example one item on the supervisee form stated, “I find what ____ and I are doing in supervision is unrelated to my concerns” (p. 102). While supervisees often bring concerns into supervision, the wording is intended for clients and may be misinterpreted by supervisees. The meaning intended for that item would have been conveyed better with a different word choice. The lack of attention to whether individual items apply to supervision conceptually may account for the lack of findings.

Second, the only validation check on the WAI-S that Bahrick reported completing was giving the adapted instrument to seven raters, who were described as either advanced doctoral students or Ph.D. holders in counseling psychology. These raters were not described as experts in either working alliance theory or supervision. The raters were asked to categorize each item based on Bordin’s definition of each component. Inter-rater agreement was 98% for the bond subscale; however it was only 60%, and 64% for agreement on goals and tasks, respectfully. Bahrick suggested that the lack of inter-rater agreement on the last two subscales means that the WAI-S has only two factors,
combining agreement on goals and tasks; however Bahrick analyzed the results as if all three components are separate subscales. Bahrick goes against her own conclusion that the agreement on goals and tasks subscales should be collapsed into one factor. In addition, Bahrick did not statistically test the factorial structure of the WAI-S. Without statistical tests such as exploratory or confirmatory factor analysis, it is unclear whether Bordin’s three component theory fits supervisory relationships.

Although these measurement issues represent a major flaw in Bahrick’s study (1989) she was the first researcher to attempt an empirical study of extending Bordin’s working alliance theory (1979) into other relationships. The issues involved in the measurement scale are a cautionary example to the current study to carefully design the measurement scale used to explore student-teacher working alliances. Bahrick’s study can be viewed as a gateway into testing Bordin’s working alliance theory in other relationships.

Ladany, Ellis and Friedlander (1999) extended the work by Bordin (1979) and Bahrick (1989) by questioning whether changes in the supervisory alliance may impact changes in supervisees’ self-efficacy and satisfaction with supervision. The authors chose supervisee self-efficacy because Bordin (1983) suggested that a strong supervisor alliance would result in mastery of specific counseling skills. Self-efficacy is defined as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments,” (Bandura, 1997, p. 3), or, in other words, believing that you have mastered a particular skill. Bandura’s theory suggests that there is a direct link between having self-efficacy and performing the particular skill. By measuring self-efficacy, the authors used an objective measure to test Bordin’s hypothesis that a strong
supervisor alliance may result in mastery of counseling skills. The authors chose to measure supervisee satisfaction because it was defined as the supervisee’s reaction to the supervisor’s “perceived personal qualities and performance, the judgment of their own behavior in supervision, and the level of comfort when expressing their own ideas in supervision” (Ladany, Ellis, & Friedlander, 1999, p. 448). Again, according to Bordin’s theory, a strong working alliance should be related to how a supervisee perceives the supervisor, how he/she perceives his/her own behavior, as well as how comfortable the supervisee is in supervision. In addition, the authors focused on changes in the supervisory relationship based on Bordin’s (1983) conceptualization that the relationship is dynamic, not static, therefore they measured the alliance, supervisee’ self-efficacy, and satisfaction with supervision at the beginning of supervision (between the third and fifth sessions) and at the end (between the eleventh and sixteenth session).

Participants were counselor trainees (N = 107) in counselor education, counseling psychology, or clinical psychology training programs. About half of the participants identified as internship/postdoctorate trainees, while 30% were in beginning practicum and 20% were in advanced practicum training levels. The majority of participants (86%) identified as Caucasian and female (67%), with the average age of 29.91 years old. The participants were in individual supervision with primarily male supervisors (65%) for an average of 81 minutes a week. Ladany and colleagues (1999) measured the working alliance using the Working Alliance Inventory/Supervision-Trainee version (WAI-S, Bahrick, 1989; described above), which contained a total score and three subscale scores, each corresponding to an element in Bordin’s (1979) theory of working alliance-bond, task and goal. Higher scores indicated a stronger working alliance. It should be noted
here that once again, the authors failed to test the factor structure of the WAI-S; therefore the subscales exist based on content, not statistical, analysis.

Supervisee satisfaction was measured using the Trainee Personal Reaction Scale-Revised (TPRS-R; Holloway & Wampold, 1984), which is a 12-item self-report scale that asks supervisees to rate each item on a 5-point likert scale with higher scores indicating greater satisfaction with supervision. Self-efficacy was measured using a self-report scale called the Self-Efficacy Inventory (SEI; Friedlander & Snyder, 1983), which is designed to measure supervisees’ confidence in their ability to perform 21 specific counseling related activities. Each activity is rated on a 10-point scale, with higher scores indicating greater self-efficacy.

The researchers used multivariate multiple regression to determine if changes in the subscale scores on the WAI-S predicted changes in supervisee self-efficacy and/or satisfaction. Although the overall proportion of variance accounted for by changes in the WAI-S subscales in supervisee satisfaction and self-efficacy was significant (F = 4.83, p < .0001), in follow-up analyses, only the bond scale significantly and uniquely predicted changes in supervisee satisfaction (F = 5.44, p = .022). This provides further evidence that the bond element in the working alliance theory may be the most important component to supervisee satisfaction, supporting the findings from Bahrick (1989).

Changes in all of the WAI-S subscales failed to predict changes in supervisee self-efficacy (F = .641, p = .641). However, it should be noted that supervisee self-efficacy did significantly improve over time. The authors suggested two main reasons for the lack of self-efficacy prediction. First, they cited the fact that the three subscales of the WAI-S were highly intercorrelated (all correlations were equal to or above .67). The authors
suggested that the multicollinearity they found may have negated the predictive power of the multiple regression analysis. Multicollinearity exists when there are strong correlations among variables that are supposed to be independent (Pedhazur & Schmelkin, 1991), in this case it is the three subscales and the total score of the WAI-S. Using independent variables is one of the assumptions of performing multiple regression, because multiple regression controls for all other variables except the variable of interest. If the variables are highly intercorrelated, then partialing out one variable is like controlling for the variable of interest too; therefore power is reduced. Performing multiple regression on a measure that has a high level of multicollinearity may produce statistically significant $R^2$ changes, but non-significant regressions, as is the case with the Ladany, Ellis, and Friedlander results (1999). Second, the authors suggest that in a training environment, there are many contributors to self-efficacy beyond the supervisory relationship (e.g., peer feedback, client feedback, emotionally arousing situations) and these variables may moderate how the supervisory relationship may impact supervisee self-efficacy. The authors did not account for these variables of interest.

From Ladany, Ellis and Friedlander’s study (1999) the current study takes away the importance of performing correct statistical checks prior to making conclusions about data. Once again, they used the WAI-S (Bahrick, 1989) which is a scale whose factor structure has not been tested as a theory of supervisory working alliances. It is possible that the lack of results may stem from the problems originating from the instrument. The current study will take care in creating an instrument that is statistically and conceptually sound in terms of the student-teacher working alliance. However, despite the statistical issues associated with the measurement scale, results supporting the contention that a
strong bond is associated with greater supervisee satisfaction were found. The bond
component of Bordin’s theory is conceptually the component most similar to rapport and
immediacy behaviors, two concepts that have already been associated empirically with
student learning outcomes. This suggests that at least some of Bordin’s theory may be
applicable to student-teacher relationships. However, as already suggested, Bordin’s
theory may not be sufficient in explaining other types of helping relationships, such as
supervision and teaching. Other authors have examined the supervisory working alliance
by using Bordin’s theory combined with other counseling theories. These articles may
provide a better a model for the current study.

Efstation, Patton, and Kardash (1990) set out to design a measure of supervisory
working alliance and based their definition of the supervision working alliance on social
learning theory defining it as a “set of actions interactively used by supervisors and
trainees to facilitate the learning of the trainee” (p. 323). The authors focused on how
supervisors purposefully try to influence supervisees with their knowledge and skills, and
in turn, supervisees purposefully try to display their acquisition of that knowledge and
skill. This definition is closer to Strong’s theory of interpersonal influence (1968);
however in their article they reported that they adapted ideas from several other authors,
including Bordin (1983). Efstation and colleagues’ work can be considered a blending of
counseling theories in the same way that the current study is hypothesizing a blending of
Strong (1968) and Bordin’s (1979) theories in order to create a student-teacher
relationship theory. However, one main difference of note is the lack of attention given
to emotional bonds that may connect the participants. Efstation and colleagues do not
include this component in their definition, and consequently did not create any items on
their measurement scale associated with it. This may be leaving out important information since the bond subscale was the only subscale associated with significant results in previous studies. Efstation and colleagues’ measure, the Supervisory Working Alliance Inventory (SWAI), was based on a list of tasks generated by “experts” in the field, which supervisors and supervisees undertake during supervision.

After ten experienced supervisors generated supervisor and supervisee tasks lists, the authors combined those lists with their own ideas about what tasks occur in supervision. The result was two scales, one for supervisors and one for supervisees, each with 30 items. The items represented corresponding tasks that each member of the dyad performs during supervision. Packets containing the corresponding scales were mailed out to 614 training directors of internship programs, who were asked to participate if they were supervising an advanced doctorate student or intern (if the training directors were not supervisors themselves, they were asked to pass the packet to another senior staff member who was actively supervising). The response rate was 33% (n = 204), and represented 42 states. The supervisors were mostly male (62%) and the mean age was 41.96 years, with an average of 15 years of counseling experience. The supervisees were mostly female (58%) with a mean age of 29.95 years and an average of 5.7 years of counseling experience. All supervisees were either advanced level doctoral students or interns in an accredited internship site.

Based on exploratory factor analysis, a three-factor solution was most appropriate for the supervisor’s version of the Supervisory Working Alliance Inventory (SWAI). The authors titled the factors, (a) client focus, (b) rapport and (c) identification, referring to the supervisor’s perception of the supervisee’s identification with the supervisor
(Efstation, Patton, & Kardash, 1990). In contrast, the supervisee’s version had a two-factor solution, with the factors entitled (a) client focus and (b) rapport. Client focus in both versions consisted of items reflecting tasks that intend to promote understanding of the client by the supervisee. The factor of rapport referred to tasks that are designed to support and encourage the supervisee. The extra factor in the supervisor’s version, identification, refers to how the supervisee may be modeling their style and approach to counseling after the supervisor. The authors believed that conceptually the supervisor’s version should contain more dimensions, as the supervisor should view the relationship more complexly, given their level of training and experience.

Similar to the Ladany, Ellis and Friedlander study (1999) the authors explored whether the supervisory working alliance was associated with supervisee’s self-efficacy. Scores on the Self-Efficacy Inventory (the same measurement scale used by Ladany et al., 1999) were found to correlate significantly with both supervisee working alliance subscales (r = .22, p ≤ .01 for rapport; and r = .15, p ≤ .05 for client focus). These findings suggest that the working alliance is related to supervisee’s self-efficacy, contrary to the finding reported by Ladany and colleagues (1999).

Three main differences may account for the inconsistent finding between the Efstaion, Patton, and Kardash (1990) study and the Ladany, Ellis and Friedlander (1999) study regarding the relationship between self-efficacy and working alliance. First, the measurement devices used were based on two different theories of working alliance, and were constructed in different ways. Ladany, Ellis, and Friedlander (1999) used the Working Alliance Inventory-Supervision (WAI-S; Bahrick, 1989) which was constructed conceptually from the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989)
and whose factor structure has not been validated. The subscales consist of emotional bonds, agreement on tasks and agreement on goals. In a statistical analysis, these subscales may not hold as factors. The main difference conceptually is the inclusion of a component to measure emotional bonds. In contrast, Efstation, Patton, and Kardash (1990) based their measurement device (Supervisory Working Alliance Inventory; SWAI) on a combination of working alliance theories, especially those incorporating social influence theory. Social influence theory focuses on the actions and behaviors of individuals; and the items generated for the SWAI were based on a task analysis of supervision. The SWAI does not measure emotional bonds and feelings directly. Based on the different theories and the resulting measurement devices, the two studies define supervisory working alliance very differently.

The second main difference between the two studies is the sample groups. Ladany and colleagues (1999) used a sample of counselor trainees with varying counseling experience; 30% identified as beginning practicum, 20% as advanced practicum and 51% as internship/postdoctorate; with an overall mean of 22.51 months of counseling experience. In contrast, Efstation and colleagues (1990) used primarily internship and advanced practicum students, with a mean of 5.7 years of experience. Self-efficacy has been found to positively correlate with experience (Friedlander & Snyder, 1983); therefore the more experienced trainees used in Efstation and colleagues study may have had higher scores on the self-efficacy measure by virtue of their time in training, as compared to Ladany and colleagues’ participants.

Finally, the Ladany, Ellis and Friedlander (1999) study measured working alliance and self-efficacy at two intervals: beginning and end of supervision; while the
Efstation, Patton, and Kardash (1990) study measured both variables only once at an undisclosed time period in the supervision process. The working alliance has been shown to change throughout the process that a counseling dyad is working together (Horvath & Symonds, 1991); therefore it may also change during a supervision period. The differences between the studies seem significant enough to warrant the conclusion that the relationship between working alliance and self-efficacy is undetermined. Since, one of the main purposes of teaching is to increase the students’ mastery of a subject, it seems reasonable that increased mastery (or self-efficacy) should be expected when the student-teacher working alliance is stronger. Therefore, one criterion variable for the current study will be student self-efficacy. Although the inconsistencies cited above make it difficult to predict whether the student-teacher working alliance will be related to student self-efficacy, conceptually both Bordin (1979) and Strong (1968)’s theories would suggest that self-efficacy should be positively related to positive student-teacher relationships.

Supervision dyads are not the only relationships to which the working alliance has been extended. Recent literature has examined whether the working alliance may help explain advising dyads as well.

**Application of the Working Alliance to Advising Dyads**

Advisor-advisee relationships may be more similar in structure to student-teacher relationships than client-counselor or supervisee-supervisor relationships. Both advising and teaching relationships involve a student and teacher; with the primary goal of helping the student grow and develop into a professional. However, these relationships typically differ in length of time and composition of interactions. Advising often occurs over
several years, between one student and one faculty member. In contrast, a teaching relationship is often only one or two semesters in length, and the interactions typically involve one teacher and a classroom of students. Although these differences are important, the advising relationship is still the closest type of relationship that has been empirically examined in terms of adapting working alliance theory in understanding the relationship.

Schlosser, Knox, Moskovitz, and Hill (2003) used consensual qualitative research (CQR) methodology to investigate students’ perception of their relationships with their graduate advisors in counseling psychology programs. In the CQR method, a small number of cases are extensively examined in order to gain an in-depth understanding of the phenomenon of study. For this study, the investigators interviewed by phone third year doctoral graduate students (N = 16) from nine universities about their experiences with their graduate advisor. Third year students were chosen because it was assumed that they would have had a significant level of interaction with their advisors by this time, while still being significantly involved in the graduate program. The majority of the participants were female (n = 14) and Caucasian (n = 14), and two participants identified as biracial. Participant ages ranged from 24 to 50 years old (M = 33.63) and had been with their current advisor for an average of 29 months (time ranged from 5 to 36 months). Only three participants reported changing their advisor at some point during their graduate career. Participants estimated that their advisors were Caucasian (n = 10), African American (n = 3), Asian American (n = 1), and multiracial (n = 2); and they estimated advisor ages between 31 and 70 years old. The majority of participants (n = 10) identified their advisors as female. Themes in the conversations centered around two
main components: interpersonal and instructional. Advisees who reported being satisfied with their advising focused on the instructional benefits of advising, such as professional mentoring and advisor accessibility. When asked about interpersonal components, the advisees suggested that they had good rapport with their advisors and they reported not focusing on it because it was a component that was assumed to be there. In contrast, those who reported being unsatisfied in their advising relationships focused on the negative interpersonal aspects of the relationship. Unsatisfied advisees talked significantly about what was missing in their relationship with their advisor. These findings suggest that rapport needs to be established first in order to have a satisfactory advisor-advisee relationship, and once established, instructional components become the important criteria for evaluating the relationship.

The finding that positive rapport needs to be established prior to having positive instructional experiences may relate directly to teaching environments (Scholosser, et al., 2003). The finding suggests that in order for optimal learning to occur, students must first feel that a positive interpersonal relationship has developed. Once established, this relationship serves as a basis for greater learning experiences. In addition, the finding that unsatisfied advisees focus on the missing interpersonal elements within the relationships suggests that a negative relationship (or even a neutral relationship) may hinder learning experiences because the advisees (or students) are too focused on what is missing, instead of placing any focus on instructional elements within a relationship. These conclusions are cautionary since the advisee-advisor relationship does contain significant differences from the student-teacher relationship; however it does suggest that
working alliance theory may be an appropriate way of examining the interpersonal processes at work in advising relationships.

Studies developing measurement scales of the advisory working alliance (Schlosser & Gelso, 2001; Schlosser & Gelso, 2005; Schlosser & Kahn, 2007) have found similar factor structures as those used in counseling and supervision working alliance measures. That is, Scholosser and Gelso (2001) argued that the concept of the working alliance is applicable to all change-inducing relationships and conceptualized it in terms of advisor and advisee dyads as the “portion of the relationship that reflects the connection between advisor and advisee that is made during work toward common goals” (p. 158). Their scale, the Advisory Working Alliance Inventory (AWAI; Schlosser & Gelso, 2001) is based on the Supervisory Working Alliance Inventory (SWAI; Efstation, Patton, & Kardash, 1990) and has been found to positively correlate with measures of advisee research interest; advisee research self-efficacy; and advisee perception of advisor expertness, attractiveness and trustworthiness. Since advisory relationships are more similar to student-teacher relationships than counseling or supervision relationships, these positive correlations suggest that similar findings may occur within the teaching setting.

Even though there is some preliminary evidence that working alliance theory may be appropriate for understanding advisory relationships, the literature is relatively new, and caution should be taken when drawing any conclusions from these studies. In contrast, the research on the working alliance in therapeutic groups is more established. Research examining therapeutic group working alliances may also be applicable to student-teacher relationships which, like group therapy, occur in a group setting.
Therefore, the current study will examine advisory relationships to examining how the working alliance has been adapted to therapeutic groups.

**Application of the Working Alliance to Therapeutic Groups**

At this point I have examined how the working alliance has been shown to be a useful predictor of outcome with individual counseling dyads, supervisory dyads and advising dyads. However, these are working alliances that consist of only two participants. The current study proposes to use the working alliance to predict outcome in a group setting. Classrooms typically consist of one teacher (for bigger or advanced classes there may be teaching assistants as well) and a varied number of students. Although a different alliance is likely to exist between the teacher and each individual student, the dynamic of the group as a whole can not be ignored as a factor influencing the development of the working alliances. These multiple relationships may more closely resemble therapeutic groups, as opposed to individual counseling dyads. To this extent, it is important to examine how the group therapy literature has viewed the working alliance.

Measuring the alliance in groups becomes more difficult because of the increased number of individuals involved (Brulingame, Fuhriman, & Johnson, 2002). Therapeutic groups can contain up to five distinct types of alliances: member to member, member to group, member to leader, leader to group, and leader to leader if there are co-leaders (Brulingame, Fuhriman, & Johnson). Although each type of alliance can be influenced by the others, the current literature review will only focus on studies of member to leader alliances because this is the dynamic that parallels the relationship that the working alliance theory was first based (i.e., client to counselor).
Even though therapy groups more closely resemble classrooms than supervision or advising dyads; there are two distinct differences that must be kept in mind when comparing therapeutic groups with educational classrooms. First, an educational classroom is likely to have more students than a therapeutic group. Although the size of a group can vary, traditionally the ideal group size is about 8 people with one leader (Corey & Corey, 2006), while a typical class size may be 20-100 students (McKeachie, 1999). This size difference can impact quantity of individual time spent between the teacher and the students. Second, although emotions are expected, encouraged, and seen as a key aspect of change in group therapy work, they do not typically play a central role in the classroom dynamic. Although emotions may arise, particularly in classes asking students to take a reflective or even critical stance; they are not central to the learning process. In applying the information available from the group therapy literature to the educational working alliance, these two differences must be remembered.

Sexton (1993) examined how session-to-session changes in alliance impact intermediate and overall outcome experiences of group members over a three month period. All participants (N = 34) received 12 outpatient sessions of multimodal group therapy that included verbal group therapy, light aerobic exercise sessions, and social training in the form of experientially-based group exercises. The majority of participants were diagnosed with an anxiety or mood disorder (65%) at the onset of the study, while the remainder of participants had a variety of nonpsychotic conditions. No participant exhibited personality disorder diagnoses. The participants ranged in age from 20 to 77 years (M = 42), 41% were male, and all participants identified as White and middle-class. Of the 34 participants, 7 had been previously admitted, 10 had previous outpatient care,
and 16 had been on sick leave for at least 3 months or have been declared chronically disabled. Therapeutic outcome was measured by several patient self-report scales such as the Beck Anxiety Scale and the Brief Symptom Inventory, as well as therapist-completed symptom and global functioning scales. Alliance was assessed at each session though a 12-item scale based on alliance literature (Morgan, Luborsky, Crits-Christoph, Curtis, & Solomon, 1982). During data analysis, alliance scores were found to correlate highly ($r > .70$) with the positive experiences scale, an eight-item scale that examined positive experiences (such as feeling supported and being understood); therefore the alliance and positive experiences scales were combined in the final analysis. The author found that participants who reported a strong positive alliance with the therapist early on reported more insight (as defined as patient reported session importance and new understanding) in later sessions and had more therapist reported improvements than those who reported a weak alliance with the therapist. In addition, those who reported a weak or broken alliance with the therapist experienced more irritation and rejection, as well as increases in client reported symptoms. This study provides some evidence that creating a positive alliance with group therapy clients is associated with better client outcomes, such as insight; while negative alliances with group clients is connected with increases in client-reported symptoms.

Studies on group marital counseling also provide some evidence for the importance of member-to-leader alliance in reducing client symptomology. Brown and O’Leary (2000) looked at 70 self-referred “discordant, husband-to-wife violent couples” (p. 341) who participated in group therapy once a week for 14 weeks, with the primary focus on psychoeducation. In order to be eligible for the study, wives had to report at
least two acts of husband-to-wife physical aggression in the past year and husbands had to report at least one act of husband-to-wife physical aggression. Couples who were actively seeking separation or divorce were excluded, as well as couples in which the wife reported being fearful of her husband or reported seeking medical care for any acts of aggression. Participants were married an average of nine years, had an average of two children, and the majority identified as White (97%), while the remaining participants identified as African American (2%) and Hispanic (1%). The average age of husbands was 38 years old and the average level of education was 14 years. The average age of wives was 35 years and their average level of education was also 14 years. Alliance was measured by the Working Alliance Inventory-Observer scale (WAI-O; Horvath & Greenberg, 1989), and each participant was coded by two observers on three subscales—bond, tasks and goals. These scales correspond to Bordin’s theory of the working alliance. Scores were based on observations of each two hour therapy session. Because the subscales were highly intercorrelated, only the total alliance score was used for data analysis. Five self-report outcome measures were assessed in this study: global marital satisfaction, levels of mild psychological aggression (e.g., insults), severe psychological aggression (e.g., humiliation and threatening), mild physical aggression (e.g., pushing) and severe physical aggression (e.g., hitting with a fist).

Brown and O’Leary (2000) found that the husbands’ alliance with the therapist significantly predicted decreased post-treatment mild and severe psychological and physical aggression, but not global marital satisfaction. The wives’ alliance scores were not predictive of any outcome. The authors hypothesized that the wives’ scores would not be as predictive as the husbands’ scores since previous research suggested that
building a positive alliance with the more powerful person in the couple was more predictive of outcome. The husband was assumed to be more powerful, since his behavior (i.e., aggression) was the primary focus of treatment. These results suggest that there may be a positive correlation between good member-to-leader alliances and educational outcomes (recall that the main purpose of the group sessions was psychoeducational in nature). If the group leader is seen as a teacher providing education toward the husbands for reducing violence in their relationships, then the husbands who had a positive alliance with their teacher (i.e., group leader) learned and applied the education better. The same connection may exist in educational classrooms, that is, positive student-teacher relationships produce better student educational outcomes. However this conclusion is cautionary because the participants in the Brown and O’Leary study (2000) all had a history of violence within the couple, therefore they would be considered a clinical population. The results may not be applicable to non-clinical populations, such as college students.

The gender differences in the above study seem to replicate findings reported by Bourgeois, Sabourin and Wright (1990) who looked at married or co-habiting couples (N = 63) in Québec, Canada. The participants volunteered for a 9-week group marital skills training program which focused on improving communication skills using a highly structured didactic format. All participants were French-speaking and white, with an average age of 38.5 years (range = 22-66 years). Because the authors wondered if the level of pretreatment marital distress would impact how strong the alliance to the therapist would become both high and low marital distressed couples were admitted into the program. Four outcome measures (Dyadic Adjustment Scale, Marital Happiness
Scale, Potential Problem Checklist, and Problem Solving Inventory) were presented to each participant prior to treatment and again a week after treatment was completed. Alliance was assessed after the third therapy session. Both participant (Couples Alliance Scale, CAS; Pinsof & Catherall, 1986) and therapist (Therapist Alliance Scale, TAS; Pinsof & Catherall, 1986) perceptions of the alliance were assessed.

The degree of pretreatment marital distress did not predict the level of therapeutic alliance; therefore the data between the high distress and low distress groups were combined. For the female participants, CAS scores predicted 5% of the variance in post-treatment marital satisfaction. For men, CAS scores predicted 7% of the variance in post-treatment marital satisfaction, 5% of the variance in increased marital happiness, and 8% of the variance in problem-solving behaviors and attitudes. In addition, the therapist-reported alliance scores (TAS) predicted 3% of the variance in men’s marital satisfaction and 10% of the variance in men’s marital happiness. Although the consistent gender differences have not been fully explained by empirical research, the authors suggested that, because men tend to have a negative view of help seeking (Addis & Mahalik, 2003), the role of a positive alliance with the therapist may be more important to overall outcome. Although teaching can be viewed as a helping profession (Robertson, 2000), the gender differences found in these studies (Bourgeois, et al., 1990; Brown & O’Leary, 2000) are not likely to appear between male and female students because getting an education is not viewed as help seeking. In the current study it is hypothesized that student-teacher relationships are likely to impact male and female student outcomes to the same degree.
Although the variance predictions in Bourgeois, Sabourin and Wright’s (1990) study were modest (3-10%), the findings provide some guidance for the current study. To start with, the non-clinical population in Bourgeois and colleague’s study more closely resembles the current study’s population of interest: college teachers and students. This lends credence to the idea that alliance is important in non-clinical populations.

Secondly, in both couples’ therapy studies (Bourgeois, et al, 1990; Brown & O’Leary, 2000), the primary focus of the group sessions was psychoeducational, resembling the focus of classroom sessions (i.e., education). The lack of prediction provided by the therapist-rated alliance scores (with the exception of male marital happiness) suggests that participant-rated alliance scores are more important, a finding that has been replicated in individual therapy studies (Horvath & Symonds, 1991; Luborsky, 1994). Because of these findings, the current study will only focus on student-rated perceptions of student-teacher relationships. Taken together, the group therapy studies on alliance and outcome suggest that alliance can be measured in a group setting and is related to therapeutic outcome. The current study seeks to extend this finding to a similar group setting—the classroom.

**Extending Working Alliance Theory to Teaching**

As mentioned in earlier sections of this proposal, several authors have discussed the similarities between teaching and therapy (e.g., Bordin, 1979; Brooke, 1987; Forsyth, 2003; Koch, 2004; Meyers, 2008; Robertson, 2000; Wool, 1989). Robertson (2000), for instance, suggested that the teaching relationship is similar to counseling and psychotherapy relationships because at the core of each relationship is a focus on helping and change. In terms of teaching, the teacher acts as a facilitator for change in the
students’ knowledge and/or skill. In a similar manner, the therapist or counselor acts as a facilitator of change in a client’s mental health. Bordin (1979) proposed that his theory on therapeutic change can be extended to student-teacher relationships because of this fundamental similarity. Buskist and Saville (2004) suggested that classroom rapport (a concept previously discussed as being linked to student outcomes) could be conceptualized as similar to a therapeutic [working] alliance because it is based on (a) the extent that students accept, or buy into, the goals of the classroom; (b) the students’ ability to work toward these goals; (c) the teacher’s ability to care genuinely for students; and (d) the emotional connection between the teacher and students. These components are clearly similar to Bordin’s (1979) components in his theory of the working alliance.

Forsyth (2003) suggested that the student-teacher relationship is similar to the therapist-client relationship because it “joins people in a complex web of relationships, roles, and networks” (p. 55). Forsyth asserted that clinicians (who are in the leadership role of the dyad) affect cognitive, emotional and behavioral change in their clients through the therapeutic relationship, and in a similar fashion, teachers must assume the leadership role and address how interpersonal dynamics can influence the success of teaching and learning. That is, good relationships will lead to good outcomes (learning and student development), while a strained or negative relationship will lead to less change and learning. Clearly authors from many different disciplines have connected teaching and counseling conceptually.

Koch (2004) suggested that the working alliance concept might be an appropriate model for “planning, evaluating, and documenting teaching effectiveness and student learning” (p. 235). Koch focused on the relationships between teachers and students in a
graduate rehabilitative counseling program and suggested that Bordin’s theory of the working alliance (1979) creates an appropriate framework for the experiences of a classroom. In her article, Koch listed each of Bordin’s components of the working alliance (i.e., bonds, mutual goals, and relevant tasks) and explained how each component could be used to describe the student-teacher relationship.

Koch proposed that interaction between teachers and students is a powerful factor in promoting learning, that is, without an appropriate bond between teachers and students, learning is likely to be more difficult. In order to define an appropriate bond, Koch borrowed from the counseling psychology literature and suggested that the three components of therapeutic rapport (empathy, warmth, and genuineness; Truax & Carkhuff, 1967) are also important in establishing a student-teacher bond. Empathy is communicated to students by listening to their ideas and offering constructive feedback. Warmth is communicated by showing respect toward the students by making eye contact, learning names, and removing structural barriers, such as podiums. Genuineness includes showing a genuine interest in the students, as well as sharing an appropriate amount of self-disclosure. Through the use of empathy, warmth and genuineness, Koch suggested that student-teacher bonds are formed in the same way that client-counselor bonds are formed.

The second component of Bordin’s (1979) theory, agreement on goals between participants, occurs in education through determining appropriate objectives for courses. Koch (2004) suggested that the teacher should focus on primary goals, or those designated as important to the field, as well as secondary goals, which are those more focused on strategies for learning. By creating objectives for courses that are both
content and learning specific, the teacher has more of an opportunity for getting students to buy into the goals, satisfying the “mutual goals” component of the theory (p.237). As Koch is speaking from a rehabilitation standpoint, it is easy to identify specific knowledge and skills that all rehabilitation counselors should obtain; however in the program in which Koch teaches, the students work collaboratively with their instructors to set student-specific learning goals as well. In this way, although the student has less input in determining what the goals are than a client has in a counseling relationship; there still exists a level of collaboration. In an undergraduate setting the students may have even less input in establishing the objectives of the class than in a graduate class. However encouraging undergraduate students to make course-specific goals and giving them a choice among different assignments to complete, may facilitate this component of the working alliance and create more student ownership in the class. This is an example of how different teaching strategies can impact one component of Bordin’s (1979) theory of working alliance (agreement of goals).

The final component in Bordin’s (1979) theory is agreement on the tasks that each member will complete in order to achieve the goals laid out. In an educational setting, development of the tasks component is completed entirely by the teacher through the creation of the course. The teacher determines the structure of the course (e.g., lecture-based as opposed to discussion-based), as well as the assignments that the students should complete. These decisions set up automatic tasks for the teacher and students. For example, in a traditional lecture-based introductory course, the teacher tasks include lecturing and grading assignments, while the student tasks include reading assigned texts, attending lectures, and completing assignments. At first glance, the fact that the teacher
establishes the tasks prior to even meeting the students appears to stop paralleling the client’s experience in therapy. However, as Koch (2004) points out, Bordin’s theory states that tasks should be agreed upon but don’t have to be created collaboratively. A positive working alliance can still be developed if students understand the relevance and importance of each task the teacher has set out. If the teacher provides clear links between the tasks and the classroom objectives, then students are more likely to agree with the tasks. This student agreement with the tasks will not only establish a stronger working alliance, but students will also be likely to work more diligently on tasks with which they agree. This situation is similar to counseling, where the counselor usually suggests the tasks, and the client must “buy into” the techniques in order for change to occur.

The purpose of Koch’s (2004) article was to create a theoretical framework in which the components of Bordin’s (1979) theory of the working alliance (bonds, goals, and tasks) could be applied to student-teacher working alliances, specifically in rehabilitation counseling graduate programs. Her article provided a guide for translating Bordin’s working alliance components into components for student-teacher working alliances. Although her article was specific to graduate rehabilitation programs, the general ideas that she provided for each component can be used for other types of programs and classrooms (such as undergraduate classrooms, which are the focus of the current proposal). For example, in her discussion of mutual goals, Koch lists the competencies of rehabilitation counselors as set by the Commission on Rehabilitation Counselor Certification. These goals would not be used in any other program; however her idea of including course-specific and learning-specific objectives in a course in order...
to maximize the students’ chances of agreeing with the goals of the course is an idea that can be utilized by all classrooms. In this way, Koch provides teachers (and the current study) with guidance on connecting working alliance theory as defined by Bordin (1979) to learning scenarios. At the same time, Koch’s article (2004) is limited because its proposal remained at a theoretical level. Although she suggested how Bordin’s theory of the working alliance (1979) can be translated into a classroom setting, she does not provide any empirical data supporting these contentions. The current study attempts to further Koch’s ideas by examining student-teacher working alliance components empirically, as well as examining interpersonal influence theory components in order to develop a theory on student-teacher relationships, not just student-teacher working alliances.

Expanding on Koch’s article, Meyers (2008) theorized that the working alliance theory could be used with undergraduate classrooms. Meyers agreed with Koch (2004) that Bordin’s theory of the working alliance can be paralleled in a classroom setting. Unlike Koch, who focused on graduate rehabilitation programs specifically, Meyers looked at how Bordin’s three components could be applied to classrooms in general. In terms of creating an emotional bond, he cited converging lines of research on rapport and immediacy behaviors (e.g., Buskist & Saville, 2004; Lowman, 1984; Wilson, 2006) that have found empirical support for the importance of the bond component in effective teaching. Meyers used the literature on active and cooperative learning (Angelo & Cross, 1993; Bilson & Tiberius, 1991; Nilson, 1998; Weimer, 2002) to create a framework for establishing how shared goals and tasks occur in a classroom. He argued that teachers can enhance collaboration within classrooms by getting student input into learning
objectives, desired competencies and pedagogical strategies (Angelo & Cross, 1993). For example, students can be asked, “What do you know about this topic, and what more would you like to learn?” (Meyers, 2008, p. 29). By participating in these types of dialogues students are collaborating with the teacher on establishing some goals and tasks of the class. Based on Bordin’s theory of the working alliance (1979), teachers who employ such techniques may engender more positive working alliances in their classrooms.

The main purpose for Meyers’ article (2008) was to establish the utility of using working alliance theory in educational settings. Meyer’s acknowledged that there are some theories (Lowman, 1984) and research (Buskist & Saville, 2004; Wilson, 2006) that address the impact of student-teacher interpersonal relations; however he argued that the working alliance theory can provide teaching scholars with a “parsimonious and novel framework to enhance their relationships with students” (Meyers, 2008, p. 30) as well as extending the current literature in several ways. First, he argued that the psychodynamic foundation of working alliance theory allows scholars to take into account past relationships, in this case past learning experiences, which current research on rapport building ignores. For example, if a student had a poor student-teacher working alliance with a previous teacher, he/she may be less likely to invest time or energy in developing an alliance with a new teacher. Second, working alliance theory addresses the fact that conflicts do arise in classrooms as a result of students’ perceiving a weak bond or devaluing the goals and tasks of the class. These conflicts can impede learning and be resolved through alliance-building techniques. Working alliance theory provides both an explanation and solution to conflicts between teachers and students. Third, Meyers’
argued, as the current study also proposes, that working alliance theory subsumes many of the current teaching theories about student-teacher relationships and provides a more parsimonious framework for consideration. Because of these three advantages (psychodynamically inspired, attention to conflict, and parsimony) Meyers advocated for current educational scholars to explore how working alliance theory may be used in classroom settings.

Both Meyers (2008) and Koch (2004) provide frameworks for using Bordin’s theory of the working alliance (1979) in classroom settings; however the authors also agree that there are some limitations that need to be addressed when applying working alliance theory to student-teacher relationships. First, student-teacher working alliances differ from counseling working alliances because they include a component of evaluation, which creates a power imbalance between the members (e.g., the teacher and students). Neither author provided guidance in how to address this limitation. The current study attempts to address the issue of evaluation by combining Bordin’s theory of the working alliance (1979) with a theory that may account for the power imbalance, namely Strong’s interpersonal influence theory (1968). The current study agrees that Bordin’s working alliance theory is an appropriate foundation; however since it is also exploring how Strong’s interpersonal influence theory (1968) can contribute to this understanding, the current study is proposing an overall theory about student-teacher relationships, which includes, but is not limited to, student-teacher working alliances.

Meyer’s also points out that there is a distinction between intent (counselors address psychological problems, whereas faculty address educational needs) and context of service (one-on-one counseling vs. teaching multiple students simultaneously) between
individual counseling and teaching. In terms of context of services, member-to-leader alliance scores have been found to be related positively to therapeutic outcomes in group counseling (Bourgeois, et al, 1990; Brown & O’Leary, 2000); suggesting that an association between student-teacher relationship factors and outcome variables may occur even in the group setting of a typical classroom. In terms of intent, many authors have argued that although the main purpose of teaching is different from counseling, they are both fundamentally helping professions (Robertson, 2000); therefore theories may be able to be applied across the two disciplines.

Koch (2004) and Meyers (2008) note that a second limitation of using working alliance theory to understand student-teacher relationships is the lack of empirical research connecting the working alliance to student outcomes (such as student achievement or teaching evaluations). Currently, the articles addressing student-teacher working alliances (Koch, 2004; Meyers, 2008) are theoretical in nature. However, before research on student-teacher working alliance can occur, Koch and Meyers acknowledged that, at present, there is no established measurement scale for student-teacher working alliance. Koch pointed to the adaptability of the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) and argued that it could be modified for measuring the student-teacher working alliance. The current study builds in this direction by working to develop a measure of student-teacher relationship variables that includes student-teacher working alliance variables--the Student-Teacher Relationship Inventory (STRI). In creating this measurement scale three different types of working alliance measurement scales were consulted: (a) the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989), as suggested by Koch (2004); (b) the Supervisory Working Alliance Inventory
Working Alliance and Interpersonal Influence Measurement Scales

Several instruments have been designed over the years to measure the working alliance in counseling settings (Martin, Garske, & Davis, 2000). Although these scales were often based on different working alliance theories, they have been found to be highly correlated. Martin and colleagues (2000) reviewed 79 empirical studies using different working alliance measures and compared the reliability of the six most common measures. These scales included (a) the “Pennsylvania scales” based on Luborsky’s (1994) working alliance theory; (b) the “Vanderbilt scales” based primarily on Strupp and Binders’ (1984) theory, with some alterations based on other theories; (c) the “Working Alliance Inventory” which is based on Bordin’s (1979) theory; (d) the “Toronto scales” which combined the classic psychodynamic theory of alliance with Bordin’s (1979) theory; (e) the “California scales” which expanded the Toronto scales based on Gaston’s (1990) theory of the aspects of the working alliance; and finally (f) the “Therapeutic Bond Scales” which are considered pantheoretical. The overall reliability (combination of cronbach’s alpha, interrater, and test-retest reliability indexes) ranged from .71 to .86, suggesting that all the scales have acceptable reliability. The Working Alliance

(SWAI; Efstation, Patton, & Kardash, 1990); and (c) the Advisory Working Alliance Inventory (AWAI; Schlosser & Gelso, 2001). In addition, because the current study will also examine the applicability of Strong’s theory of interpersonal influence (1968), the long and short version of the Counselor Rating Form (CRF; Barak, & LaCrosse, 1975) was also consulted. By looking at a range of instrument devices, the current study attempted to be thorough in measuring potential dimensions of student-teacher relationships.
Inventory (WAI; Horvath & Greenberg, 1989) had the highest overall reliability (compared to measurement scales that had data for all types of reliability indexes) and it was used most often in the sample of studies (n = 22) reported on by Martin, Garske and Davis (2000). The authors concluded that although all the scales had acceptable utility, the WAI is recommended for most research projects. The authors based this recommendation on the overall psychometric properties, and three attractive aspects of the WAI that made it a flexible device for projects. First, the scale provides a global alliance score as well as subscales that measure Bordin’s concepts (bond, tasks, goals); therefore the researcher can choose to use all or some of the scales, depending on his/her research question. Second, the device was created to measure the underlying constructs of the working alliance regardless of the type of therapy or theoretical orientation of the counselor. Finally, there are several reliable versions of the WAI to choose from including patient, therapist and observer versions of the scale, as well as a shortened version. Due to the above recommendations, as well as the fact that the WAI is based on Bordin’s theory of the working alliance (1979) which is one of the main theories the current study is using as a potential framework for understanding student-teacher relationships, the WAI may be an appropriate working alliance scale on which to base the Student-Teacher Relationship Inventory.

**Working Alliance Inventory (WAI)**

The Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) was designed to measure “the generic […] variables affecting the degree of success in counseling” (p. 223). Horvath and Greenberg defined these factors as those variables common between different theoretical interventions. The author’s chose Bordin’s theory
as the basis of their new measure due to its focus on mutuality between client and
counselor, its conceptualization as a vehicle for change (i.e., not a specific intervention,
but a context in which interventions can occur) and the pantheoretical nature of the
theory. The pantheoretical nature of the theory was especially important because
Horvath and Greenberg wanted the measure to be useful regardless of theoretical
orientation adhered to by the counselor. Additionally, Bordin offered a parsimonious
theory which included three distinct factors (bond, agreement of tasks, and agreement of
goals) which could be operationalized and combined into a global alliance score.

The initial item pool included 91 items that were created based on content
analysis of Bordin’s (1979) definition of each of his factors (bond, tasks, goals). After
each item was developed it was evaluated by seven experts in the field of working
alliance theory. The experts evaluated whether the item was relevant to the working
alliance and the dimension to which it related (bond, task, goal). After items were
eliminated or adjusted based on the experts’ recommendations the remaining items were
given to 21 randomly selected psychologists to reevaluate the items based on the same
criteria that the experts used. After items were again eliminated based on poor inter-rater
agreement the remaining 55 items were sorted into categories based on the dimension
they represented. The authors then created “meaning clusters” (p. 225) of items based on
similarity of content. High-rated items based on the item’s relevance to the working
alliance and its representation of one of the three dimensions in Bordin’s theory were
chosen from each cluster until the desired number of 12 items per dimension (36 items
total) were chosen. These items consisted of word stems which participants would rate
on a 7-point scale regarding how much they agreed with the statement.
Initial psychometric testing occurred with 29 counselor-client dyads engaged in therapy for a multitude of problems (Horvath, 1981 as cited in Horvath & Greenberg, 1989). The counselors were identified as “experienced professionals” (p. 226) and practiced a variety of theoretical orientations. The clients’ ages ranged from 19 to 65 and were part of the counselor’s regular caseload. No other demographic information was available for the counselors or clients. The WAI was given after the third session and therapeutic outcome was defined by client satisfaction, client perceived changed and client perceived adjustment after the tenth therapy session. The WAI composite score was found to be significantly (p < .05) and positively correlated with client satisfaction (r = .50), perceived change (r = .33) and the composite score of therapeutic outcome (r = .42). The Task subscale was also related to client satisfaction (r = .65), perceived change (r = .45) and outcome composite (r = .57) and the goal subscale was related to client satisfaction (r = .40). No WAI scale was significantly related to client perceived adjustment and the bond subscale was not significantly related to any therapeutic outcome as measured by this study. The authors suggested that the lack of correlation between therapeutic alliance and client perceived adjustment was due to the fact that the measurements were taken after only three sessions. An outcome as broad as adjustment may not be impacted significantly after only a few therapy sessions. A similar explanation was given for why the bond subscale did not perform as expected. The WAI was measured after the third session, which may be enough time to establish agreement on tasks and goals between client and counselor; however it may not be adequate for establishing a bond, or at least not a strong enough bond to be related to therapeutic outcome.
The reliability estimates for the WAI ranged from .85 to .88, indicating acceptable reliability (Horvath, 1981 as cited in Horvath & Greenberg, 1989). Intercorrelations between the subscales were high, ranging from .79 to .88. In order to address this multicollinearity, step-wise regression analyses were performed on the dependent variables of therapeutic composite and client satisfaction. The authors entered the WAI task subscale first, since it had performed at the highest level during the initial analysis. Other subscales were added to the equation only if they predicted a significant amount of additional variance. The goal subscale predicted an additional 15% of variance in the therapeutic composite score above and beyond what the task subscale predicted; and the bond subscale predicted an additional 10% in variance in the client satisfaction scale above and beyond the task subscale. The authors concluded that although the subscales may be highly related, they may also be functionally distinct, therefore the subscales should remain as part of the inventory.

Concurrent validity was established by comparing the WAI subscales with two other measures designed to assess client-counselor relationship dynamics: the Counselor Rating Form (CRF; Barak & LaCrosse, 1975) and the Empathy scale of the Relationship Inventory (RI; Barrett-Lennard, 1962). Correlations between the CRF and the WAI subscales ranged from .05 to .39, suggesting that although some overlap exists between the two scales, the WAI measures elements distinct from those of the CRF. It should be noted that the CRF is based on Strong’s interpersonal influence theory. The current study is suggesting that Bordin (1979) and Strong’s (1968) theories may complement each other in understanding the student-teacher relationships. Horvath and Greenberg’s (1989) study suggested that the WAI (based on Bordin’s theory) and the CRF (based on Strong’s
theory) capture distinct elements of the relationship and therefore both scales should be
used to assess a more thorough understanding. Correlations between the Empathy scale
of the Relationship Inventory and the WAI were higher (.63-.83); however this was
predicted based on the similarity between the concept of the working alliance and
empathy. The bond subscale and empathy are particularly similar and their correlation
was .83.

In summary, there is evidence that the WAI has acceptable psychometric
properties (Horvath & Greenberg, 1989). Concurrent and predictive validity was
established by comparing it to the well-known Counselor Rating Form (Barak &
LaCrosse, 1975) and the Empathy scale of the Relationship Inventory (Barrett-Lennard,
1962). Correlations between the measures were as predicted—higher among more
conceptually similar concepts such as Empathy and Bond, while it was lower among
more distinct concepts. Reliability indexes were acceptable for all the WAI subscales, as
well as the composite score. Although a large degree of overlap exists between the
subscales of the WAI, evidence suggested that the subscales may measure distinct
concepts, and account for distinct variance in certain situations. These observations
suggest that the WAI would make an appropriate measure upon which to base the
Student-Teacher Relationship Inventory.

Tracey and Kokotovic (1989) extended the work by Horvath and Greenberg
(1989) by factor analyzing the Working Alliance Inventory. The authors used
confirmatory factor analysis and tested three different models for fitness: (a) a one-factor
model that theorized that there was only a general factor of working alliance (b) a three-
factor model which followed Bordin’s hypothesized three components (bond, task, and
goals) and (c) a bilevel hierarchical factor model, which suggested that there was a higher level factor that was a general factor of alliance, and three lower level factors that represented Bordin’s three components. The third model was a combination of the first two models (i.e., a general alliance factor, along with the three factors suggested by Bordin). Confirmatory factor analysis was chosen over exploratory factor analysis because of its ability to test hierarchical models.

The WAI was given to 124 pairs of clients and counselors after the first session. Of the original 124 pairs, there were 123 usable questionnaires from 15 therapists, and 84 usable questionnaires from clients. Of the 84 clients, 53 were women and the average age of clients was 22 years old (range was 17 to 34). No data regarding ethnicity or socioeconomic backgrounds of the clients were obtained. Of the 15 therapists, eight were male and seven were female; 13 were Ph.D.-level psychologists and 2 were interns. The majority of therapists described their orientation as psychodynamic (n = 10), while the remaining described themselves as humanistic (n = 4) and cognitive-behavioral (n = 1). No other demographic information was available for the therapists. The therapist and client questionnaires were analyzed separately in order to test whether there was a difference between therapist and client perceptions of the working alliance. Based on several different indexes of fit (chi-square goodness of fit, the chi-square/degrees of freedom ratio, the BBI, the root mean-square residual, the GFI, TLI, the modification matrix and the normed residual matrix) none of the models was a “good approximation” (p. 208) for the data; however the bilevel hierarchical model proved to be an adequate fit. The authors used these data to create a short version of the WAI that included the four best performing items from each subscale (12 items all together). Tracey and Kokotovic
used confirmatory factor analysis on the WAI-S (Working Alliance Inventory-Short version) and found that the bilevel model was again the best representation of the data. The authors concluded that the WAI assesses three first-order (lower level) factors, which each account for a unique aspect of the alliance, along with a more general second-order (higher level) factor that accounts for alliance in general.

Results of the Tracey and Kokotovic (1989) study suggest that the WAI is measuring the working alliance as Bordin theorized it (i.e., containing three separate elements), in addition to measuring a general factor, which is termed alliance. However, it should be noted that this model was only an adequate fit for the data, suggesting that the working alliance (or at least the WAI) may not be exactly as Bordin theorized. The current study believes Bordin’s theory is a good framework for student-teacher working alliances; however it leaves open the possibility that another theory, or a combination of theories, may fit the relationship better. The adequate fit of the bilevel model for the WAI gives support to the possibility that the WAI may not be capturing all of the components of the working alliance. Other authors have used Bordin’s theories as guidelines for creating additional measurement scales; however they have deviated from using the WAI due to the questions surrounding its factor structure. The questionable factor structure of the WAI is not a concern for the current study because it is not just using items from the WAI to assess the three components of Bordin’s theory. Other items from additional measure and items created based on a review of the literature are included in order to assess Bordin’s theory of the working alliance.

**Supervisory Working Alliance Inventory (SWAI)**
Development of the Supervisory Working Alliance Inventory (SWAI; Efstation, Patton, & Kardash, 1990) was already explored in the section entitled Application of the Working Alliance with Supervision Dyads. As a review, the authors used Bordin’s theory of the working alliance in conjunction with other theories that focused on social influence. The authors developed a scale based on their definition of the supervisory working alliance as a “set of actions interactively used by supervisors and trainees to facilitate the learning of the trainee” (p. 323). Based on this definition, all of their items on the scale reflected tasks that were supposed to represent what the supervisors and supervisees actually do in supervision. As stated previously, the authors used a combination of expert opinion and the supervision literature to generate the items for the scale. Thirty items were written for each version of the SWAI (i.e., supervisor and supervisee) in a 7-point likert scale. Packets containing both versions of the SWAI, as well as the Supervisory Styles Inventory (SSI; Friedlander & Ward, 1984) and the Self-Efficacy Inventory (SEI; Friedlander & Snyder, 1983) were mailed out to training directors listed in the directory of internship programs. Instructions asked that one supervisor and one supervisee from each site complete their version of the scales and return them to the authors. Data were complete for 185 supervisors and 178 supervisees.

Efstation, Patton and Kardashian (1990) used exploratory factor analysis to examine both versions of the SWAI. Four criterion were used to determine the factor solution of each measure: (a) eigenvalues (a factor needed to be greater than one to be considered); (b) Cattell’s scree test; (c) stability of the factors across extraction methods; and, (d) interpretability of factor. The final supervisor version of the SWAI contained 23 items, which represented three factors (client focus, rapport and identification) and accounted
for 35% of the variance. Internal reliability for each factor was found to be acceptable: .71 for client focus, .73 for rapport, and .77 for identification.

The final supervisee version accounted for 38% of the variance and had two factors (client focus and rapport) which were represented by 19 items. Again, internal reliable for both factors were within the acceptable range: .90 for rapport and .77 for client focus. The factor named client focus represented tasks that promoted understanding of the client by the supervisee such as “My supervisor encourages me to take time to understand what the client is saying and doing” (p. 327). The rapport factor referred to tasks that are designed to support and encourage the supervisee, such as “I feel comfortable working with my supervisor” (p. 327). The third factor in the supervisor’s version of the SWAI (identification) represented items reflecting how the supervisee may be modeling the supervisor’s style and approach to counseling, such as “My trainee identifies with me in the way he/she thinks and talks about his/her clients” (p. 326).

Eftation, Patton and Kardash (1990) found some convergent and divergent evidence for the use of the SWAI. The authors compared the SWAI with the Supervisory Styles Inventory (SSI; Friedlander & Ward, 1984); a scale designed to measure the extent that a supervisor’s behaviors are representative of three different styles of supervision: attractive, interpersonally sensitive, and task-orientated. The SSI has two versions, one for the supervisors and one for the supervisees. Results of intercorrelations between the SWAI factors and the subscales of the SSI were as expected, the rapport factor from each version of the SWAI was highly correlated with the attractive and interpersonally sensitive subscales of the SSI (r = .66-.78, p ≤ .001 for the supervisee version; r = .32-.49, p ≤ .001 for the supervisor version); however it was not correlated with the task-
orientated version (r = .12 for the supervisee version; r = -.06 for the supervisor version). The task-orientated subscale of the SSI was significantly correlated with client focus factors of the SWAI as rated by the supervisee (r = .52, p ≤ .001) and the supervisor (r = .50, p ≤ .001). The authors concluded that although the SWAI is measuring similar constructs as the SSI, the correlations remained moderate and in the expected directions (i.e., similar concepts were more positively correlated than concepts that were dissimilar); therefore there is preliminary evidence for both the convergent and divergent validity of the SWAI.

The Supervisory Working Alliance Inventory (SWAI; Efstation, Patton, & Kardash, 1990) was constructed differently than the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989). The WAI was created deductively, meaning that the authors used the definition of Bordin’s (1979) three components (i.e., bond, goals, tasks) to guide them when writing the items. Each item on the WAI was written specifically to represent one of the three components. In contrast, the SWAI was created inductively, meaning that items were written based on answers that a sample population provided to a particular question. In the case of the SWAI, authors asked a group of experienced supervisors (N = 10) to list activities that represented what a supervisor and a supervisee do in supervision. Although the authors of the SWAI consulted working alliance theories, the items on the SWAI reflect the task list that the supervisors generated, not components of a particular working alliance theory. There are pros and cons to using each scale as a guide for developing a measure of student-teacher relationships. The SWAI items appear to reflect the tasks of supervisors and supervisees; however the items may neglect the feelings or bond that is associated with a supervision relationship. Some supervisory
alliance studies have suggested that the bond element is the most powerful of all three of Bordin’s theorized components (Bahrick, 1989; Ladany, Ellis, Friedlander, 1999). Efstation, Patton and Kardash (1990) do not address the issue of this potential missing component. On the other hand, the SWAI has more structurally sound properties than the WAI, and it has been adapted for use in advisory relationships (Schlosser & Gelso, 2001). In terms of the current study, developing the Student-Teacher Relationship Inventory based on items from both the WAI and SWAI maybe most beneficial. This consideration will be further explored in chapter 3.

**Advisory Working Alliance Inventory (AWAI)**

Schlosser and Gelso (2001) set out to measure the working alliance as it relates to advisor and advisee relationships in graduate psychology programs. They argued that the concept of the working alliance is applicable to all change-inducing relationships and conceptualized it in terms of advisor and advisee dyads as the “portion of the relationship that reflects the connection between advisor and advisee that is made during work toward common goals” (p. 158). The main purpose of their article was to develop a measure of working alliance, as assessed from the advisee’s perspective. The authors began by using 20 items from the Supervisory Working Alliance Inventory (SWAI; Efstation, Patton, & Kardash, 1990) as a basis and then supplemented them with four items from another scale (the Research Training Environment Scale; Gelso, Mallinckrodt, & Judge, 1996) and developed nine other items based on the definition of an advisory working alliance. A research team consisting of one full professor and five graduate students examined the items and offered feedback that lead to omitting some items, rewording others and the development of 11 new items. Interviews with faculty lead to the creation of more items,
and finally, content analysis was completed by the authors, which left the total item pool at 48. Each item was placed into one of three categories based on the factors associated with the SWAI: rapport, identification, and task focus.

The AWAI was sent out to counseling psychology doctoral students (N=281), along with the Counselor Rating Form-Short version (CRF-S; Corrigan & Schmidt, 1983). The CRS-S was developed based on Strong’s interpersonal influence theory (1968) and is a measure of perceived expertness, attractiveness, and trustworthiness of the counselor (which was adapted for use with advisor-advisee relationships by replacing the word counselor with advisor). The CRF-S was thought to be the best competing scale because of the similarities between the components of the working alliance and expertness, attractiveness and trustworthiness. In addition to the AWAI and the CRF-S, scales designed to measure research self-efficacy and research attitudes were sent out because of the amount of involvement that the advisor was thought to have in the advisee’s research. Research self-efficacy and research attitudes were used as the dependent variables in the study.

Exploratory factor analysis was conducted and a three factor solution was indicated based on eigenvalues, Cattell’s scree plot, proportion of variance accounted for by the entire factor solution, the proportion of variance accounted for by individual factors, and interpretability. The factor solution accounted for 57% of the total variance and retained 30 items from the original pool of 48. The three factors were named rapport, which represented relational concerns between the advisor and advisee; apprenticeship, which contained items reflective of advisory tasks and the degree that the relationship led to professional development of the advisee; and identification-individuation, which
reflected the degree that the advisee wants or does not want to be like the advisor. Not surprisingly, these three factors are similar to the three factors (rapport, client focus, and identification) in the supervisor’s version of the Supervisory Working Alliance Inventory (SWAI; Efstation, Patton, & Kardash, 1990). After factor analysis, the authors discovered that the majority of the 30 items retained for the AWAI were items derived from the SWAI; therefore the similarity of the factor structure is to be expected.

Internal consistency was found to be acceptable among all three factors, as well as the total AWAI score (.77-.95). High intercorrelations were found between the total scale and the subscales (r = .86-.90, p ≤ .001), as well as between the subscales (r = .62-.72, p ≤ .001), which has been an issue with several working alliance measures (see Horvath & Greenberg, 1989). The AWAI total score and subscales were also correlated highly with the CRF-S total score (r = .65-.80, p ≤ .001) and all the subscales. The authors suggested that the positive correlations between the CRF-S and AWAI provided evidence of AWAI’s convergent validity since the CRF measures expertness, trustworthiness, and attractiveness, concepts that are similar to Schlosser and Gelso’s definition of the advisory working alliance. The AWAI’s total score correlated positively with research self-efficacy (r = .32, p < .001) and research attitudes (r = .28, p < .001), which suggests that advisors may be able to influence their advisees’ feelings and thoughts about research. A few years later, Schlosser and Gelso (2005) extended their scale to include an advisor version which contained three similar factors: (a) rapport, (b) apprenticeship and (c) task focus.

The working alliances inventories based on Bordin’s theory (WAI; Horvath & Greenberg, 1989) and based on a combination of Bordin’s theory and social influence
theory (SWAI; Efstation, Patton, & Kardash, 1990; AWAI; Schlosser & Gelso, 2001) are a good foundation for the current study’s purpose of creating a scale for measuring student-teacher relationships. The Working Alliance Inventory was based conceptually on Bordin’s theory and the items were generated by and tested on a group of working alliance experts. Using items from this inventory will allow the current study to directly test whether Bordin’s three component theory is a good fit for student-teacher relationships. However, items on the WAI were designed for counseling dyads; therefore some items may not translate well to the student-teacher relationship. The current study must take care to adapt wording in items in order to capture the unique relationship dynamic involved in student-teacher relationships, as opposed to just changing the key words in the items (i.e., change counselor to teacher and client to student). When Bahrick (1989) attempted to create a supervision version of the WAI, she only made cosmetic word changes without questioning whether the content of the items matched dynamics in a supervision relationship. Her lack of attention to this detail may be one reason that her study did not have many significant results. The current study prefers to use the WAI as a guide, while being thorough about making more wording changes to some items and leaving other items out altogether due to the lack of fit for the relationship of interest. The working alliance inventories that combined Bordin’s theory with social influence theory have found more success in correlating their inventories with outcome variables of interest. This success may be due in part to the fact that each scale used empirical tests to choose the final set of items. Although the original items for the SWAI and AWAI were chosen based on task analysis, the items retained for each scale were only those that performed well in the factor analysis; therefore they were
empirically-derived, as opposed to theoretically-derived items in the WAI. In addition to using some items that may be adapted appropriately from the SWAI and AWAI, the current study will use a method similar to Efstation, Patton and Kardash (1990) and Schlosser and Gelso (2001) to derive empirically the items for the Student-Teacher Relationship Inventory (STRI). By using the items from the WAI the current study will attempt to capture Bordin’s theory; however the method of creating the final scale will sample from the factor analysis method used in the creation of the SWAI and AWAI. In addition, because the current study is hypothesizing that Strong’s theory of interpersonal influence (1968) may be a complementary or competing theory for explaining student-teacher relationships, the STRI will also sample from a scale derived from Strong’s theory, the Counselor Rating Form (Barak & LaCrosse, 1975).

**Counselor Rating Form (CRF)**

The Counselor Rating Form (CRF; Barak & LaCrosse, 1975) has been used several times to test the convergent and divergent validity of working alliance inventories (see Horvath & Greenberg, 1989; Scholosser & Gelso, 2001) because the CRF components are similar to components in working alliance inventories. The CRF was created to test the three components of Strong’s interpersonal influence theory (1968): expertness, trustworthiness, and attractiveness. As previously discussed, Strong identified his theory as a theory of the generic components in counseling. Strong hypothesized that these generic components were a key factor in creating change, regardless of the type of interventions used or theoretical orientation of the counselor.
Bordin’s working alliance theory is based on the same idea: generic components that create change in clients regardless of interventions or theoretical orientation of the counselor. Because of these similarities, Strong’s theory of interpersonal influence is sometimes viewed as a working alliance theory by scholars (Horvath & Greenberg, 1989).

When creating the CRF, Barak and LaCrosse (1975) generated a list of 83 adjectives based on previous research and asked four experts on Strong’s interpersonal influence theory to classify each adjective according to one of the three dimensions in the theory (i.e., expertness, trustworthiness, attractiveness). The authors included the adjectives that had at least 75% agreement among the experts as to which dimension the items represented, which resulted in 36 adjectives (12 adjectives per dimension) being chosen for the final scale. Each item was paired with an antonym to form a bipolar adjective pair and a 7-point bipolar scale was created for each item pair.

Two hundred and two volunteer students from an introductory psychology course were shown the film, *Three Approaches to Psychotherapy* (Shostrom, 1966; as cited in Barak & LaCrosse, 1975), in which three psychologists; Carl Rogers, Frederick Perls, and Albert Ellis; conduct a counseling interview with one client, “Gloria.” The students were asked to rate each therapist using the newly constructed CRF based on the session in the film. Participants were about evenly distributed between male and female and no other demographic information was given. Barak and LaCrosse analyzed the data for each counselor separately. Exploratory factor analysis for two of the three segments suggested three factors that were similar to the hypothesized three factors from Strong’s theory. The data from the third segment revealed two strong factors similar to expertness and attractiveness; however the items representing trustworthiness did not form its own
factor (the items loaded higher on the expertness and attractiveness factors). The authors concluded that although the factor structure may differ depending on therapist, there was substantial evidence that the three dimensions of Strong’s interpersonal influence theory exist and have utility in explaining counseling relationships. Subsequent studies have found that all three subscales on the CRF have related significantly to client comfort, satisfaction with counseling, client’s overall impression with the counseling climate, and better psychiatric functioning at treatment follow-up (Goates-Jones & Hill, 2008; Heppner & Heesacker, 1983; Kasarabada, Hser, Boles, & Huang, 2002).

Using adaptable items from the Counselor Rating Form (Barak & LaCrosse, 1975) in conjunction with items from the Working Alliance Inventory, Supervisory Working Alliance Inventory and Advisory Working Alliance Inventory, will allow the current study to capture different elements of student-teacher relationships, as well as explore how Bordin’s theory of the working alliance (1979) and Strong’s theory of interpersonal influence (1968) may be related to student-teacher relationships.

**Summary and Purpose of the Current Study**

The purpose of the current study is twofold: to create a scale to measure student-teacher relationships and evaluate the applicability of the working alliance theory and the interpersonal influence theory for understanding these relationships. As noted, several theoretical models have been suggested in the educational literature for explaining effective teaching (i.e., Seven principles of good practice in undergraduate education, Chickering & Gamson, 1987; Two dimensional model of effective college teaching, Lowman, 1984; Skillful teacher, Brookfield, 2006); however no model explicitly focuses on the relationship aspect of classroom dynamics and to date the empirical research
supporting these models has been limited. In addition, empirical research examining student-teacher relationships has often been atheoretical, limiting the generalizability between studies and hampering the development of a consistent line of research. Several authors (Bordin, 1979; Buskist & Saville, 2004; Koch, 2002; Meyers, 2008; Robertson, 2000; Wool, 1989) have suggested that the working alliance theory from counseling psychology may be appropriate for explaining student-teacher relationships. Working alliance theory has already been adapted successfully to other relationships (Bahrick, 1989; Bourgeois, Sabourin, & Wright, 1990; Brown & O’Leary, 2000; Efstation, Patton & Kardash, 1990; Ladany, Ellis, & Friedlander, 1999; Schlosser & Gelso, 2001; Schlosser & Gelso, 2005; Schlosser & Kahn, 2007; Sexton, 1993) so the current study tests whether Bordin’s theory of the working alliance (1979), combined with Strong’s interpersonal influence theory (1968), may help conceptualize student-teacher relationships.

The second part of this study is to test empirically the use of working alliance and interpersonal influence theories in explaining student-teacher relationships by creating an appropriate scale to measure the components involved in these two theories and testing how well they are associated with several student outcomes. To date, there is no scale designed specifically to measure student-teacher relationships. Items from previous working alliance inventories (i.e., Working Alliance Inventory, Supervisory Working Alliance Inventory, and Advisory Working Alliance Inventory), as well as items from the Counselor Rating Form (a measure based on interpersonal influence theory) will be adapted to create an inventory that attempts to capture the unique relationship dynamics between students and teachers, while still representing the three dimensions of Bordin’s
theory of the working alliance (1979; bond, goals and tasks) and the three dimensions of Strong’s interpersonal influence theory (1968; expertness, attractiveness, and trustworthiness). Therefore, the resulting measure may have up to six theoretical dimensions. Items and scales will be retained based on the resulting analysis, which will be discussed further in chapter three. If an appropriate measurement device for student-teacher relationships is created, then the final goal of the current study will be to examine how the resulting relationship variables are related to several student learning outcomes.

**Research Questions and Hypotheses**

The first main research question of the current study is the following: Is there a dimensional nature to the student-teacher relationship and if so, what degree are these dimensions representative of the two existing theories considered in this research study? The current study proposes that two different theories may explain student-teacher relationships: Bordin’s theory of working alliance (1979) and Strong’s theory of interpersonal influence (1968). It is unknown whether one of these theories will better account for student-teacher relationships than the other; or if some combination of the two theories is the best fit for student-teacher relationships. Previous research (Horvath & Greenberg, 1989) examined intercorrelations between the CRF (representing Strong’s theory) and the WAI (representing Bordin’s theory) subscales from a sample of 29 counseling dyads. Correlations ranged from .05-.39, all nine correlations were positive. The largest correlations were found between the task subscale and the expertness subscale (r = .39); the bond subscale and the attractiveness subscale (r = .38); and the task subscale and the attractiveness subscale (r = .33). The low correlations among the dimensions of the CRF and WAI suggest that each of the six dimensions may be
measuring unique relationship factors; however it is likely that some overlap between the dimensions will occur so that they may be combined into the same statistical factor. For example, the bond subscale of the WAI and the attractiveness subscale of the CRF may have similar underlying constructs (i.e., the affectionate relationship between the two individuals); therefore the current study may find that the items representing these dimensions may form one factor in the scale. There is not enough evidence to predict whether different dimensions may combine, and if so how they will combine; therefore the hypotheses are exploratory. Three hypotheses are derived to examine this first exploratory question:

Hypothesis 1: The student-teacher relationship will resemble Bordin’s theory of the working alliance by having three factors that correspond to his theorized dimensions: bond, agreement of goals and agreement of tasks.

Hypothesis 2: The student-teacher relationship will resemble Strong’s theory of interpersonal influence by having three factors that correspond to his theorized dimensions: expertness, trustworthiness, and attractiveness.

Hypothesis 3: The student-teacher relationship will contain dimensional elements from both Bordin and Strong’s theory, which may contain up to six factors which may correspond to one of the theorized factors (bond, agreement of goals, agreement of tasks, expertness, trustworthiness, and attractiveness) or may be a blend of the elements.

Developing a theory of student-teacher relationship is important because the resulting theory can be used to establish how the relationship is related to student outcomes. Because of the need to relate the relationship to student outcomes, the second main research question is the following: How does the student-teacher relationship relate to student outcomes? Four student learning outcomes were chosen for this study based on previous research on student outcomes and student-teacher relationships (Buskist & Saville, 2004; Heckert et al., 2006; Wilson, 2006). The first outcome variable of interest
is self-efficacy. Self-efficacy is defined as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p. 3). In terms of the current study, I defined self-efficacy as the student’s belief that he/she is able to complete the requirements of the course in order to obtain a successful grade (i.e., mastery of the course). There have been inconsistent findings between self-efficacy and supervisory working alliance in previous studies (Efstation, Patton & Kardashian, 1990; Ladany, Ellis, & Friedlander, 1999). However one desired student outcome for a course is a belief of mastery; therefore self-efficacy is an important variable to test.

Hypothesis 4: Student-teacher relationship scores will correlate positively with students’ self-efficacy scores.

The second outcome variable of interest in the current study is student satisfaction with the course and teacher. Working alliance scores have correlated with satisfaction with counseling (Horvath & Greenberg, 1989) and classroom rapport has been related to satisfaction with course and teacher (Buskist & Saville, 2004; Heckert, et al., 2006). Therefore the current study will test how student-teacher relationship scores relate to student satisfaction with the course and the teacher.

Hypothesis 5: Student-teacher relationship scores will correlate positively with students’ satisfaction with the course and teacher.

Classroom rapport has been related to increases in student participation in learning, such as participating in class, completing assignments, asking for help from the professor when needed, and planning to take another course in the department (Benson, Cohen, & Buskist, 2005). Therefore it is likely that these positive student behaviors would also be related to positive relationship scores, so the current study will also test how the student-teacher relationship relates to certain student behaviors.
Hypothesis 6: Student-teacher relationship scores will correlate positively with students’ active participation in learning.

The final outcome variable of interest in the current study is the students’ overall performance in the class. Although some authors (Gorham, 1988; Wilson & Taylor, 2001) argue that course performance, such as final grades, are not a good measure of learning because of various interfering variables (e.g., test taking ability and anxiety), course performance is the most tangible outcome of a course. In addition, course performance impact whether students will achieve their desired degree because degree conferment is often based on passing a certain number of credit hours, and some college majors even specify what grade must be achieved in specific classes (e.g., a C or better in all major courses). Therefore course performance is an important outcome to students, which is why the current study will test whether student-teacher relationship scores relates to course performance. Course performance will be determined based on the amount of points earned in the course by the end of it.

Hypothesis 7: Student-teacher relationship scores will correlate positively with students’ course performance.

Chapter three will further explain how the above hypotheses and research questions will be operationalized and tested. The first major section will discuss explicitly how the new measurement scale, entitled the Student-Teacher Relationship Inventory, will be developed and tested. Chapter three will also detail how the participants will be solicited and what procedures will be followed in order to test the hypotheses. Finally, chapter three will discuss which measurement scales will be used to test the four outcome variables included in the current study.
CHAPTER III

METHODODOLOGY

The benefits of a positive student-teacher relationship have been established empirically (e.g., Benson, Cohen, & Buskist, 2005; Gorham, 1988; Heckert, Latier, Rignwald, & Silvey, 2006; Wilson, 2006). However research in this field has suffered from a lack of an overarching model within which to understand the findings and guide future empirical undertakings (Buskist, Sikorski, Buckley, & Saville, 2002; Gorham, 1988; Strong, 1991). Establishing an overarching model in order to explain the roll of student-teacher relationships in student outcomes could provide a framework and consistency which could extend the current body of literature further (Meyers, 2008). The current study drew heavily from the theoretical and empirical research available in the educational and clinical/counseling literatures in order to propose that working alliance theory (Bordin, 1979), supplemented with interpersonal influence theory (Strong, 1968), could be an appropriate model within which to conceptualize student-teacher relationships. This chapter discusses the procedures and analyses that will be used to test the hypotheses that were established at the end of chapter two.

Part I – Measurement Development

The first step needed to test whether Bordin (1979) and Strong’s (1968) theories provide an appropriate model for student-teacher relationships is to develop an effective measurement scale with which to test the hypotheses. Therefore, the Student-Teacher
Relationship Inventory (STRI; see Appendix A for initial pool of 73 items) was designed to measure the theorized dimensions of the two theories consistent with recent literature (Koch, 2002; Meyers, 2008). Items for the STRI were created to represent the three dimensions (bond, goals, and tasks) from Bordin’s theory of the working alliance (1979) and the three dimensions (expertness, trustworthiness, and attractiveness) from Strong’s interpersonal influence theory (1968). Items were initially generated based on two methods: 1) items were adapted from previous scales, and 2) original items were written based on theoretical definitions of constructs (e.g., deductive method; Hinkin, 1995).

Items from the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989), the Supervisory Working Alliance Inventory (SWAI; Efstation, Patton, & Kardash, 1990), the Advisory Working Alliance Inventory (AWAI; Schlosser & Gelso, 2001), and the Counselor Rating Form (CRF; Barak & LaCrosse, 1975) were selected by the principle researcher based on their potential applicability to student-teacher relationships. Some items were able to be used with little revision, such as one item from the AWAI which stated “My advisor offers me encouragement for my accomplishments” (Schlosser & Gelso, 2001, p. 162); the only change for this item was changing the word “advisor” to “professor.” Other items required more modification, which was often based on item structure. For example, one item from the WAI which was worded “I wish ______ and I could clarify the purpose of our sessions” (Horvath & Greenberg, 1989, p. 226), was changed to “My professor clearly identifies the purpose of this course.” The modifications for this item changed the format from an item stem containing a blank space to a complete sentence structure and also changed “sessions” to “this course.” This change was performed in order to maintain consistency among items in the STRI. Items
from the Counselor Rating Form (Barak & LaCrosse, 1975) also were revised significantly since the original measurement scale consisted of 7-point Likert scales which were anchored by bipolar adjective pairs. For example, the STRI item “My professor presents the material in a clear way” was derived from the CRF item polarities of “Clear-vague,” (p. 472) in which “clear” anchored one end of the 7-point scale and “vague” anchored the other. Changing these items to full sentences reflecting the positive quality allowed all the STRI items to maintain consistent structure. In all, 13 items were adapted from the WAI, three from the SWAI, eight from the AWAI, and 26 from the CRF. An additional 23 items were created by the researcher based on theoretical conceptualizations of student-teacher working alliances (Koch, 2004; Meyers, 2008) and the theoretical definition of each dimension (Bordin, 1979; Strong, 1968). These activities resulted in 73 original items (see Appendix A). All items were positively worded, since negatively worded items may introduce a negative response bias (Hinkin, 1995).

At this stage of scale development feedback was solicited in order to provide breadth of coverage for each dimension and to maximize clarity. All items were reviewed by one male associate professor in counseling psychology with 26 years of teaching experience and five psychology graduate students (four females, one male). Three graduate students were from a counseling psychology program and two were from an industrial/organizational psychology program. The average age of the graduate students was 33 (ranging from 25-50 years) and the average years of teaching experience was four (ranging from 3-6 years). Graduate students were chosen to review the items because they have a dual role as students and teachers which can give them a unique
perspective on the student-teacher relationship since they hold both roles simultaneously. Participants were provided with definitions of the dimensions of interest (i.e., bond, task, goals, expertness, attractiveness, trustworthiness) and items generated for each dimension (see Appendix B for instructions and dimension definitions). Based on recommendations, 30 items were reworded to simplify structure and/or clarify ideas, 4 items were added and 3 items were deleted, resulting in 74 total items (see Appendix C).

All 74 items that were generated based on the graduate student feedback group were used for the final Student-Teacher Relationship Inventory (STRI). Participants will rate the items on a 7-point Likert scale indicating their level of agreement to the item (1 = strongly disagree and 7 = strongly agree). The 7-point scale was chosen because reliability is stronger when scales have at least five points (Hinkin, 1995) and three of the four working alliance scales (e.g., WAI, SWAI, CRF) from which items were derived used 7-point scales.

Part II – Hypothesis Testing

This section provides a detailed description of the participants, procedures and instruments that were used to test the seven hypotheses in the current study.

Participants

The data for the current study was collected using an online survey method called SurveyMonkey. SurveyMonkey is a free, online program that allows participants to take registered surveys. The results of the surveys are then compiled for the researcher. Participants were recruited from undergraduate Introduction to Psychology courses at one Midwestern university. This population is an appropriate sample for this study because one of the primary purposes of the current study is to examine student-teacher
relationships in undergraduate classrooms. Participation was solicited through instructor announcements in courses and posted advertisements during the middle third of the class semester. This point in time was chosen to give ample time for student-teacher relationships to develop, while ensuring the largest variety of student answers. Although counseling working alliances have been shown to be more predictive of outcome during the last part of therapy (Horvath & Symonds, 1991), it is unclear whether student-teacher relationships will follow this pattern. Often, students who are doing poorly in class (which may or may not be related to their relationship with their teacher) will drop the course before the end of the semester. Therefore the current study chose the middle third time frame in order to attempt to assess a wide variety of students, while allowing sufficient time to develop a relationship between the teachers and the students.

Participants were offered two points of extra credit for their participation in the survey.

In order to determine the appropriate sample size for this study, we must first consider how the data analysis method of factor analysis relates to sample size because exploratory factor analysis has been shown to be susceptible to sample size effects (Hinkin, 1995). In general, larger sample sizes improve the generalizability of the findings, the stability of factors, and the likelihood of obtaining statistical significance; however larger samples can be difficult to obtain (Hinkin, 1995; MacCallum, Widaman, Zhang, & Hong, 1999). A wide range of recommendations for minimum sample size and item-to-response ratios for exploratory factor analysis have been proposed (MacCallum, et al., 1999; Tinsley & Tinsley, 1987). Often cited guidelines include item-to-response ratios between 1:5 and 1:10 (Tinsley & Tinsley, 1987). However, Arrindell and van der Ende (1985) found that ratios as small as 1:1.3 yielded stable factor solutions.

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MacCallum, Widaman, Zhang, and Hong (1999) showed that the communalities among the items and number of factors expected are more important in determining appropriate sample size for factor analysis. Scales that have high communalities among items showed factor stability with sample sizes well below 100. Moderate communality with well-determined factors yielded stability with sample sizes between 100 and 200 participants and low community between items needed about 300 participants to yield stable factors. Kahn (2006) agrees that communality is the best determiner of sample size; however communality can be difficult to determine prior to analyzing the results; therefore he suggests that unless there is a solid agreement for the type of communality to be expected, most researchers should have a sample size of at least 300 participants.

It is difficult to estimate the amount of commonality between the items on the Student-Teacher Relationship Inventory (STRI). These items are based on two separate theories (Bordin, 1979; Strong, 1968), which suggests low communality between the items. However, some of the measurement scales that the items have been adapted from have shown moderate correlations between them (Horvath & Greenberg, 1989; Schlosser & Gelso, 2001) suggesting moderate communality among the items. Because of the difficulty of estimating the communality between the items on the STRI, the current study collected a minimum of 300 participants (an item-to-response ratio greater than 1:4), in order to be “safe” according to Kahn (2006, p. 701).

A total of 401 students attempted the survey. Of those students, 50 were eliminated based on significant missing data (more than 10 data points) or entries that were duplicates (i.e. some students completed the survey more than once). In cases where the student completed the survey more than once, the first survey was retained for
analyses. An additional 29 students were eliminated from analyses because they were not currently enrolled in an Introduction to Psychology course and three were removed due to age restrictions. The remaining 319 surveys were used in the subsequent analyses.

Participant’s demographic characteristics are presented in Table 1. Of the 319 participants, 65.2% (N = 208) signed the additional consent form to allow the researcher to access their grades from the introduction to psychology course and access their academic record from the university. This data was used to test hypothesis seven. Independent t-tests were conducted on the demographic variables to determine whether there were significant differences between the participants that chose to give consent and the participants who didn’t. The only significant difference was age, F = 5.41, p = .02, individuals who did not give consent to release records were older than those who did give consent.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Consent Permission</td>
<td>208</td>
<td>65.2</td>
</tr>
<tr>
<td>Grade Consent No permission</td>
<td>111</td>
<td>34.8</td>
</tr>
<tr>
<td>Sex Female</td>
<td>224</td>
<td>70.2</td>
</tr>
<tr>
<td>Sex Male</td>
<td>95</td>
<td>29.8</td>
</tr>
<tr>
<td>Racial Identity White</td>
<td>258</td>
<td>80.9</td>
</tr>
<tr>
<td>Racial Identity African American</td>
<td>35</td>
<td>11.0</td>
</tr>
<tr>
<td>Racial Identity Asian American</td>
<td>8</td>
<td>2.5</td>
</tr>
<tr>
<td>Racial Identity Arab American</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td>Racial Identity Hispanic</td>
<td>2</td>
<td>0.6</td>
</tr>
</tbody>
</table>
Participants were asked to self-report their age, gender, racial identity, GPA and educational status. The average age of participants was 20.45 (SD = 5.40) years old, and ranged from 18 to 61. Seven participants chose not to identify their age. The majority of participants identified as female (n = 224, 70.2%), and White (n = 258, 80.9%).

### Table 1. Demographic Characteristics (continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian</td>
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<td>0.3</td>
</tr>
<tr>
<td>International Student</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Biracial</td>
<td>10</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year in School</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First year</td>
<td>181</td>
<td>56.7</td>
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<tr>
<td>Second year</td>
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<td>Third year</td>
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<tr>
<td>Fourth year</td>
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</tr>
<tr>
<td>Over four years</td>
<td>13</td>
<td>4.1</td>
</tr>
<tr>
<td>Postsecondary HS</td>
<td>7</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Estimate of Class Size</strong></td>
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<td>10-20</td>
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<td>12.9</td>
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<tr>
<td>50-60</td>
<td>6</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>Over 60</strong></td>
<td>2</td>
<td>0.6</td>
</tr>
</tbody>
</table>
Thirty-five participants identified as African-American (11%), eight as Asian American (2.5%), three as Arab American (0.9%), two as Hispanic (0.6%), one as American Indian (0.3%), one as an International student (0.3%), 10 as biracial (3.1%) and one student preferred not to identify their racial identity. Students were also given an opportunity to write in a racial identity. One student who identified as Arab American also wrote “Middle Eastern.” Two students who identified as biracial included a written identity as well, “Greek” and “Turkish,” respectively.

The average self-reported college GPA was 3.21 (SD = 0.57), with a range of 1.4 to 4.4, and four students choosing not to report their GPA. The majority of participants were in their first year of college (N = 181, 56.7%), 83 students were in the second year of college (26%), 26 students were in their third year (8.2%), nine were in their fourth year (2.8%), 13 were over four years (4.1%) and seven identified as a post-secondary high school students (2.2%). Students were also asked to identify their college major. The most common major reported was Nursing (n = 45), followed by Psychology (n = 34), Biology (n = 23), Accounting (n = 18) and Business (n = 18).

Participants were asked to estimate how many students were in their Introduction to Psychology course. Nineteen participants (6%) estimated between 10 and 20 students, 147 participants (46.1%) estimated between 20 and 30, 104 (32.6%) estimated between 30 and 40, 41 (12.9%) estimated between 40 and 50, six (1.9%) estimated between 50 and 60, and only two participants (0.6%) estimated that there was over 60 students in their introduction to psychology course. The average number of students enrolled in the Introduction to Psychology courses during the time of the investigation was 33.4 (range of 23-46). The medium number of students enrolled was 44 and the mode was 45. The
majority of participants (78.6%) estimated that their class size was between 20 and 40 students. These estimates are considered accurate since the number of students who attend class is often less than the number of students enrolled; therefore student estimates may be lower than actual enrollment. Participants were also asked to report the gender of their instructor. The majority of participants (n = 204, 63.9%) reported that their instructor was female, 114 (35.7%) reported that their instructor was male, and one participant did not respond to this question.

**Procedures**

All participants were asked to read an informed consent page and give their consent prior to answering survey questions (see Appendix D). In addition to agreeing to participate in the study, all students were asked to grant permission to the researchers to obtain their grade information from their Introduction to Psychology course, as well as their academic records from The University of Akron, which includes SAT/ACT scores and high school GPA. Students refusing to grant permission to their academic record were still allowed to take the survey and were still granted extra credit for participating. At the end of the semester the grade files of the consenting students were requested from the Introduction to Psychology Course Coordinator. After completing the informed consent page participants began the survey by completing the demographic questionnaire (Appendix E). Students were then instructed to answer all subsequent questions based on their Introduction to Psychology course. Students first completed the items for the Student-Teacher Relationship Inventory (STRI) and then moved on to answering questions from the Motivated Strategies for Learning Questionnaire-Self-efficacy Subscale (Appendix F), Course and Satisfaction Scale (Appendix G), and Participation in
Learning Scale (Appendix H). It was determined that the STRI items would be presented first because its development is one of the primary goals of the study and it is the longest survey in the current study. Placing the STRI items first should reduce the impact of participant fatigue effects on this scale. After completing all of the survey questions, participants were directed to a final page thanking them for participation, giving them a brief explanation regarding the study, and providing information about receiving extra credit (Appendix I). The researcher’s contact information was also given in case the student had any further questions, or would like to withdraw consent. No students withdrew consent after completing the survey.

**Instruments**

**Demographic questionnaire.** Participants completed a demographic questionnaire (Appendix E) concerning their age, sex, race/ethnicity, year in school, program of study/intended major, estimated class size, and GPA if known.

**Motivated Strategies for Learning Questionnaire, Self-efficacy subscale.** The Motivated Strategies for Learning Questionnaire (MSLQ; Appendix F) is a 56-item questionnaire designed to measure student motivation beliefs and self-regulated learning strategies (Pintrich & De Groot, 1990). The Self-efficacy subscale consists of nine items designed to assess students’ perceived competence and confidence in performing coursework in a specific class. Example items include, “I expect to do very well in this class” and “compared with others in this class, I think I’m a good student.” Responses on the subscale are rated on a 7-point Likert scale anchored by 1 (*not at all true of me*) and 7 (*very true of me*). Higher scores indicate greater levels of self-efficacy for that course. The total score for self-efficacy is obtained by averaging all nine items. Alphas for the
subscale have ranged from .89 (Pintrich & De Groot, 1990) to .97 (Bong & Hocevar, 2002), suggesting that the internal reliability is acceptable.

Self-efficacy is defined as a belief that one can master the necessary tasks in order to achieve a specific goal (Bandura, 1997). For students, this means mastering classroom tasks. Increasing student self-efficacy should be an objective in teaching any course. Although the perception of mastery may not relate directly to achievement of mastery, high levels of self-efficacy have been related to higher levels of cognitive strategy use, academic self-regulation, academic performance and lower levels of test anxiety (Pintrich & De Groot, 1990). Therefore higher levels of self-efficacy can be considered one outcome of positive student-teacher relationships.

**Course performance.** One of the most obvious predictors of student outcome is the overall performance in the course, often measured by final grade. Final grades are a summary of how the student performed the various tasks required in the course (McKeachie, 1999), as well as impacting short- and long-term consequences for students such as approval from family, impacting intrinsic motivation, fulfilling degree requirements, and admission to graduate school (Tata, 1999). Because of the power that final grades can have over a student’s future, they are a meaningful outcome of courses; therefore the current study chose to use final grades as a dependent variable. In order to increase the variance within this variable, the total number of points earned in the course was used in all analyses, instead of the final letter grade. Introduction to Psychology students could earn up to 800 points in the course. Permission to received final grades was given by 208 students in a separate informed consent section at the start of the survey.
**Student satisfaction.** Student evaluations of satisfaction in the course and teacher can be collected through multidimensional forms or global items. Multidimensional forms ask students to rate instructors and the course on various dimensions (such as organization, individual rapport, and workload), while global items ask students to rate instructors and the course on overall satisfaction. Compared to multidimensional ratings, research has found that global items assessing student satisfaction with courses and teachers account for significant amounts of variance in the overall evaluation of a course (Cashin & Downey, 1992). Cashin and Downey found that two items (“overall I rate this INSTRUCTOR as an excellent teacher” and “overall I rate this an excellent COURSE,” p. 565) each accounted for over 50% of the total variance in the overall evaluation of the course (the instructor item accounted for 54% of the variance in the total rating; and the course item accounted for 60% of the variance in the total rating). When individual items assessing evaluations for specific aspects of the course were entered into a step-wise multiple regression with the global items, only two other items accounted for at least 5% additional variance. The authors concluded that because short, global items were more economical for research and accounted for a substantial portion of the variance in course evaluation, they are appropriate for most studies. Due to this finding, the current study chose to use these two items to measure student satisfaction.

The two global items used in the Cashin and Downey (1992) study came from the IDEA Survey Form (The IDEA Center, 1998), a rating form frequently used by colleges and universities. The original form asked students to use a 5-point Likert scale; however the current study will increase the Likert scale by 2 points in order to match the other scales in the study. In this way, participants were asked to rate their instructor and course
on a 7-point scale ranging from (1) strongly disagree to (7) strongly agree (see Appendix G).

**Participation in learning.** An 8-item scale was developed for this study in order to measure participation in learning (Appendix H). Items were adapted from a questionnaire used in Benson, Cohen, and Buskist’s (2005) study. Benson and colleagues asked students to rate on a scale of 1 to 5 how likely they were to engage in certain behaviors when rapport was established in a classroom and when rapport was not established in a classroom. Analysis revealed that students were significantly more likely to attend class, pay attention during class, study for class, enjoy the subject, enjoy the professor, attend office hours, e-mail the professor, take another class from the professor, and take another class in the subject in courses where rapport was established, as opposed to courses where rapport was not established. In addition, students were less likely to drop a course in which rapport was established. Benson and colleagues did not report any psychometric properties of the group of items on their questionnaire. The current study seeks to use these items as an exploratory scale measuring how engaged a student is in the learning process.

Student participation in learning was defined as behaviors that would contribute to student learning. Five of the items came directly from Benson, Cohen and Buskist’s (2005) questionnaire (attend class, pay attention during class, attend office hours, e-mail teacher, and take another class in this subject). Three items (participate in class discussions, complete written assignments, and read assigned materials) were included in order to assess additional positive student behaviors that were assumed to contribute to student learning. Students were asked to rate how likely they are to perform the
behaviors using a 7-point Likert scale, ranging from (1) very unlikely to (7) very likely. The 7-point scale (as opposed to the original 5-point scale used in the Benson et al. study) was chosen in order to be consistent with the other scales used in the current study.

**Data Analysis**

Chapter four provides further details based on the data analyses that were conducted to test the seven hypotheses of the current study. The first three hypotheses question of the current study asks whether there is a dimensional nature to the student-teacher relationship and if so, what are the components. Each hypothesis was tested using exploratory factor analysis (EFA) with an oblique rotation. Given the lack of empirical research on the student-teacher relationship conceptualized through counseling theories, an exploratory method for examining the STRI items seemed more appropriate than a confirmatory method (Dawis, 1987). The oblique rotation style was chosen over orthogonal rotation styles because oblique rotations assume that the factors will be correlated. The following five criteria were used to determine the number of factors to extract and rotate for the final solution: (a) Kaiser’s criterion (retaining factors that have eigenvalues greater than or equal to 1.0), (b) Cattell’s scree plot test (eigenvalue discontinuity), (c) proportion of variance explained by each factor, (d) the amount of common variance accounted for by the factor solution (i.e. at least 40% or greater), and (e) clarity or interpretability of the solution, based on a factor loading cutoff of .40 (Hatcher, 1994; Kahn, 2006; Tinsley & Tinsley, 1987). Final solutions were evaluated by the researcher to determine which solution would be the best model for the Student Teacher Relationship Inventory (STRI).
The best solution from the first set of analyses was used to test the second set of research hypotheses, which inquires how student-teacher relationships are related to student outcomes. Specifically, hypotheses four through seven predicted that student-teacher relationships would be related positively to student self-efficacy, satisfaction with course and teacher, participation in learning, and course performance. Hypotheses four through seven were be tested by correlating subscale and total scores on the STRI with scores on the MSLQ-Self-efficacy subscale, the satisfaction questionnaire, the participation in learning scale, and the amount of earned points within the course. The direction and strength of correlations between the final STRI and the student outcomes will provide preliminary evidence for the utility of (a) using Bordin’s theory of working alliance and/or Strong’s theory of interpersonal influence to interpret student-teacher relationships and (b) the Student-Teacher Relationship Inventory.
CHAPTER IV
RESULTS

This chapter presents the results of the study. First, the procedures that were used to screen the data for statistical assumptions are described. Second, descriptive statistics relating to the outcome variables are introduced. Third, the statistical results relating to the first three hypotheses are presented. These results will be examined in order to determine which factor analysis solution is the most accurate representation of student-teacher relationships. Finally, the chosen solution will be named the Student Teacher Relationship Inventory (STRI) and will be used to test hypotheses four through seven.

Data Screening

Before the data were submitted to the proposed analyses, screening methods were conducted to ensure that the data were appropriate for the statistical methods proposed.

Student-Teacher Relationship Inventory Items

Of the 319 participants, less than 5% of data were missing from each variable; therefore the missing data were considered random (Tabachnick & Fidell, 2001). Pairwise deletion was used during each analysis in order to deal with missing data. The pairwise deletion method was chosen over the listwise deletion method, because it allows a case to continue to be used in an analysis, even if it is missing a variable. In listwise deletion an entire case is omitted if it is missing one variable. Since the missing data are
considered random and no participant was missing more than 5% of the data, pairwise
deletion was deemed a better choice than listwise deletion.

During data screening, multicollinearity was also viewed as a potential problem.
Research has demonstrated multicollinearity problems with the scales from which many
of the items were derived (Bahrick, 1989; Heesacker & Heppner, 1983; Horvath &
Greenberg, 1989; Zamostny, et al., 1981). Multicollinearity exists when there are strong
correlations among variables that are supposed to be independent (Pedhazur & Schmelkin,
1991). This becomes problematic because high correlations may mean that the items are
so similar that they are representing the same construct. When multicollinearity occurs it
typically leads to lower error variance, which means that the results of analyses may be
misleading. In order to test for multicollinearity, all items were submitted to a correlation
matrix in order to examine the relationships between items. Although there is no specific
criterion for removing an item due to multicollinearity, most authors suggest that
bivariate correlations above .90 represent multicollinearity; however correlations as low
as .70 can theoretically cause problems depending on the analysis conducted (Tabachnick
& Fidell, 2001). Factor analysis assumes some overlap between the items in order to
determine which items are representing the same factor. The items on the student-teacher
relationship inventory were specifically written to represent the six dimensions theorized;
therefore some overlap of content was expected. In order to reduce the effects of
multicollinearity the conservative cutoff of .85 was chosen in the current study. Because
multicollinearity has been a problem in the past with these scales, this conservative cutoff
was chosen in order to try to avoid problems that have plagued the previous scales. Four
bivariate correlations were above .90, and an additional 59 correlations out of a possible
2701 were above .85. Items with the highest correlations were removed first. Decisions between which of the two correlated items to remove were based on which item had more problematic correlations, as well as how well that item was thought to represent the domain. In total, fourteen items (see below) were determined to be problematic based on multicollinearity and were removed from subsequent analyses, leaving 60 total items to be analyzed.

18. I respect my professor (Bond)
19. I like my professor (Bond)
48. My professor is an intelligent person (Expertness)
51. I am confident in my professor’s ability to teach me (Expertness)
52. My professor has specialized training in the subject area (Expertness)
53. My professor uses classroom time wisely (Expertness)
54. My professor is an agreeable person (Attractiveness)
56. My professor is typically pleasant in class (Attractiveness)
60. My professor is a likeable person (Attractiveness)
61. My professor is an approachable person (Attractiveness)
65. My professor appears honest (Trustworthiness)
66. My professor is reliable (Trustworthiness)
67. My professor is a responsible person (Trustworthiness)
74. I trust my professor to give me the grade that I deserve (Trustworthiness)

**Outcome Variables**

Self-efficacy scores were measured by using the self-efficacy scale of the Motivated Strategies for Learning Questionnaire (Pintrich & De Groot, 1990). Participants ranked nine items on a scale of 1 (not at all true of me) to 7 (very true of me) and then their scores were averaged for an average self-efficacy score. The average self-efficacy score was 5.76 (SD = 1.06). There was no significant difference between the participants who granted consent to the investigators to obtain their class and academic record (n = 208; 5.84, SD = 1.01) from those who did not grant consent (n = 111; 5.62, SD = 1.15; F = 1.02, p = .313). Individual scale items were also tested for significant
differences between the two groups of participants and no individual item had significant
differences.

Student satisfaction was measured by two global statements “overall I rate this
instructor as an excellent teacher,” and “overall I rate this course as excellent.” The
participants were asked to rate each statement on a scale of one (strongly disagree) to
seven (strongly agree). Average score for student satisfaction of the teacher was 6.16
(SD = 1.32) and the average score for student satisfaction of the course was 5.67 (SD =
1.46). There were significant differences in the average rating of student satisfaction of
the teacher between students who granted consent for the investigators to obtain their
class and academic record (6.24, SD = 1.14) from those who did not grant consent (5.99,
SD = 1.59; F = 8.24, p = .004). There were also significant differences in the average
student satisfaction with the course rating between those who granted consent (5.80, SD
= 1.35) and those who did not (5.41, SD = 1.60; F = 6.00, p = .015). In general, those
who granted the investigators consent to view their class and academic record were more
satisfied with the course and teacher than those who did not grant consent.

Student satisfaction with the teacher was correlated with student satisfaction with
the course to determine if the scores should be used separately or averaged together to
determine one satisfaction scale. The correlation between the statements was r = .64,
which was significant at the p < .01 level. Although the correlation was significant, it
was only moderately high; suggesting that testing each satisfaction score separately may
yield unique results; therefore each item was correlated separately, in addition to
correlating the “average satisfaction” scale, which consisted of the average score between
satisfaction with the course and satisfaction with the teacher. The average satisfaction

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rating was 5.90 (SD = 1.27) for the overall sample and again the participants who granted consent to the investigators to obtain their academic record had a significantly higher mean (6.01, SD = 1.14) than those participants who did not grant consent to the investigator to obtain their academic record (5.69, SD = 1.46; F = 8.86, p = .003).

Learning participation was measured by eight self-report items that were adapted from a previous measure (Benson, Cohen, & Buskist, 2005). The participants rated each item on a 1 (not likely) to 7 (very likely) Likert scale. Scores on the eight items were averaged to create an average participation in learning score. The average rating for the overall sample was 5.60 (SD = .94), and there was no significant difference between the participants who granted consent for the investigators to obtain their class and academic record (5.61, SD = 0.95) and those who did not grant consent (5.58, SD = 0.92; F = .02, p = .893) on the overall participation in learning scale. Individual items on the scale were also tested and one item, “I know that I will be able to learn the material for this class” was found to have significant differences between participants who granted consent (6.08, SD = 1.13) and those who did not grant consent (5.81, SD = 1.38; F = 5.13, p = .02). This item appears to represent confidence in individuals’ abilities in the course and it is possible that students who have more confidence in their ability in the course, were also more likely to grant consent to view their grades because they believed that their grades would be high. Significant differences on this one item does not appear to be important enough to justify separating the data for the participation in learning scale between students who granted consent and those who did not grant consent; therefore the data were subsumed together.
Course performance was measured by the amount of final points earned in the course. Only data from students who granted permission to access their grades was used (n = 208). Of the 208 participants who granted access to obtain their grades, 21 participants did not meet the criteria for inclusion in the current study. Two participants did not provide enough information to request their grades (i.e. did not provide the name of their professor) and six participants either dropped the course before the end of the semester or their professor did not provide total points earned data. Thirteen participants were in Introduction to Psychology honors courses, which have an extra 100-point assignment added to the course, making the total amount of points possible 900, instead of 800. These data were not used for the analyses because the scale was not the same as the other Introduction to Psychology courses. The range of points earned was 170.5 to 800, and the average number of points earned was 647.23, corresponding to a grade of B-.

**Hypothesis Testing**

Hypothesis one through three were tested first to determine which theory or combination of theories would describe the student-teacher relationship best. The resulting measurement scale was used to test hypotheses four through seven.

**Hypothesis One**

Hypothesis one stated that the student-teacher relationship would resemble Bordin’s theory of the working alliance by having three factors that correspond to his theorized dimensions: bond, agreement of goals and agreement of tasks. In order to test this hypothesis, exploratory principal-axis factor analyses were performed on the 40 items that correspond to Bordin’s theory. For each set of analyses, I used principal-axis factoring using squared multiple correlations as prior communality estimates. An oblique
rotation was performed for each analysis because the factors were assumed to be correlated based on previous research (Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989). The following five criteria were used to determine the number of factors to extract and rotate for the final solution: (a) Kaiser’s criterion (retaining factors that have eigenvalues greater than or equal to 1.0), (b) Cattell’s scree plot test (eigenvalue discontinuity), (c) proportion of variance explained by each factor, (d) the amount of common variance accounted for by the factor solution (i.e. at least 40% or greater), and (e) clarity or interpretability of the solution, based on a factor loading cutoff of .40 (Hatcher, 1994; Kahn, 2006; Tinsley & Tinsley, 1987).

**Initial exploratory factor analysis.** The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .98 (‘superb’ according to Field, 2009), and all KMO values for individual items were > .90 which is well above the acceptable limit of .5 (Field, 2009). Bartlett’s test of sphericity $\chi^2 (780) = 13798.045$, $p < .001$, indicated that correlations between items were sufficiently large for PAF. Communalities for all items were above .3 after extraction. Initial extraction resulted in three factors with eigenvalues greater than 1.0. Examination of the scree plot (see Figure 1) suggested eigenvalue discontinuities of three as well; therefore a three-factor solution was investigated.
Three-factor solution. The three-factor solution accounted for 73.02% of the common variance and all items loaded on at least one factor at a cutoff of |.40| or higher. Three items (2, 12, and 28) were removed from further analyses because factor loadings were similar on factor one and two; therefore these items were removed in order to more clearly define each factor. Factor loadings on these items were relatively small (item 2: .506 & .480; item 12: .477 & .483; item 28: .424 & .424) suggesting that their removal would not make a substantial difference when defining factors one and two. Results of the three-factor solution are presented in Table 2.
Table 2. Factor Loading Values in the Three-factor Solution for the Bordin Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Role fulfillment</th>
<th>Factor 2 Personalization</th>
<th>Factor 3 Academic Goals</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>35. My professor provides clear instructions for the assignments in this course.</td>
<td>.971</td>
<td>-.141</td>
<td>-.012</td>
<td>.751</td>
</tr>
<tr>
<td>34. My responsibilities are clear in this course.</td>
<td>.935</td>
<td>-.146</td>
<td>.088</td>
<td>.801</td>
</tr>
<tr>
<td>33. Course time is spent efficiently.</td>
<td>.901</td>
<td>-.060</td>
<td>-.008</td>
<td>.728</td>
</tr>
<tr>
<td>6. My professor welcomes my involvement in class.</td>
<td>.874</td>
<td>.098</td>
<td>-.158</td>
<td>.714</td>
</tr>
<tr>
<td>38. My professor promotes active student involvement.</td>
<td>.852</td>
<td>.051</td>
<td>-.077</td>
<td>.704</td>
</tr>
<tr>
<td>4. My professor respects me.</td>
<td>.843</td>
<td>.086</td>
<td>-.060</td>
<td>.753</td>
</tr>
<tr>
<td>13. My professor is genuine.</td>
<td>.839</td>
<td>.095</td>
<td>-.081</td>
<td>.733</td>
</tr>
<tr>
<td>1. I feel comfortable with my professor.</td>
<td>.834</td>
<td>.074</td>
<td>.005</td>
<td>.798</td>
</tr>
<tr>
<td>30. I agree with the classroom objective.</td>
<td>.791</td>
<td>-.017</td>
<td>.110</td>
<td>.735</td>
</tr>
<tr>
<td>29. Achieving the course objectives is important to me.</td>
<td>.788</td>
<td>-.176</td>
<td>.145</td>
<td>.596</td>
</tr>
<tr>
<td>21. My professor clearly identifies the purpose of this course.</td>
<td>.773</td>
<td>.027</td>
<td>.125</td>
<td>.780</td>
</tr>
<tr>
<td>42. I understand what it takes to be successful in this course.</td>
<td>.755</td>
<td>-.015</td>
<td>.123</td>
<td>.694</td>
</tr>
<tr>
<td>40. I recognize the relevance of the assignments in this course.</td>
<td>.748</td>
<td>-.108</td>
<td>.247</td>
<td>.737</td>
</tr>
<tr>
<td>8. My professor is available when I need him/her.</td>
<td>.727</td>
<td>.218</td>
<td>-.069</td>
<td>.724</td>
</tr>
<tr>
<td>27. My professor is willing to work with the students on learning objectives and teaching strategies.</td>
<td>.670</td>
<td>.186</td>
<td>.055</td>
<td>.731</td>
</tr>
<tr>
<td>16. My professor accepts me.</td>
<td>.665</td>
<td>.289</td>
<td>-.065</td>
<td>.729</td>
</tr>
<tr>
<td>7. My professor has my best interests in mind.</td>
<td>.627</td>
<td>.247</td>
<td>.039</td>
<td>.726</td>
</tr>
<tr>
<td>22. I agree with my professor about what I ought to get out of this course.</td>
<td>.592</td>
<td>.113</td>
<td>.247</td>
<td>.756</td>
</tr>
<tr>
<td>39. I have a clear understanding of how the course activities are preparing me for personal success.</td>
<td>.517</td>
<td>.232</td>
<td>-.034</td>
<td>.696</td>
</tr>
</tbody>
</table>
Table 2. Factor Loading Values in the Three-factor Solution for the Bordin Items (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Role fulfillment</th>
<th>Factor 2 Personalization</th>
<th>Factor 3 Academic Goals</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>41. My professor is willing to adjust the course based on student feedback.</td>
<td>.517</td>
<td>.232</td>
<td>-.034</td>
<td>.464</td>
</tr>
<tr>
<td>37. I have a shared responsibility with my professor for my learning.</td>
<td>.404</td>
<td>.254</td>
<td>.165</td>
<td>.547</td>
</tr>
<tr>
<td>25. My professor helps me recognize areas where I can improve.</td>
<td>-.097</td>
<td>.878</td>
<td>.053</td>
<td>.708</td>
</tr>
<tr>
<td>15. My professor recognizes my expertise and unique perspective.</td>
<td>-.093</td>
<td>.870</td>
<td>.055</td>
<td>.701</td>
</tr>
<tr>
<td>20. My professor understands what my goals are.</td>
<td>-.098</td>
<td>.854</td>
<td>.068</td>
<td>.681</td>
</tr>
<tr>
<td>9. My professor makes the effort to understand me.</td>
<td>.121</td>
<td>.827</td>
<td>-.106</td>
<td>.733</td>
</tr>
<tr>
<td>26. I work with my professor on specific goals in the course.</td>
<td>-.335</td>
<td>.826</td>
<td>.264</td>
<td>.601</td>
</tr>
<tr>
<td>11. My professor shows an interest in me.</td>
<td>.113</td>
<td>.825</td>
<td>-.104</td>
<td>.720</td>
</tr>
<tr>
<td>23. My professor and I agree on what is important for me to work on.</td>
<td>-.024</td>
<td>.753</td>
<td>.104</td>
<td>.642</td>
</tr>
<tr>
<td>14. My professor provides constructive feedback to me.</td>
<td>.163</td>
<td>.692</td>
<td>-.008</td>
<td>.663</td>
</tr>
<tr>
<td>5. My professor offers me encouragement in class.</td>
<td>.250</td>
<td>.684</td>
<td>-.034</td>
<td>.741</td>
</tr>
<tr>
<td>10. My professor is tactful when commenting about my performance.</td>
<td>.211</td>
<td>.665</td>
<td>-.009</td>
<td>.680</td>
</tr>
<tr>
<td>17. My professor has confidence in my abilities.</td>
<td>.260</td>
<td>.614</td>
<td>.016</td>
<td>.694</td>
</tr>
<tr>
<td>3. My professor likes me.</td>
<td>.321</td>
<td>.594</td>
<td>-.083</td>
<td>.645</td>
</tr>
<tr>
<td>31. I find what we are doing in this class is related to my overall college goals.</td>
<td>-.029</td>
<td>.129</td>
<td>.852</td>
<td>.835</td>
</tr>
<tr>
<td>36. The course topics and assignments are relevant to my academic goals.</td>
<td>.074</td>
<td>.083</td>
<td>.767</td>
<td>.765</td>
</tr>
<tr>
<td>24. The work I conduct in this course fits in with my college academic goals.</td>
<td>.115</td>
<td>.012</td>
<td>.762</td>
<td>.708</td>
</tr>
</tbody>
</table>
Table 2. Factor Loading Values in the Three-factor Solution for the Bordin Items (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Role fulfillment</th>
<th>Factor 2 Personalization</th>
<th>Factor 3 Academic Goals</th>
<th>h²</th>
</tr>
</thead>
<tbody>
<tr>
<td>32. What I am doing in this course brings me closer to achieving my academic goals.</td>
<td>.301</td>
<td>-.021</td>
<td>.642</td>
<td>.744</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>23.021</td>
<td>2.557</td>
<td>1.438</td>
<td></td>
</tr>
<tr>
<td>% of variance</td>
<td>62.218%</td>
<td>6.912%</td>
<td>3.886%</td>
<td></td>
</tr>
<tr>
<td>Cronbach’s α</td>
<td>.978</td>
<td>.959</td>
<td>.930</td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 319. Factor loadings ≥ | .40 | are in boldface.*

The first factor derived from the 40 items related to Bordin’s theory accounted for 62.22% of the variance and contained 21 items: seven items from the bond scale, five items from the goals scale and nine items from the task scale. Other than the items which were already removed due to cross-loading on factor two, no other items cross-loaded on another factor above .40. Examination of these items suggests that they represent the professor fulfilling his or her role, such as item 35, “My professor provides clear instructions for the assignments in this course” and the student understanding his or her role in the course, such as item 34 “My responsibilities are clear in this course.” The underlying theme for this factor seems to be role fulfillment in the course by both the professor and student; therefore factor one was termed “Role fulfillment.” Cronbach’s alpha was .978 for this factor and could not be improved by deleting any of the items. Inter-item correlations ranged from .431 to .815, all were significant at the p < .01 level.

The second factor accounted for an additional 6.91% of the variance and contained 12 items. With the exception of the three items which were removed for cross-
loading on factor one, none of the remaining items cross-loaded on either of the other factors. Eight items from the factor were originally from the bond scale and four items were from the original goals scale. All items appear to reflect how the professor can “personalize” the course to the individual student; such as item 25, “My professor helps me recognize areas where I can improve” and item 15, “My professor recognizes my expertise and unique perspective.” Factor two was termed “Personalization.”

Personalizing the course to the individual student seems to be most similar to the original bond scale that Bordin (1979) conceptualized. Cronbach’s alpha was .959 for this factor and could not be improved by deleting any of the items. All inter-item correlations were significant at the $p < .01$ level and ranged from .557 to .762.

The third factor accounted for an additional 3.89% of variance and contained four items, none of which cross-loaded on any other factor. Three items were originally written for the task subscale and one item was from the goal subscale. All items referred to “academic or college goals,” such as item 31, “I find what we are doing in this class is related to my overall college goals” and item 24, “The work I conduct in this course fits in with my college academic goals.” The third factor was termed “Academic goals.” Cronbach’s alpha was .930 and could not be improved by deleting any items. Inter-item correlations were large, ranging from .732 to .816, and all correlations were significant at the $p < .01$ level. The variance that this factor accounts for is small; therefore it may be left out of the final measurement scale; however it does appear to account for a dimension that was originally theorized by Bordin (1979; i.e. goals) therefore it will be used cautiously in the next analysis.
Overall, three interpretable factors emerged from the exploratory factor analysis of items corresponding to Bordin’s theory of the working alliance (1979). These factors appear to represent “Role fulfillment,” “Personalization,” and “Academic goals.” All factors had good internal reliability (all above .90) and significant inter-item correlations. Inter-factor correlations are .60 (personalization and academic goals), .69 (role fulfillment and academic goals) and .73 (role fulfillment and personalization). These correlations suggest some degree of overlap among the factors, but each factor represents a unique component of student-teacher relationships. Although there is some degree of overlap between these factors and the factors hypothesized by Bordin, they do not appear to be identical. Hypothesis one stated that “the student-teacher relationship will resemble Bordin’s theory of the working alliance by having three factors that correspond to his theorized dimensions: bond, agreement of goals and agreement of tasks.” In order for hypothesis one to be confirmed, the items written for each scale hypothesized by Bordin would need to factor together; however that did not occur. The items written for the “bond” scale factored on factor one and factor two. The items written for the “goals” scale factored on factor one and two predominantly (one goal item factored on the third factor). The items written for the tasks scale factored on factor one and three. Since the factors do not appear to correspond to Bordin’s three factors, hypothesis one was not confirmed. However, the three-factor solution does result in an interpretable solution containing only items that represent Bordin’s theory of working alliance. This solution will be compared to other potential solutions from testing hypotheses two and three.
Hypothesis Two

Hypothesis two stated that the student-teacher relationship will resemble Strong’s theory of interpersonal influence by having three factors that correspond to his theorized dimensions: expertness, trustworthiness, and attractiveness. This hypothesis was tested using the same method and criteria that was used to test hypothesis one, namely exploratory principal axis factor analysis with an oblique rotation, but with only the 20 items that correspond to Strong’s theory entered into the analysis.

Initial exploratory factor analysis. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .977 (‘superb’ according to Field, 2009), and all KMO values for individual items were > .90 which is well above the acceptable limit of .5 (Field, 2009). Bartlett’s test of sphericity $\chi^2 (190) = 7622.975$, $p < .001$, indicated that correlations between items were sufficiently large for PAF. Communalities for all items were above .3 after extraction except for item 73 “My professor is not motivated by personal gain,” which was .166. Therefore this item was eliminated from any further analyses. Initial extraction resulted in one factor with an eigenvalue greater than 1.0. Examination of the scree plot (see Figure 2) suggested eigenvalue discontinuities of one or four. Strong’s original theory suggested three factors. In order to investigate all possible factor solutions a one-factor, three-factor and a four factor solution were examined.
Figure 2. Scree Plot for EFA, Strong’s Items Only

One-factor solution. The one-factor solution was examined first due to the rules of parsimony (results of the one-factor solution are presented in Table 3). The solution accounted for 74.87% of the common variance and all items loaded onto the one factor (factor loadings ranged from .662 to .909); because only one factor was extracted there was no rotation of the solution. Cronbach’s alpha was .98 and could not be improved by deleting any item. Inter-item correlations ranged from .502 to .857, and all were significant at the p < .001 level. This factor can best be described as interpersonal influence since it contains all of the items from Strong’s interpersonal influence theory. These items can be used to create a measurement scale with only one general construct entitled “Interpersonal influence.” This solution could be compared to other interpretable
solutions in order to determine which solution fits the student-teacher relationship the most precision and explanatory power.

Table 3. Factor Loading Values in the One-factor Solution for the Strong Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>72. My professor appears open when interacting with students.</td>
<td>.909</td>
<td>.827</td>
</tr>
<tr>
<td>64. My professor appears dependable.</td>
<td>.908</td>
<td>.824</td>
</tr>
<tr>
<td>50. My professor seems skillful at teaching.</td>
<td>.901</td>
<td>.812</td>
</tr>
<tr>
<td>47. My professor is insightful when discussing course material.</td>
<td>.891</td>
<td>.794</td>
</tr>
<tr>
<td>71. My professor presents him/herself in a straightforward manner.</td>
<td>.890</td>
<td>.792</td>
</tr>
<tr>
<td>44. My professor appears confident when presenting material.</td>
<td>.888</td>
<td>.788</td>
</tr>
<tr>
<td>43. My professor presents the material in a clear way.</td>
<td>.884</td>
<td>.782</td>
</tr>
<tr>
<td>58. My professor appears enthusiastic about the course material and teaching.</td>
<td>.882</td>
<td>.777</td>
</tr>
<tr>
<td>70. My professor is fair when evaluating course and student material.</td>
<td>.882</td>
<td>.777</td>
</tr>
<tr>
<td>68. My professor interacts with me and other students in a sincere way.</td>
<td>.872</td>
<td>.761</td>
</tr>
<tr>
<td>55. My professor appears to appreciate student input during class.</td>
<td>.867</td>
<td>.751</td>
</tr>
<tr>
<td>49. My professor is prepared for each class session.</td>
<td>.866</td>
<td>.750</td>
</tr>
<tr>
<td>69. My professor is a trustworthy individual.</td>
<td>.857</td>
<td>.735</td>
</tr>
<tr>
<td>59. My professor is friendly towards me.</td>
<td>.852</td>
<td>.726</td>
</tr>
<tr>
<td>45. My professor shows that he/she is an expert in the subject matter.</td>
<td>.832</td>
<td>.692</td>
</tr>
<tr>
<td>46. My professor appears experienced in teaching.</td>
<td>.815</td>
<td>.664</td>
</tr>
<tr>
<td>57. My professor’s teaching style is compatible with my learning style.</td>
<td>.815</td>
<td>.664</td>
</tr>
<tr>
<td>62. My professor appears warm toward me.</td>
<td>.786</td>
<td>.617</td>
</tr>
<tr>
<td>63. There are similarities between myself and my professor.</td>
<td>.662</td>
<td>.438</td>
</tr>
</tbody>
</table>

Eigenvalues

- 14.225

% of variance

- 74.869%

Cronbach’s α

- .980

Note. N = 319. Factor loadings ≥ |.40| are in boldface.

**Three-factor solution.** Due to the exploratory nature of this study, all possible factor solutions were examined; therefore a three-factor solution was also examined.
through an EFA based on the fact that hypothesis two specifically stated that three factors should emerge if Strong’s interpersonal influence theory (1968) was represented in this situation. The three-factor solution accounted for 82.58% of the common variance and all 19 items (item 73 was not included based on a communality loading below 0.3) loaded on at least one factor at a cutoff of \( \mid 0.40 \mid \) or higher (see Table 4).

Table 4. Factor Loading Values in the Three-factor Solution for the Strong Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Trust</th>
<th>Factor 2 Expertness</th>
<th>Factor 3 Similarities</th>
<th>( h^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>59. My professor is friendly towards me.</td>
<td>.960</td>
<td>-.119</td>
<td>.058</td>
<td>.814</td>
</tr>
<tr>
<td>49. My professor is prepared for each class session.</td>
<td>.868</td>
<td>.117</td>
<td>-.115</td>
<td>.808</td>
</tr>
<tr>
<td>72. My professor appears open when interacting with students.</td>
<td>.849</td>
<td>.071</td>
<td>.037</td>
<td>.865</td>
</tr>
<tr>
<td>64. My professor appears dependable.</td>
<td>.749</td>
<td>.231</td>
<td>-.044</td>
<td>.844</td>
</tr>
<tr>
<td>69. My professor is a trustworthy individual.</td>
<td>.732</td>
<td>.075</td>
<td>.120</td>
<td>.761</td>
</tr>
<tr>
<td>55. My professor appears to appreciate student input during class.</td>
<td>.732</td>
<td>.141</td>
<td>.043</td>
<td>.769</td>
</tr>
<tr>
<td>68. My professor interacts with me and other students in a sincere way.</td>
<td>.721</td>
<td>.088</td>
<td>.139</td>
<td>.785</td>
</tr>
<tr>
<td>71. My professor presents him/herself in a straightforward manner.</td>
<td>.713</td>
<td>.209</td>
<td>.009</td>
<td>.804</td>
</tr>
<tr>
<td>70. My professor is fair when evaluating course and student material.</td>
<td>.683</td>
<td>.259</td>
<td>-.028</td>
<td>.789</td>
</tr>
<tr>
<td>62. My professor appears warm toward me.</td>
<td>.661</td>
<td>-.076</td>
<td>.327</td>
<td>.700</td>
</tr>
<tr>
<td>58. My professor appears enthusiastic about the course material and teaching.</td>
<td>.549</td>
<td>.411</td>
<td>-.046</td>
<td>.785</td>
</tr>
<tr>
<td>45. My professor shows that he/she is an expert in the subject matter.</td>
<td>-.061</td>
<td>.883</td>
<td>.114</td>
<td>.818</td>
</tr>
<tr>
<td>50. My professor seems skillful at teaching.</td>
<td>.077</td>
<td>.827</td>
<td>.093</td>
<td>.900</td>
</tr>
<tr>
<td>46. My professor appears experienced in teaching.</td>
<td>.029</td>
<td>.827</td>
<td>.035</td>
<td>.759</td>
</tr>
<tr>
<td>44. My professor appears confident when presenting material.</td>
<td>.308</td>
<td>.714</td>
<td>-.104</td>
<td>.845</td>
</tr>
<tr>
<td>47. My professor is insightful when discussing course material.</td>
<td>.324</td>
<td>.592</td>
<td>.041</td>
<td>.812</td>
</tr>
<tr>
<td>57. My professor’s teaching style is compatible with my learning style.</td>
<td>.139</td>
<td>.513</td>
<td>.305</td>
<td>.725</td>
</tr>
</tbody>
</table>
Table 4. Factor Loading Values in the Three-factor Solution for the Strong Items (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Trust</th>
<th>Factor 2 Expertness</th>
<th>Factor 3 Similarities</th>
<th>( h^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>43. My professor presents the material in a clear way.</td>
<td>.396</td>
<td>.444</td>
<td>.130</td>
<td>.786</td>
</tr>
<tr>
<td>63. There are similarities between myself and my professor.</td>
<td>-.011</td>
<td>.395</td>
<td>.459</td>
<td>.566</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>14.225</td>
<td>.889</td>
<td>.576</td>
<td></td>
</tr>
<tr>
<td>% of variance</td>
<td>74.87</td>
<td>4.68</td>
<td>3.03</td>
<td></td>
</tr>
</tbody>
</table>

Note. \( N = 319 \). Factor loadings \( \geq |.40| \) are in **boldface**.

The first factor accounted for 74.87% of the variance and contained 11 items; one item from the expertness scale, four items from the attractiveness scale and the remaining six items from the trustworthiness scale. One item cross-loaded on factor two, item 58, “My professor appears enthusiastic about the course material and teaching;” however the difference (.549 and .411, respectfully) was determined to be large enough to keep the item solely on factor one. These items appear to reflect positive teaching qualities and trust between a student and teacher; such as a student trusting that the professor is prepared (item 49), open (item 72), fair (item 70) and sincere (item 68); therefore this factor was termed “Trust.”

The second factor accounted for only 4.68% of the variance and contained seven items; six from the expertness scale and one item from the attractiveness scale. No item cross-loaded on another factor at the cut-off of \( |.40| \) or higher. The items appear to reflect the expertness scale and focus on the professor’s teaching ability, such as item 50 “My professor seems skillful at teaching.” Even the one item from the attractiveness
scale, item 57 “My professor’s teaching style is compatible with my learning style,” reflects teaching ability; therefore this factor was termed “Expertness.”

The third factor contained only one item (63), “There are similarities between myself and my professor.” This factor accounted for 3.03% of the common variance. This factor was termed “Similarities.”

The three factors that emerged appear to reflect the hypothesized dimensions of Strong’s interpersonal influence theory (1968): expertness (factor two), attractiveness (factor three) and trustworthiness (factor one); however factors two and three account for less than 5% of the common variance. Factor three contains only one item and that factor loading is relatively small (.459), suggesting that that factor is not well defined. Due to the low variance accounted for in the second and third factors and a poorly defined third factor, the three-factor solution must be rejected. This rejection also confirms the rejection of hypothesis two, “the student-teacher relationship will resemble Strong’s theory of interpersonal influence by having three factors that correspond to his theorized dimensions: expertness, trustworthiness, and attractiveness” because the three-factor solution is not legitimate.

**Four-factor solution.** A four-factor solution was also examined based on the scree plot (see figure 2) suggestion that four factors may be appropriate. The four-factor solution accounted for 84.59% of the common variance and 18 of the 19 items loaded on at least one factor at a cutoff of \(|.40|\) or higher. Factor four did not contain any items that met the cutoff criteria for factor loadings; therefore the four-factor solution was immediately rejected without further exploration because it did not contain four factors.
Hypothesis Three

Hypothesis three stated that the student-teacher relationship will contain dimensional elements from both Bordin and Strong’s theory, which may contain up to six factors which may correspond to one of the theorized six dimensions (bond, agreement of goals, agreement of tasks, expertness, trustworthiness, and attractiveness) or may be a blend of the dimensions. This hypothesis is the most exploratory of the first three hypotheses and there are no preconceived notions about how many or what types of factors are expected. Hypothesis three was tested using the same method and criteria that was used to test hypothesis one and two, namely exploratory principal axis factor analysis with an oblique rotation. All 60 items (14 items were removed due to multicollinearity prior to all the factor analyses) were entered into the analysis.

Initial exploratory factor analysis. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .983 (‘superb’ according to Field, 2009), and all KMO values for individual items were > .90 which is well above the acceptable limit of .5 (Field, 2009). Bartlett’s test of sphericity $\chi^2 (1770) = 22854.178, p < .001$, indicated that correlations between items were sufficiently large for PAF. Communalities for all items were above .3 after extraction except for item 73 “My professor is not motivated by personal gain.” This item was also eliminated from examination due to low communality in hypothesis two; therefore its low communality score was not surprising. In addition item 73 did not load on any factors above $| .40 |$; therefore it was eliminated from any further analyses. Initial extraction resulted in four factors with eigenvalues greater than 1.0. Examination of the scree plot (see Figure 3) suggested eigenvalue discontinuities of two or four. In order to test every possible solution, both the two and
four factor solutions were examined. In addition, because the items were originally written to encompass six separate dimensions, a six-factor solution was also explored.

Figure 3. Scree Plot for EFA, All Items

![Scree Plot](image)

**Two-factor solution.** The two-factor solution was examined first, following the rules of parsimony. The two-factor solution accounted for 69.82% of the common variance and 57 items loaded on at least one factor at a cutoff of |.40| or higher. Item 63 and item 24 did not load on either factor at the cutoff of |.40|; therefore they were removed from further consideration in the two-factor solution. When these items were removed from the analysis, item 37 no longer loaded on either factor at the cutoff of |.40|. In the previous analysis of hypothesis one, item 37 barely loaded on factor two; therefore the low factor loading was not a surprise. Item 37 was also removed from
further consideration in the two-factor solution. The final solution accounted for 70.92% of the common variance. Results of the two-factor solution are presented in Table 5.

Table 5. Factor Loading Values in the Two-factor Solution for All Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Interpersonal Tasks</th>
<th>Factor 2 Personalization</th>
<th>h²</th>
</tr>
</thead>
<tbody>
<tr>
<td>49. My professor is prepared for each class session.</td>
<td>1.028</td>
<td>-.204</td>
<td>.787</td>
</tr>
<tr>
<td>72. My professor appears open when interacting with students.</td>
<td>.994</td>
<td>-.109</td>
<td>.839</td>
</tr>
<tr>
<td>64. My professor appears dependable.</td>
<td>.959</td>
<td>-.076</td>
<td>.817</td>
</tr>
<tr>
<td>71. My professor presents him/herself in a straightforward manner.</td>
<td>.949</td>
<td>-.085</td>
<td>.788</td>
</tr>
<tr>
<td>70. My professor is fair when evaluating course and student material.</td>
<td>.946</td>
<td>-.081</td>
<td>.789</td>
</tr>
<tr>
<td>55. My professor appears to appreciate student input during class.</td>
<td>.922</td>
<td>-.075</td>
<td>.754</td>
</tr>
<tr>
<td>59. My professor is friendly towards me.</td>
<td>.918</td>
<td>-.079</td>
<td>.741</td>
</tr>
<tr>
<td>44. My professor appears confident when presenting material.</td>
<td>.905</td>
<td>-.071</td>
<td>.730</td>
</tr>
<tr>
<td>43. My professor presents the material in a clear way.</td>
<td>.900</td>
<td>-.029</td>
<td>.772</td>
</tr>
<tr>
<td>35. My professor provides clear instructions for the assignments in this course.</td>
<td>.896</td>
<td>-.019</td>
<td>.728</td>
</tr>
<tr>
<td>58. My professor appears enthusiastic about the course material and teaching.</td>
<td>.889</td>
<td>-.019</td>
<td>.765</td>
</tr>
<tr>
<td>34. My responsibilities are clear in this course.</td>
<td>.874</td>
<td>-.003</td>
<td>.759</td>
</tr>
<tr>
<td>69. My professor is a trustworthy individual.</td>
<td>.873</td>
<td>-.018</td>
<td>.740</td>
</tr>
<tr>
<td>47. My professor is insightful when discussing course material.</td>
<td>.862</td>
<td>.014</td>
<td>.761</td>
</tr>
<tr>
<td>50. My professor seems skillful at teaching.</td>
<td>.840</td>
<td>.041</td>
<td>.757</td>
</tr>
<tr>
<td>38. My professor promotes active student involvement.</td>
<td>.831</td>
<td>.035</td>
<td>.734</td>
</tr>
<tr>
<td>33. Course time is spent efficiently.</td>
<td>.830</td>
<td>.019</td>
<td>.712</td>
</tr>
<tr>
<td>68. My professor interacts with me and other students in a sincere way.</td>
<td>.802</td>
<td>.106</td>
<td>.781</td>
</tr>
<tr>
<td>29. Achieving the course objectives is important to me.</td>
<td>.790</td>
<td>-.053</td>
<td>.565</td>
</tr>
<tr>
<td>40. I recognize the relevance of the assignments in this course.</td>
<td>.771</td>
<td>.076</td>
<td>.687</td>
</tr>
<tr>
<td>Item</td>
<td>Factor 1 Interpersonal Tasks</td>
<td>Factor 2 Personalization</td>
<td>$h^2$</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>--------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>42. I understand what it takes to be successful in this course.</td>
<td>.765</td>
<td>.085</td>
<td>.689</td>
</tr>
<tr>
<td>13. My professor is genuine.</td>
<td>.764</td>
<td>.120</td>
<td>.734</td>
</tr>
<tr>
<td>1. I feel comfortable with my professor.</td>
<td>.756</td>
<td>.167</td>
<td>.788</td>
</tr>
<tr>
<td>21. My professor clearly identifies the purpose of this course.</td>
<td>.748</td>
<td>.162</td>
<td>.765</td>
</tr>
<tr>
<td>46. My professor appears experienced in teaching.</td>
<td>.747</td>
<td>.046</td>
<td>.612</td>
</tr>
<tr>
<td>45. My professor shows that he/she is an expert in the subject matter.</td>
<td>.743</td>
<td>.081</td>
<td>.647</td>
</tr>
<tr>
<td>30. I agree with the classroom objectives.</td>
<td>.732</td>
<td>.134</td>
<td>.698</td>
</tr>
<tr>
<td>6. My professor welcomes my involvement in class.</td>
<td>.715</td>
<td>.144</td>
<td>.685</td>
</tr>
<tr>
<td>4. My professor respects me.</td>
<td>.702</td>
<td>.182</td>
<td>.716</td>
</tr>
<tr>
<td>57. My professor’s teaching style is compatible with my learning style.</td>
<td>.686</td>
<td>.160</td>
<td>.659</td>
</tr>
<tr>
<td>62. My professor appears warm toward me.</td>
<td>.654</td>
<td>.178</td>
<td>.632</td>
</tr>
<tr>
<td>27. My professor is willing to work with the students on learning objectives and teaching strategies.</td>
<td>.633</td>
<td>.274</td>
<td>.734</td>
</tr>
<tr>
<td>8. My professor is available when I need him/her.</td>
<td>.621</td>
<td>.272</td>
<td>.711</td>
</tr>
<tr>
<td>39. I have a clear understanding of how the course activities are preparing me for personal success.</td>
<td>.600</td>
<td>.261</td>
<td>.660</td>
</tr>
<tr>
<td>22. I agree with my professor about what I ought to get out of this course.</td>
<td>.597</td>
<td>.305</td>
<td>.720</td>
</tr>
<tr>
<td>7. My professor has my best interests in mind.</td>
<td>.544</td>
<td>.357</td>
<td>.712</td>
</tr>
<tr>
<td>16. My professor accepts me.</td>
<td>.534</td>
<td>.368</td>
<td>.711</td>
</tr>
<tr>
<td>41. My professor is willing to adjust the course based on student feedback.</td>
<td>.514</td>
<td>.220</td>
<td>.480</td>
</tr>
<tr>
<td>32. What I am doing in this course brings me closer to achieving my academic goals.</td>
<td>.501</td>
<td>.280</td>
<td>.537</td>
</tr>
<tr>
<td>26. I work with my professor on specific goals in the course.</td>
<td>-.254</td>
<td>.923</td>
<td>.568</td>
</tr>
<tr>
<td>15. My professor recognizes my expertise and unique perspective.</td>
<td>-.126</td>
<td>.917</td>
<td>.686</td>
</tr>
<tr>
<td>25. My professor helps me recognize areas where I can improve.</td>
<td>-.121</td>
<td>.917</td>
<td>.690</td>
</tr>
<tr>
<td>20. My professor understands what my goals are.</td>
<td>-.125</td>
<td>.905</td>
<td>.666</td>
</tr>
</tbody>
</table>
Table 5. Factor Loading Values in the Two-factor Solution for All Items (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Interpersonal Tasks</th>
<th>Factor 2 Personalization</th>
<th>( h^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. My professor shows an interest in me.</td>
<td>-0.033</td>
<td>.865</td>
<td>.707</td>
</tr>
<tr>
<td>9. My professor makes the effort to understand me.</td>
<td>-0.007</td>
<td>.843</td>
<td>.703</td>
</tr>
<tr>
<td>23. My professor and I agree on what is important for me to work on.</td>
<td>-0.042</td>
<td>.829</td>
<td>.637</td>
</tr>
<tr>
<td>14. My professor provides constructive feedback to me.</td>
<td>0.074</td>
<td>.759</td>
<td>.665</td>
</tr>
<tr>
<td>5. My professor offers me encouragement in class.</td>
<td>0.158</td>
<td>.735</td>
<td>.737</td>
</tr>
<tr>
<td>10. My professor is tactful when commenting about my performance.</td>
<td>0.118</td>
<td>.735</td>
<td>.683</td>
</tr>
<tr>
<td>17. My professor has confidence in my abilities.</td>
<td>0.180</td>
<td>.694</td>
<td>.699</td>
</tr>
<tr>
<td>3. My professor likes me.</td>
<td>0.201</td>
<td>.631</td>
<td>.627</td>
</tr>
<tr>
<td>2. My professor is genuinely concerned for my learning.</td>
<td>0.358</td>
<td>.559</td>
<td>.736</td>
</tr>
<tr>
<td>12. My professor takes the time to listen to me.</td>
<td>0.350</td>
<td>.554</td>
<td>.717</td>
</tr>
<tr>
<td>28. My professor has realistic expectations of me.</td>
<td>0.411</td>
<td>.495</td>
<td>.716</td>
</tr>
<tr>
<td>31. I find what we are doing in this class is related to my overall college goals.</td>
<td>0.300</td>
<td>.453</td>
<td>.497</td>
</tr>
<tr>
<td>36. The course topics and assignments are relevant to my academic goals.</td>
<td>0.344</td>
<td>.404</td>
<td>.487</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>36.239</td>
<td>3.476</td>
<td></td>
</tr>
<tr>
<td>% of variance</td>
<td>64.713%</td>
<td>6.207%</td>
<td></td>
</tr>
<tr>
<td>Cronbach’s ( \alpha )</td>
<td>0.989</td>
<td>0.967</td>
<td></td>
</tr>
</tbody>
</table>

Note. \( N = 319 \). Factor loadings \( \geq |.40| \) are in **boldface**.

The first factor accounted for 64.71% of the variance and contained 39 items. All of the remaining items from the expertness (n = 8), attractiveness (n = 5) and trustworthiness (n = 6) scales loaded on the first factor, as well as seven items from the bond scale, eight items from the task scale and five items from the goals scale. One item, 28 “My professor has realistic expectations of me” loaded on factor one (.411) and two (.495). This item was retained for factor two because the factor loading was higher for
this factor. Items on factor one appear to represent Strong’s interpersonal influence theory, the majority of the task items from Bordin’s theory, and select items from the bond and goals scales that reflect course objectives and general positive traits; therefore this factor was termed “Interpersonal tasks.” Cronbach’s alpha was .989 and would not be improved by deleting any item. Inter-item correlations ranged from .426 to .861 and all were significant at the p < .01 level.

The second factor accounted for 6.21% of the variance and contained 17 items. Ten items came from the bond scale, five items came from the goals scale, and two items came from the task scale. As stated previously, only item 28 cross-loaded on factor one. The items on this factor appear to be derived primarily from Bordin’s theory of the working alliance and have an underlying theme of personalizing the course to an individual student. For example item 26, “I work with my professor on specific goals in the course,” and item 11, “My professor shows an interest in me.” This factor is very similar to the personalization factor that was derived from the first EFA (hypothesis one testing), except that this factor also includes the following items: 2, 12, 28, 31, and 36. Due to the similarity to the second factor in the first EFA, this factor was also termed “Personalization.” Cronbach’s alpha is .967 and cannot be improved by deleting any item. Inter-item correlations ranged from .48 to .81 and all were significant at the p < .01 level.

In summary, the two-factor solution appears to have divided the items between the two main theories, with the majority of items in factor one containing the dimensions theorized by Strong (along with the task subscale of Bordin’s theory), and factor two containing the bond and goals dimensions theorized by Bordin. Factor one could be
considered “Interpersonal Tasks” to reflect the subscales it appears to represent and factor two could be considered “Personalization.” This solution was deemed interpretable and could be compared to other solutions from testing hypotheses one through three.

**Four-factor solution.** The four-factor solution testing all of the items from both theories originally accounted for 74.98% of the common variance. Three (63, 37, and 39) out of the 59 items did not load on at least one factor at a cutoff of $| .40 |$ or higher. When these three items were removed from the analysis the solution accounted for 75.78% of the common variance and the remaining 56 items loading on at least one factor at a cutoff of at least $| .40 |$ (see Table 6).

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Interpersonal Tasks</th>
<th>Factor 2 Personalization</th>
<th>Factor 3 Academic Goals</th>
<th>Factor 4 Expertness</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>49. My professor is prepared for each class session.</td>
<td><strong>1.024</strong></td>
<td>-0.187</td>
<td>-0.031</td>
<td>0.029</td>
<td>0.799</td>
</tr>
<tr>
<td>59. My professor is friendly towards me.</td>
<td><strong>0.997</strong></td>
<td>-0.054</td>
<td>-0.060</td>
<td>0.068</td>
<td>0.777</td>
</tr>
<tr>
<td>72. My professor appears open when interacting with students.</td>
<td><strong>0.971</strong></td>
<td>-0.090</td>
<td>-0.040</td>
<td>0.067</td>
<td>0.846</td>
</tr>
<tr>
<td>64. My professor appears dependable.</td>
<td><strong>0.937</strong></td>
<td>-0.022</td>
<td>-0.133</td>
<td>0.131</td>
<td>0.833</td>
</tr>
<tr>
<td>55. My professor appears to appreciate student input during class.</td>
<td><strong>0.930</strong></td>
<td>-0.019</td>
<td>-0.142</td>
<td>0.094</td>
<td>0.773</td>
</tr>
<tr>
<td>69. My professor is a trustworthy individual.</td>
<td><strong>0.888</strong></td>
<td>0.018</td>
<td>-0.083</td>
<td>0.041</td>
<td>0.755</td>
</tr>
<tr>
<td>6. My professor welcomes my involvement in class.</td>
<td><strong>0.878</strong></td>
<td>0.175</td>
<td>-0.093</td>
<td>-0.160</td>
<td>0.748</td>
</tr>
</tbody>
</table>
Table 6. Factor Loading Values in the Four-factor Solution for All Items (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Interpersonal Tasks</th>
<th>Factor 2 Personalization</th>
<th>Factor 3 Academic Goals</th>
<th>Factor 4 Expertness</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>71. My professor presents him/herself in a straightforward manner.</td>
<td>.877</td>
<td>-.062</td>
<td>-.045</td>
<td>.141</td>
<td>.793</td>
</tr>
<tr>
<td>70. My professor is fair when evaluating course and student material.</td>
<td>.857</td>
<td>-.075</td>
<td>-.009</td>
<td>.144</td>
<td>.789</td>
</tr>
<tr>
<td>29. Achieving the course objectives is important to me.</td>
<td>.819</td>
<td>-.155</td>
<td>.249</td>
<td>-.197</td>
<td>.643</td>
</tr>
<tr>
<td>4. My professor respects me.</td>
<td>.810</td>
<td>.152</td>
<td>.060</td>
<td>-.180</td>
<td>.769</td>
</tr>
<tr>
<td>68. My professor interacts with me and other students in a sincere way.</td>
<td>.798</td>
<td>.109</td>
<td>-.016</td>
<td>.031</td>
<td>.787</td>
</tr>
<tr>
<td>34. My responsibilities are clear in this course.</td>
<td>.795</td>
<td>-.100</td>
<td>.229</td>
<td>-.024</td>
<td>.782</td>
</tr>
<tr>
<td>35. My professor provides clear instructions for the assignments in this course.</td>
<td>.790</td>
<td>-.105</td>
<td>.116</td>
<td>.087</td>
<td>.729</td>
</tr>
<tr>
<td>58. My professor appears enthusiastic about the course material and teaching.</td>
<td>.777</td>
<td>.006</td>
<td>-.070</td>
<td>.224</td>
<td>.777</td>
</tr>
<tr>
<td>1. I feel comfortable with my professor.</td>
<td>.767</td>
<td>.128</td>
<td>.094</td>
<td>-.065</td>
<td>.808</td>
</tr>
<tr>
<td>13. My professor is genuine.</td>
<td>.761</td>
<td>.132</td>
<td>-.023</td>
<td>.029</td>
<td>.744</td>
</tr>
<tr>
<td>38. My professor promotes active student involvement.</td>
<td>.754</td>
<td>.055</td>
<td>-.056</td>
<td>.163</td>
<td>.740</td>
</tr>
<tr>
<td>33. Course time is spent efficiently.</td>
<td>.717</td>
<td>-.024</td>
<td>.106</td>
<td>.105</td>
<td>.712</td>
</tr>
</tbody>
</table>
Table 6. Factor Loading Values in the Four-factor Solution for All Items (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Interpersonal Tasks</th>
<th>Factor 2 Personalization</th>
<th>Factor 3 Academic Goals</th>
<th>Factor 4 Expertness</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>44. My professor appears confident when presenting material.</td>
<td>.682</td>
<td>-.014</td>
<td>-.144</td>
<td>.444</td>
<td>.814</td>
</tr>
<tr>
<td>43. My professor presents the material in a clear way.</td>
<td>.669</td>
<td>-.049</td>
<td>.049</td>
<td>.319</td>
<td>.798</td>
</tr>
<tr>
<td>16. My professor accepts me.</td>
<td>.669</td>
<td>.363</td>
<td>.005</td>
<td>-.183</td>
<td>.765</td>
</tr>
<tr>
<td>62. My professor appears warm toward me.</td>
<td>.667</td>
<td>.194</td>
<td>-.043</td>
<td>.023</td>
<td>.642</td>
</tr>
<tr>
<td>42. I understand what it takes to be successful in this course.</td>
<td>.648</td>
<td>-.002</td>
<td>.209</td>
<td>.047</td>
<td>.699</td>
</tr>
<tr>
<td>30. I agree with the classroom objectives.</td>
<td>.628</td>
<td>.027</td>
<td>.249</td>
<td>.003</td>
<td>.716</td>
</tr>
<tr>
<td>47. My professor is insightful when discussing course material.</td>
<td>.625</td>
<td>.014</td>
<td>-.004</td>
<td>.368</td>
<td>.805</td>
</tr>
<tr>
<td>8. My professor is available when I need him/her.</td>
<td>.617</td>
<td>.265</td>
<td>.003</td>
<td>.025</td>
<td>.716</td>
</tr>
<tr>
<td>21. My professor clearly identifies the purpose of this course.</td>
<td>.580</td>
<td>.061</td>
<td>.234</td>
<td>.110</td>
<td>.774</td>
</tr>
<tr>
<td>40. I recognize the relevance of the assignments in this course.</td>
<td>.571</td>
<td>-.081</td>
<td>.374</td>
<td>.062</td>
<td>.729</td>
</tr>
<tr>
<td>27. My professor is willing to work with the students on learning objectives and teaching strategies.</td>
<td>.542</td>
<td>.218</td>
<td>.115</td>
<td>.079</td>
<td>.731</td>
</tr>
</tbody>
</table>
Table 6. Factor Loading Values in the Four-factor Solution for All Items (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Interpersonal Tasks</th>
<th>Factor 2 Personalization</th>
<th>Factor 3 Academic Goals</th>
<th>Factor 4 Expertness</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. My professor has my best interests in mind.</td>
<td>.479</td>
<td>.303</td>
<td>.129</td>
<td>.028</td>
<td>.717</td>
</tr>
<tr>
<td>57. My professor’s teaching style is compatible with my learning style.</td>
<td>.429</td>
<td>.133</td>
<td>.072</td>
<td>.345</td>
<td>.704</td>
</tr>
<tr>
<td>22. I agree with my professor about what I ought to get out of this course.</td>
<td>.396</td>
<td>.155</td>
<td>.356</td>
<td>.079</td>
<td>.752</td>
</tr>
<tr>
<td>41. My professor is willing to adjust the course based on student feedback.</td>
<td>.393</td>
<td>.231</td>
<td>-.037</td>
<td>.220</td>
<td>.497</td>
</tr>
<tr>
<td>25. My professor helps me recognize areas where I can improve.</td>
<td>-.207</td>
<td>.896</td>
<td>.011</td>
<td>.157</td>
<td>.712</td>
</tr>
<tr>
<td>11. My professor shows an interest in me.</td>
<td>.078</td>
<td>.892</td>
<td>-.111</td>
<td>-.050</td>
<td>.729</td>
</tr>
<tr>
<td>15. My professor recognizes my expertise and unique perspective.</td>
<td>-.133</td>
<td>.890</td>
<td>.022</td>
<td>.036</td>
<td>.689</td>
</tr>
<tr>
<td>20. My professor understands what my goals are.</td>
<td>-.200</td>
<td>.879</td>
<td>.038</td>
<td>.118</td>
<td>.684</td>
</tr>
<tr>
<td>9. My professor makes the effort to understand me.</td>
<td>.090</td>
<td>.870</td>
<td>-.110</td>
<td>-.031</td>
<td>.723</td>
</tr>
<tr>
<td>26. I work with my professor on specific goals in the course.</td>
<td>-.424</td>
<td>.832</td>
<td>.212</td>
<td>.134</td>
<td>.604</td>
</tr>
<tr>
<td>23. My professor and I agree on what is important for me to work on.</td>
<td>-.101</td>
<td>.777</td>
<td>.090</td>
<td>.064</td>
<td>.640</td>
</tr>
</tbody>
</table>
Table 6. Factor Loading Values in the Four-factor Solution for All Items (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Interpersonal Tasks</th>
<th>Factor 2 Personalization</th>
<th>Factor 3 Academic Goals</th>
<th>Factor 4 Expertness</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. My professor provides constructive feedback to me.</td>
<td>.128</td>
<td>.745</td>
<td>-.014</td>
<td>-.031</td>
<td>.668</td>
</tr>
<tr>
<td>5. My professor offers me encouragement in class.</td>
<td>.179</td>
<td>.735</td>
<td>-.035</td>
<td>.027</td>
<td>.745</td>
</tr>
<tr>
<td>10. My professor is tactful when commenting about my performance.</td>
<td>.172</td>
<td>.721</td>
<td>-.007</td>
<td>-.039</td>
<td>.688</td>
</tr>
<tr>
<td>17. My professor has confidence in my abilities.</td>
<td>.169</td>
<td>.663</td>
<td>.037</td>
<td>.027</td>
<td>.699</td>
</tr>
<tr>
<td>3. My professor likes me.</td>
<td>.314</td>
<td>.653</td>
<td>-.065</td>
<td>-.100</td>
<td>.658</td>
</tr>
<tr>
<td>12. My professor takes the time to listen to me.</td>
<td>.477</td>
<td>.552</td>
<td>-.011</td>
<td>-.155</td>
<td>.756</td>
</tr>
<tr>
<td>2. My professor is genuinely concerned for my learning.</td>
<td>.396</td>
<td>.551</td>
<td>-.011</td>
<td>-.019</td>
<td>.744</td>
</tr>
<tr>
<td>28. My professor has realistic expectations of me.</td>
<td>.369</td>
<td>.452</td>
<td>.093</td>
<td>.024</td>
<td>.720</td>
</tr>
<tr>
<td>63. There are similarities between myself and my professor.</td>
<td>.144</td>
<td>.341</td>
<td>.046</td>
<td>.322</td>
<td>.519</td>
</tr>
<tr>
<td>37. I have a shared responsibility with my professor for my learning.</td>
<td>.256</td>
<td>.291</td>
<td>.230</td>
<td>.077</td>
<td>.552</td>
</tr>
<tr>
<td>31. I find what we are doing in this class is related to my overall college goals.</td>
<td>-.111</td>
<td>.112</td>
<td>.891</td>
<td>.006</td>
<td>.801</td>
</tr>
</tbody>
</table>
Table 6. Factor Loading Values in the Four-factor Solution for All Items (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Interpersonal Tasks</th>
<th>Factor 2 Personalization</th>
<th>Factor 3 Academic Goals</th>
<th>Factor 4 Expertness</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>24. The work I conduct in this course fits in with my college academic goals.</td>
<td>.026</td>
<td>.004</td>
<td>.845</td>
<td>-.035</td>
<td>.721</td>
</tr>
<tr>
<td>36. The course topics and assignments are relevant to my academic goals.</td>
<td>.026</td>
<td>.074</td>
<td>.844</td>
<td>-.092</td>
<td>.759</td>
</tr>
<tr>
<td>32. What I am doing in this course brings me closer to achieving my academic goals.</td>
<td>.188</td>
<td>-.024</td>
<td>.749</td>
<td>-.022</td>
<td>.745</td>
</tr>
<tr>
<td>39. I have a clear understanding of how the course activities are preparing me for personal success.</td>
<td>.303</td>
<td>.098</td>
<td>.395</td>
<td>.192</td>
<td>.719</td>
</tr>
<tr>
<td>45. My professor shows that he/she is an expert in the subject matter.</td>
<td>.365</td>
<td>.088</td>
<td>-.026</td>
<td>.601</td>
<td>.821</td>
</tr>
<tr>
<td>46. My professor appears experienced in teaching.</td>
<td>.405</td>
<td>.056</td>
<td>-.044</td>
<td>.560</td>
<td>.757</td>
</tr>
<tr>
<td>50. My professor seems skillful at teaching.</td>
<td>.501</td>
<td>.043</td>
<td>-.021</td>
<td>.539</td>
<td>.883</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of variance</td>
<td>37.69</td>
<td>3.51</td>
<td>1.71</td>
<td>1.37</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 319. Factor loadings $\geq |.40|$ are in **boldface**.

The first factor accounted for 63.88% of the variance and contained 36 items. All items from the attractiveness and trustworthiness scales loaded on the first factor, as well
as seven items from the bond scale, six items from the expertness scale, seven items from the task scale and five items from the goals scale. Three items (44, 46 and 50) cross-loaded on factor four. The loadings for item 44 (.682 and .444) were determined to have a large enough difference that the item was retained on factor one and the loadings for item 46 (.405 and .560) had a large enough difference that the item was retain on factor four. However the factor loadings for item 50 (.501 and .539) were so similar that the item was removed from further analysis in the four-factor solution in order to improve the clarity of the factors. Items 26 and item 12 cross-loaded on factor two. Item 26 had a higher factor loading on factor two (-.424 and .832, respectfully); therefore it was retained on factor two. The factor loading for item 12 were so similar (.477 and .552) that it was removed from further analysis in order to provide clarity for the factors.

Factor one appears to be similar to factor one from the two-factor solution involving all of the items (see Table 5) which primarily resembled Strong’s interpersonal influence theory, as well as the task subscale of Bordin’s theory and select items from the bond and goals subscales. Items appear to include positive interpersonal personality variables, such as warmth and trustworthiness. This factor was termed “Interpersonal Tasks” which includes the interpersonal skills, as well as the pragmatic skills.

The second factor accounted for 5.95% of the variance and contained 15 items. Ten items came from the bond scale, and five items came from the goals scale. As previously discussed, two items (12 and 26) cross-loaded on factor one. Item 12 was removed from further analysis and item 26 was retained for factor two. Items loading on factor two appear to reflect how the professor can “ personalize” or “ individualize” the
course to the individual student, similar to factor two from the previous two-factor solution of these items; therefore this factor was termed “Personalization.”

The third factor accounted for 2.90% of the variance and contained four items. Three items came from the tasks scale, and one item came from the goals scale. No items cross-loaded onto any other factor at the cutoff level of $| .40 |$. This factor has the same items as factor three from the solution representing Bordin’s theory; therefore this factor was termed “Academic Goals.”

The fourth factor accounted for 2.26% of the variance and contained four items from the expertness scale. Three of these items cross-loaded on factor one. Item 44 was retained on factor one due to the larger factor loading, while item 46 was retained on factor four. Item 50 had similar loading on factor one and four; therefore it was removed from further analysis. These changes result in a two-item factor (items 45 and 46) which was named “Expertness.”

Removal of items 12 and 50 resulted in changes to other factor loadings within the factor structure. Item 45, which previously only loaded on factor four significantly, cross-loaded on factor one (.613) and factor four (.511). This change suggested that this item now correlated with factor one better than with factor four. The second item from factor four (item 46) also cross-loaded on factor one (.603) and factor four (.447). Just like item 45, item 46 now had a higher loading on factor one. No other items loaded on factor four at a significant level; therefore factor four was eliminated. Elimination of the fourth factor resulted in the solution being rejected and no further analyses were undertaken.
Six-factor solution. An EFA was conducted exploring a six-factor solution to test hypothesis three that is based on items that were written to test six dimensions from the two theories. The six-factor solution accounted for 77.55% of the variance; six items (7, 21, 22, 27, 37, and 63) did not load on any factor at a level of at least \(| .40 | \) or higher. Factor six did not contain any items that met the cutoff criteria for factor loadings; therefore the six-factor solution was immediately rejected without further exploration.

Three potential factor solutions were explored with the entire item pool: two-factor, four-factor and six-factor. The two-factor solution yielded an interpretable result. Factor one contained items related to Strong’s interpersonal influence theory (1968) and the task subscale from Bordin’s theory of the working alliance (1979). The second factor contained items associated with the bond and goals subscales from Bordin’s theory of the working alliance. The four-factor solution did not yield an interpretable result because only one item loaded on the fourth factor and this item had to be removed due to cross-loading on factor one. Therefore the four-factor solution was rejected. Additionally, the six factor solution was rejected because no items loaded on the sixth factor in the initial extraction. Hypothesis three did not specifically state how many factors should result from the EFA in order for the hypothesis to be confirmed. Confirmation of this hypothesis results if any interpretable solution is found. A two-factor solution was interpretable, therefore hypothesis three, which states “The student-teacher relationship will contain dimensional elements from both Bordin and Strong’s theory, which may contain up to six factors which may correspond to one of the theorized factors (bond, agreement of goals, agreement of tasks, expertness, trustworthiness, and attractiveness) or may be a blend of the elements” was confirmed.
Summary of Research Question 1 (Hypotheses 1-3)

The first research question stated, “Is there a dimensional nature to the student-teacher relationship and if so, to what degree are these dimensions representative of existing theories?” The current study attempted to answer this question by developing and adapting items that represent two different counseling psychology theories, Bordin’s theory of the working alliance (1979) and Strong’s interpersonal influence theory (1968). These items were then submitted to several exploratory factor analyses in order to explore the dimensional nature of the items. Hypotheses one and two were rejected because the resulting interpretable solutions did not sufficiently resemble the hypothesized factors by the theorists. Hypothesis three was confirmed because there was an interpretable solution (two factors) that confirmed this hypothesis.

Although hypotheses one and two were rejected, interpretable solutions that did not resemble the theorized dimensions were found. The first set of EFAs (analyzing only the items from Bordin’s theory of working alliance) resulted in a three-factor interpretable solution (solution one) containing the following factors: role fulfillment, personalization, and academic goals. The second set of EFAs (analyzing only the items from Strong’s interpersonal influence theory) resulted in a one-factor solution (solution two) that was named interpersonal influence. The final set of EFAs (analyzing all of the items from Bordin and Strong’s theories) resulted in an interpretable two-factor solution (solution three) with the following factors: interpersonal tasks and personalization.

Correlations between the interpretable solutions and their factors are displayed in Table 7. Correlations ranged from .66 (between measurement scale two and academic goals factor)
to .99 (between the personalization factors from measurement scale one and three). All correlations were significant at the p < .01 level.

Examination of each interpretable solution suggests three separate ways of interpreting the student-teacher relationship. One potential way of interpreting the relationship is to assume Bordin’s theory of working alliance adequately represents the student-teacher relationship and the relationship is made up of three components, which are similar, but not the same as, Bordin’s originally theorized components. Interpreting the relationship using only Bordin’s items neglects the limitations of applying Bordin’s theory to student teacher relationships, namely the hierarchical nature to the relationship, the evaluative component to the relationship and the expertness of the teacher. In contrast, the second option for interpreting the student-teacher relationship is to only use the items from Strong’s theory of interpersonal influence, which suggests that the student-teacher relationship is a one dimensional construct. While this is the most parsimonious way of interpreting the relationship, it also neglects the dimensions from Bordin’s theory, which have received significant attention in the literature (Koch, 2002; Meyers, 2008) and have face value in terms of interpreting the student-teacher relationship. The final way of interpreting the student-teacher relationship involves using items from both theories, which suggests that the relationship is a two dimensional construct consisting of interpersonal tasks and personalization. Using items from both theories addresses the limitations of only using one theory to interpret student-teacher relationships (see chapter two for further discussion). Using this solution to form the Student-Teacher Relationship Inventory (STRI) appears to be the best option for interpreting student-teacher relationships and testing whether the relationship is related to
student learning outcomes. Solution three was renamed the Student-Teacher Relationship Inventory (STRI) and was used in all subsequent analyses.

Table 7. Correlations Between Interpretable Solutions

<table>
<thead>
<tr>
<th>EFA Solution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Solution one</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Role fulfillment</td>
<td>.93</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Personalization</td>
<td>.90</td>
<td>.80</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Academic Goals</td>
<td>.90</td>
<td>.75</td>
<td>.67</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Solution two</td>
<td>.84</td>
<td>.94</td>
<td>.73</td>
<td>.66</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Solution three</td>
<td>.97</td>
<td>.96</td>
<td>.93</td>
<td>.78</td>
<td>.91</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>7. Interpersonal Tasks</td>
<td>.90</td>
<td>.99</td>
<td>.77</td>
<td>.73</td>
<td>.98</td>
<td>.95</td>
<td>-</td>
</tr>
<tr>
<td>8. Personalization</td>
<td>.95</td>
<td>.85</td>
<td>.99</td>
<td>.75</td>
<td>.77</td>
<td>.96</td>
<td>.82</td>
</tr>
</tbody>
</table>

Note: MS = measurement scale
All correlations were significant at p < .01

**Hypothesis Four**

Hypothesis four stated that “student-teacher relationship scores will correlate positively with students’ self-efficacy scores.” The average self-efficacy score was correlated with the total STRI (r = .254), as well as the two subscales, interpersonal tasks (r = .215) and personalization (r = .266). All correlations were significant at the p ≤ .01, (see Table 8). These results suggest that the STRI was significantly correlated with a student’s feeling of mastery in a course. The better the student-teacher relationship is, as measured by the STRI, the greater the sense of self-efficacy, which means that hypothesis four is confirmed.

**Hypothesis Five**

Hypothesis five stated that “relationship scores will correlate positively with students’ satisfaction with the course and teacher.” There are three separate results for this outcome variable: satisfaction with teacher, satisfaction with course, and overall satisfaction scores, which was the average between satisfaction with course and teacher.
Table 8 displays the results for each satisfaction variable. The STRI significantly correlated (p ≤ .01) with satisfaction with the teacher (r = .543), satisfaction with the course (r = .442) and overall satisfaction (r = .540). In addition, both subscales significantly correlated with all satisfaction variables. These results suggest that the more positive the student-teacher relationship is, the greater the satisfaction the student feels with both the course and the teacher, which means that hypothesis five is confirmed.

**Hypothesis Six**

Hypothesis six stated that “relationship scores will correlate positively with students’ active participation in learning.” The average participation in learning score was correlated with the total STRI (r = .359), the interpersonal tasks subscale (r = .284) and the personalization subscale (r = .395). All correlations were significant at the p ≤ .01 (see Table 8). These results suggest that the more positive the student-teacher relationship, as measured by the STRI, the more likely students are to participate in learning behaviors, such as reading the textbook and engaging in class, according to their self-report. This means that hypothesis six was confirmed.

**Hypothesis Seven**

Hypothesis seven stated that “relationship scores will correlate positively with students’ course performance.” The STRI and its subscales were correlated with the final number of earned points within the Introduction to Psychology course. Earned points did not significantly correlate with the STRI (r = .022), or either of its subscales—interpersonal tasks (r = .016) and personalization (r = .031). These results suggest that there is no relationship between the quality of student-teacher relationships, as measured by the STRI, and final grade in the course. In order to control for previous ability, partial
correlations based on other academic information were computed. There were no significant correlations (see Table 9) between the STRI and earned points observed when controlling for high school GPA ($r = .100$), college GPA ($r = .048$), SAT scores ($r = .130$), or self-reported GPA ($r = .085$). Results suggest that even when controlling for previous ability, the student teacher relationship is not related to overall course performance, rejecting hypothesis seven.

Table 8. Correlations between STRI and Student Learning

<table>
<thead>
<tr>
<th>Measurement Scale</th>
<th>Self-efficacy</th>
<th>Satisfaction with teacher</th>
<th>Satisfaction with course</th>
<th>Overall satisfaction</th>
<th>Participation in Learning</th>
<th>Earned Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRI</td>
<td>.254*</td>
<td>.543*</td>
<td>.442*</td>
<td>.540*</td>
<td>.359*</td>
<td>.022</td>
</tr>
<tr>
<td>Interpersonal Tasks</td>
<td>.215*</td>
<td>.583*</td>
<td>.443*</td>
<td>.561*</td>
<td>.284*</td>
<td>.016</td>
</tr>
<tr>
<td>Personalization</td>
<td>.266*</td>
<td>.459*</td>
<td>.402*</td>
<td>.474*</td>
<td>.395*</td>
<td>.031</td>
</tr>
</tbody>
</table>

Note. N = 319 for all variables except earned points. N= 187 for earned points
*p ≤ .01

Summary Research Question 2 (Hypotheses 4-7)

Hypotheses four, five, and six were confirmed; in general the student-teacher relationship was positively correlated with student self-efficacy, satisfaction with the instructor, satisfaction with the course, overall satisfaction, and student participation in learning. Hypothesis seven was rejected; the student-teacher relationship was not correlated with final grade.
Additional Analyses

Additional academic information was gathered from the participants who granted special consent (n = 208). The institutional research department at the university provided college GPA for 159 participants, ACT scores for 127 participants, SAT scores for 21 participants and high school GPA from 134 participants. ACT scores were converted to SAT scores in order to create an equivalent variable. Class data were obtained through the introduction to psychology coordinator, who gathers and maintains records from all introduction to psychology instructors. Completed data, which includes attendance information and individual test scores, were obtained for 183 participants, while an additional 17 participants had test data, but not attendance information. The introduction to psychology course had five tests, each worth 100 points, and students could take an optional sixth test, which would replace their lowest scoring test if they had fewer than four absences. Absenteeism, which was defined as the number of days absent from class, correlated negatively with the grade on test 1 (r = -.15, p ≤ .05), test 2 (r = -.26, p ≤ .01), test 3 (r = -.40, p ≤ .01), test 4 (r = -.41, p ≤ .01), test 5 (r = -.38, p ≤ .01), test 6 (r = -.53, p ≤ .01), number of earned points (r = -.46, p ≤ .01), and college GPA (r = -.49, p ≤ .01), which suggests that students who attended class more often, also did better on the individual exams, had higher number of earned points (i.e. final grade), and higher college GPAs. The individual exam scores were highly positively correlated, ranging from .40 to .82, and all correlations were significant at p ≤ .01. The final number of earned points correlated positively with all exam scores and ranged from .61 to .88 (p ≤ .01), as well as college GPA (r = .81, p ≤ .01), SAT score (r = .44, p ≤ .01), and high school GPA (r = .34, p ≤ .01).
Final points earned in class were not significantly correlated with the STRI as reported previously; however other academic data may be related to the student-teacher relationship. Bivariate correlations were conducted with the STRI and the additional academic information collected (see table 9). Only the correlations between test one and the STRI ($r = .17, p \leq .05$), the interpersonal tasks subscale ($r = .17, p \leq .05$), and the personalization subscale ($r = .15, p \leq .05$) were significant. These results suggest that a positive student-teacher relationship is slightly related to scores on the first exam; however the student-teacher relationship does not appear to have an impact after the first exam. Because the student teacher relationship was not correlated with any other academic variables, additional analyses did not seem warranted.

Table 9. Correlations Between Additional Academic Information and STRI

<table>
<thead>
<tr>
<th></th>
<th>STRI</th>
<th>Interpersonal Tasks</th>
<th>Personalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absenteeism (N=183)</td>
<td>.020</td>
<td>.023</td>
<td>.011</td>
</tr>
<tr>
<td>Test 1 (N=200)</td>
<td>.171*</td>
<td>.171*</td>
<td>.150*</td>
</tr>
<tr>
<td>Test 2 (N=200)</td>
<td>.025</td>
<td>.015</td>
<td>.043</td>
</tr>
<tr>
<td>Test 3 (N=200)</td>
<td>.026</td>
<td>.022</td>
<td>.030</td>
</tr>
<tr>
<td>Test 4 (N=200)</td>
<td>-.003</td>
<td>-.020</td>
<td>.033</td>
</tr>
<tr>
<td>Test 5 (N=200)</td>
<td>-.013</td>
<td>-.012</td>
<td>-.015</td>
</tr>
<tr>
<td>Test 6 (N=66)</td>
<td>-.194</td>
<td>-.198</td>
<td>-.159</td>
</tr>
<tr>
<td>College GPA (N=159)</td>
<td>-.008</td>
<td>-.001</td>
<td>-.022</td>
</tr>
<tr>
<td>SAT (N=127)</td>
<td>-.109</td>
<td>-.102</td>
<td>-.106</td>
</tr>
<tr>
<td>HS GPA (N=134)</td>
<td>-.045</td>
<td>-.038</td>
<td>-.049</td>
</tr>
</tbody>
</table>

Note. *$p \leq .05$
Summary

This chapter presented results pertaining to this study’s hypotheses regarding the dimensional structure of the Student-Teacher Relationship Inventory (STRI) and the relationship between the STRI and the relevant outcome variables. Hypothesis one resulted in three factors (role fulfillment, personalization and academic goals) that did not fully resemble Bordin’s theorized three dimensions; however were the solution was still interpretable. Hypothesis two resulted in one factor, which did not resemble the theorized three dimensions corresponding to Strong’s interpersonal influence theory; however the factor analysis resulted in an interpretable solution. Hypothesis three resulted in one measurement scale with two factors (interpersonal tasks and personalization). Since hypothesis three was not based on an existing theory, no presumptions were hypothesized about the number or type of dimensions and hypothesis three was confirmed. In sum, three potential measurement scales resulted from testing hypotheses one through three using exploratory factor analysis. Although interpretable solutions were derived from testing each theory individually, the two-factor solution that resulted from the combination of Bordin’s theory of the working alliance (1979) and Strong’s interpersonal influence theory (1968) was used in subsequent analyses and named the Student Teacher Relationship Inventory. This solution was chosen because it was hypothesized in previous chapters (see one and two) that the theories would compliment each other well and each theory could account for the limitations of the other theory.

The STRI and its subscales significantly correlated with self-efficacy (hypothesis four), satisfaction with the teacher and course (hypothesis five), and participation in
learning (hypothesis six). The scale was not significantly correlated with final course performance (hypothesis seven). Chapter five will further elaborate on these results and discuss the implications.
CHAPTER V

DISCUSSION

The purpose of this study was to advance the understanding of the interpersonal dynamics within undergraduate classrooms through creating the Student-Teacher Relationship Inventory (STRI) from a thorough review of teaching theory and theories within the counseling helping relationship, and by examining the dimensional nature of this inventory. Once developed, the STRI was examined in relation to self-efficacy, student satisfaction, student participation in learning, and final course grade. Two counseling psychology theories (and their corresponding instruments) were used to create measurement items which could help operationalize the student-teacher relationship: Bordin’s working alliance theory (1979) and Strong’s theory of interpersonal influence (1968). In part I of the research study, items based on these two theories were subjected to exploratory factor analyses (EFA). Three specific sets of EFAs were completed, one using items related to Bordin’s theory of the working alliance (n = 40), one using items related to Strong’s interpersonal influence theory (n = 20) and one using a combination of the items related to Bordin and Strong’s theories (n = 60). Each set of EFAs resulted in one interpretable solution. The first solution, using only items representing Bordin’s working alliance theory (1979), had three factors (role fulfillment, personalization, and academic goals). The second solution, using only items representing Strong’s interpersonal influence theory (1968), resulted in only one factor named interpersonal
influence. The final solution, using items from both theories, resulted in two factors (interpersonal tasks and personalization). From a theoretical standpoint, neither Bordin’s theory of the working alliance, nor Strong’s interpersonal influence theory adequately encompassed all of the components of the student-teacher relationship; therefore it seemed advantageous to use the solution that contained items from both theories. Solution three was renamed the Student Teacher Relationship Inventory (STRI) and was correlated with student outcome variables (self-efficacy, student satisfaction, participation in learning, and final points earned).

In general, four of the seven hypotheses were confirmed (hypotheses three, four, five and six). Of the remaining three hypotheses, hypotheses one and two were rejected because they did not result in the same factor structure that was hypothesized, although they did result in interpretable solutions. Hypothesis seven was rejected. All seven hypotheses will be reviewed in detail below, along with the key strengths and weaknesses of the present investigation. Implications of the results of the present study with respect to future research and practice are also reviewed. Although the results of this study must be understood in the context of the limitations of the present investigation due to the nature of the sample, measures used, and overall design of the study, the findings of this investigation address major questions regarding the nature of student-teacher relationships, the applicability of counseling psychology theories in use with undergraduate classrooms, and the relationship between student-teacher interpersonal dynamics and student outcomes.
Dimensional Structure of the STRI

Two theories were examined to determine the appropriate dimensional structure of the Student Teacher Relationship Inventory: Bordin’s working alliance theory (1979) and Strong’s interpersonal influence theory (1968).

Working Alliance Theory

The first research question of the present study included three hypotheses which all pertained to the dimensional structure of student-teacher relationships and how the dimensional structure may relate to extant theories in counseling psychology. The first hypothesis proposed that a three-factor solution representing the three components of Bordin’s theory of the working alliance (1979) would occur if the 40 items representing Bordin’s theory were analyzed through exploratory factor analysis. A three-factor solution was observed, accounting for 73% of the common variance. The three factors were labeled role fulfillment, personalization, and academic goals. The resulting three factors did not coordinate strongly enough with the three dimensions from Bordin’s theory to say that the theory was fully operationalized in the student-teacher relationships examined; therefore hypothesis one was not confirmed. Although the hypothesis was not confirmed, the interpretable solution was still examined as a potential way of interpreting the student-teacher relationship.

Examining the results of the EFA that examined the items from Bordin’s theory as a whole, there was one general factor (termed role fulfillment) that accounted for 62% of the variance and contained items representing all three theorized dimensions from Bordin’s working alliance theory (1979). This finding stands in contrast to Bordin’s theory that the working alliance consists of three separate dimensions. However, this
finding is not completely surprising because the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) was used to create items for the current study and confirmatory factor analysis of the WAI in other studies (e.g. Tracey & Kokotovic, 1989) revealed that a bi-level hierarchical model, containing three “first-order” factors that correspond to Bordin’s original theory and one “second-order” general factor that they termed “general alliance” (p. 208-9), was the best fit for their data. In the current study, the large role fulfillment factor, which contained 21 of the 37 items in the total scale, may actually represent a second-order general factor. The smaller personalization and academic goals factors may represent first-order factors for the student-teacher relationship. Follow-up studies should examine whether any of the interpretable solutions would fit a two-level hierarchal model better than the model examined here.

Relating the results of the first EFA with used only Bordin-related items back to his original theory; Bordin’s first theorized dimension was bond, which is defined as a close emotional connection. Out of all of the theorized dimensions in the current study, the bond dimension had the most items written for it because it represents such a general category. A bond can be defined through mutual respect, feelings of comfort, showing an interest in each other, being tactful, or showing confidence toward an individual (see the bond items in Appendix A). The items (n =19) written for the bond dimension divided between factor one and two in the first EFA. Factor one represented the abilities of the professor to fulfill the basic duties of managing a classroom, while creating a positive environment. The bond items that represented general characteristics (respect, genuineness, welcoming, comfort, availability, acceptance, concern) loaded on this first factor which appears to represent basic foundations that need to exist in order for the
student to believe that the professor is fulfilling his/her role. Schlosser and colleagues’ (2003) qualitative study on advising relationships found that positive interpersonal rapport needed to be established as a necessary condition in order for advisees to benefit from the instructional and professional nature of the advising relationship. Advisees who were unsatisfied with their advising relationships focused on the negative interpersonal relationship aspects while advisees who were satisfied focused on the instructional elements, such as professional mentoring. Satisfied advisees seemed to assume that a good relationship was automatically a part of advising; therefore they did not focus on it when discussing what they appreciated about their advising relationship. The first factor from measurement scale one seemed to represent the aspects of the undergraduate student-teacher relationship that are assumed to exist and are only noticed if they are not met, similar to the results of Schlosser and colleagues’ study.

The bond items on the second factor represented more specific aspects of creating an emotional closeness that is individualized to the student (e.g. recognizing uniqueness, understanding, interest, constructive feedback, encouragement, tactfulness, confidence, and liking). These characteristics may represent the professor going above and beyond the role expectations. If these characteristics exist then the student’s experience in the course will not only be positive, but has the potential to be personalized and life changing. In this way, Bordin’s bond dimension appears to be split into two dimensions: general, basic characteristics that help the professor fulfill his or her role as the classroom manager, and a deeper emotional connection that allows the student to personalize the course to fit his or her needs and incorporates the professor as a potential mentor, not just another teacher. The division among these bond items make sense when they are seen as
extending a theory originally designed for therapy to teaching. In therapy, clients are typically seeking life-changing experiences; however not every student may be seeking “change” from the classroom. Some students may be more inclined to seek a deeper relationship with the teacher, which could lead to change; while other students are just looking for a good classroom experience or course credit. Therefore all students may seek the bond items that factored onto the first factor (i.e. role fulfillment); while only some students seek the bond items that factored onto the second factor (i.e. personalization). This observation may be especially true with the “general studies” nature of the class used in the current study.

Bordin’s dimensions of agreement on goals and agreement on tasks emphasize the collaborative nature that is needed between the agent of change and the individual seeking change. In reference to counseling relationships there are numerous change goals that can occur and a multitude of different ways to enact change (i.e. tasks). Therefore an understanding and agreement on what needs to be changed (i.e. goals) and how to accomplish that change (i.e. tasks) may be more important in counseling than in the classroom. In student-teacher relationships there may be more inherent structure in terms of the goals and tasks on the course. For the most part, the overall content goals of the class are dictated by the title (i.e. the title of the course specifies the content), while more specific goals are set by the instructor (i.e. the objectives in the course). The tasks of the course are also dictated by the instructor (i.e. assignments), as is the type of course (i.e. lecture, laboratory). The inherent structure of the classroom may be why these two dimensions did not factor distinctly (i.e. there was no factor that was made up of only the
items written for the goal dimension and there was no factor that was made up of only the items written for the task dimension).

Although there was a separate factor called academic goals, it was only made up of four items, two of which were originally written for the task dimension, and accounted for 4% of the variance. The similar wording of the four items (i.e., all of the items contained the words “college goals” or “academic goals”) from the academic goals factor was what likely caused the items to factor together. The remaining goal items were divided between the first two factors. Again, a split was found between the items that are important in establishing a positive general environment (agreeing with objectives and purpose of the course) and items that pertained specifically to the individual student (recognizing areas of improving and understanding individual goals). The remaining task items all loaded on the first factor, suggesting that understanding and completing the tasks of the course is a basic function of the professor’s role in the course. The professor fulfills this basic role by providing clarity in the tasks of the course and using the classroom time wisely.

Although the items written for each of Bordin’s theorized dimensions did not load onto distinct factors, the resulting three factors of the first EFA using only working alliance items does share some resemblance to Bordin’s theory. The first factor, role fulfillment, has the majority of the items written for the tasks dimension (n = 9) and in translating Bordin’s theory from counseling to teaching, perhaps the “tasks” component needs to be considered in terms of behavioral tasks completed by the professor to establish a positive environment (i.e. item 33, course time is spent efficiently), as well as displaying positive characteristics, (i.e. item 4 my professor respects me). The second
factor, personalization, is a blend of bond items (n = 8) and goals items (n = 4). Bonds that are created through teaching may differ from bonds created in counseling sessions because an agreement on the goals of the course may be more important to the development of the bond in teaching than the development of the bond in counseling. Although the third factor, academic goals, only included two actual items written for the goals dimension, the theme of this factor clearly was goals.

If only the underlying themes of the EFA with the Bordin items are examined, then the results appear to loosely conform to Bordin’s theory of working alliance, with role fulfillment representing the tasks of teaching, personalization representing the bond between student and teacher, and academic goals representing the agreement of goals between student and teacher. This observation relates to theoretical articles suggesting the Bordin’s working alliance theory may represent student-teacher relationship in useful ways (Koch, 2004; Meyers, 2008).

**Interpersonal Influence Theory**

Hypothesis two was similar to hypothesis one but tested a different theory regarding the professional help-seeking relationship: it proposed that a three-factor solution representing the three components hypothesized by Strong’s theory of interpersonal influence (1968) would result from submitting the 20 items representing Strong’s theory to an EFA. Results suggested that only a one-factor solution was interpretable when the EFA was performed on the items proposed to fit Strong’s theory. This finding is contrary to Strong’s original theory of three separate dimensions (expertness, attractiveness, and trustworthiness). The items for the current study were based on the Counselor Rating Form (CRF; Barak & LaCrosse, 1975) which is a
measurement scale based on Strong’s interpersonal influence theory. Interestingly, this scale has been shown in other studies to be one-dimensional (Heesacker & Heppner, 1983). Therefore the one-dimensional nature that was found in the current study may be due to nature of the items.

In any case, since the interpretable solution did not resemble Strong’s three components, hypothesis two was rejected. This rejection means that the student-teacher relationship as assessed in the current study does not correspond precisely to the structure that was theorized by Strong. The interpersonal influence theory may still be applicable to student-teacher relationships; however students in this study did not seem to differentiate between expertise, attractiveness and trustworthiness. Previous studies using the Counselor Rating Form (e.g., LaCrosse, 1977; Zamostony, Corrigan, & Eggert, 1981) have found that the distinction between the three dimensions decreases over time as the amount of counseling sessions increase. This pattern suggests that clients in counseling see less distinction between expertise, attractiveness and trustworthiness in their counselors as they get to know them better. In the current study, students were tested during the middle third of the semester. If this study was conducted earlier in the semester, students may have distinguished between expertise, attractiveness, and trustworthiness more; however by the time that the first third of the semester is over, students may see these dimensions as part of a single construct of positive or negative teaching, similar to clients in counseling. Regardless of the singular dimension found in the testing of hypothesis two, due to the exploratory nature of the current study, the resulting one dimensional measurement scale was still examined as a potential way of interpreting the student-teacher relationship.

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Many of the items that had the highest factor loadings for the one factor measure using the items from Strong’s theory were written to represent the trustworthiness dimension (five of the top ten). High factor loadings indicate strong correlations with the underlying construct, what the current study termed interpersonal influence. The high factor loadings suggest that trustworthiness is a strong component to interpersonal influence. The perception of professor trustworthiness has been strongly related to the belief in fairness and justice in a classroom (Chory, 2007). Fairness and realistic expectations of students were ranked by undergraduate students as the most important characteristic for “master” teachers (Buskist, et al., 2002). Taken together, if a strong component of interpersonal influence is trustworthiness, and trustworthiness is viewed as an important component of master teaching by students, then one can conclude that the concepts that are measured by the interpersonal influence measurement scale are also important to students.

Judgments about the relative importance of each of the dimensions theorized by Strong (1968) to the student-teacher relationship cannot be made since the result of the EFA was a one-factor solution. Attempts at separating the dimensions from each other by forcing a three-factor solution resulted in a factor structure that contained one factor that consisted of all of the trustworthiness items and most (four out of six) of the attractiveness items (plus one expertness item), a second factor that contained the expertness items (plus one attractiveness item), and a third factor that consisted only of one attractiveness item. The solution was deemed not interpretable because the second and third factors each accounted for less than 5% of the variance and the third factor only had one item with a relatively low factor loading (.459). Although the one-factor solution
was retained over the three-factor solution, the factor structure of the three-factor solution does resemble Strong’s theorized structure (factor one could be called trustworthiness, factor two was expertness, and factor three was attractiveness), suggesting that all three dimensions likely exist within student-teacher relationships, even if they are not always viewed by students as distinct.

**Combining Working Alliance and Interpersonal Influence Theories**

Hypothesis three stated that a combination of the items representing Bordin’s theory of the working alliance (1979) and items representing Strong’s theory of interpersonal influence (1968) would create an interpretable solution. Although these 60 items technically represented six theoretically unique components, no specific number of factors was hypothesized due to the overlapping nature of the components and the exploratory nature of the study. This hypothesis represented the idea that the working alliance and interpersonal influence theories would be complementary to each other and that a combination of these two theories may be the best way to describe the student-teacher relationship. Results revealed a two-factor solution which was the most interpretable.

Examination of the results of the EFA revealed a recapitulation of the results from hypothesis one and two in terms of having one large first factor (containing 39 of 56 items) that accounted for the majority of the variance (65%). The first factor, entitled interpersonal tasks, appears to be a combination of the first factor from the EFA testing Bordin’s theory (role fulfillment) and the only factor from the EFA testing Strong’s theory (interpersonal influence). Because the interpersonal tasks factor is so large, identifying a common theme among the items beyond that of general student-teacher
relationships was difficult. As discussed in the section on the working alliance theory, this factor may represent a general higher-order factor. As operationalized by this EFA, the first factor contains elements of role fulfillment by the professor and establishing him/herself as a credible expert. Establishment of the professor as a credible expert could be viewed as a component of role fulfillment because it is the professor’s role in the course to be an expert. Factor one is the best representation of Bordin and Strong’s theories acting in a complementary nature because it contains the two largest factors from the first and second set of EFAs.

The second factor in this solution was called “personalization” and was almost identical to the second factor from the EFA that tested items that represented Bordin’s theory. The development of this similar factor between the first set of EFAs (testing only items from Bordin’s theory) and the third set of EFAs (testing items from both theories) suggests that these items group together in a consistent way. Consistency suggests that this factor may be an important distinction from the larger, general factor that existed in all other EFAs. The factor would suggest an element important at a deeper level which appears to establish a relationship between an individual student and professor that is similar to mentoring, in that it allows the student to personalize his or her experience in the classroom and requires the student to perceive the professor as being interested in him or her as an individual. The existence of this distinction between characteristics that create a general, positive classroom experience and characteristics that create a deeper relationship have implications in faculty training. Faculty may need to cultivate two separate sets of skills. The first set of skills are involved in establishing a general, positive classroom for all students (represented by the items from the large general
factors in the current study). The second set of skills are involved in creating a deeper relationship with students (represented by the items from the personalization subscales). Developing the second set of skills may strengthen the professor’s ability to become a mentor to various students. Mentoring interactions have been found to be important to student confidence and motivation (Komarraju, Musulkin, & Bhattacharya, 2010).

The current study theorized that combining the two theories would be the best way of interpreting the student-teacher relationship since it would account for the limitations inherent in the two separate theories. Previous theorists (Koch, 2004; Meyers, 2008) have suggested that Bordin’s working alliance theory (1979) would be an adequate model for student-teacher relationships. However Bordin’s theory does not account for the evaluative and hierarchical nature of the student-teacher relationship, or the importance of establishing the professor as an expert in the field of study, which has been conceptualized as important in other teaching theories (Brookfield, 2006). The current study theorized that if Bordin’s theory was supplemented by an additional theory that accounted for these limitations, then it would be an adequate model for student-teacher relationships. Strong’s interpersonal influence theory (1968) is based on a hierarchical conceptualization of relationships and one of the theorized dimensions is expertness. Strong’s theory accounts for the evaluative nature of student-teacher relationships through the dimension of Trustworthiness, which is connected to fairness when conducting evaluations. The exploratory factor analysis examining how these items relate to each other and underlying constructs resulted in a two-factor solution that was interpretable. Correlations between this factor solution and the factor solutions examining the theories individually were high (.84 and .97, respectfully) suggesting that
there was considerable overlap between the solutions. Since the solutions are similar to each other, using the solution that incorporates both theories would overcome the most limitations and would be the most theoretically sound model for interpreting student-teacher relationships. This solution resulted in the creation of a scale which was renamed the Student-Teacher Relationship Inventory (STRI).

**STRI and Student Learning Outcomes**

The second set of research hypotheses (four through seven) examined whether the student-teacher relationship, as operationalized by the two-factor solution containing items representing Bordin’s working alliance theory and Strong’s interpersonal influence theory (STRI), would relate to four student outcomes: self-efficacy, satisfaction (divided into satisfaction with course and satisfaction with professor), participation in learning, and course performance (operationalized as the amount of points earned out of a possible 800 points). Hypotheses four through six were confirmed, meaning that the STRI was significantly related to student self-efficacy, satisfaction with both course and instructor, and student participation in learning. Hypothesis seven was rejected, meaning that the STRI was not significantly correlated with course performance. These results will be discussed below in relation to each of the student outcomes.

**Self-efficacy.** The current study observed a positive relationship between student-teacher relationships and student self-efficacy. This finding suggests that a good relationship with the professor is related to the students’ belief that they can master the course. Implications of this finding suggest that creating a strong positive relationship could improve students’ belief in their ability to master the course. High self-efficacy has been linked to persistence in the face of challenges (Bandura, 1997), which could lead to
higher retention rates for colleges and universities. High self-efficacy in college courses has previously been related to higher levels of cognitive strategy use, academic self-regulation, academic performance, student feelings of control over the college environment, and lower levels of test anxiety (Jungert & Rosander, 2010; Pintrich & De Groot, 1990), which in turn can lead to greater retention of students because they are achieving success in their courses. Retention is an area of concern for all departments and colleges; discovering methods to increase retention is valuable.

Previous studies have shown mixed results in terms of whether there is a correlation between supervisory working alliance and supervisee self-efficacy (Efstation, Patton, & Kardashian, 1990; Ladany, Ellis, & Friedlander, 1999). In the present study, the strength of the correlation between the STRI, and self-efficacy (i.e. .25) was similar to the strength of the correlation between supervisory working alliance and supervisee self-efficacy as reported by Efstation and colleagues (1990; \( r = .22 \)). Ladany and colleagues (1999) did not find a significant correlation between self-efficacy and working alliance; suggesting that there was no connection between a positive working alliance and self-efficacy; however they were comparing changes in the working alliance with changes in self-efficacy. The Ladany et al. study measured working alliance and self-efficacy at the beginning and end of a semester. They questioned whether improvements in the supervisory relationship would lead to improvements in self-efficacy. In contrast, the current study and the Efstation et al. study only measured each variable once and measured them concurrently. The current study only sought to discover whether there was a relationship, and does not make any assumptions about the direction of the student-teacher relationship. It is possible that a more positive student-teacher relationship may
lead to higher self-efficacy in students (or supervisees in the case of the Estation et al. study); or students who have higher self-efficacy may also perceive the relationship with the professor (or supervisor) as more positive. Alternatively, there could be a third variable involved in explaining the relationship between student self-efficacy and student-teacher relationships. Due to the limitations inherent in correlations, no causal statements can be made between self-efficacy and student-teacher relationships in the current study. Further studies should examine this relationship closer in an effort to determine whether a positive student-teacher relationship impacts increases in student self-efficacy.

**Student satisfaction in course and teacher.** Students who reported more positive student-teacher relationships also reported higher satisfaction with the course and teacher. In fact, out of the four student learning outcomes measured by the current study, student satisfaction had the highest correlation with the STRI and its subscales. What this suggests is that student satisfaction is strongly related to student perceptions of the student-teacher relationship. Due to the limitations of correlations, it is unclear whether students are satisfied with the course and teacher because of the positive relationship with the teacher, or if feeling satisfied with the course and teacher leads to a better perceived relationship. In all likelihood, feeling satisfied and evaluating the student-teacher relationship as positive probably occurs simultaneously. Student satisfaction is the most obvious outcome of positive student-teacher relationships. If a student reports having a positive relationship, then they are also likely to feel satisfied. This finding has direct implications for faculty. Student satisfaction has been highly correlated with end of the semester teaching evaluations (Corts, et al., 2000). Tenure, promotion, and compensation
decisions often take into account the results of the student evaluations. If professors work to develop and maintain a positive student-teacher relationship, then they are also likely to create high levels of student satisfaction, which will be reflected in the student evaluations.

The positive correlation between student satisfaction and student-teacher relationships have been documented in previous studies (Benson, Cohen, & Buskist, 2005; Buskist & Saville, 2004). However, the results in the current study suggest that the student-teacher relationship impacts satisfaction with the instructor differently than satisfaction with the course. Examination of Table 8 shows different correlations between the STRI and satisfaction with the instructor ($r = .543$), and satisfaction with the course ($r = .442$). The discrepant correlations between satisfaction with the instructor and satisfaction with the course suggest that students separate their feelings of satisfaction with the professor and the course; however this discrepancy may be explained by the sample that was selected for the current study. Only introductory to psychology students at The University of Akron were used in the current sample so the course content, structure, and evaluation procedures were relatively identical for all study participants. Controlling this variable eliminated confounding variables that may exist if the sample consisted of students from various disciplines and courses; however it also may have caused the discrepancy between satisfaction with the instructor and satisfaction with the course. Course and instructor satisfaction may be more closely related in courses in which the design of the course was chosen by the instructor because there may be more similarities between the teaching style of the instructor and the structure of the course. Although the current study exhibits a discrepancy between satisfaction with the
course and satisfaction with the teacher, maintaining the consistency of the course involved in this study was viewed as more important than examining courses in which the same person designed and taught the course.

**Participation in learning.** Students reported that they were more likely to engage in positive learning behaviors (e.g. attending class, paying attention during class, and completing assignments) if they perceived the student-teacher relationship as positive. These findings have direct applicability to classroom settings as professors seek methods to motivate students to complete the tasks presented to them and to engage in the learning process. If students appear to be unengaged in a particular course, the professor can use the STRI to gauge the quality of the student-teacher relationship and to identify areas in which the students report poor relations with the professor. The professor can then focus on improving that area of the student-teacher relationships, which can, in turn, improve the students’ engagement in the learning process.

Several other studies have found links between positive student-teacher relationships and students’ reporting higher levels of positive student learning behaviors (Benson, Cohen, & Buskist, 2005; Christophel, 1990; Gorham, 1988). However, it should be noted that a positive relationship was found between student-teacher relationships and students’ reporting the likelihood of completing the behaviors. Additional data were collected from students who gave permission to the researchers to obtain their final class file which included their attendance record. The correlation between scores on the STRI and actual attendance in the course was not significant. These results suggest that although student-teacher relationships are positively correlated with students’ self-report of the likelihood of attending class, student-teacher
relationships were not correlated with actual behavior. Perhaps other explanations account for these findings (e.g. illness, opportunity), and further studies examining actual classroom behavior may help explain this discrepancy.

**Course Performance.** The current study correlated scores on the STRI with the number of earned points in the course for 187 of the participants (participants who gave permission and whose instructor provided the researchers with a complete academic file). The correlation between the STRI and the number of points earned was near zero (.022), suggesting that there is no relationship between the student’s course performance and the quality of the student-teacher relationship. This finding was surprising, as previous studies have found significant correlations between student-teacher relationships and predictions of final grade (Wilson, 2006) and perception of learning (Gorham, 1988). Additionally, final grades are assumed to be an indicator of learning and many theories on student-teacher relationships are based on the premise that better student-teacher relationships should lead to more learning (Brookfield, 2006; Buskist & Saville, 2004; Lowman, 1984). However, course performance is also a product of many different components—attendance, writing skills, participation, student preparation, effort, ability, test anxiety, and motivation (Gorham, 1988; Tremblay, 1999). Although student-teacher relationships are theorized to be important for beginning students (McKeachie, 1999), they may not be strong enough to override the impact of study skills and preparedness on course performance. Many of the students in this sample were in their first semester of school; therefore their academic success is likely to be heavily influenced by preparedness for college and study skills rather than the actual experiences within the classroom. It would be interesting to examine whether early learning experiences in one
course are related to later success in other courses. For example, a student may have a
great relationship with a teacher in his/her first semester in college; but this relationship
may not impact the academic success in that particular course; however it may impact
academic performance in later courses. Meyers (2008) suggested that experiences with
teachers are cumulative for students, suggesting that early experiences may impact later
successes. In addition, the current study found a link between positive student-teacher
relationships and self-efficacy, which could impact academic success later in college.
Further studies could test whether variables such as self-efficacy mediate or moderate the
relationship between course performance and the student-teacher relationship.

Additional data were collected from the students who granted consent (n = 208),
which included college GPA, high school GPA, ACT and SAT scores, individual
examination scores, and attendance data. The number of earned points did positively
correlate with all of the above data, suggesting that students who had higher GPAs,
standardized test scores, course exam scores and better attendance also earned a greater
number of points in the class. It was theorized post-hoc that although the student-teacher
relationship did not impact number of points earned directly, it may impact other areas of
academic achievement; therefore the STRI was correlated with all of the additional data
collected. Only the correlation with the first course exam grade was significant (p ≤ .05).
This finding suggests that positive student-teacher relationships may impact initial test
performance; however other variables become more important as the semester continues.
One possible reason for this finding could be the sample population used. Introductory
courses are typically survey-based and are taken by beginning students who may still be
learning how to learn and study in college. The sample used was 83% first and second
year students; therefore the student-teacher relationship may not be powerful enough to override limitations in student preparedness and study abilities. Student-teacher relationships may be more important as students progress in their chosen field of study. Additionally, motivation was not measured in the current study, even though it has been demonstrated to mediate the relationship between the student-teacher relationship and other learning outcomes (Christophel, 1990). Inclusion of this factor may have explained why there was no significant correlation with academic variables and student-teacher relationships. The final explanation of the findings may be that creating a positive student-teacher relationship may not impact how the student objectively performs in the course, contrary to what was predicted and theorized.

**Strengths and Limitations of Current Study**

The current study used well established theories from the field of counseling psychology to create a measurement scale with which to examine the student-teacher relationship. Research has established the importance of the interpersonal dimension in classroom settings; however no overarching model or theory has established a theory-based measurement device with which to empirically test this relationship. The literature either contains theories without substantial empirical backing (e.g., Brookfield, 2006; Chickering & Gamson, 1987; Lowman, 1984) or empirical research without a guiding theory (e.g., Heckert, et al., 2006). The current study has used two well-established theories—working alliance theory (Bordin, 1979) and interpersonal influence theory (Strong, 1968)—to create a measurement scale for student-teacher relationships. Although not representing all six theorized dimensions from the two theories
independently, the resulting measurement scale can be used to conduct further student-
teacher relationship research.

The greatest strength that this study possesses is that it is based on two well-
established theories of counseling. The working alliance is a concept that has been
written about since the early writings of Sigmund Freud (Greenson, 1965/1990; Horvath,
2006) and it remains today an influential and empirically supported concept in counseling
(Gelso, 2006). Many theorists have suggested that Bordin’s working alliance theory
(1979) could be used to understand classroom interpersonal dynamics (Bordin, 1979;
Koch, 2004; Meyers, 2008). The current study has moved this speculation from theory to
empirical support by examining how measurement scale items written to represent the
dimensions of the working alliance would factor together when given to undergraduate
students. In addition, the current study accounted for limitations in the working alliance
theory by supplementing the theory with another well-know theory in psychology, the
interpersonal influence theory (Strong, 1968). The interpersonal influence theory is
based on social psychological concepts related to hierarchical relationships. Previous
studies (Efstation, Patton, & Kardash, 1990) have used principles from social psychology
in combination with working alliance theories in order to address relationship dynamics
successfully. Results from the current study support the idea that working alliance theory
and social psychological theory can be combined to explain relationship dynamics. The
combination of these theories resulted in a measurement scale that included two
dimensions (interpersonal tasks and personalization) and correlated positively with
student self-efficacy, satisfaction with the teacher and course, and participation in
learning. The observed factor structure suggests that students first evaluate the student-
teacher relationship in general terms that include whether the instructor appears to be credible, fulfills the tasks of the classroom and establishes clear guidelines for the students in term of their role in the classroom (factor one). Establishment and fulfillment of roles includes elements from all six theorized dimensions (bond, agreement of goals, agreement of tasks, expertness, attractiveness, and trustworthiness). This factor appears to represent the necessary elements of establishing a positive classroom dynamic. Students distinguish between actions and characteristics that establish a general positive classroom and actions that move the student-teacher relationship to a more personalized level (i.e. factor two). The second and smaller factor within student-teacher relationships appears to be personalizing the classroom experience for the student. Students appear to recognize that some relationships developed with professors include a feeling that the professor truly understands the academic needs of the student and seeks to help the student fulfill his or her personal goals. In terms of Bordin’s theory of working alliance, this factor is a mixture of bond elements and agreement on goals between the student and professor. No items representing Strong’s interpersonal influence theory correlated on this factor. Understanding that students separate the student-teacher relationship this way adds to the general body of knowledge involving student teacher relationships, while establishing future directions for this research.

The sample population used is both a strength and weakness of the current study. Only students enrolled in an introduction to psychology course were asked to participate in this study. This selection of a narrow population allowed the researcher to maintain consistency in the type of course; however it also meant that the results may not generalize outside of this population. It is possible that students enrolled in upper-level
courses or in courses in different disciplines may view the student-teacher relationship differently. A difference in perspective may be due to increased age, time in school, or the meaning that the course has to their field of study (i.e. an upper level course would likely be more important because it is in their chosen field of study, as opposed to an introductory survey course which may be a part of a general requirement). The sample was also only derived from one mid-sized university in the Midwest. Changing the location or size of the university may also change the way the student-teacher relationship is viewed. For example, smaller colleges often have more opportunities for formal and informal contact with faculty, which could change the perspective of student-teacher relationships in general (Kuh, Pace, & Vesper, 1997). The average class size for the sample used in the current study was 33. The student-teacher relationship may be viewed differently by students in larger or smaller courses. A final limitation based on only using Introduction to Psychology courses at The University of Akron is that the majority of the instructors were graduate assistants in their first or second year of teaching. The student-teacher relationship may be viewed differently by students depending upon the rank of their instructor (i.e. graduate assistant instructors vs. faculty members). Horvath and Bedi (2002) did not find a significant difference in client-counselor working alliance scores between beginning and experienced therapists, suggesting that the amount of experience an instructor has should not make a difference in their ability to create a positive student-teacher relationship; however it is unclear whether the structure of the STRI would be the same for relationships involving full faculty members and undergraduate students.
Another limitation to this sample was that the student-teacher relationship was measured at one period of time. The semester in which the data were drawn was divided into thirds and the data were collected during the middle third time period. This time period was chosen because it was theorized that it would provide adequate time for a student-teacher relationship to be established, but expectations of final grades would not interfere with the students’ perceptions of the relationship. Working alliances have been shown to change over time (Luborsky, 1994), and the current study does not take into account the developmental nature of the working alliance. It is possible that the student-teacher relationship may predict student learning outcomes differently at different points in the relationship.

Finally, the current study only provided initial data supporting the utility of the Student-Teacher Relationship Inventory (STRI). Scores on the STRI were only correlated with student learning outcomes. Correlations only suggest that there is a link between the two variables. It is unclear whether positive student-teacher relationships create increased self-efficacy, student satisfaction, and participation in learning, or vice versa. Assumptions of causation cannot be made based on the limited statistical procedures calculated. In addition, although the STRI was positively correlated with students’ self-reported participation in learning, it was not correlated with actual behavior such as attendance. It is therefore unclear how the STRI may relate to actual student behavior, as opposed to the reported intentions of students.

**Future Research**

Future research needs to address some of the major limitations of the current study. The structure of the Student-Teacher Relationship Inventory (STRI) needs to be
examined in other populations of students that include upper-level courses, different classroom sizes, different class subjects (i.e. math courses), and different sizes of the university or college; as well as other populations of instructors (e.g. adjunct instructors, full faculty members). Replication of the structure of the STRI in other populations would indicate that it is applicable to most college classrooms. The student-teacher relationship should also be measured at different points within the semester to test whether the working alliance fluctuates, depending on other experiences within the classroom (as research has shown with counseling working alliance). More advanced statistical procedures should be used to test whether the two-factor, one-level model of student-teacher relationships is the best fit for the data, or if a bi-level model containing one general second-order factor and smaller first-order factors is a better fit for the data, as suggested by research involving the Working Alliance Inventory (Tracey & Kokotovic, 1989).

Other variables have been shown to be important when explaining how interpersonal dynamics impact learning objectives in the classroom. One variable of particular interest is motivation. Christophel (1990) found evidence for a model of interpersonal dynamics in which motivation appeared to partially mediate the relationship between positive student-teacher relationships (called immediacy behaviors) and student outcomes. Christophel examined state and trait motivation and found the state motivation impacted attitude toward the course and professor, student self-reported behaviors, and student perceptions of learning better than trait motivation. In turn, the students’ perception of the student-teacher relationship was related directly to those outcome variables, as well as students’ state motivation, suggesting that the positive
student-teacher relationship increased motivation, which in turn increased positive student attitudes and behaviors. Motivation is likely an important factor to consider in future research in this area, and may increase the prediction and explanatory power of the STRI greatly.

Finally, the STRI needs to be compared to other measurement scales designed to assess components of the student-teacher relationship. A popular measurement scale from the educational psychology literature is the Immediacy Behavior Scale (IBS; Gorham & Christophel, 1990), which measures verbal and nonverbal actions of professors that are theorized to increase physical and psychological availability of the professor (Mehrabian, 1969). Psychometric properties of this scale have been shown to be adequate and it has been used for over two decades to examine student-teacher relationships (Rocca, 2004; Sanders & Wiseman, 1990; Wilson, 2006; Wilson & Taylor, 2001). A more recent measurement scale is the Teacher Behaviors Checklist (TBC; Buskist, et al., 2002). The TBC was based on research and theory involved in determining the elements of master teaching. The TBC has been shown to have adequate psychometric properties and shows promise in helping faculty members evaluate their behaviors within the classroom (Keeley, Smith & Buskist, 2006). The STRI should be compared to these similar measurement scales in order to establish construct and discriminant validity.

Conclusions

The purpose of this study was to explore the nature of the student-teacher relationship including its dimensional structure and the relationship between student-teacher relationships and student learning outcomes. The results of the current study
provide support for the proposal that Bordin’s theory of the working alliance (1979),
combined with Strong’s theory of interpersonal influence (1968) is applicable to student-
teacher relationships. Measurement scale items written to represent these theories
factored into an interpretable solution that was positively correlated with student self-
efficacy, satisfaction with the teacher and course, and students’ self-reported participation
in learning. The resulting measurement scale, the Student-Teacher Relationship
Inventory, holds significant promise as a tool for advancing research on the determinants
and outcomes of student-teacher relationships and their influence on student success.
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APPENDIX A

ORIGINAL STUDENT TEACHING RELATIONSHIP INVENTORY ITEMS

Bond items:

B1  I feel comfortable with my professor.\(^1,2\)
B2  I believe my professor is genuinely concerned for my learning.\(^1\)
B3  I get the feeling that my professor likes me.\(^1,3\)
B4  I feel respected by my professor.\(^1,3\)
B5  My professor offers me encouragement for my accomplishments.\(^3\)
B6  My professor welcomes my input into class discussions.\(^3\)
B7  I believe my professor has my best interests in mind.\(^3\)
B8  My professor is available when I need him/her.\(^3\)
B9  My professor makes the effort to understand me.\(^2\)
B10 My professor is tactful when commenting about my performance.\(^2\)
B11 My professor shows an interest in me.
B12 My professor takes the time to listen to me.
B13 My professor is genuine.
B14 I am provided with constructive feedback from my professor.
B15 My expertise and unique perspective is recognized by my professor.
B16 I consider my professor to be authentic.
B17 My professor accepts me.
B18 My professor has confidence in my abilities.
B19 I respect my professor.\(^1\)

Goal items

G1  My professor accurately perceives what my future goals are.\(^1\)
G2  My professor clearly identifies the purpose of this course.\(^1\)
G3  I agree with my professor about what I ought to get out of this course.\(^1\)
G4  My professor and I agree on what is important for me to work on.\(^1\)
G5  The work I conduct in this course fits in with my college major.\(^3\)
G6  My professor helps me recognize areas where I can improve.\(^3\)
G7  I work with my professor on specific goals in the course.\(^2\)
G8  I feel my professor is willing to collaborate with the students on learning objectives and teaching strategies.
G9  My professor asks the students for input on improving the class.
G10 I feel that my professor has high expectations for me that I can meet.
G11 Achieving the course objectives is important to me.
G12 My professor connects the course objectives to my own goals.

Task items
T1 I find what we are doing in this class is related to my overall college goals.¹
T2 I agree with the things I will need to do to be successful in this course.¹
T3 What I am doing in this course brings me closer to achieving my academic goals.¹
T4 I believe that course time is spent efficiently.¹
T5 I am clear on what my responsibilities are in this course.¹
T6 My professor provides clear instructions for the assignments in this course.¹
T7 The course topics and assignments are relevant to my academic goals.
T8 I feel I have a shared responsibility with my professor for my learning.
T9 My professor promotes active student involvement.
T10 I have a clear understanding of how the course activities are preparing me for my future profession.
T11 When I am completing my assignments I recognize their relevance.

Expertness items
E1 My professor presents the material in a clear way.⁴
E2 My professor appears confident when presenting material.⁴
E3 In class, my professor shows that he/she is an expert in the subject matter.⁴
E4 My professor appears experienced in teaching.⁴
E5 My professor is insightful when discussing course material.⁴
E6 I would describe my professor as an intelligent person.⁴
E7 My professor is prepared for each class session.⁴
E8 My professor seems skillful at teaching.⁴
E9 I am confident in my professor’s ability to teach me.¹
E10 My professor has specialized training in the subject area.

Attractiveness items
A1 I would describe my professor as an agreeable person.⁴
A2 My professor appears to appreciate student input during class.⁴
A3 My professor is typically cheerful in class.⁴
A4 My professor’s teaching style is compatible with my learning style.⁴
A5 My professor appears enthusiastic about the course material and teaching.⁴
A6 My professor is friendly towards me.⁴
A7 I would describe my professor as a likeable person.⁴
A8 I would describe my professor as a sociable person.⁴
A9 My professor appears warm toward me.⁴
A10 I see similarities between myself and my professor.
Trustworthiness items

W1  My professor appears dependable.\textsuperscript{4}
W2  My professor appears honest in his/her evaluations of students.\textsuperscript{4}
W3  My professor is reliable.\textsuperscript{4}
W4  I would describe my professor as a responsible person.\textsuperscript{4}
W5  My professor interacts with me and other students in a sincere way.\textsuperscript{4}
W6  I consider my professor a trustworthy individual.\textsuperscript{4}
W7  My professor is unbiased when evaluating course and student material.\textsuperscript{4}
W8  My professor presents him/herself in a straightforward manner.\textsuperscript{4}
W9  My professor appears open when interacting with students.\textsuperscript{4}
W10 My professor is not motivated by personal gain.
W11 I trust my professor to give me the grade that I deserve.

\textit{Superscript indicates origin of item; 1 = Working Alliance Inventory, 2 = Supervisory Working Alliance Inventory, 3 = Advisory Working Alliance Inventory, 4 = Counselor Rating Form. Items with no notation were generated through review of relevant literature.}
APPENDIX B

INSTRUCTIONS FOR INITIAL FEEDBACK GROUP

Thank you for volunteering to help create the Student-Teacher Relationship Inventory (STRI). Your thoughts and opinions are quite valued during this process. The only expertise that you need is your experience as both a teacher and student.

Before we begin, please fill out the following information. I will use this information when reporting the finding of this meeting in my dissertation. Thank you.

Name:_________________________________________________________
Age: _______________ Gender:_________________________
Program of study:_________________________________________
Number of years you have taught:_______

Background on the instrument:

The STRI is designed to measure a component of student-teacher relationships called the working alliance. The working alliance is the collaborative aspects of a student-teacher relationship that is formed in the context of a trusting, emotional bond. Although the STRI may be used in all student-teacher relationships, we are currently focusing on using it in a traditional undergraduate context. When examining the items, please think about them from the perspective of an undergraduate student, taking a traditional, lecture-based course. Thank you.

Dimension Definitions:

Bond: Bond is defined as the liking, caring and trusting feelings that the participants share for each other. This is the emotional connection between teacher and student. It is formed through the use of empathy, warmth and genuineness on the part of the teacher.

Goals: A mutual agreement on goals occurs when there is a basic level of understanding and agreement between the individuals on the principles that are involved in the change process, specifically what the intended change will be. The agreement of goals occurs in education when the students “buy into” the established objectives for courses. Although
students in an undergraduate setting have no input in establishing the objectives of the class, the teacher can encourage students to make course-specific goals. By facilitating the achievement of the student-created goals and the course objectives there is collaboration on goals between the student and teacher.

Task: Both participants should agree to the tasks and understand the relevance between the tasks and goals. In an educational setting, tasks are typically written out in a syllabus which clearly states the expectations of teacher and student. If the teacher sets up clear links between the tasks and the classroom objectives, then students are more likely to agree with the tasks.

Expertness: Expertness occurs if an individual is viewed as a valid source of information. According to Strong (1968), expertness can be achieved through (a) objective evidence such as specialized training, diplomas, or certificates; (b) behavioral evidence such as presenting rational and knowledgeable arguments in a confident manner and (c) maintaining a reputation as an expert.

Attractiveness: Attractiveness refers to how much the student is drawn toward the professor. This connection is established through a feeling of liking, similarity and compatibility. Strong asserts that the stronger the attractiveness of the perceived authority, the more influential that authority member will be.

Trustworthiness: Trustworthiness is established through four things: (a) maintaining a reputation as honest; (b) holding a particular social role that inherently assumes the individual should be trusted, such as a doctor; (c) the individual’s display of sincerity and openness; and (d) the perception of altruistic motivation. The combination of these attributions establishes the individual’s perceived trustworthiness.
APPENDIX C

REVISED STUDENT TEACHING RELATIONSHIP INVENTORY

Please use the following scale to rate each item in reference to your Introduction to Psychology course at the University of Akron:

1 2 3 4 5 6 7
(Strongly disagree) (Strongly agree)

Bond:
1. I feel comfortable with my professor.  
2. My professor is genuinely concerned for my learning.  
3. My professor likes me.  
4. My professor respects me.  
5. My professor offers me encouragement in class.  
6. My professor welcomes my involvement in class.  
7. My professor has my best interests in mind.  
8. My professor is available when I need him/her.  
9. My professor makes the effort to understand me.  
10. My professor is tactful when commenting about my performance.  
11. My professor shows an interest in me.  
12. My professor takes the time to listen to me.  
13. My professor is genuine.  
14. My professor provides constructive feedback to me.  
15. My professor recognizes my expertise and unique perspective.  
16. My professor accepts me.  
17. My professor has confidence in my abilities.  
18. I respect my professor.  
19. I like my professor.  

Goals:
20. My professor understands what my goals are.  
21. My professor clearly identifies the purpose of this course.  
22. I agree with my professor about what I ought to get out of this course.  
23. My professor and I agree on what is important for me to work on.  
24. The work I conduct in this course fits in with my college academic goals.  
25. My professor helps me recognize areas where I can improve.  
26. I work with my professor on specific goals in the course.
27. My professor is willing to work with the students on learning objectives and teaching strategies.
28. My professor has realistic expectations of me.
29. Achieving the course objectives is important to me.
30. I agree with the classroom objectives.

Task:
31. I find what we are doing in this class is related to my overall college goals.¹
32. What I am doing in this course brings me closer to achieving my academic goals.¹
33. Course time is spent efficiently.¹
34. My responsibilities are clear in this course.¹
35. My professor provides clear instructions for the assignments in this course.¹
36. The course topics and assignments are relevant to my academic goals.
37. I have a shared responsibility with my professor for my learning.
38. My professor promotes active student involvement.
39. I have a clear understanding of how the course activities are preparing me for personal success.
40. I recognize the relevance of the assignments in this course.
41. My professor is willing to adjust the course based on student feedback.
42. I understand what it takes to be successful in this course.

Expertness:
43. My professor presents the material in a clear way.⁴
44. My professor appears confident when presenting material.⁴
45. My professor shows that he/she is an expert in the subject matter.⁴
46. My professor appears experienced in teaching.⁴
47. My professor is insightful when discussing course material.⁴
48. My professor is an intelligent person.⁴
49. My professor is prepared for each class session.⁴
50. My professor seems skillful at teaching.⁴
51. I am confident in my professor’s ability to teach me.¹
52. My professor has specialized training in the subject area.
53. My professor uses classroom time wisely.

Attractiveness:
54. My professor is an agreeable person.⁴
55. My professor appears to appreciate student input during class.⁴
56. My professor is typically pleasant in class.⁴
57. My professor’s teaching style is compatible with my learning style.⁴
58. My professor appears enthusiastic about the course material and teaching.⁴
59. My professor is friendly towards me.⁴
60. My professor is a likeable person.⁴
61. My professor is an approachable person.
62. My professor appears warm toward me.  
63. There are similarities between myself and my professor.

Trustworthiness:
64. My professor appears dependable.  
65. My professor appears honest.  
66. My professor is reliable.  
67. My professor is a responsible person.  
68. My professor interacts with me and other students in a sincere way.  
69. My professor is a trustworthy individual.  
70. My professor is fair when evaluating course and student material.  
71. My professor presents him/herself in a straightforward manner.  
72. My professor appears open when interacting with students.  
73. My professor is not motivated by personal gain.
74. I trust my professor to give me the grade that I deserve.

Superscript indicates origin of item; 1 = Working Alliance Inventory, 2 = Supervisory Working Alliance Inventory, 3 = Advisory Working Alliance Inventory, 4 = Counselor Rating Form. Items with no notation were generated through review of relevant literature.
APPENDIX D

INFORMED CONSENT

Title of Study: Measuring Undergraduate Student-Teacher Relationship Factors Using Working Alliance and Interpersonal Influence Theories

Introduction: You are invited to participate in a research project being conducted by Shannon M. Schmidt, M.A., and Charles A. Waehler, Ph.D. in the Department of Psychology, at The University of Akron.

Purpose: The purpose of the study is to investigate how interactions with instructors impact student outcomes in classrooms. At least 300 students are being asked to participate in this investigation.

Procedures: You will fill out a series of questions about your experiences in your classroom. Please answer all of the questions based on your experience with your Introduction to Psychology class. In addition, you will be asked to provide permission for the researchers to have access to your course grades and your university academic record. This is voluntary. Regardless of whether you grant access to your academic record, you will be allowed to complete this survey and will receive the allotted extra credit.

Exclusion: You must be at least 18 years old to participate in this study and currently enrolled in a University of Akron Introduction to Psychology course.

Risks and Discomforts: There are no known risks associated with completing this survey.

Benefits: You will receive no direct benefit from your participation in this study, but your participation may help us better understand student-teacher interactions.

Right to refuse or withdraw: Participation in this study is voluntary. Failure to participate will in no way affect your final grade in your course.

Anonymous and Confidential Data Collection: Any identifying information and academic records collected will be kept in a secure location and only the researchers will have access to the data. Instructors will not be granted access to any information provided on this survey. Participants will not be individually identified in any publication or presentation of the research results. Only aggregate data will be used.
Who to contact with questions: If you have any questions about this study, you may contact Shannon M. Schmidt at sms86@zips.uakron.edu or Charles A. Waehler at 330-972-6701, or at cwaehler@uakron.edu. This project has been reviewed and approved by The University of Akron Institutional Review Board. If you have any questions about your rights as a research participant, you may call the IRB at (330) 972-7666.

Acceptance & signature:

_____ I have read the information provided and all of my questions have been answered. I voluntarily agree to participate in this study.

I may print a copy of this consent statement for future reference.

Access to academic records

Please check one of the following:

_____ I have read the information provided and I give permission to the researchers to access my academic records to obtain my SAT/ACT scores, high school and university GPA, and course performance.

  Course title_________________
  Instructor_________________

UAnet ID: ____________________
e.g., bobsmith@zips.uakron.edu
d(bobsmith is the UAnet ID)

_____ I have read the information provided and I DO NOT give permission to the researchers to access my final course grade.
APPENDIX E

DEMOGRAPHIC QUESTIONNAIRE

Please answer the following questions about yourself:

1. Your age: ________ years

2. Your sex: (check one)
   _____ Male
   _____ Female

3. Your race/ethnicity: (check one)
   _____ White
   _____ African-American
   _____ Hispanic/Latino(a)
   _____ Asian American
   _____ American Indian
   _____ Arab American
   _____ International Student
   _____ Biracial ________________ please specify
   _____ Other ________________ please specify

4. Your year in college: (check one)
   _____ First year
   _____ Second year
   _____ Third year
   _____ Fourth year
_____ Over 4 years
_____ Postsecondary high school student

5. Program of study (Major or intended major): ____________________________

6. College GPA (give High School GPA if first semester freshman): __________

7. Please estimate how many students are in your Introduction to Psychology course:
   ______

8. Please mark the sex of your teacher in your Introduction to Psychology course: (check one)
   _____ Male
   _____ Female

9. Please check your expected final grade in your Introduction to Psychology course:
   _____ A
   _____ B
   _____ C
   _____ D
   _____ F
APPENDIX F

MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE
SELF-EFFICACY SUBSCALE

Please answer the following questions in reference to your Introduction to Psychology course and please use the following scale:

1 2 3 4 5 6 7
(Not at all like me) (Very true of me)

1. Compared with other students in this class I expect to do well.
2. I’m certain I can understand the ideas taught in this course.
3. I expect to do very well in this class.
4. Compared with others in this class, I think I’m a good student.
5. I am sure I can do an excellent job on the problems and tasks assigned for this class.
6. I think I will receive a good grade in this class.
7. My study skills are excellent compared with others in this class.
8. Compared with other students in this class I think I know a great deal about the subject.
9. I know that I will be able to learn the material for this class.
APPENDIX G

INSTRUCTOR AND COURSE SATISFACTION

Please answer the following questions in reference to your Introduction to Psychology course and teacher. Please use the following scale:

1  2  3  4  5  6  7
(Strongly disagree) (Strongly agree)

1. Overall, I rate this instructor as an excellent teacher.

2. Overall, I rate this course as excellent.
APPENDIX H

PARTICIPATION IN LEARNING

Please rate how likely you are to do the following behaviors in your Introduction to Psychology class, and please use the following scale:

1  2  3  4  5  6  7
(Very unlikely)  (Very likely)

1. Attend class

2. Pay attention during class

3. Participate in class discussions

4. Complete written assignments for class

5. Read material assigned for this class

6. Attend office hours to get assistance from the teacher

7. E-mail the teacher about course-related content

8. Take another class in this subject
Thank you for completing this survey.

The purpose of this study was to examine how interactions with instructors affect student outcomes such as final grade, satisfaction with course and certain behaviors like attending class and studying. Previous research has shown that when students feel respected and liked by their instructor they are more likely to enjoy the course (Heckert et al., 2006), complete classroom tasks (Benson, Cohen, & Buskist, 2005), and are less likely to engage in cheating behavior (Stearns, 2001). This study sought to identify perceptions of instructors that lead to an atmosphere of respect, learning, and collaboration between students and instructors; and to develop a scale to measure these perceptions. By completing this survey, your experiences will help us determine how an instructor creates this atmosphere and how it impacts students’ satisfaction, behaviors, grades, and self-efficacy.