THE NOMOLOGICAL NETWORK OF FIT: WHERE DO DIFFERENT FIT
MEASUREMENTS FIT?

A Thesis
by
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FOREWORD

This thesis is written in accordance with the style of the
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the Department of Psychology at Appalachian State University

Abstract

The concept of Person-Environment fit has been studied in multiple contexts and has been shown to positively impact a variety of desirable outcomes. These research efforts have primarily utilized three measurement techniques (i.e., perceived, subjective, and objective) to capture the concept of fit. While researchers typically use these measures of fit interchangeably, there is growing evidence, mostly meta-analytic, suggesting these three measures of fit are not equivalent. The relationships between three measures of fit using the same context, content dimension, and outcomes were examined. Specifically, the study examined congruence between students' and instructors' learning goals and evaluated their predictions of behavioral and attitudinal outcomes. The sample included undergraduate students enrolled in Introductory Psychology courses, and data were collected at three time periods during the semester. It was expected that: 1) the three measurements of fit would be weakly related to one another; 2) subjective and perceived fit would be related to attitudinal outcomes more strongly than to behavioral outcomes with perceived being the stronger predictor; and 3) objective fit would be related to behavioral outcomes more strongly than to attitudinal outcomes. Polynomial regression, accompanied with surface response methodology, provided support for the first set of proposed fit-outcome relationships, partial support for the first set of proposed relationships, and no support for the final set of proposed relationships. No traditional fit relationships were revealed; however, positive and negative fit relationships significantly predicted attitudes and behaviors. These relationships provided evidence that researchers should discriminate among the types of fit because the three fit measurement approaches are not equivalent and differentially predict academic-related outcomes.

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The Nomological Network of Fit: Where Do Different Fit Measurements Fit?

The notion that individual outcomes are a function of an individual's interaction with the surrounding environment is the basis of the person-environment (P-E) fit paradigm. P-E fit is broadly defined as the match or compatibility of the characteristics of the individual with those of his or her environment (Kristof-Brown, Zimmerman, & Johnson, 2005). Individual characteristics can include personality, values, goals, abilities, or psychological and biological needs. Environmental elements can include cultures, values, goals, demands, rewards, and norms. The fit paradigm proposes that compatibility between individual characteristics and the environmental elements will subsequently lead to positive outcomes.

Compatibility between an individual and his/her environment can be evaluated by making a number of different comparisons between a person and different levels of his/her environment (Kristof, 1996). Specifically, comparisons can be made between person-organization (P-O), person-group (P-G), person-vocation (P-V), person-job (P-J), and person-person (P-P). The most general level of analysis is P-O fit and refers to the assessment between an individual and some aspect of the environment in the organization (e.g., values, culture, or goals). As work teams are becoming more predominant in organizations, research examining P-G fit is also increasing. P-G fit is more exclusive than P-O fit in that it refers to the comparison between individuals and characteristics of their work group (e.g., goals, demography, or personality). P-V fit refers to the compatibility of an individual with characteristics relative to his or her chosen vocation (e.g., interest or skills). Fit with one's job is known as P-J fit and is more specific than P-V fit. P-J fit is the match between the characteristics of the individuals (e.g., knowledge, skills, or abilities) and the demands of the job. P-P fit is the most exclusive type of fit which compares the

characteristics of an individual with those of another individual (e.g., supervisor, teacher, co-worker, or subordinate). The appropriate level of analysis would depend on the relevant individual characteristics, environmental elements, and outcomes being studied.

The fit paradigm suggests when compatibility exists between an individual and his/her environment, the foundation for positive attitudes, performance, citizenship behaviors, and other desirable outcomes is provided (Cable & DeRue, 2002; Kristof, 1996). The fit concept has been applied across various fields (e.g., rehabilitation and health assessment, residential satisfaction for older adults, social relationships, and treatment for children with developmental disorders). However, compatibility is most often examined in organizational settings where research has found the match between an individual and the organization has a number of desired outcomes ranging from positive work attitudes, reduced stress, increased organizational identification, improved perceived organizational support, engagement in more prosocial behaviors, higher work performance, and lower intentions to quit (e.g., Amos & Weathington, 2008; Cable & DeRue, 2002; Edwards, 1991; Kristof, 1996). Not only are positive outcomes found in organizational research, but research has also demonstrated the advantages of fit in academic settings such as higher levels of participation in the classroom, increased interest in the subject, and higher grades (e.g., Feldman, Smart & Ethington, 2004; Freeman, Anderman, & Jensen, 2007; Lau & Nie, 2008; Westerman, Nowicki, & Plante, 2002). Across disciplines, the abundance of positive outcomes as a result of compatibility has prompted practitioners and researchers to study the specific predictors, elements, and outcomes of fit in various settings.

Conceptualizations and Measurements of Fit

The fit paradigm is broadly defined in the literature which allows the notion of fit to be conceptualized and measured in many different ways. Schneider (2001) goes as far as to describe fit as "a syndrome with many manifestations" (p. 142) due to the variety of approaches used to assess compatibility. Caplan (1987) emphasized the importance of disentangling the conceptualizations and assessments of fit in order to further develop theory. He stated that the relationship between different measures of fit is generally expected to be imperfect and that the "multiple sources of imperfection are not well understood, and therefore, they are currently uncontrollable" (p. 257). To correct this limitation, distinctions must be made between the various measures of fit.

While several conceptualizations of fit exist, supplementary is the most common and assesses the similarity between the attribute of an individual and a comparable attribute of the environment (Muchinsky & Monahan, 1987). The basis of supplementary fit is that positive outcomes are obtained when characteristics of an individual are enhanced by comparable levels of the environmental characteristics.

Supplementary fit, as well as other conceptualizations, can be assessed using direct (i.e., perceived) or indirect (i.e., subjective or objective) methods. The direct method of assessing fit explicitly asks individuals about the degree to which they believe they are similar to or compatible with some element of their environment. This measure of fit is known as *perceived fit*. Perceived fit asks individuals to make a holistic assessment of the similarity between person and environment. Respondents are assumed to have a mental representation of their environment that they can cognitively compare with their personal characteristics to obtain an overall perception of congruence, match, or fit (Edwards, 1991).

This measure of correspondence forces individuals to make an immediate cognitive comparison between themselves and an element or elements in their environment.

Indirect approaches involve assessing individuals and their environments separately on commensurate measurements. Subjective and objective fit are considered indirect approaches because the individual is not asked to directly evaluate the match between the two entities. Instead, indirect fit measures assess the individual and the environment separately (Kristof, 1996). S*ubjective fit*[1] is assessed by asking individuals to describe separately themselves and their perceptions of environmental characteristics using commensurate measures (Hoffman & Woehr, 2006). Individuals are not being asked to make a comparison between themselves and their environment, but simply to describe both entities separately. *Objective fit* is defined as the comparison of person and environment variables as reported by different sources (Kristof-Brown et al., 2005). Individuals provide a subjective evaluation of themselves, which is subsequently compared to an evaluation of the environment made by a different source.

Whereas compatibility between the person and the environment is evaluated explicitly by the individual using direct fit, indirect approaches require the separate measures of the individual and environment to be compared against one another to obtain a measure of fit. These approaches differ in the cognitions individuals engage to obtain a measure of the compatibility between two entities. Specifically, perceived fit is solely reliant on individuals' ability to perceive and report the degree to which fit between two entities exists. However, alternate methods of assessment (i.e., subjective and objective fit) allow for comparisons to

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[1] Note perceived and subjective fit are defined to be consistent with Kristof-Brown et al.'s (2005) use of the terms, but these labels are reversed in Hoffman and Woehr (2006).

be made that rely less on an individual's ability to perceive and report the extent to which compatibility between two entities exists.

Despite these differences, perceived, subjective, and objective fit are often treated as though they assess the same discrepancies or similarities between individuals and their environment and are frequently thought of as commensurate measurements of fit (Hoffman & Woehr, 2006). However, studies have found the various measurement approaches are not strongly correlated and differentially predict various outcomes (Cable & Judge, 1997; Edwards, Cable, Williamson, Lambert, & Shipp, 2006; Hoffman & Woehr, 2006; Kristof-Brown & Stevens, 2001; Kristof-Brown et al., 2005; Verquer, Beehr, & Wagner, 2003; Wessel, Ryan, & Oswald, 2008). These findings have led some to suggest that the different measurement approaches tap into different psychological phenomenon (e.g., Kristof-Brown et al., 2005; van Vuuren, Veldkamp, de Jong, & Seydel, 2007). Unfortunately, researchers have failed to fully examine how different conceptualizations, levels, and measures of fit relate to one another and influence desirable outcomes.

Despite the evidence suggesting distinctions among the measures of fit, many researchers continue to treat these different fit measures as if they were assessing the same construct (e.g., Cable & DeRue, 2002; Kristof, 1996). This is problematic because conclusions drawn from studies using different measures arguably do not assess the same fit construct. As a result, inconsistencies among the findings from fit research may not be due to the fit paradigm operating differently in various situations. Rather, inconsistencies could be due to researchers not distinguishing among the various approaches used to assess fit. This failure among researchers to distinguish among the various measures of fit ultimately inhibits theory development.

The proposed study takes an important step towards deepening the understanding of the nomological network of the construct of fit and its three common measurement approaches: perceived, subjective, and objective fit. One way to build the nomological network is to examine the outcomes predicted by each approach. The current study will begin to build that nomological network by explicitly distinguishing between the three measures of fit and their prediction of relevant outcomes.

Differential Prediction of Fit Measurements

Results from several meta-analyses provide empirical support for the notion that the three measurements of fit differentially predict outcomes. For example, Kristof-Brown et al. (2005) examined attitudinal outcomes such as intent to quit, job satisfaction, and organizational commitment. This meta-analysis found that individuals' perceptions of overall fit assessed directly (perceived fit) and their descriptions of characteristics of themselves and the environment on separate measures (subjective fit) predicted attitudinal outcomes better than their actual fit (objective fit). Verquer et al. (2003) also found that for all attitudinal criteria, perceived fit was a stronger predictor than either objective or subjective measures of fit.[2] Hoffman and Woehr (2006) extended the meta-analysis of Verquer et al. (2003) and found objective fit was the best predictor of behavioral outcomes, such as turnover, task performance, and organizational citizenship behaviors.

Individual studies have also examined differential prediction of the various fit measures. Specifically these studies provide support to the notion that perceived fit is a better predictor of attitudinal outcomes than objective fit is. For example, Arthur, Bell, Villado, and

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[2] Note that perceived and subjective fit are defined to be consistent with Kristof-Brown et al.'s (2005) use of the terms, but these labels are reversed in Verquer et al. (2003).

Doverspike (2006) found that, in an organizational context, perceived fit had the strongest relationship with attitudinal criteria (i.e., turnover intention, job satisfaction, and organizational commitment) followed by subjective then objective fit. Differential prediction among the fit measurements is found not only in organizational research. Westerman et al. (2002) used a college sample and found subjective values congruence and classroom environment fit were strong predictors of student satisfaction but not of performance (i.e., course grade).

Other individual studies have shown that objective fit predicts behavioral outcomes better than attitudinal outcomes. Westerman et al. (2002) and Westerman and Vanka (2005) found that objective personality fit was a significant predictor of course performance but not of satisfaction. Wessel et al. (2008) studied the fit between students and their majors and found that objective major fit correlated significantly and positively with GPA. Their results also showed that perceived fit did not significantly increase the variance accounted for in GPA, avoidable absences, or the probability of changing majors above and beyond the effects of objective fit.

Together, these meta-analyses and individual studies provide support for the notion that the nomological network of perceived and subjective fit includes attitudes, but potentially excludes behaviors. Conversely, the evidence suggests that the nomological network of objective fit includes performance and other beneficial behaviors relative to the context, but potentially excludes attitudinal outcomes.

Rationale of Differential Prediction of Fit Measurements

        Perceived fit. One possible explanation of why perceived fit is a better predictor of

attitudinal outcomes than subjective or objective fit can be derived from cognitive dissonance

theory (Festinger, 1957) and the affective-consistency perspective (Yu, 2009). These two

theories posit that individuals need consistency between their behaviors, cognitions, and

attitudes and suggest that individuals may change their behaviors, perceptions, or attitudes to

alleviate strain caused by inconsistency. According to cognitive dissonance theory,

individuals struggle to maintain the consistency of their cognitions and actions in order to

reduce the amount of tension felt when holding beliefs that are incompatible with their

actions. Similarly, affective-consistency perspective asserts that individuals who feel positive

work-based affect will be prone to adjust their perceptions of self or the environment so that

they are able to report that compatibility exists. These principles are activated when

individuals are asked to directly report the compatibility between themselves and an outside

entity.

        Specifically, when asked to evaluate the similarity between themselves and an outside

entity (e.g., their job, work environment, or another individual), people tend to, consciously

or unconsciously, consider affective cognitions when reporting the degree to which similarity

does or does not exist. Individuals who have positive affective cognitions (e.g., satisfaction,

liking, or commitment) toward the outside entity will report strong similarity in an attempt to

avert dissonance that would be introduced if they had positive attitudes toward the entity but

reported being dissimilar. A similar process occurs for individuals who hold negative

affective cognitions toward an outside entity. In these instances, individuals will be more

likely to report dissimilarity to avoid reporting being similar to something they are not satisfied with or like.

In an academic environment, this means if an individual is performing poorly in a class and is not satisfied with his or her performance but reports compatibility with the environment, dissonance between his/her attitudes and behavior would occur. This state of dissonance produces strain, either consciously or unconsciously, and the individual must find a way to reduce the conflicting attitude (i.e., satisfaction of the course) or behavior (i.e., reporting incompatibility). Reducing this strain could occur by one of two mechanisms: the individual in the situation could change his or her attitude towards the class to reflect dissatisfaction, or the individual could adjust his or her reporting behavior to reflect compatibility. In either position, the individual's subsequent attitudes and behaviors would then be consonant, and the dissonance would be reduced.

These two theories offer an explanation for why perceived fit is the strongest predictor of subsequent attitudinal outcomes. Since perceived fit forces individuals to report an assessment of similarity between themselves and an outside entity, the measure of perceived fit relies heavily on maintaining consistency between the reporting of congruence and many of the attitudes (e.g., satisfaction or liking) the concept of fit is supposed to predict (Kristof, 1996). As a result, the reporting of the "fit" between two entities using direct measurement is actually influenced by many of the attitudinal outcomes that fit is supposed to predict. Thus, if individuals report a strong similarity or congruence with their environment, then they are also more likely to subsequently report being highly satisfied, interested, and committed.

Subjective fit. The rationale for why subjective fit predicts attitudes more strongly than behaviors is more complex than the reasoning behind the differential predictive power of perceived fit. As previously mentioned, perceived fit involves directly reporting the congruence between the person and an outside entity. With subjective fit, individuals must evaluate themselves and the outside entity separately. However, research from social cognition suggests that these separate assessments are not completely independent from one another.

While individuals are not directly asked to compare the target or outside entity against themselves in subjective fit measurement approaches, Dunning (2000) argues that individuals tend to use an egocentric comparison, either consciously or unconsciously, in which judgments of others are based on the self. That is, instead of objectively describing the characteristics of or attitudes toward an outside target, judgments about an external entity are partially based on comparing the target to the self. Borrowing from these ideas, individuals are still, at least indirectly, making a comparison between themselves and the environment when evaluating the outside entity in subjective fit.

If individuals are using egocentric comparisons when evaluating the environment, then ideas discussed by cognitive dissonance and the affective-consistency perceptive are also introduced in the subjective measure of fit, but perhaps to a lesser extent. That is, individuals make an effort to reduce the discrepancy between their affective cognitions and their descriptions of the outside entity by providing ratings that indicate greater similarity for environments for which there are positive affective cognitions or attitudes and less similarity for environments for which there are negative affective cognitions or attitudes. Measures of subjective fit are, thus, partially influenced by the various attitudes that they subsequently

predict. This influence is less direct than in perceived fit, providing the rationale for why subjective fit is still a predictor of attitudinal outcomes, but not as strong of a predictor as perceived fit.

Objective fit. The rationale for why objective fit predicts behavioral outcomes more strongly than attitudes is less complex than the reasoning for perceived and subjective fit. Simply put, because objective fit relies on two separate sources to evaluate the individual and the environment, the biases in assessing the congruence between the two are reduced (Kristoff-Brown et al., 2005). Objective measures of fit are thought to more accurately assess the actual compatibility between the individual and the environment, rather than a perception of fit.

Congruence assessed by objective fit reflects efficiency that results from the actual, not merely perceived, processes between individuals and their environments. Actual compatibility between an individual and his or her environment leads to improved communication, group functioning, or work coordination, even if the perception of fit does not exist (Kristof, 1996; Lofquist & Dawis, 1969; Padgett & Wolosin, 1980; Tsui & O'Reilly, 1989). This improved work process leads to desirable behavioral outcomes, such as reduced turnover, increased task performance, and engagement in more organizational citizenship behaviors.

Objective fit is the least biased measurement of fit because it is not as influenced by an individual's cognitions (e.g., satisfaction, liking) as perceived and subjective fit are. An individual who demonstrates actual compatibility with the other entity, as assessed by objective fit, will demonstrate more positive behaviors. This provides the rationale to explain

why objective fit, when compared with perceived and subjective fit, is a stronger predictor of

behavioral outcomes, but not as strong for attitudinal outcomes.

Fit in the Current Study

As previously discussed, the vast majority of empirical evidence has demonstrated

that positive outcomes result from congruence in organizational settings. From the academic

perspective, compatibility would also be advantageous for students and instructors. By

bridging the gap between organizations and the classroom, many of the basic components of

an organization become clear in classrooms. Instructors often behave like managers in that

they rate performance, control the way information is disbursed, and provide necessary

resources and feedback to their subordinates (Westerman & Vanka, 2005). Students and

employees also have different preferences for their leaders. Many of the same beneficial

outcomes associated with fit in organizations would be valuable in classroom settings

including improved student attitudes, teamwork, citizenship and ethical behaviors, and

performance (Fraser & Fisher, 1983; Westerman & Vanka, 2005).

Student-Instructor Fit

In academia, characteristics of students can be compared with characteristics of

instructors, classroom environments, peers, majors, or the universities (Fraser & Fisher,

1983; Wessel et al., 2008). The conceptualization of fit in the current study is student to

instructor which is indicative of P-P fit. The degree to which an attribute of an individual is

comparable to an attribute of another individual has been linked to an individual's

satisfaction, commitment, and performance (Ostroff & Schulte, 2008).

The underlying theory of P-P fit is based on the similarity-attraction paradigm which

describes individuals as preferring others who are similar to themselves while avoiding those

who are dissimilar (Byrne, 1971). This type of attraction is more pronounced for individuals

than groups. For example, Ostroff, Shin, and Kinicki (2005) found that perceived fit between

employees and their managers is more important than perceived fit with the workgroup,

highlighting the importance of the P-P comparison.

Other research in classroom settings has demonstrated the congruence of

characteristics between students and instructors and the role of compatibility in predicting

positive effects. Sapolsky's research (as cited in Byrne, 1971) concluded that when there was

either high attraction or compatibility between students and their instructors, a greater effect

on performance was revealed. Rich and Bush (1978) reported that groups of students and

their teachers with congruent relationships outperformed incongruent groups on achievement,

time at attention to task, and affective perception. The results were not significantly related to

teacher style which provides support for the interaction between characteristics of the

students and their instructor being the underlying cause of positive outcomes. As a result of

the congruent relationships discussed, the relationship between students and their classroom

environments should have a positive impact on behavioral and attitudinal outcomes.

Learning Goals

In the fit literature, and especially in organizational research, values tend to be the

most common content domain assessed. However, there is evidence to suggest that values are

less relevant in educational settings. Ostroff et al. (2005) found that P-P value congruence did

not produce strong results but emphasized that attributes such as personality, goals, abilities,

and attitudes may be more relevant in future P-P comparison. Westerman et al. (2002) and

Westerman and Vanka (2005) found value congruence not to be a significant predictor of

student performance or satisfaction and attribute these results to the brief nature of a class.

Students view the class as being transitory as opposed to employees viewing their part in the organization as enduring where values would play a larger role.

In the present study, the congruence between the learning goals of the students (i.e., what students hoped to learn in the course) compared to the learning goals of the instructors (i.e., what the instructors hope to teach their students in the course) is evaluated in relation to attitudinal and behavioral outcomes. Learning goals are temporary, making them more appropriate for a classroom setting than values, and they constitute a commensurate dimension with the same essential definition for both the students and the instructors. Learning goals were also chosen due to their high level of relevance and importance to students; therefore, it should have a strong influence on course outcomes. Edwards et al. (2006) emphasized selecting a dimension that is of high importance to the person by stating "as the importance of a dimension increases, the person is more likely to process information regarding that dimension carefully and thoroughly" (p. 808).

In a classroom setting, Lau and Nie (2008) stated that students set goals at the beginning of the semester course that represent their reasons for engaging in academic tasks. These researchers also emphasized the interaction between the classroom environment and the students' goals as being critical for assessing outcomes. Classroom goal structures, placed by instructors, could have additive effects on student outcomes independent of students' personal goals, as well as moderating effects on the relations between students' personal goals and outcomes. Lau and Nie (2008) also presented evidence that classrooms emphasizing competition for grades, demonstration of ability, and social comparison led to negative behaviors for those students who were oriented toward performance-avoidance

goals. Goals emphasized in the classroom setting that were congruent with students' goals led to more adaptive behaviors.

Harackiewicz, Barron, Durik, Linnenbrink-Garcia, and Tauer (2008) demonstrated a reciprocal effect between interest in the course and specific types of goals on performance outcomes. In this study, interest was defined as initial interest and was assessed at the beginning of the semester, and maintained situational interest which reflected interest in the course material and instructor after time had passed. The reciprocal effects between interest and goals led researchers to believe that if instructors emphasized goals that were congruent with students' goals, students' interest in the course increased, and performance was enhanced. Other empirical evidence has revealed that goal congruence between individuals and their environments also leads to important attitudinal and behavioral outcomes (Kristof-Brown & Stevens, 2001; Vancouver & Schmitt, 1991; Westerman & Yamamura, 2006). These findings suggest that goal congruence is influential in students' attraction, commitment, performance, and the perceived compatibility with their environments.

Outcomes of Fit

Given the popularity and prevalence of fit research, it is important to know if the different measures of fit are assessing different concepts and differentially predict various outcomes. Attitudinal outcomes include individuals' cognitions about the environment and are obtained by self-report measures. This outcome of fit includes affect that results from cognitions made about the interaction between themselves and their environments (Edwards & Shipp, 2007). In organizational research, attitudinal outcomes range from satisfaction, commitment, intent to quit, and attraction (Edwards & Shipp, 2007). In classroom settings, satisfaction with the course, university, and instructor are attitudes readily assessed. In the

present study, attitudinal outcomes were specific to students' psychology courses and

instructors and included satisfaction with the instructor and course and interest in

psychology.

Behavioral outcomes are described as objective results because they are independent

of an individual's subjective evaluations. This type of outcome is most likely to reflect

quantifiable products, although self-reported behaviors can also be assessed. The most

prevalent behavioral outcome in an organizational or classroom setting is performance.

Performance can be conceptualized by criteria relevant to the environment and the individual

being assessed, such as number of units produced by an employee in an organizational

setting. Behavioral outcomes can also include number of absences, superior appraisals, and

amount of time spent completing work. In the present study, behavioral outcomes included

students' course performance and the number of visits to the course website. Course

performance was assessed as the student's final grade in the course. Each psychology class

used a course management system as a resource to communicate important information

regarding assignments and notes pertaining to the class to students. Successful students are

presumed to be more likely to take advantage of this resource and complete the assignments

posted on the website.

Proposed Relationships

Congruence between an individual and his/her environment has been associated with

increased organizational commitment and job satisfaction and decreased intentions to quit in

organization contexts (Amos & Weathington, 2008; Devendorf & Highhouse, 2008; Verquer

et al., 2003). In educational settings, perceptions of fit and actual fit have provided the

foundation for satisfaction and performance (Freeman et al., 2007; Harackiewicz et al., 2008;

Lau & Nie, 2008; Westerman et al., 2002; Westerman & Vanka, 2005). Research on the

approaches of the measurement of fit, specifically meta-analyses, has shown the approaches

are weakly related and differentially predict outcomes (Kristof-Brown et al., 2005; Verquer

et al., 2003). Based on these findings, the three measurements of fit are expected to be

weakly related to one another.

   Kristof-Brown et al. (2005), Hoffman and Woehr (2006), and Verquer et al. (2003)

provided meta-analytic results that subjective and perceived fit will be related to attitudinal

outcomes more strongly than behavioral outcomes. Perceived fit will be related to attitudinal

outcomes based on the similarity between attitudes and perceptions made by individuals

striving to maintain cognitive consistency (Festinger, 1957; Yu, 2009). Subjective fit will be

related to attitudinal outcomes because individuals are asked to report their opinion regarding

themselves and the environment using cognitions that are available to them at that time, most

likely information about themselves. This comparison is also affected by the attitudes that

they hold at the same time regarding the target and themselves (Dunning, 2000). In the

present study, it is expected that perceived fit will be most strongly related to attitudinal

outcomes of satisfaction with the course and instructor and interest in psychology than

behavioral outcomes. It is also expected that subjective fit will be more strongly related to the

same attitudinal outcomes than behavioral outcomes, but it is hypothesized that this

relationship will be more weakly related than perceived fit with the attitudinal outcomes.

   Westerman et al. (2002), Westerman and Vanka (2005), and Hoffman and Woehr

(2006) provided evidence that objective fit is related to behavioral outcomes more strongly

than attitudinal outcomes. Research on processes, especially communication, has maintained

that objective compatibility between individuals and their environment leads to positive

behaviors and improved performance. Finally, it is expected that objective fit will be related to behavioral outcomes of course performance and number of visits to course website more strongly than attitudinal outcomes.

Currently, there is not a single study examining the equivalence of these three measures of fit and their differential prediction in the same context within the same situational boundaries. Individual studies have measured behavioral or attitudinal outcomes using different conceptualizations of fit, and the results have been compiled in meta-analyses; however, this study is the first of its kind to compare the three measurements of fit in a longitudinal study with behavioral and attitudinal outcomes using learning goals as the attribute of interest. The purpose of this study was to examine how the different measurements of fit impact learning and classroom outcomes. The current study begins to build the nomological network of fit by examining correlations between measures and differential prediction of outcomes.

Method

Participants

The data for the research are archival in nature and do not provide any identifiers or links to identifiable information; therefore, it did not require Institutional Review Board (IRB) approval (refer to Appendix A). The original study that collected the data was approved by the IRB. The sample included 725 undergraduate students enrolled in an introductory level psychology course at a mid-sized university in the southeastern United States. Incentives (i.e., class credit for completing an assignment) were provided for students at each data collection period in exchange for their participation.

Overview of Data Collection

Data were collected at three time periods during the semester. Students' stated learning goals for the course were assessed within the first two weeks of the semester during a class period. Students' perceptions of their instructors' learning goals and the direct perceived fit between their learning goals and those of their instructors were collected 10 to 12 weeks into the semester using an online survey tool. At this time, instructors were asked to report what they hoped to teach their students (i.e., their learning goals). The final data collection took place at the end of the semester extending to three weeks after classes concluded. During this time, the attitudinal and behavioral outcomes were obtained, including each students' impression of the course and the instructor, interest in psychology, final course grade, and number of class website visits. This information was collected either during a class period or using an online survey tool. All scales are presented in Appendices B-E.

Measures

Student learning goals. Learning goals of the student were assessed using learning objectives identified by the Individual Development and Education Assessment (IDEA) Center (Hoyt & Lee, 2002; Hoyt & Perera, 2000). The IDEA form uses 12 items to evaluate five learning goals: 1) substantive learning, 2) lifelong learning, 3) general intellectual/academic intellectual skills, 4) development of specific skills/competencies, and 5) personal development (see Appendix B). The directions for students' stated learning goals were "Below you will find a number of statements that describe learning objectives that individuals might have for this class. Please read each item carefully and indicate how important each learning objective is to you." Students' responses were measured on a 5-point

Likert scale ranging from 1 (*not at all important*) to 5 (*extremely important*). This measure was used to assess subjective and objective fit.

The original IDEA scale provided poor reliabilities. For this reason, an exploratory factor analysis was performed in order to develop more parsimonious predictors. Principal Axis Factoring with an oblimin rotation was used. An iterative process was employed with items loadings higher than .40 on multiple factors being removed in each iteration until only a distinct set of factors remained. Items in each factor were examined for common themes and scale dimensions were developed. Two factors were extracted: applied learning goal and basic learning goal (noted in Appendix B). These factors were used for both student and instructor learning goals.

Students' impression of instructor's learning goals. Students' impression of their instructor's learning goals were also assessed using the same 12 items developed by the IDEA Center (see Appendix B) and collected during the weeks 10 to 12 of the semester. Students received the directions "Please think of what you know about your instructor and think of what your instructor would like you to learn during your time in this class." Students' responses were measured on a 5-point Likert scale ranging from 1 (*not at all important*) to 5 (*extremely important*). This measure was compared with the students' learning goals to obtain a measurement of subjective fit for each learning goal.

Instructor learning goals. Instructor learning goals were also assessed using the same 12 items developed by the IDEA center (see Appendix B). Instructors received the directions "Please think of what you would like your students to learn during their time in this class." Instructors' responses were measured on a 5-point Likert scale ranging from 1

(*not at all important*) to 5 (*extremely important*). This measure was compared with the students' learning goals to obtain a measurement of objective fit for each learning goal.

Perceived fit with instructor. Perceived fit between student learning goals and instructor learning goals were assessed using the same 12 items from the IDEA questionnaire (see Appendix B). The questionnaire was given during weeks 10 to 12 of the semester. Students received the directions "Below you will find a number of statements that describe learning objectives that both you and your instructor might have for this class. Read each statement carefully and think about how similar what you want to learn is to what your instructor wants to teach." Each item was assessed using a 7-point Likert type scale ranging from 1 (*not at all similar*) to 7 (*completely similar*).

Satisfaction with the instructor. Satisfaction with the instructor was assessed with 4 items (Appendix C) at the end of the semester. Each item was assessed using a 5-point Likert type scale ranging from 1 (*strongly disagree*) to 5 (*strongly Agree*).

Satisfaction with the course. Satisfaction with the course was assessed with 4 items (Appendix D) at the end of the semester using a 5-point Likert type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Interest in psychology. Interest in psychology was assessed with 7 items (Appendix E) at the end of the semester and was used to determine the student's plans to continue pursuing psychology. A 5-point Likert type scale was used, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Course performance. Overall course performance was assessed using students' final percentage for the course. Course grades were obtained with permission from the student, and grades were compiled from the students' instructors at the end of the semester.

Number of class website visits. Number of class website visits was assessed by asking instructors to run an activity report using the university-wide course management system at the end of the semester. Information was obtained regarding the number of times a student viewed the course website and information regarding what activities or assignments were viewed. The number of times students viewed any resource (e.g., syllabus, assignments) pertaining to the class on the course website was summed.

<div align="center">

Results

</div>

The means, standard deviations, correlations, and reliability estimates for all measures used to test the study's hypotheses are listed in Table 1.

Assessing Fit Relationships

While testing the impact that perceived fit has on the study's outcomes was relatively simple (i.e., correlating the participants' ratings with the attitudinal and behavioral outcomes), examining the impact that measures of subjective and objective fit had on the study's outcomes was more complex. That is, because subjective and objective measures of fit were composed of two variables (i.e., ratings of students' learning goals and ratings of instructors' learning goals) estimating the effects that fit had on an outcome required techniques that could appropriately examine the simultaneous effect that student and instructor characteristics had on attitudes and behavior.

The most commonly-used technique for assessing the fit between two entities is a bivariate congruence index such as an algebraic ($X - Y$), absolute ($|X - Y|$), or squared difference $(X - Y)^2$. However, a number of researchers have criticized the use of these methods for a wide variety of reasons (see Cronbach, 1958; Edwards, 1991; Johns, 1981; Nunnally, 1962). Thus, the current study used a polynomial regression procedure to examine

the fit that existed between student and instructor learning goals (see Edwards, 1994;

Edwards & Parry, 1993). This procedure did not collapse student and instructor variables into

a single index. Rather, it examined the effect that fit between two entities (i.e., student and

instructor) had on an outcome using the following equation:

$$Z = b_0 + b_1 X + b_2 Y + b_3 X^2 + b_4 XY + b_5 Y^2 + e$$

where Z represents the outcome, X represents ratings of students' learning goals, Y represents

ratings of instructors' learning goals, and e represents error. This procedure also assumed that

the relationship between fit and an outcome should be considered in three dimensions. As a

result, a surface response methodology (Edwards & Parry, 1993; Kutner, Nachtsheim, Neter,

& Li, 2005) was employed to interpret the joint relationship the two entities have on course

satisfaction and performance.

Multi-Level Modeling

Sampling participants from classrooms that had the same instructors essentially

clustered the participants into higher-level categories (i.e., instructor's classroom). As a

result, a relationship was introduced among participants who had the same instructor that

violated the assumption of independence of traditional ordinary-least-squares regression

(OLS), which could not have appropriately modeled the interdependence of the data (Field,

2009; Norusis, 2008). To address this issue, a full maximum likelihood estimation random

effects modeling (FML-REM) procedure was used to examine the relationship between the

different measures of fit and the study's outcomes.

The FML-REM procedure first compared the -2 log likelihood from the model

without random effects (i.e, regression models in which the intercepts and predictor slopes

were not allowed to vary across classrooms) against the null model, which used the grand

mean of the outcome as the only predictor. Next, the no random effects models were

compared against the random intercepts model (i.e., regression models in which the

intercepts were allowed to vary across classrooms). Finally, the random intercepts models

were compared against the random slopes and intercepts models (i.e., regression models in

which the both intercepts and predictor slopes were allowed to vary across classrooms).

As can be seen in Tables 2 and 3, the random intercepts models did not significantly

improve the prediction of the attitudinal outcomes over the models without random effects

for any of the measures of fit. The random intercepts models did significantly improve the

prediction of course grades over the no random effects models for all fit measures. With the

exception of the objective fit, basic knowledge model, random intercepts models improved

the prediction of number of visits to the course websites over the no random effects models

for all fit measures.

The random intercepts and slopes models failed to converge, which indicated no

additional variance was explained by estimating the slopes for each classroom, for all but

four models. The four random intercepts and slopes models that did converge failed to

improve prediction of the outcomes over the random intercepts models. Although not all of

the random intercepts models significantly improved the prediction of the study's outcomes

over no random effects models, the random intercepts models for both learning goals were

used to test the proposed relationships for comparability purposes.

Examination of Functional Forms

Relationship among fit measures. A series of analyses were undertaken to

determine the extent to which the measurement approaches related to one another. First, a

series of FML-REM polynomial regression analyses were conducted using the subjective and

objective fit terms (i.e., X, Y, X^2, XY, Y^2) as predictors with analogous applied and basic

perceived fit learning goals measures as outcomes. None of the random intercepts models

added to the prediction of perceived fit above the models without random effects (see Table

4). Additionally, the subjective fit, applied knowledge random intercepts model failed to

converge. As such, surface response plots were created using the results from OLS regression

analyses.

The functional form of the relationship between the applied learning goal and

perceived similarity demonstrated a positive fit relationship for subjective fit (see Figure 1).

Students' perceived similarity between the learning goals of their instructors and themselves

was maximized when students' instructor ratings and student ratings of the applied learning

goals were highest, as indicated by circle A. Conversely, perceived similarity was minimized

when students' instructor ratings and student ratings of the applied learning goals were

lowest, as indicated by circle B.

The functional form of the relationship between the applied learning goal and

perceived similarity demonstrated a positive fit relationship for objective fit (refer to Figure

2). Students' perceived similarity between the applied learning goals of their instructors and

themselves was maximized when students' instructor ratings and student ratings of the

applied learning goals were highest, as indicated by circle A. Perceived similarity was

minimized when instructor ratings and student ratings of the applied learning goals were

lowest, as indicated by circle B.

The functional form of the relationship between the basic learning goal and perceived

similarity demonstrated a positive fit relationship for subjective fit (refer to Figure 3).

Students' perceived similarity between the basic learning goals of their instructors and

themselves was maximized when students' instructor ratings and student ratings of the basic learning goals were highest, as indicated by circle A. Perceived similarity was minimized when students' instructor ratings and student ratings of the basic learning goals were lowest, as indicated by circle B.

The functional form of the relationship between the basic learning goal and perceived similarity demonstrated a positive fit relationship for objective fit (refer to Figure 4). Students' perceived similarity between the basic learning goals of their instructors and themselves was maximized when instructor ratings and student ratings of the basic learning goals were highest, as indicated by circle A. Perceived similarity was minimized when instructor ratings and student ratings of the basic learning goals were lowest, as indicated by circle B.

Subjective fit. To determine if the joint relationship between student and instructor ratings and outcomes was indicative of a fit relationship, the three-dimensional surface response graphs were first examined for subjective fit. While none of the forms indicated traditional fit relationships with maximized outcomes along the line of perfect fit, several of the functional relationships indicated a variant of a fit relationship. The following sections discuss the functional relationships between student and instructor learning goal ratings and the study's outcomes to determine if a form of a fit relationship was present in the current study.

Course satisfaction. The functional form of the relationship between the applied learning goal and course satisfaction demonstrated a positive fit relationship for subjective fit (see Figure 5). When students' instructor ratings and students' ratings of the applied learning goals were highest, satisfaction was maximized, as denoted by circle A. When students'

instructor ratings and students' ratings of applied learning goal ratings were low, course satisfaction was minimized, as denoted by circle B.

The functional form of subjective fit of the basic learning goals with course satisfaction did not reveal a fit relationship (see Figure 6); however, a main effect for instructor was present. As students rated instructors' basic learning goals increased, their course satisfaction increased as indicated by the circle in Figure 6.

Satisfaction with instructor. The functional form of the relationship of the applied learning goal with satisfaction with instructor demonstrated a positive fit relationship (see Figure 7). Satisfaction was maximized when students' instructor ratings and students' ratings for applied learning goals were highest, as denoted by circle A. Conversely, satisfaction with instructor was minimized when students' instructor ratings and students' ratings of applied learning goals were lowest, as denoted by circle B.

The functional form of the relationship of the basic learning goal with satisfaction with instructor revealed a positive fit relationship (see Figure 8). Satisfaction with instructor was maximized when students' instructor ratings and students' ratings of applied learning goals were highest, as denoted by circle A. On the other hand, satisfaction with instructor was minimized when students' instructor ratings and students' ratings of basic learning goals were lowest, as denoted by circle B.

Interest in psychology. The subjective fit functional forms of the applied learning goals with interest in psychology did not reveal a positive fit relationship (see Figure 9). The functional form of the relationship of the applied learning goal with satisfaction depicts a main effect for student learning goals. As students rated applied learning goals higher, their interest in psychology declined as indicated by the circle in Figure 9.

The functional form of the relationship of the basic learning goals with interest in psychology revealed a negative fit relationship (see Figure 10). Interest was maximized when students' instructor ratings and students' ratings of basic learning goals were low, as denoted by circle A. Interest was minimized when students' instructor ratings and students' ratings of basic learning goals were high, as denoted by circle B.

Final grade. The functional form of the relationship of the applied learning goals with the final grade demonstrated a positive fit relationship (see Figure 11). Final grades were maximized when students' instructor ratings and students' ratings of applied learning goals were highest, as denoted by circle A. Final grades were minimized when students' instructor ratings and students' ratings of applied learning goals were lowest, as denoted by circle B.

The functional form of the relationship of the basic learning goal with final grade demonstrated a positive fit relationship (see Figure 12). Final grades were maximized when students' instructor ratings and students' ratings of basic learning goals were highest, as denoted by circle A. Final grades were minimized when students' instructor ratings and students' ratings of basic learning goals were lowest, as denoted by circle B.

Number of visits to course website. The functional form of the relationship of the applied learning goal with the number of visits to course website demonstrated a positive fit relationship (see Figure 13). The number of visits was maximized when students' instructor ratings and students' ratings of applied learning goals were highest, as denoted by circle A. Number of visits was minimized when students' instructor ratings and students' ratings of applied learning goals were lowest, as denoted by circle B.

The functional form of the relationship of the basic learning goal with number of visits to course website demonstrated a positive fit relationship (see Figure 14). Number of visits was maximized when students' instructor ratings and students' ratings of basic learning goals were highest, as denoted by circle A. Number of visits was minimized when students' instructor ratings and students' ratings of basic learning goals were lowest, as denoted by circle B.

Summary of subjective fit relationships. When assessing subjective fit, all of the functional forms for the study's outcomes, except interest in psychology and course satisfaction, revealed a positive fit relationship (see Tables 5 and 6). That is, the outcomes were maximized when both the ratings for the instructor and student were high. Congruence between the ratings of students' learning goals and instructors' learning goals, as reported by students, successfully predicted relevant outcomes.

Objective fit. Three-dimensional surface response graphs were examined to assess objective fit. While none of the forms indicated traditional fit relationships with maximized outcomes along the line of perfect fit, several of the functional relationships indicated a variant of a fit relationship. The following sections discuss the functional relationship between student and instructor learning goal ratings and the study's outcomes to determine if a form of a fit relationship was present in the current study.

Course satisfaction. The functional form of the relationship of the applied learning goal with course satisfaction demonstrated a positive fit relationship (see Figure 15). Course satisfaction was maximized when ratings for both student and instructor applied learning goals were highest, as denoted by circle A. Course satisfaction was minimized when ratings for both student and instructor applied learning goals were lowest, as denoted by circle B.

The objective fit functional form of the basic learning objective with course satisfaction did not reveal a fit relationship (see Figure 16); however, there was a main effect for instructor learning goals. As ratings of basic learning goals for instructors increased, course satisfaction increased, as denoted by the circle in Figure 16.

Satisfaction with instructor. The functional form of the relationship of the applied learning goal with course satisfaction demonstrated a positive fit relationship (see Figure 17). Satisfaction was maximized when ratings for both student and instructor applied learning goals were highest, as denoted by circle A. Conversely, satisfaction with their instructors was minimized when ratings for both student and instructor applied learning goals were lowest, as denoted by circle B.

Figure 18 reveals a positive fit relationship of the basic learning goals with satisfaction with instructor. Satisfaction with instructor was maximized when ratings for both student and instructor basic learning goals were highest, as denoted by circle A. On the other hand, satisfaction with instructor was minimized when ratings for both student and instructor basic learning goals were lowest, as denoted by circle B.

Interest in psychology. The objective fit functional forms of the applied learning goals with interest in psychology did not reveal a fit relationship (see Figure 19); however, a main effect for instructor was present. Interest in psychology decreased when instructors rated applied learning goals as important, as indicated by the circle in Figure 19.

The functional form of the relationship of the basic learning goal with interest revealed a negative fit relationship (see Figure 20). Interest was maximized when ratings for both student and instructor basic learning goals were lowest, as denoted by circle A.

Conversely, when ratings for both student and instructor basic learning goals were highest interest in psychology was minimized, as denoted by circle B.

Final grade. The functional form of the relationship of the applied learning goal with final grade demonstrated a positive fit relationship (see Figure 21). Final grades were maximized when ratings for both student and instructor applied learning goals were highest, as denoted by circle A. Final grades were minimized when ratings for both student and instructor applied learning goals were lowest, as denoted by circle B.

The functional form of the relationship of the basic learning goal with final grade did not reveal a fit relationship (see Figure 22); however, a main effect for instructor was present. Final grades increased when ratings for instructor basic learning goals were low, as indicated by the circle in Figure 22.

Number of visits to course website. The objective fit functional forms of the applied learning objectives with the number of visits to the course website did not reveal any significant relationships (see Figure 23). That is, after accounting for the random intercepts, none of the predictors of fit (i.e., X, Y, X^2, XY, Y^2) were significant predictors of website visits.

The functional form of the relationship of the basic learning goal with number of visits to course website did not reveal a fit relationship (see Figure 24) but there was a main effect for instructor. When instructor ratings of basic learning goals decreased, number of visits increased, as indicated by the circle in Figure 24.

Summary of objective fit relationships. When assessing objective fit, multiple variations of fit relationships were revealed (see Tables 5 and 6). For these outcomes, congruence between the ratings of instructors' learning goals and students' learning goals,

reported separately, successfully predicted relevant outcomes. Number of visits to course website was the only outcome not to demonstrate at least one type of fit relationship.

Testing of Proposed Relationships

      Proposed fit-outcome relationships. Based on prior research, it was proposed that the measurements of fit would be weakly related. While the results of the OLS regression provided multiple-R values for the subjective-perceived and objective-perceived fit relationships, examining the subjective-objective fit relationships was not as straightforward, as both measures of fit were composed of five terms (i.e., X, Y, X^2, XY, Y^2). Thus, the subjective-objective fit relationships were first tested using structural equation modeling in LISREL, which allowed the five fit terms that comprised subjective and objective fit to load on two separate latent constructs representing subjective and objective fit. LISREL then attempted to compute the correlations between these two latent constructs.

      However, the solutions for these analyses all failed to converge and did not provide estimates of subjective-objective fit relationships. This failure to converge was most likely because two of the fit terms (X and X^2) that comprised subjective fit and objective fit were identical. Given that the only fit terms that were free to differ across subjective and objective fit were terms that contained the instructor ratings (Y, XY, and Y^2), the correlations between students' ratings of instructors' learning goals (subjective fit) and instructors' ratings of their learning goals (objective fit) were examined to determine the extent to which subjective and objective fit related to one another.

      As can been seen in Table 7, there were significant relationships among the three measurements. Perceived and subjective fit were more strongly related to one another for both learning goals than with objective fit, which was expected due to their expected ability

to predict attitudinal outcomes. Relationships between perceived and objective fit were weaker. Subjective fit demonstrated the weakest relationship with objective fit. The correlations provide evidence that the measurements of fit are weakly related, thus supporting the first set of proposed relationships.

First set of proposed relationships. It was predicted that perceived and subjective fit would be more strongly related to attitudinal outcomes than behavioral outcomes. As shown by the reduction in error variances displayed in Table 8, perceived and subjective fit were not better predictors of attitudinal outcomes than behavioral outcomes. Despite these results, perceived and subjective fit approaches reduced more residual variance in attitudinal outcomes, excluding interest in psychology, than objective fit. Thus, this set of hypothesized relationships was partially supported.

It was also expected that perceived fit would predict attitudinal outcomes more strongly than subjective fit. However, as seen in Table 8, measures of perceived fit did not consistently, or substantially, result in a reduction of the error variances over measures of subjective fit. Therefore, this set of hypothesized relationships was not supported.

Second set of proposed relationships. It was proposed that objective fit would predict behavioral outcomes more strongly than attitudinal outcomes. As seen in Table 8, objective fit was only a significant predictor of one behavioral outcome, final grade in relation with the applied learning goal and all three measurement approaches reduced approximately the same amount of error variance for that outcome. Thus, the final set of proposed relationships was not supported.

Discussion

Fit research has utilized three methods to assess compatibility between two entities: perceived, subjective, and objective fit. The three measurements of fit are used interchangeably by researchers and practitioners; however, recent meta-analyses have shown that the approaches are weakly related and differentially predict outcomes (Kristof-Brown et al., 2005; Verquer et al., 2003). This is the first study to examine the equivalence of the three measures of fit and their differential prediction in the same context within the same situational boundaries. This study extends the meta-analyses by comparing the three measurements of fit in a longitudinal study with behavioral and attitudinal outcomes using learning goals as the variable of interest. The purpose of this study was to examine how the different measurement approaches of fit impact learning and classroom outcomes.

Relationships Among Fit Measures

It was expected that the three measurement approaches of fit would be weakly related. This set of proposed relationships was supported. Subjective and perceived fit were the most related, as both were expected to predict attitudinal outcomes better than behavioral outcomes. Objective and perceived fit were moderately related while subjective and objective fit were weakly related.

This finding supports prior research that has found these outcomes to be weakly related (Hoffman & Woehr, 2006; Kristof-Brown & Stevens, 2001; Kristof-Brown et al., 2005; Verquer et al., 2003). The inconsistent findings that are reported in fit research could be due to the fact these approaches are different. Based on this finding, distinctions should be made between the fit measurement approaches because the types of fit are not strongly related and predict different outcomes.

Interestingly, the polynomial regression and the surface response methodology did not reveal any functional forms of the subjective-perceived and the objective-perceived relationships that conformed to the traditional fit hypothesis, in which the perception of similarity would be maximized along the line of perfect fit and minimized when deviating from that line. Rather, these relationships were found to be positive fit relationships, where perceptions of similarity were maximized at the point in which the ratings of instructors and students' learning goals were the highest. This maximization was also accompanied by a minimization of the perceived similarity when the ratings of instructors' and students' learning goals were the lowest.

These findings indicate that when compatibility was present on the high end of student and instructor rating scales, students were most accurate in reporting similarity. When compatibility existed on the low end of the ratings, students did not place importance on those learning goals; therefore, they did not include that information in determining similarity between themselves and their instructor. In that case, other information (i.e., liking, satisfaction) could have been utilized in making decisions about similarity.

Objective and subjective fit were not related as students did not report an accurate description of their instructor. When assessing subjective fit, students were explicitly asked to describe their instructor. Students may have had to make judgments on their own if their instructors were not clear about their goals for the class or never stated the goals. Students may have not heard or understood their instructors' goals. Students may have relied on other information, such as liking or satisfaction toward their instructor, to make those judgments. In this study, these judgments varied from those reported firsthand by instructors, as evidenced by the low correlations between student and instructor ratings.

Proposed Fit-Outcome Relationships

Given that students were sampled within classrooms, creating a nested sampling design, a FML-REM procedure was employed. FML-REM results revealed there were significant mean-level differences between the classes for the behavioral outcomes (i.e., final grade and the number of visits to the course website), but not attitudinal outcomes (i.e., satisfaction and interest in psychology). These findings reflect the differing performance expectations, grading approaches, and mechanisms that instructors utilize in their classrooms. Due to these differences, random intercepts models were utilized to examine the study's proposed relationships.

Overall, the polynomial regression and the surface response methodology did not reveal any traditional fit relationships. However, alternate fit relationships were discovered. The main congruence relationship that emerged was positive fit relationship. A positive fit relationship was said to have occurred when the outcome was maximized at the point in which the ratings of instructors and students' learning goals were the highest. Typically, this maximization of the outcomes was accompanied by a minimization of the outcome when the ratings of instructors' and students' learning goals were the lowest. Interestingly, two negative fit relationships were also found (see Figures 10 and 20). These relationships occurred when the outcome was maximized at the point in which the ratings of instructors' and students' learning goals were the lowest.

In total, eight of the ten subjective fit measures were found to have one of the alternative fit relations: seven positive and one negative. Only five of the ten objective fit measures were found to have one of the alternative fit relationships: four positive and one negative. In each of these cases, congruence had a significant impact on the outcome. Even in

the absence of fit relationships, all three measurement approaches, were significant predictors

for all the outcomes.

First set of proposed fit-outcome relationships. It was first expected that perceived

and subjective fit would predict attitudinal outcomes better than behavioral outcomes. Based

on the results reported in Table 8, perceived and subjective fit did not predict attitudinal

outcomes better than behavioral outcomes. These approaches, however, did predict

attitudinal outcomes better than objective fit. Thus, this set of proposed relationships was

partially supported. These findings are consistent with prior research that states that

perceived and subjective fit are more closely related to attitudes, so they should effectively

predict attitudes (Arthur et al., 2006; Kristof-Brown et al., 2005; Verquer et al., 2003).

One possible reason for the failure of perceived and subjective fit to predict

attitudinal outcomes better than objective fit could be due to the use of the random intercepts

models. Modeling the mean-level differences across the classes accounted for a substantial

portion of the variance in behavioral outcomes. As such, there was not much remaining

variance to be accounted for by the fit relationships. In fact, follow-up analyses that were

conducted used a series of OLS regressions generally revealed that perceived and subjective

fit did predict attitudinal outcomes better than objective fit. Thus, the results found in the

current study could, in part, be due to the statistical methods used to test the proposed

relationships.

The finding that perceived and subjective fit were better predictors of attitudinal

measures than objective fit was expected and provided support for the contention that these

approaches allow the students' attitudes to influence the measure of fit. That is, cognitive

dissonance (Festinger, 1957) and the affective-consistency perspective (Yu, 2009) predicted

that if students liked their instructors, they were more likely to report themselves as having similar learning goals, regardless of the actual degree of similarity. Objective fit does not allow student biases to impact the determination of compatibility, so measures of objective fit do not as strongly predict attitudinal outcomes when compared with other fit approaches.

Next, it was proposed that perceived fit would predict attitudinal outcomes better than subjective fit. Results from the study, however, did not support these relationships. Based on the amount of residual variance reduced from both approaches, there were very little differences in the predictive ability between the two.

One possible explanation for these findings is that the positive form of the subjective fit relationship may be more similar to perceived fit than initially proposed. Evidence for this contention can be first found in the stronger than expected correlations between subjective and perceived fit. Next, the positive fit relationship between subjective and perceived fit indicated that students did not report as strong of a similarity between themselves and their instructor when both parties indicated a learning objective was unimportant. This same positive fit relationship was found between subjective fit and the attitudinal outcomes. Together these results indicate that students who reported that student and instructor learning goals were very important were also more likely to report similarity and satisfaction. Conversely, students who reported that these goals were not at all important were more likely to report dissimilarity and dissatisfaction.

This finding suggests that perceived and subjective fit might operate in a similar manner and the cognitive processes that underlie these measures could be more consistent than initially hypothesized. As such, cognitive dissonance (Festinger, 1957) and the affective-consistency perspective (Yu, 2009) may be playing larger roles in subjective fit

than expected. As a result, the predictive ability of perceived and subjective fit was not found to be different. Perceived and subjective fit are assessing similar underlying concepts that are influenced by attitudes and predict similar outcomes.

Second set of proposed fit-outcome relationships. Finally, it was expected that objective fit would predict behavioral outcomes better than attitudinal ones. There were multiple positive fit relationships that predicted the behavioral outcomes; however, there were no significant differences between the three measurement approaches in predicting final grade and number of visits to the course website. All three approaches to fit predicted behavioral outcomes better than attitudinal outcomes; consequently, the final set of proposed relationships was not supported.

One possible explanation for these findings is that objective fit did not reveal many fit relationships. The only fit relationship for objective fit with the behavioral outcomes was for the applied learning goal and the final grade. Students who felt that applied knowledge was important and had instructors who emphasized teaching the application of knowledge were better able to apply the material learned in the class to multiple examples; therefore, increasing their final grade. In this case, objective fit led to behavioral outcomes because instructors were fulfilling an expectation of the students by providing them opportunities to apply of the information leading to higher grades.

Main effects were found for instructors when assessing basic knowledge and the behavioral outcomes. As the instructors placed less emphasis on factual knowledge, students' grades and the number of visits to the course website increased. This could be explained because students were not interested in gaining basic, mastery information for psychology but were instead interested in more popular psychological concepts. If the instructors only

emphasized factual information, students performed worse and were less engaged because this was less stimulating material to them.

Unexpected Findings

   Positive fit relationships. As previously discussed, none of the fit-outcome relationships were found to conform to the traditional fit hypothesis. This traditional view of fit does not predict that outcomes will only be maximized when both entities report the highest levels of a construct (i.e., positive fit), nor does it predict that outcomes would be minimized at the lowest levels of the construct.

   However, these positive fit relationships were consistently found for the subjective fit measures. That is, when students rated their learning goals and the learning goal of their instructors as very important, students were more satisfied, had higher grades, and visited the course website more frequently. Compatibility on the low end of the scale minimized these outcomes. One possible reason for this pattern of results could be that when students report learning goals as important and perceive that their instructors are emphasizing those learning goals, satisfaction is maximized because students may think they are learning valuable information which makes the course worthwhile. When students report learning goals as unimportant and perceive their instructors as not emphasizing those learning goals, they may not have high expectations for the course and not care about what information is important, thus, decreasing their satisfaction and productive behaviors.

   Positive fit relationships were also discovered for objective fit, although to a lesser extent. One possible explanation for this pattern of results could be because when both students and instructors reported the learning goal as important, they were both focused on the same learning goal. The students knew the specific subject matter was important, and

their instructor expected them to know the important information; therefore, outcomes, such as final grades and satisfaction, increased. Compatibility did not maximize the outcomes on the low end of the scale. This could be because both students and instructors rated the learning goals as unimportant and students may have not known what information was important and what their instructor wanted them to learn. This could have resulted in confusion between what the student and the instructor thought was important, leading to lower satisfaction, lower grades, and fewer visits to the course website.

Objective fit and behavioral outcomes. When assessing objective fit for basic learning goals, a negative main effect for instructor was discovered for both final grades and the number of visits to the course website. As instructors rated the basic learning goals as unimportant, these outcomes were maximized. In classrooms, instructors could be emphasizing applied learning goals more often to students which led to more interesting material, higher grades, and more productive classroom behaviors. Compatibility did not have an impact on the outcomes because the actual processes that influence positive outcomes may not be as salient in an introductory class. There may be less interaction between students and instructors, in which communication is neither enhanced nor hindered by the compatibility of learning goals. The more efficient processes that are a result of objective fit may be more significant in an organizational setting where interactions among superiors and subordinates are long-term.

Interest in psychology. Finally, the interest in psychology outcome produced some unexpected and unusual results. First, the interest in psychology outcome had a negative fit relationship for both the basic knowledge subjective and objective fit measures. These were the only two negative fit relationships found in the study. These negative fit relationships

indicated that students' interest in psychology was lowest when the student and instructor ratings of the basic learning goals were highest. One possible explanation for these unexpected findings is that students who reported learning the basic knowledge as very important were simply trying to master the facts in the class in order to obtain higher grades and were not interested in gaining an in-depth understanding of psychological concepts that would assist them in their future studies. If these students believed their instructors were trying to teach an in-depth understanding of these concepts (i.e., subjective fit), or if their instructors were actually trying to teach an in-depth understanding of these concepts (i.e., objective fit), then they were "turned off" to the idea of studying psychology in the future.

Additionally, students who were strongly interested in majoring in psychology were typically not strongly interested in adopting applied knowledge goals. When subjective fit was assessed, a main effect was present for student such as that when students' rated applied learning goals as more important, their interest was lower. Students who were interested in majoring in psychology considered the basic information as more important to them.

A similar relationship was also evident when objective fit was assessed. A main effect for instructors was present such as when instructors rated applied knowledge as unimportant, interest was lower for students. This relationship may signal that students were most interested in "pop" psychology and not in majoring in it. Students who do not plan on majoring in psychology may only want to learn about interesting and popular aspects in psychology, but not gain basic information that is needed for a major in psychology.

Implications and Future Research

This study extends understanding of the positive outcomes that result from compatibility between two entities to an academic setting and further develops the

nomological network by examining the outcomes of each measurement approach by utilizing an academic setting. The positive and negative fit relationships of each approach predicted relevant attitudes and behaviors. Universities could utilize a type of fit assessment to determine if students are compatible with their instructors in order to maximize student performance and satisfaction.

This study also extends the literature on the differences of the approaches to fit. Based on the findings, measurement approaches are weakly related and should not be used interchangeably in the fit research. Subjective and perceived fit are most alike, however, they are not identical concepts. Objective fit had the weakest relationships with the other approaches. Kristoff-Brown and colleagues (2005) found similar results between the approaches. This study provides support for the rationale that researchers should discriminate between the types of fit and their ability to predict relevant outcomes.

The differential prediction of outcomes, especially attitudes, was revealed by the measurement approaches which provide further evidence for the distinction of the types of fit. Perceived and subjective fit predicted attitudinal outcomes slightly better than objective fit. However, behavioral outcomes were significantly predicted by all outcomes. The outcome of interest may have an impact on what type of measurement approach that should be utilized.

In future research, controlling for the size of the classroom would be beneficial to more effectively study the outcomes of fit. Large and small class sizes were used in the current study which could have impacted the relationships between students and instructors as well as the outcomes. Large amounts of variance for final grades and web activity were

attributed to differences among these classes. Examining within classes may reveal more accurate fit relationships than between classes, as in the current study.

This study could also be extended to determine if other variables are more salient to students or different courses. Personality, learning styles, abilities, or environmental variables could be viable sources for prediction in college classrooms. These concepts may be more relevant to students in an introductory course. Piasentin and Chapman (2006) discuss individual differences that influence how people evaluate fit: self construal, needs motivation, personality, and self-esteem. Assessing individual differences along with fit relationships could present more fit relationships.

Limitations and Strengths

A number of limitations were inherent in this study. First, the nature of the course sample introduced a number of potential confounding variables. The sample included participants from an introductory psychology class; therefore, learning goals may not be as salient to these students. This course is a requirement for most students in the sample, and students may not have possessed significant goals. Using higher level courses or other variables (e.g., personality) could assist in eliminating this potential problem.

There was very little variance among the responses to the basic learning goals for the instructor because all instructors rated basic learning goals as highly important. This decreased the amount of variance available for each measurement approach to predict. This obstacle in predicting adequately could have impacted the results; consequently, discovering possible fit relationships using basic knowledge could have been hindered. No instructors rated basic knowledge as unimportant, so there was no compatibility between students who rated basic knowledge as unimportant and instructors when assessing objective fit. If more

variance would had been present, more variations of objective fit relationships could have been revealed.

This study also had a number of strengths to offset the weaknesses described. This was the first study of its kind to assess all three measurement approaches to fit in a longitudinal study using the same variables, sample, and outcomes. This minimizes the confounding variables that are present in the meta-analyses comparing the three measurement approaches to fit across various contexts.

This study expanded the positive effects of fit research to an academic setting. Positive outcomes have been most readily studied in organizational settings (e.g., Amos & Weathington, 2008; Cable & DeRue, 2002; Edwards, 1991; Kristof, 1996). By studying the possible positive outcomes in different contexts, the concept of fit could be enhanced. This study also supports the rationale that the relationships between students and instructors have much of the same characteristics as employees and subordinates. Further evidence was provided for Schneider's (1987) attraction-selection-attrition model within the academic setting. Compatibility between instructors and students as demonstrated through positive and negative fit relationships predicted important outcomes that are relevant in educational settings.

The current study further developed the nomological network of fit to reveal the approaches of fit may not be the same and may differentially predict outcomes. There are different underlying psychological phenomenons for each type of fit (e.g., cognitive dissonance theory, Festinger, 1957; affective-consistency perspective, Yu, 2009). This study could provide evidence for the discrepancies that are found in fit research. By emphasizing to

researchers that the approaches should be differentiated, more consistent findings should

result.

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Appendix A

Notice from IRB

To: Heather Jackson
Psychology ,
CAMPUS MAIL

From: Robin Tyndall, IRB Associate Administrator

Date: 1/24/2011

RE: Determination that Research or Research-Like Activity does not require IRB Approval

Study #: 11-0181
Study Title: The Nomological Network of Fit: Where Do Different Fit Measurements Fit?

This submission was reviewed by the IRB. It was determined that it does not constitute human subjects research as defined under federal regulations [45 CFR 46.102 (d or f)] and does not require IRB approval. If your study protocol changes, this determination may no longer apply, and you should contact the IRB before making the changes.

CC: Shawn Bergman, Psychology

Appendix B

Learning Goals Questionnaire

Objectives emphasizing substantive knowledge

1. Gaining factual knowledge (terminology, classifications, methods, trends).**

2. Learning fundamental principles, generalizations, or theories.**

3. Learning to apply course material (to improve thinking, problem solving, and decisions).**

Objectives emphasizing lifelong learning

4. Learning how to find and use resources for answering questions or solving problems.*

5. Acquiring an interest in learning by asking questions and seeking answers.

Objectives emphasizing general intellectual/academic skills

6. Developing skill in expressing oneself orally or in writing.*

7. Learning to analyze and critically evaluate ideas, arguments, and points of view.*

Objectives emphasizing the development of specific skills/competencies

8. Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course.**

9. Acquiring skills in working with others as a member of a team.

10. Developing creative capacities (writing, inventing, designing, performing in art, music, drama, etc.).*

Objectives stressing personal development

11. Gaining a broad understanding and appreciation of intellectual/cultural activity (music, science, literature, etc.).*

12. Developing a clearer understanding of, and commitment to, personal values.*

Note: * Applied Learning Goal. ** Basic Learning Goal.

Appendix C

Satisfaction with the Instructor Questionnaire

1. I believe this instructor to be well-educated and knowledgeable.

2. I have a lot of respect for this instructor.

3. I really like this instructor.

4. Overall, I rate this instructor an excellent teacher.

Appendix D

Satisfaction with the Course Questionnaire

1. I am really excited about this class.

2. I think what we are studying in this class will be important for me to know.

3. I think what we are studying in this class will be useful to know.

4. Overall, I rate this course as excellent.

Appendix E

Interest in Psychology

1. I have always been fascinated by psychology.

2. I am really looking forward to learning more about psychology.

3. I think the field of psychology is an important discipline.

4. I think the field of psychology is very interesting.

5. To be honest, I just don't find psychology interesting. (reversed)

6. It is likely that I will major in psychology.

7. It is likely that I will enroll in another psychology course.

Table 1

Descriptive Statistics

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. LG Student (Applied)	3.88	0.60	(.89)												
2. LG - Student (Basic)	3.84	0.60	.64**	(.73)											
3. LG -Students' Perceptions of Instructors (Applied)	3.63	0.75	.31**	.23**	(.73)										
4. LG -Students' Perceptions of Instructors (Basic)	4.06	0.52	.24**	.31**	.47**	(.89)									
5. LG -Similarity (Applied)	4.55	1.04	.27**	.23**	.55**	.42**	(.88)								
6. LG -Similarity (Basic)	4.95	1.04	.31**	.31**	.35**	.47**	.67**	(.88)							
7. LG -Instructor (Applied)	3.22	0.44	.02	.06	.09*	.06	.10*	.05	(.84)						
8. LG -Instructor (Basic)	4.12	0.35	-.01	.03	.03	.00	.06	.00	.34**	(.79)					
9. Course Satisfaction	4.03	0.65	.14**	.24**	.23**	.37**	.31**	.37**	.01	-.01	(.85)				
10. Instructor Satisfaction	4.31	0.61	.18**	.16**	.31**	.37**	.35**	.35**	.02	-.03	.71**	(.89)			
11. Interest in Psychology	3.56	0.48	.20**	.27**	.11**	.27**	.18**	.27**	-.07	-.05	.66**	.37**	(.88)		
12. Final Grade	85.17	15.75	.09*	.06	-.07	-.02	.03	.20**	.09*	.23**	.08	.01	.11**	--	
13. Number of Visits to Course Website	163.89	78.52	-.01	.10	.07	.11*	.09	.05	.18**	.35**	.01	.03	-.11	.08	--

Note: LG denotes Learning Goals. Values on main diagonal (in parentheses) represent Cronbach's coefficient alpha. *M* denotes mean. *SD* denotes standard deviation. *N* = 725.

*p < .05, 2-tailed. **p < .01, 2-tailed.

Table 2

Percent Reduction in Residual Variance Over the Null Model Which Predicted the Grand Mean

(Applied Knowledge Learning Goal)

	No Random Effects			Random Intercepts			Random Slope & Intercepts		
	Δ Residual Variance	Δ-2 LL	*p*-value	Δ Residual Variance	Δ-2 LL	*p*-value	Δ Residual Variance	Δ-2 LL	*p*-value
Perceived Fit									
Course Satisfaction	9.44%	54.51	.00	2.97%	3.66	.06	DNC		
Instructor Satisfaction	12.23%	71.78	.00	2.49%	2.21	.14	DNC		
Interest in Psychology	3.14%	17.57	.00	1.21%	0.67	.41	DNC		
Final Grade	0.11%	0.74	.39	68.61%	669.59	.00	DNC		
Number of Visits to Course Website	0.80%	2.45	.12	18.89%	37.67	.00	0.11%	0.03	.85
Subjective Fit									
Course Satisfaction	7.99%	57.19	.00	2.59%	2.67	.75	DNC		
Instructor Satisfaction	12.70%	85.02	.00	2.13%	1.61	.20	DNC		
Interest in Psychology	4.09%	30.91	.00	1.54%	0.98	.32	DNC		
Final Grade	1.63%	86.48	.00	67.77%	663.88	.00	DNC		
Number of Visits to Course Website	0.87%	37.34	.00	19.58%	39.41	.00	DNC		
Objective Fit									
Course Satisfaction	4.43%	50.09	.00	2.36%	1.75	.19	DNC		
Instructor Satisfaction	4.91%	51.08	.00	2.86%	2.23	.14	DNC		
Interest in Psychology	3.95%	39.43	.00	0.79%	0.27	.60	DNC		
Final Grade	1.03%	82.28	.00	68.05%	661.64	.00	DNC		
Number of Visits to Course Website	9.40%	64.59	.00	10.69%	17.74	.00	DNC		

Note: -2 LL = -2 log likelihood. Δ-2 LL denotes change in -2 log likelihood between the higher-order model and the lower-order model; Change in -2 LL for no random effect model denotes change in -2 LL from null model; Change in -2 LL for random intercepts model denotes change in LL from no random effects model; change in -2 LL for random intercepts and slopes model denotes change in LL from random slopes model; *p*-value denotes the change in -2 LL divided by the degrees of freedom with a Chi Square distribution; DNC denotes that the model did not converge. *N* =725.

Table 3

Percent Reduction in Residual Variance Over the Null Model Which Predicted the Grand Mean

(Basic Knowledge Learning Goal)

	No Random Effects			Random Intercepts			Random Slope & Intercepts		
	Δ Residual Variance	Δ-2 LL	*p*-value	Δ Residual Variance	Δ-2 LL	*p*-value	Δ Residual Variance	Δ-2 LL	*p*-value
Perceived Fit									
Course Satisfaction	13.35%	78.81	.00	1.69%	2.34	.90	DNC		
Instructor Satisfaction	12.32%	72.31	.00	2.86%	2.92	.09	DNC		
Interest in Psychology	7.41%	42.34	.00	0.33%	0.06	.80	DNC		
Final Grade	1.42%	10.04	.00	67.66%	668.55	.00	0.01%	0.00	.96
Number of Visits to Course Website	0.22%	0.66	.42	19.34%	38.63	.00	0.51%	1.12	.29
Subjective Fit									
Course Satisfaction	17.50%	116.55	.00	0.99%	0.55	.46	DNC		
Instructor Satisfaction	15.62%	103.50	.00	0.50%	0.10	.75	DNC		
Interest in Psychology	11.81%	76.59	.00	1.36%	0.89	.35	6.37%	5.34	.16
Final Grade	-0.38%	72.53	.00	19.87%	668.38	.00	DNC		
Number of Visits to Course Website	2.73%	43.06	.00	19.41%	39.76	.00	DNC		
Objective Fit									
Course Satisfaction	8.11%	71.19	.00	1.69%	1.15	.28	DNC		
Instructor Satisfaction	4.83%	50.68	.00	1.09%	0.39	.53	DNC		
Interest in Psychology	7.85%	61.71	.00	0.88%	0.35	.55	DNC		
Final Grade	6.61%	122.39	.00	62.30%	619.84	.00	DNC		
Number of Visits to Course Website	19.00%	98.54	.00	2.04%	1.60	.21	DNC		

Note: -2 LL = -2 log likelihood. Δ-2 LL denotes change in -2 log likelihood between the higher-order model and the lower-order model; Change in -2 LL for no random effect model denotes change in -2 LL from null model; Change in -2 LL for random intercepts model denotes change in LL from no random effects model; change in -2 LL for random intercepts and slopes model denotes change in LL from random slopes model; *p*-value denotes the change in -2 LL divided by the degrees of freedom with a Chi Square distribution; DNC denotes that the model did not converge. *N* =725.

Table 4

Percent Reduction in Residual Variance Over the Null Model Which Predicted the Grand Mean

(Relationships Among Measures of Fit)

	No Random Effects			Random Intercepts			Random Slope & Intercepts		
	Δ Residual Variance	Δ-2 LL	*p*-value	Δ Residual Variance	Δ-2 LL	*p*-value	Δ Residual Variance	Δ-2 LL	*p*-value
Subjective Fit									
LG- Applied	33.38%	317.15	.00	DNC			DNC		
LG- Basic	26.77%	249.43	.00	1.41%	1.83	.18	DNC		
Objective Fit									
LG- Applied	11.05%	146.56	.00	0.11%	0.02	.92	DNC		
LG- Basic	11.83%	152.83	.00	0.43%	0.11	.74	DNC		

Note: -2 LL = -2 log likelihood. LG denotes Learning Goals. Δ-2 LL denotes change in -2 log likelihood between the higher-order model and the lower-order model; Change in -2 LL for no random effect model denotes change in -2 LL from null model; Change in -2 LL for random intercepts model denotes change in LL from no random effects model; change in -2 LL for random intercepts and slopes model denotes change in LL from random slopes model; *p*-value denotes the change in -2 LL divided by the degrees of freedom with a Chi Square distribution; DNC denotes that the model did not converge. *N* =725.

Table 5

Overall Reduction in Error Variance of Random Intercepts Model/Null Model

(Applied Knowledge Learning Goal)

Outcome	Reduction in Residual Variance	Δ -2 LL	Functional Form	Relevant Figure
Perceived Fit				
Course Satisfaction	12.41%	58.17**		
Instructor Satisfaction	14.72%	73.98**		
Interest in Psychology	4.35%	18.24**		
Final Grade	68.71%	670.34**		
Number of Visits to Course Website	19.68%	40.12**		
Subjective Fit				
Course Satisfaction	10.58%	59.87**	Positive Fit	5
Instructor Satisfaction	14.84%	86.63**	Positive Fit	7
Interest in Psychology	5.63%	31.89**	Main Effect-Individual	9
Final Grade	69.40%	750.36**	Positive Fit	11
Number of Visits to Course Website	20.46%	76.76**	Positive Fit	13
Objective Fit				
Course Satisfaction	6.79%	51.84**	Positive Fit	15
Instructor Satisfaction	7.77%	53.31**	Positive Fit	17
Interest in Psychology	4.73%	39.70**	Main Effect-Instructor	19
Final Grade	69.08%	743.92**	Positive Fit	21
Number of Visits to Course Website	20.09%	82.33**	No significant predictors	23

Note: -2 LL = -2 log likelihood. Reduction in Residual Variance was computed by subtracting the estimated residual variance of the Random Intercepts Model from the estimated residual variance of the Null Model and dividing by the estimated residual variance of the Null Model. Δ-2 LL denotes change in log likelihood between the random intercepts model and the null model. $N = 725$.

*$p < .05$, 2-tailed. **$p < .01$, 2-tailed.

Table 6

Overall Reduction in Error Variance of Random Intercepts Model/Null Model

(Basic Knowledge Learning Goal)

Outcome	Reduction in Residual Variance	Δ -2 LL	Functional Form	Relevant Figure
Perceived Fit				
Course Satisfaction	15.04%	81.15**		
Instructor Satisfaction	15.18%	75.23**		
Interest in Psychology	7.74%	42.40**		
Final Grade	69.08%	678.59**		
Number of Visits to Course Website	19.55%	39.30**		
Subjective Fit				
Course Satisfaction	18.49%	117.10**	Main Effect-Instructor	6
Instructor Satisfaction	16.12%	103.60**	Positive Fit	8
Interest in Psychology	13.17%	77.48**	Negative Fit	10
Final Grade	68.98%	740.91**	Positive Fit	12
Number of Visits to Course Website	22.14%	82.82**	Positive Fit	14
Objective Fit				
Course Satisfaction	9.80%	72.34**	Main Effect-Instructor	16
Instructor Satisfaction	5.92%	51.08**	Positive Fit	18
Interest in Psychology	8.74%	62.06**	Negative Fit	20
Final Grade	68.91%	742.22**	Main Effect-Instructor	22
Number of Visits to Course Website	21.04%	100.15**	Main Effect- Instructor	24

Note: Reduction in Residual Variance was computed by subtracting the estimated residual variance of the Random Intercepts Model from the estimated residual variance of the Null Model and dividing by the estimated residual variance of the Null Model. Δ-2 LL denotes change in log likelihood between the random intercepts model and the null model. N =725.

*p < .05, 2-tailed. **p < .01, 2-tailed.

Table 7

Relationship Between Measures of Perceived, Subjective, and Objective Fit

Fit Relations Examined	R
Learning Goal- Applied	
Perceived - Subjective	.51**
Perceived - Objective	.32**
Subjective - Objective	.09*
Learning Goal- Basic	
Perceived - Subjective	.57**
Perceived - Objective	.31**
Subjective - Objective	.00

Note: R values from ordinary least squares regressions. *N* =725.

*p < .05, 2-tailed. **p < .01, 2-tailed.

Table 8

Overall Reduction in Residual Variance Over the Null Model

Outcome	Reduction in Residual Variance		
Applied	Perceived	Subjective	Objective
Course Satisfaction	12.41%	10.58%	6.79%
Satisfaction with Instructor	14.72%	14.84%	7.77%
Interest in Psychology	4.35%	NFR	NFR
Final Grade	68.71%	69.40%	69.08%
Number of Visits to Course Website	19.68%	20.46%	NFR
Basic			
Course Satisfaction	15.04%	NFR	NFR
Satisfaction with Instructor	15.18%	16.12%	5.92%
Interest in Psychology	7.74%	(13.17%)	(8.74%)
Final Grade	69.08%	68.98%	NFR
Number of Visits to Course Website	19.55%	22.14%	NFR

Note: NFR indicates no fit relationship. Percentages reflect positive fit relationships; Percentages in parentheses are negative fit relationships. $N = 725$.
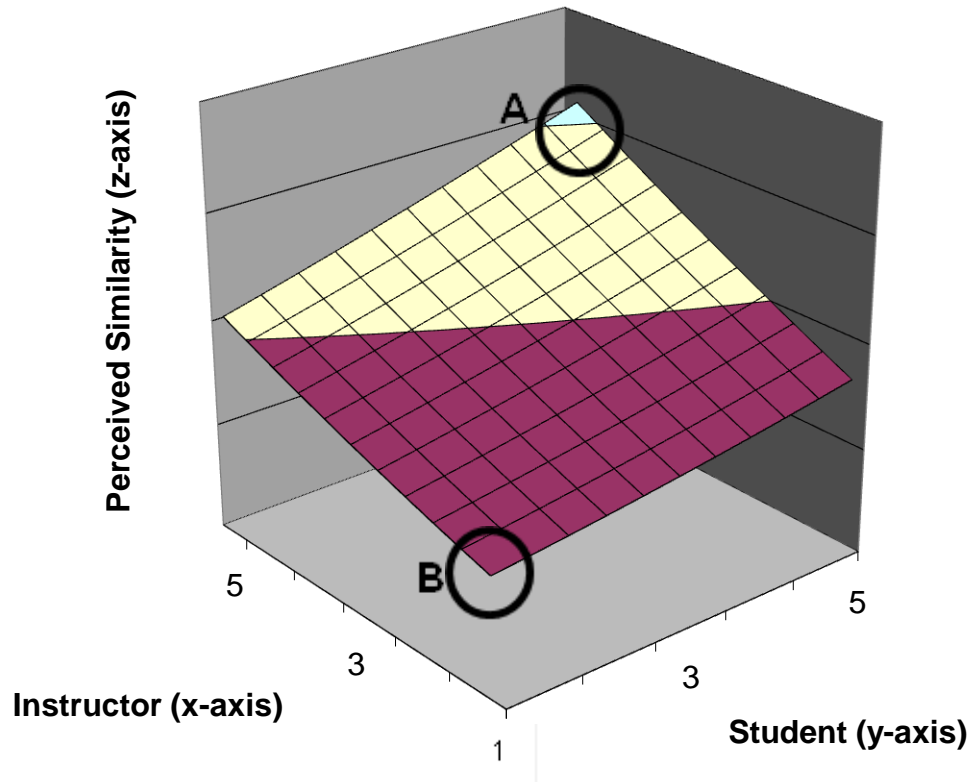
Figure 1. Subjective Fit: Functional Form of the Relationship Between Applied Learning Goal and Perceived Similarity. The x-axis represents ratings of students' applied learning goals, y-axis represents students' ratings of instructors' applied learning goals, and z-axis represents students' perceived similarity.
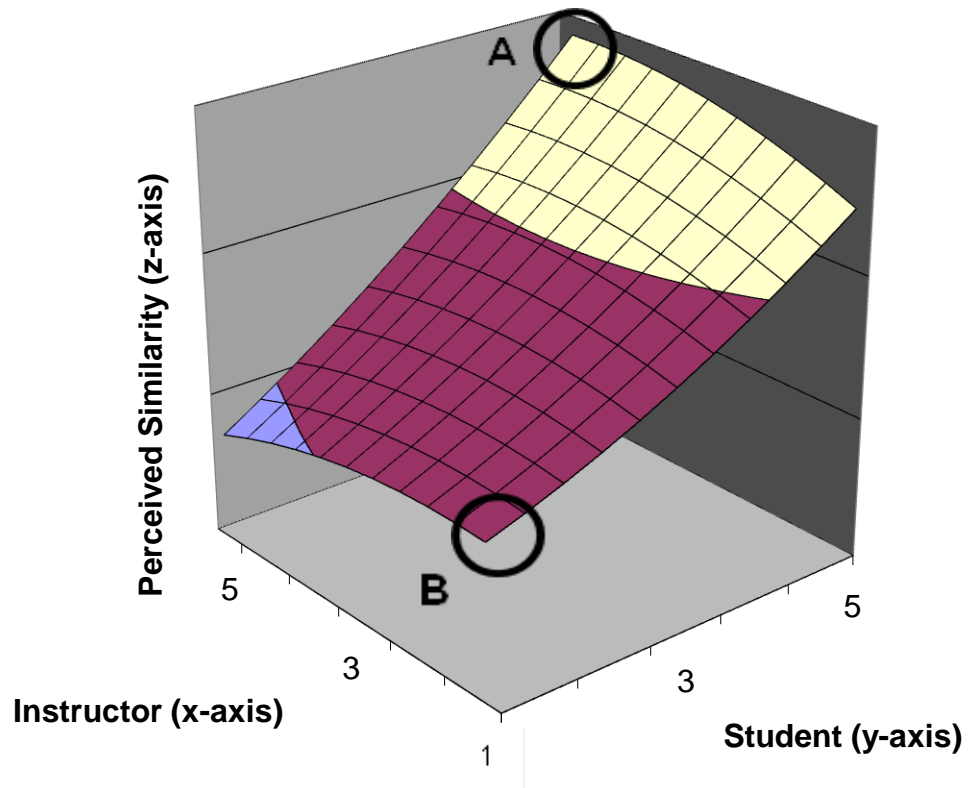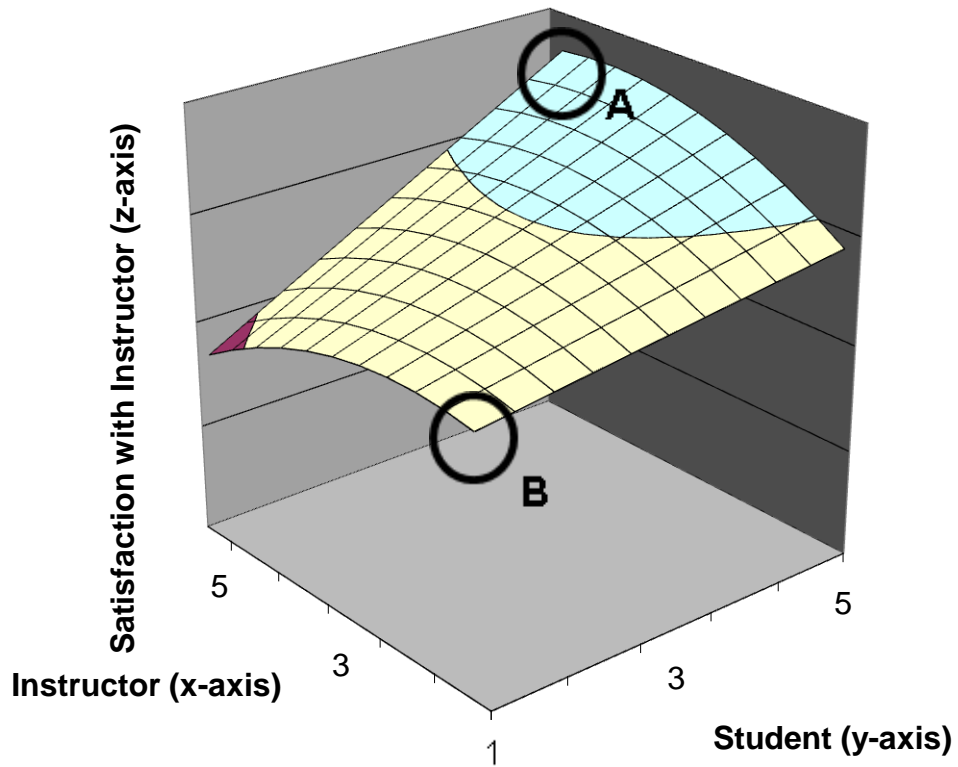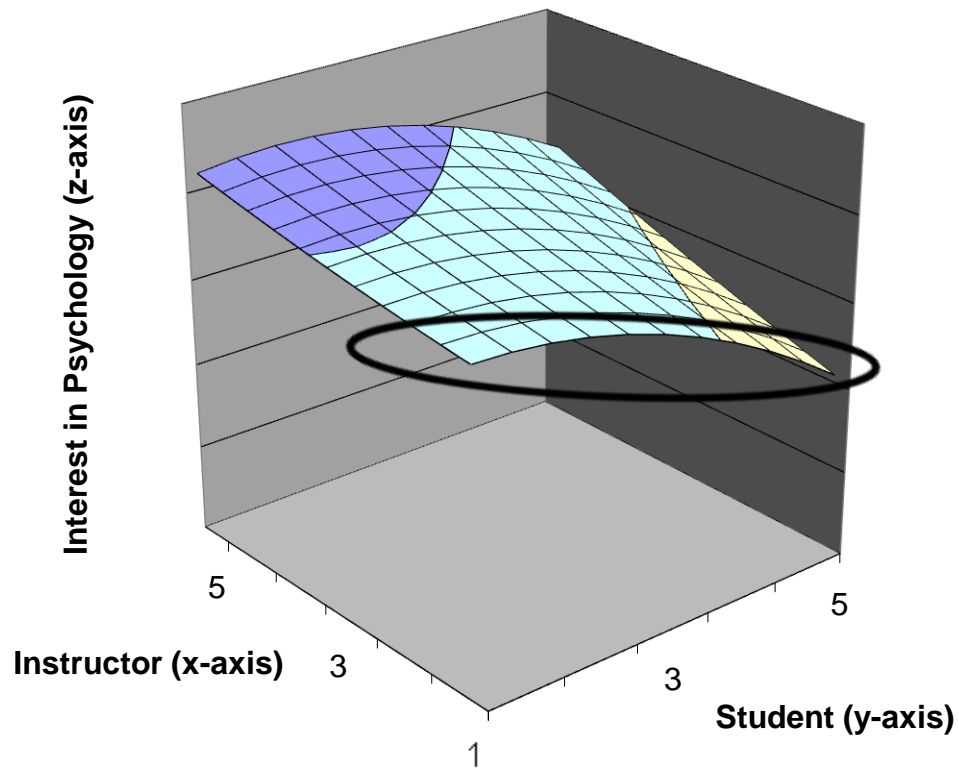
Figure 2. Objective Fit: Functional Form of the Relationship Between Applied Learning Goal and Perceived Similarity. The x-axis represents ratings of students' applied learning goals, y-axis represents students' ratings of instructors' applied learning goals, and z-axis represents students' perceived similarity.
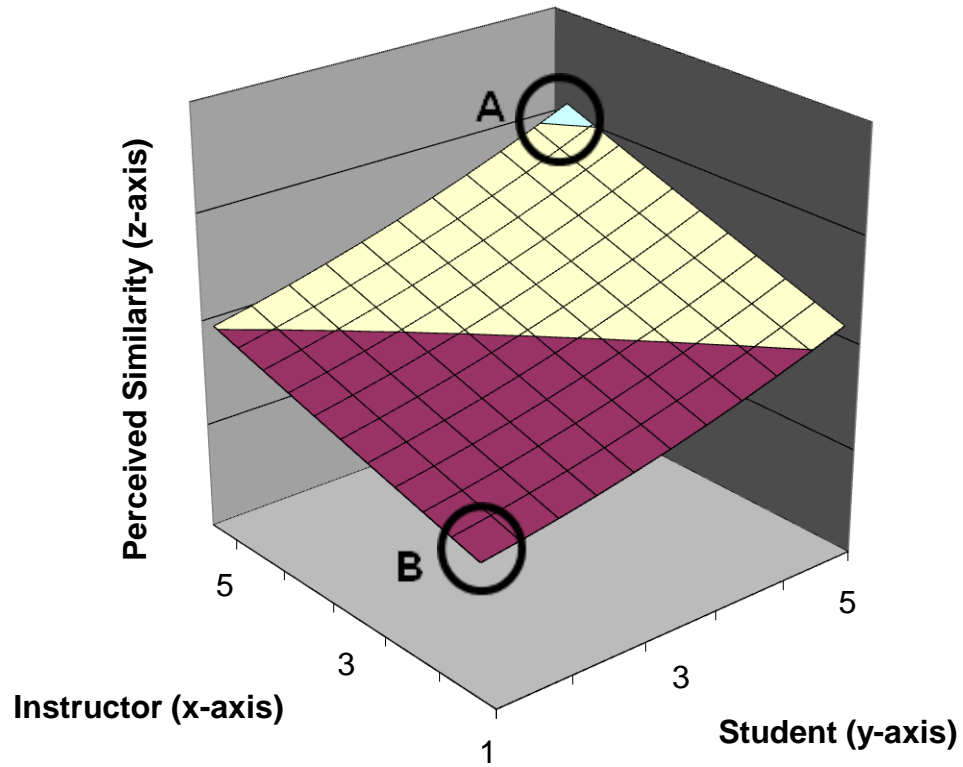
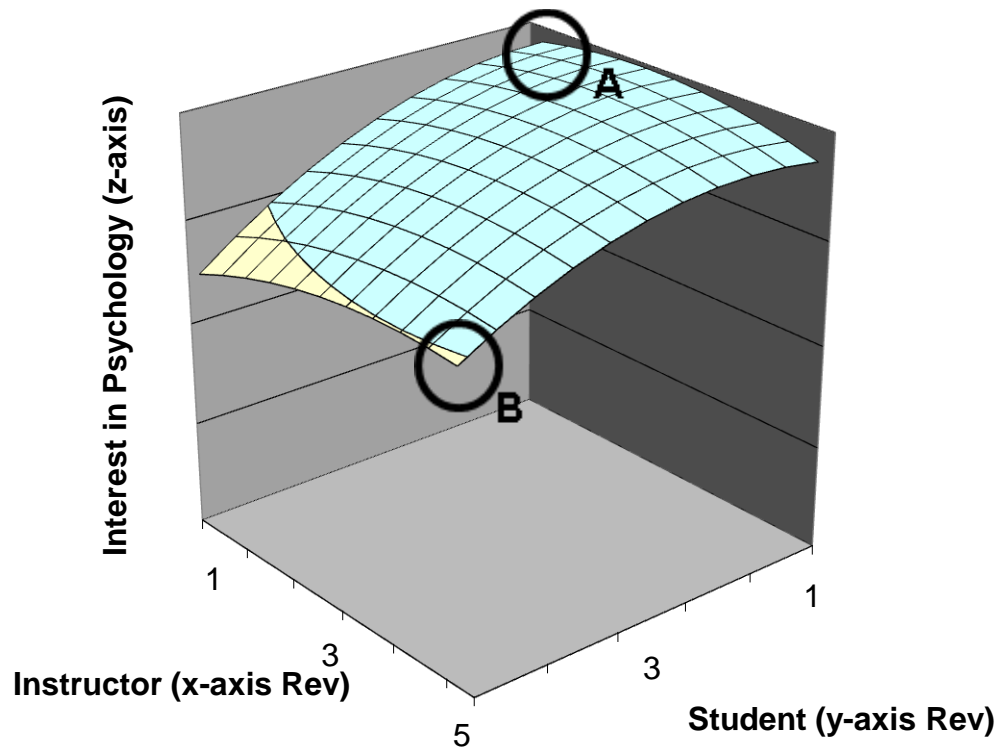*Figure 3.* Subjective Fit: Functional Form of the Relationship Between Basic Learning Goal and Perceived Similarity. The x-axis represents ratings of students' basic learning goals, y-axis represents students' ratings of instructors' basic learning goals, and z-axis represents students' perceived similarity.
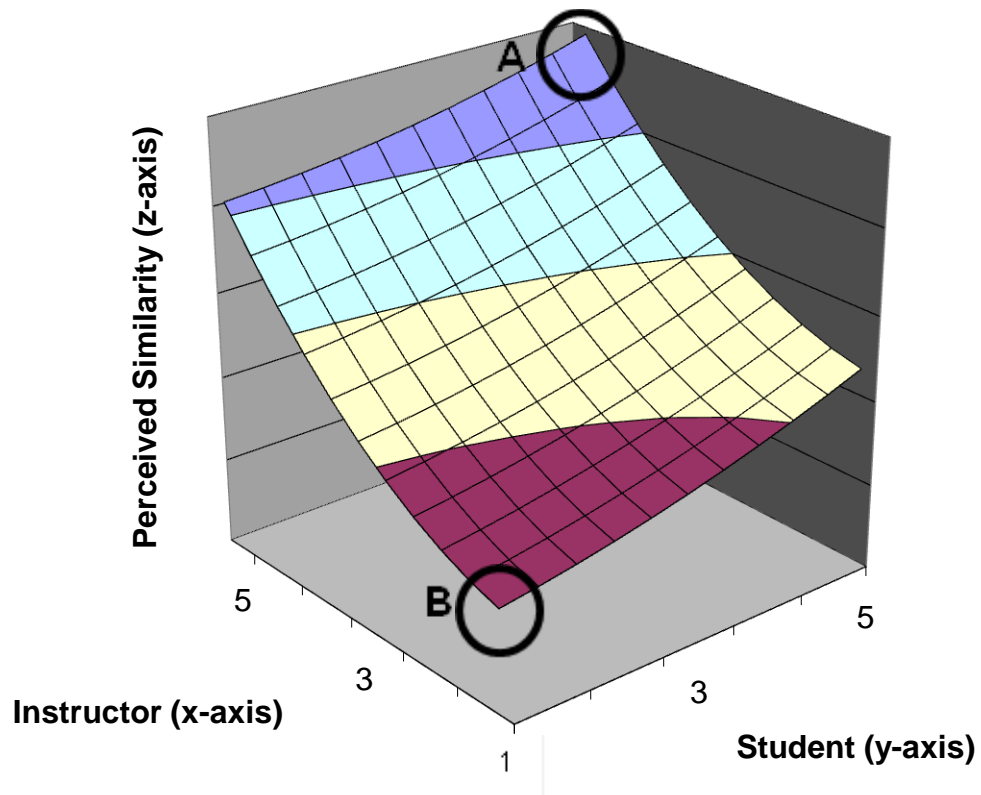
Figure 4. Objective Fit: Functional Form of the Relationship Between Basic Learning Goal and Perceived Similarity. The x-axis represents ratings of students' basic learning goals, y-axis represents students' ratings of instructors' applied basic goals, and z-axis represents students' perceived similarity.
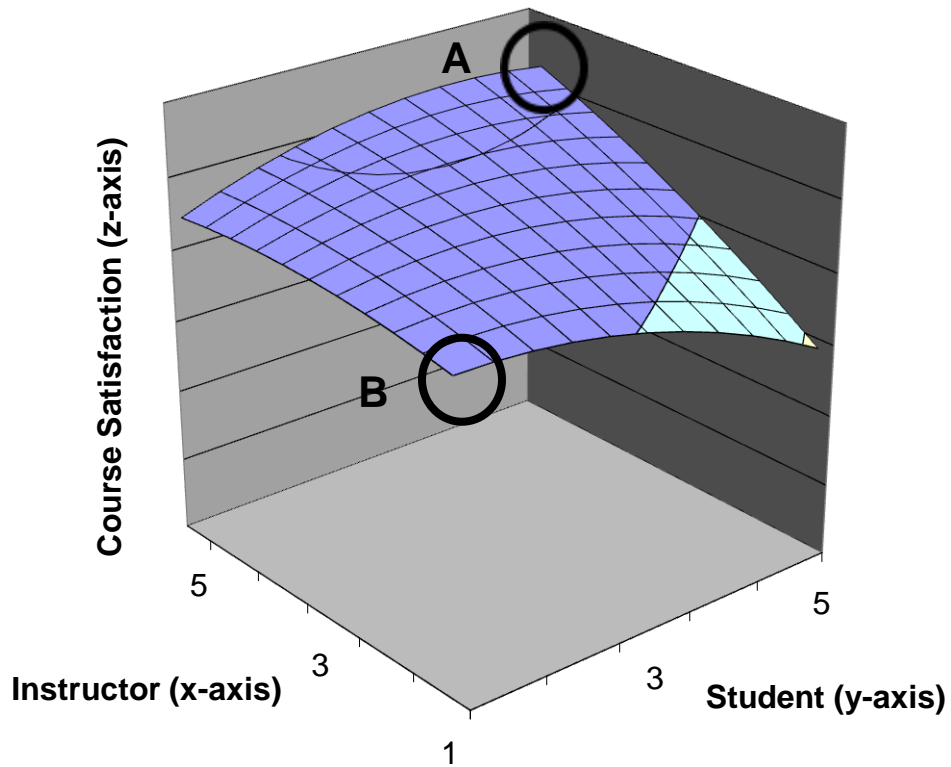
Figure 5. Subjective Fit: Functional Form of the Relationship Between Applied Learning Goal and Course Satisfaction. The x-axis represents ratings of students' applied learning goals, y-axis represents students' ratings of instructors' applied learning goals, and z-axis represents students' course satisfaction.
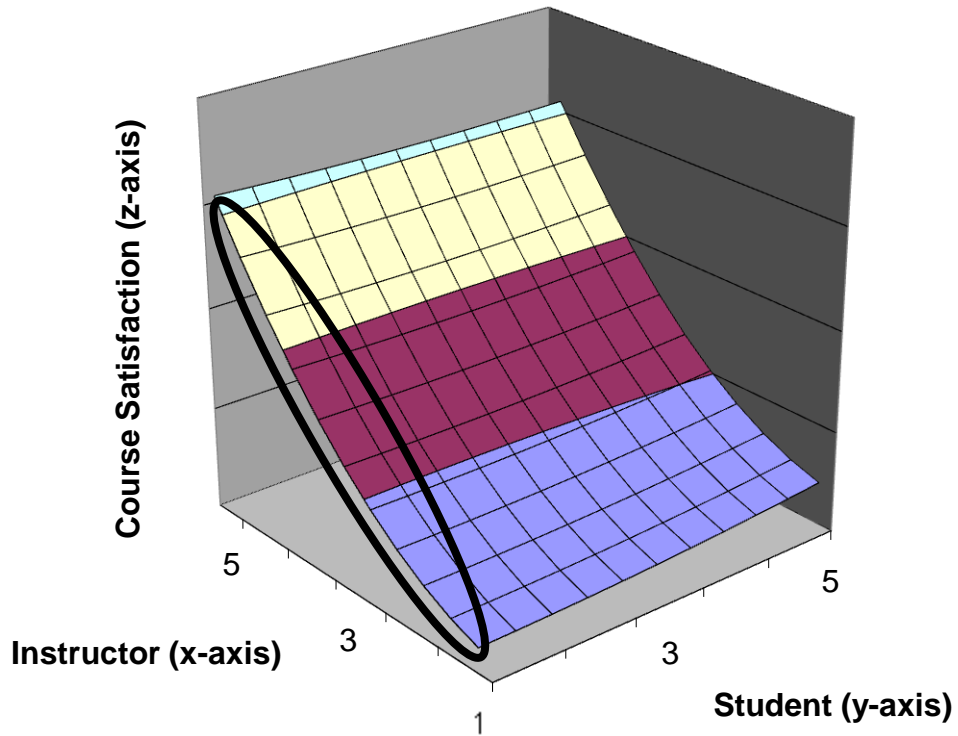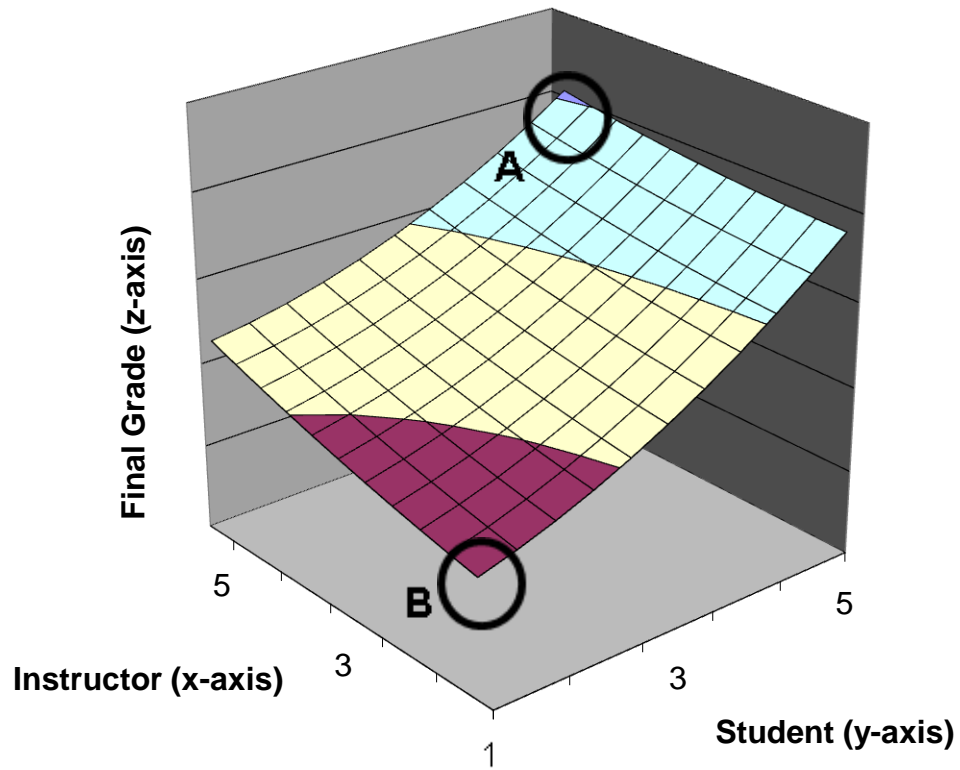
Figure 6. Subjective Fit: Functional Form of the Relationship Between Basic Learning Goal and Course Satisfaction. The x-axis represents ratings of students' basic learning goals, y-axis represents students' ratings of instructors' basic learning goals, and z-axis represents students' course satisfaction.
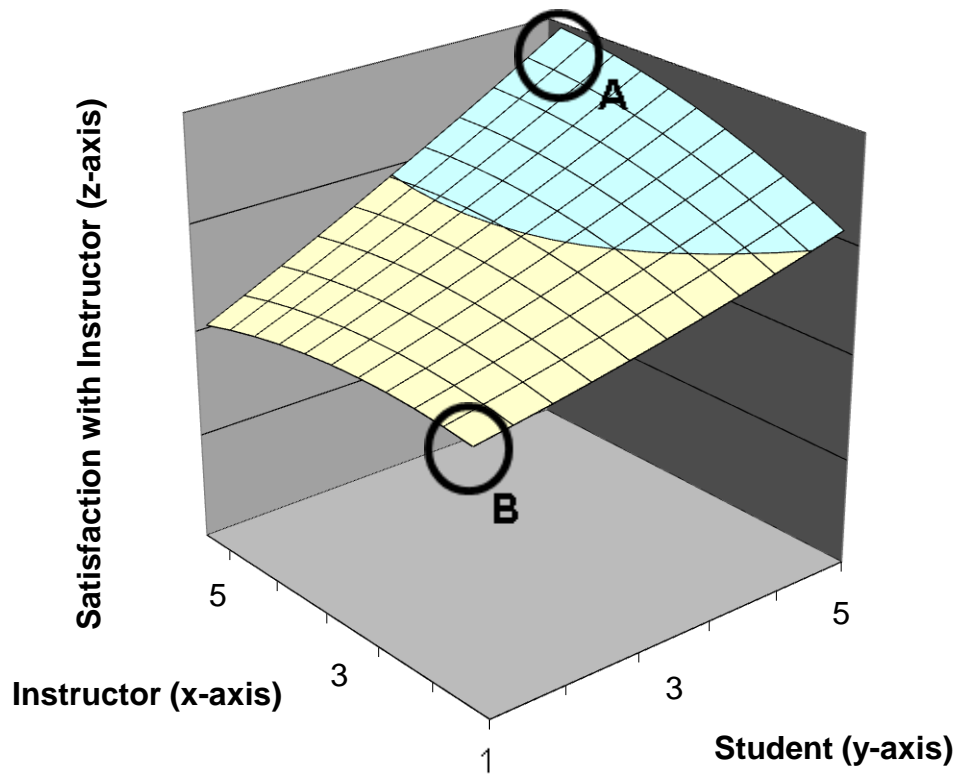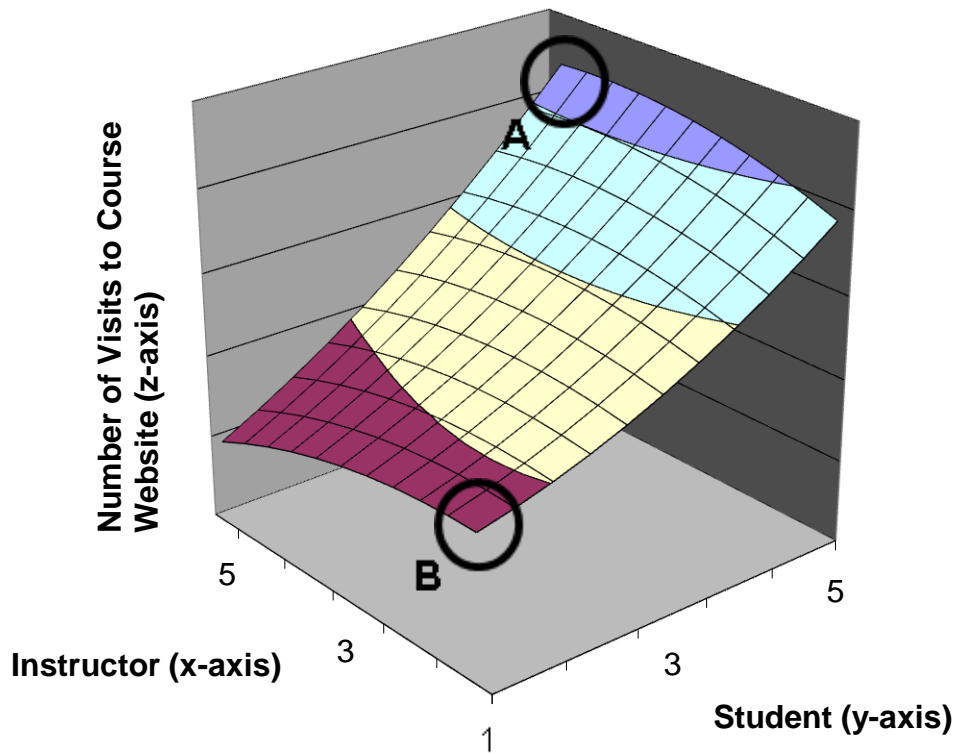
Figure 7. Subjective Fit: Functional Form of the Relationship Between Applied Learning Goal and Satisfaction with Instructor. The x-axis represents ratings of students' applied learning goals, y-axis represents students' ratings of instructors' applied learning goals, and z-axis represents students' satisfaction with instructor.

Figure 8. Subjective Fit: Functional Form of the Relationship Between Basic Learning Goal and Satisfaction with Instructor. The x-axis represents ratings of students' basic learning goals, y-axis represents students' ratings of instructors' basic learning goals, and z-axis represents students' satisfaction with instructor.

Figure 9. Subjective Fit: Functional Form of the Relationship Between Applied Learning Goal and Interest in Psychology. The x-axis represents ratings of students' applied learning goals, y-axis represents students' ratings of instructors' applied learning goals, and z-axis represents students' interest in psychology.

Figure 10. Subjective Fit: Functional Form of the Relationship Between Basic Learning Goal and Interest in Psychology. The x-axis represents ratings of students' basic learning goals, y-axis represents students' ratings of instructors' basic learning goals, and z-axis represents students' interest in psychology. Rev denotes that the axis has been reversed to more effectively demonstrate the fit relationship.
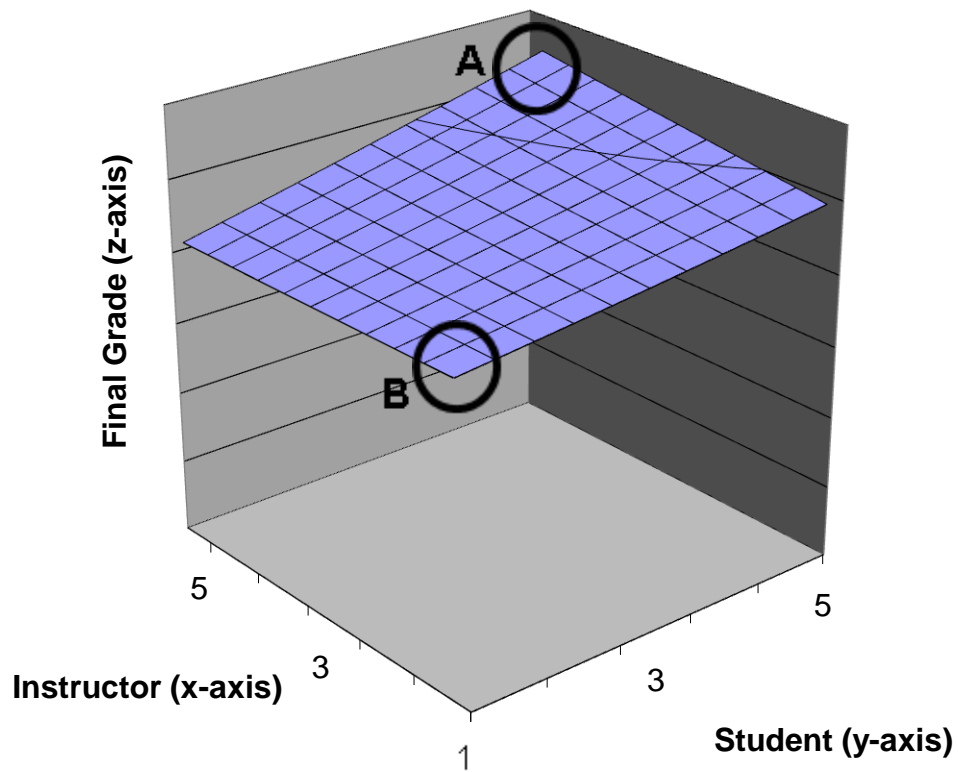
Figure 11. Subjective Fit: Functional Form of the Relationship Between Applied Learning Goal and Final Grade. The x-axis represents ratings of students' applied learning goals, y-axis represents students' ratings of instructors' applied learning goals, and z-axis represents students' final grade.
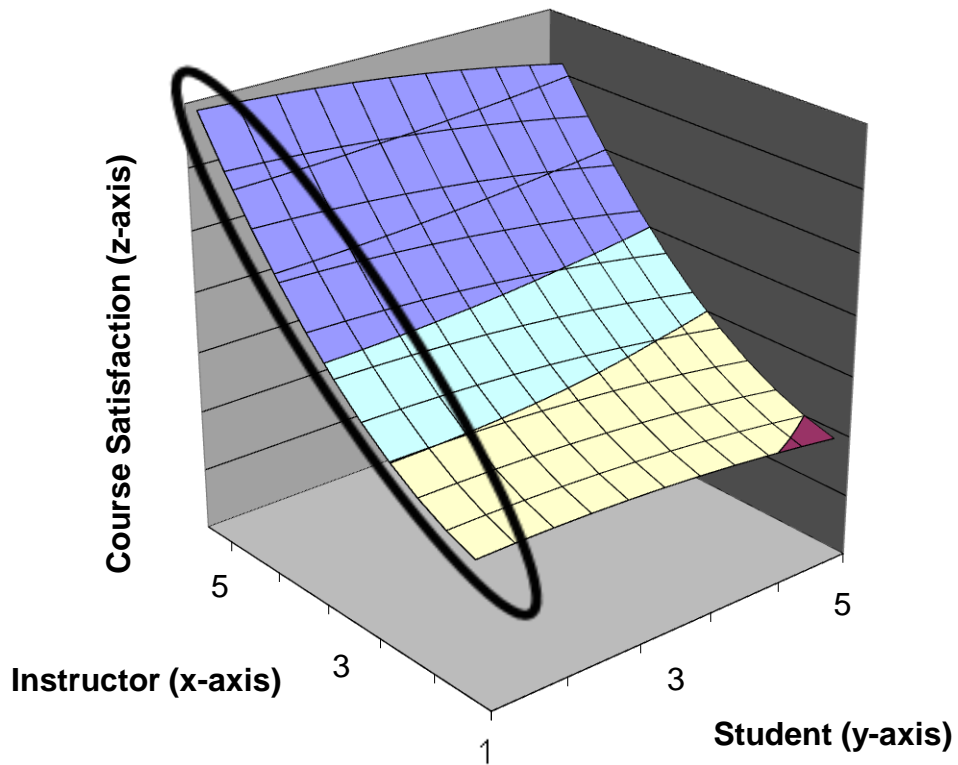
Figure 12. Subjective Fit: Functional Form of the Relationship Between Basic Learning Goal and Final Grade. The x-axis represents ratings of students' basic learning goals, y-axis represents students' ratings of instructors' basic learning goals, and z-axis represents students' final grade.
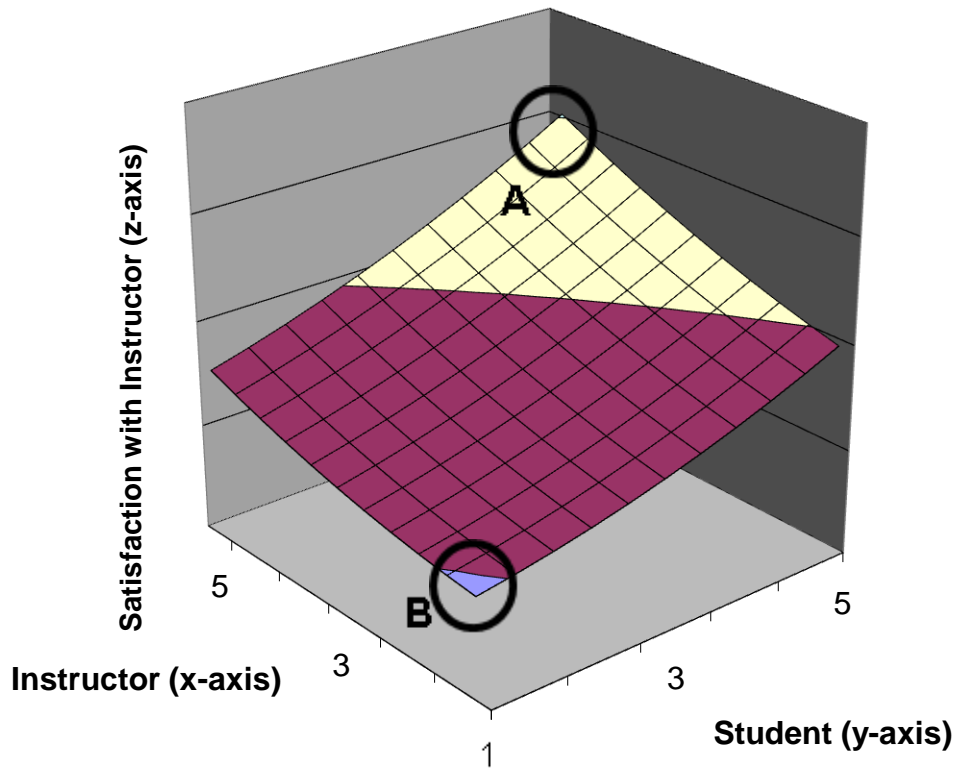
Figure 13. Subjective Fit: Functional Form of the Relationship Between Applied Learning Goal and Web Activity. The x-axis represents ratings of students' applied learning goals, y-axis represents students' ratings of instructors' applied learning goals, and z-axis represents the number of visits students' made to the course website.
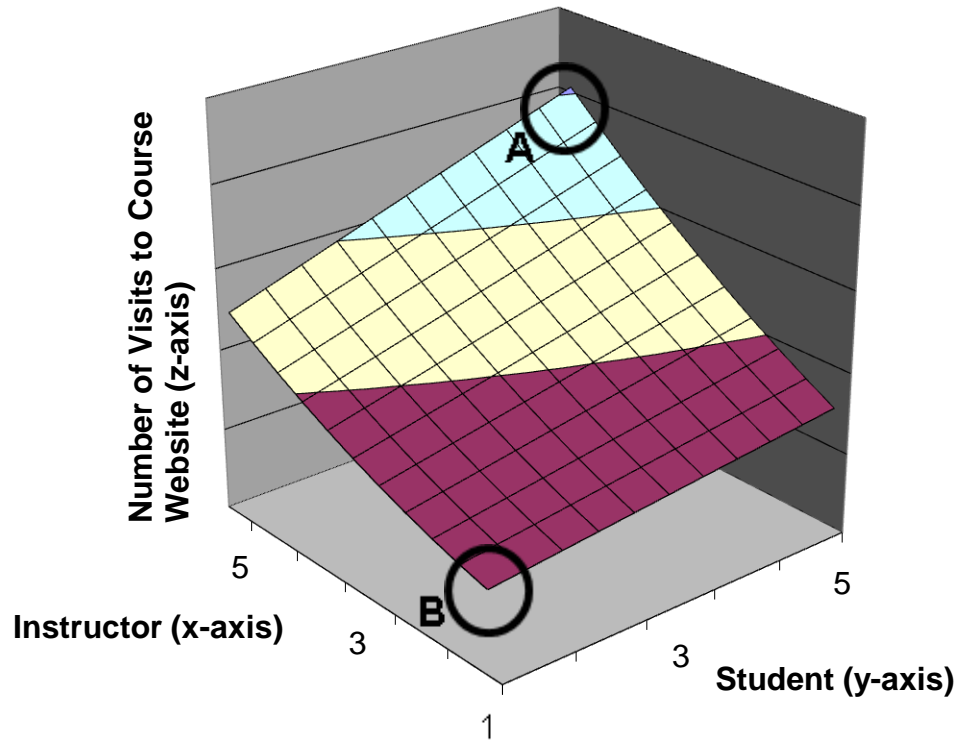
Figure 14. Subjective Fit: Functional Form of the Relationship Basic Learning Goal with Web Activity. The x-axis represents ratings of students' basic learning goals, y-axis represents students' ratings of instructors' basic learning goals, and z-axis represents the number of visits students' made to the course website.
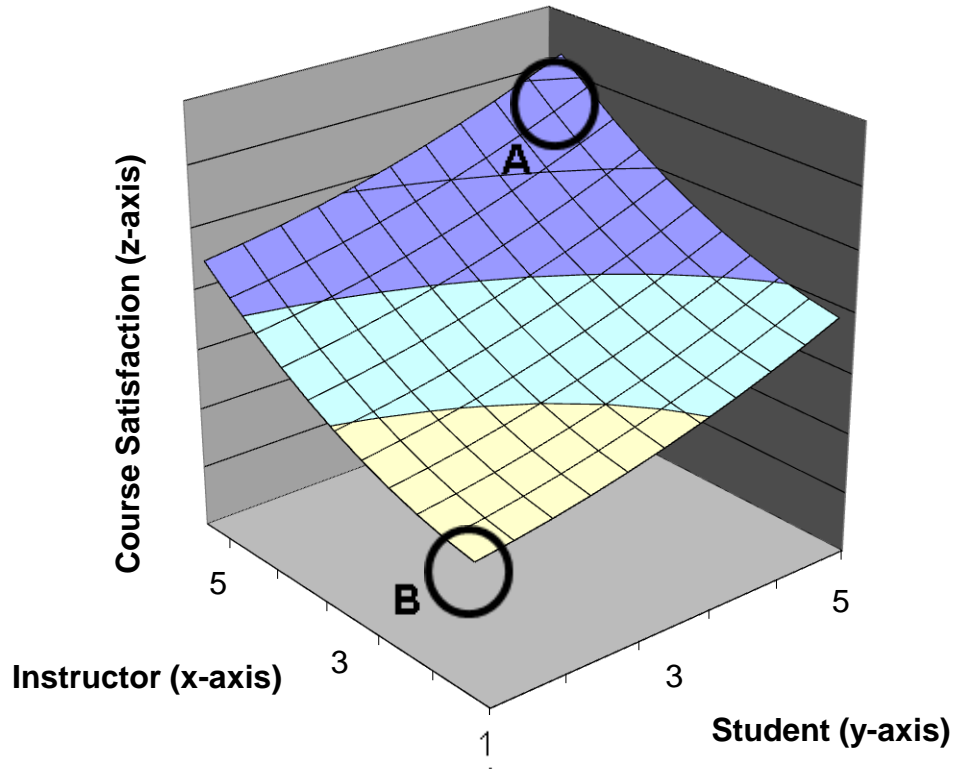
Figure 15. Objective Fit: Functional Form of the Relationship of Applied Learning Goal with Course Satisfaction. The x-axis represents ratings of students' applied learning goals, y-axis represents ratings of instructors' applied learning goals, and z-axis represents students' course satisfaction.
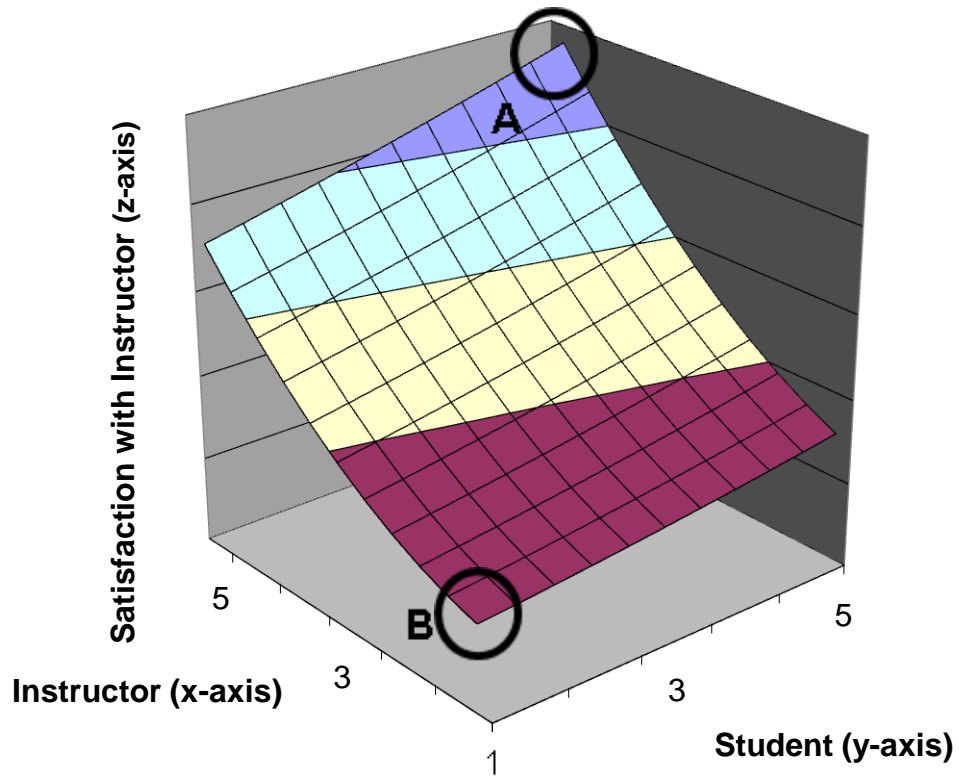
Figure 16. Objective Fit: Functional Form of the Relationship Between Basic Learning Goal with Course Satisfaction. The x-axis represents ratings of students' basic learning goals, y-axis represents ratings of instructors' basic learning goals, and z-axis represents students' course satisfaction.
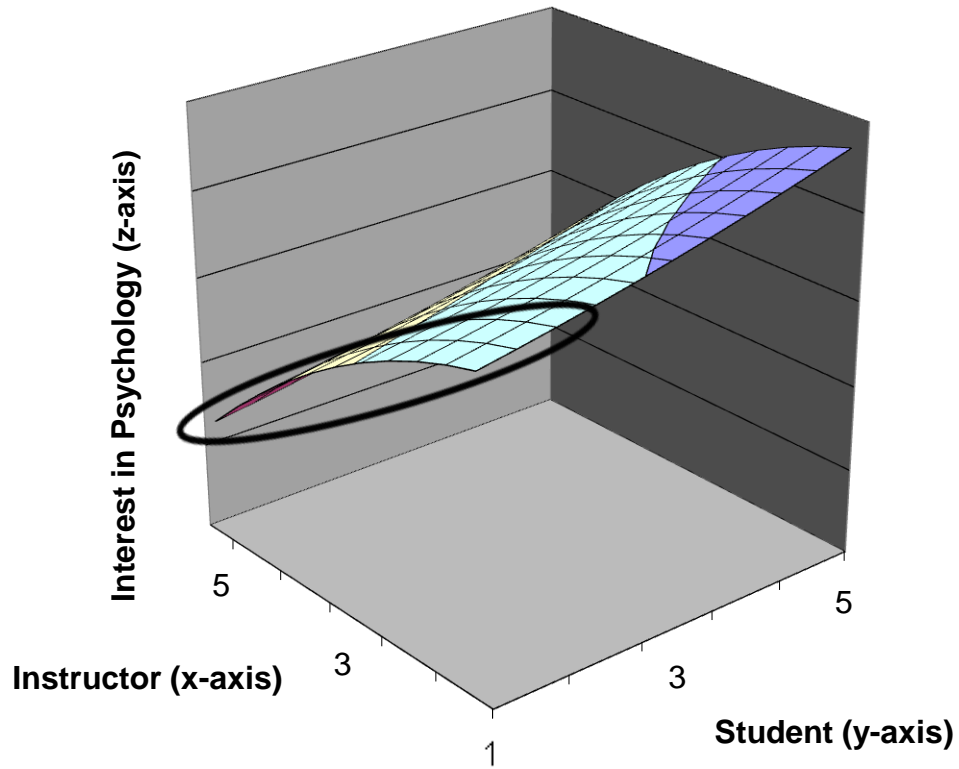
Figure 17. Objective Fit: Functional Form of the Relationship Between Applied Learning Goal Satisfaction with Instructor. The x-axis represents ratings of students' applied learning goals, y-axis represents ratings of instructors' applied learning goals, and z-axis represents students' satisfaction with instructor.
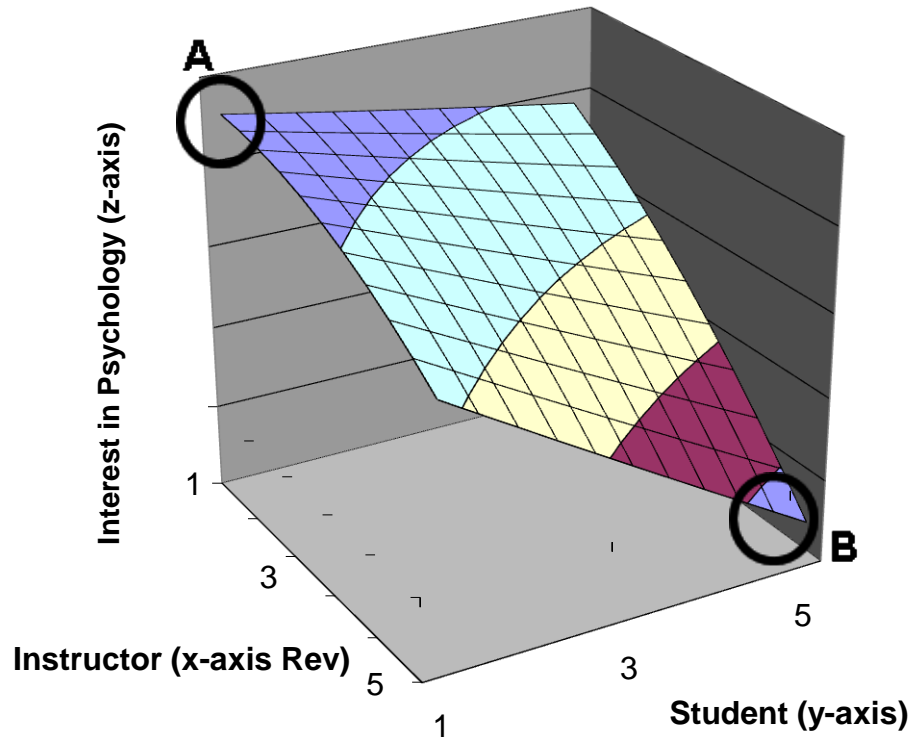
Figure 18. Objective Fit: Functional Form of the Relationship Between Basic Learning Goal with Satisfaction with Instructor. The x-axis represents ratings of students' basic learning goals, y-axis represents ratings of instructors' basic learning goals, and z-axis represents students' satisfaction with instructor.

Figure 19. Objective Fit: Functional Form of the Relationship Between Applied Learning Goal with Interest in Psychology. The x-axis represents ratings of students' applied learning goals, y-axis represents ratings of instructors' applied learning goals, and z-axis represents students' interest in psychology.

Figure 20. Objective Fit: Functional Form of the Relationship Between Basic Learning Goal with Interest in Psychology. The x-axis represents ratings of students' basic learning goals, y-axis represents ratings of instructors' basic learning goals, and z-axis represents students' interest in psychology. Rev denotes that the axis has been rotated to more effectively demonstrate the fit relationship.
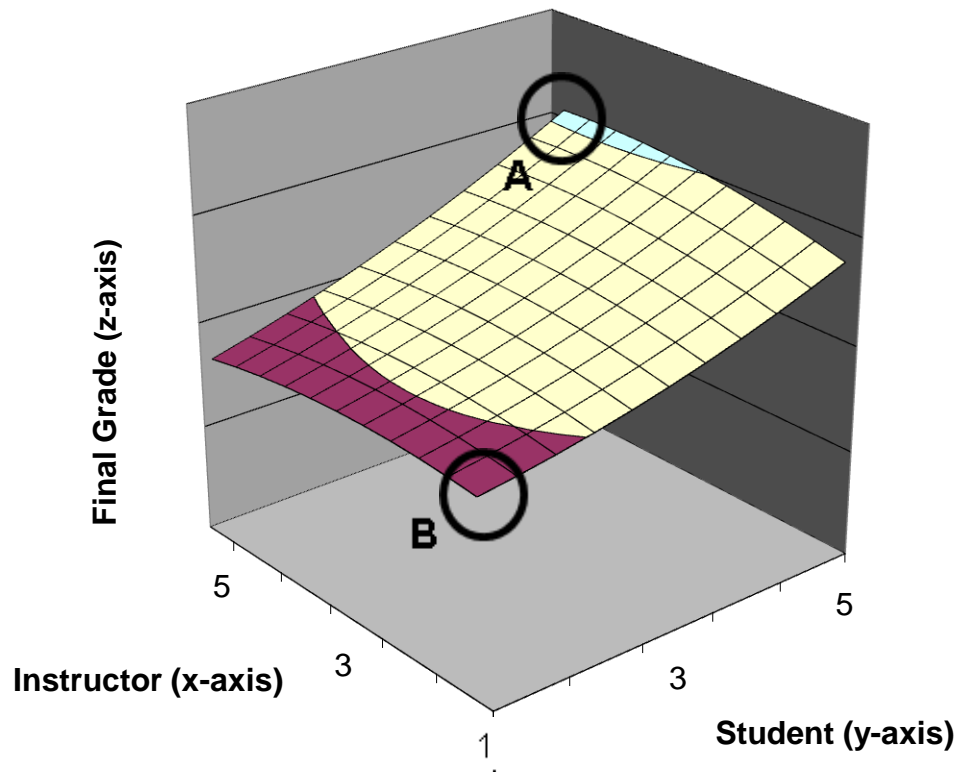
Figure 21. Objective Fit: Functional Form of the Relationship Between Applied Learning Goal with Final Grade. The x-axis represents ratings of students' applied learning goals, y-axis represents ratings of instructors' applied learning goals, and z-axis represents students' final grade.
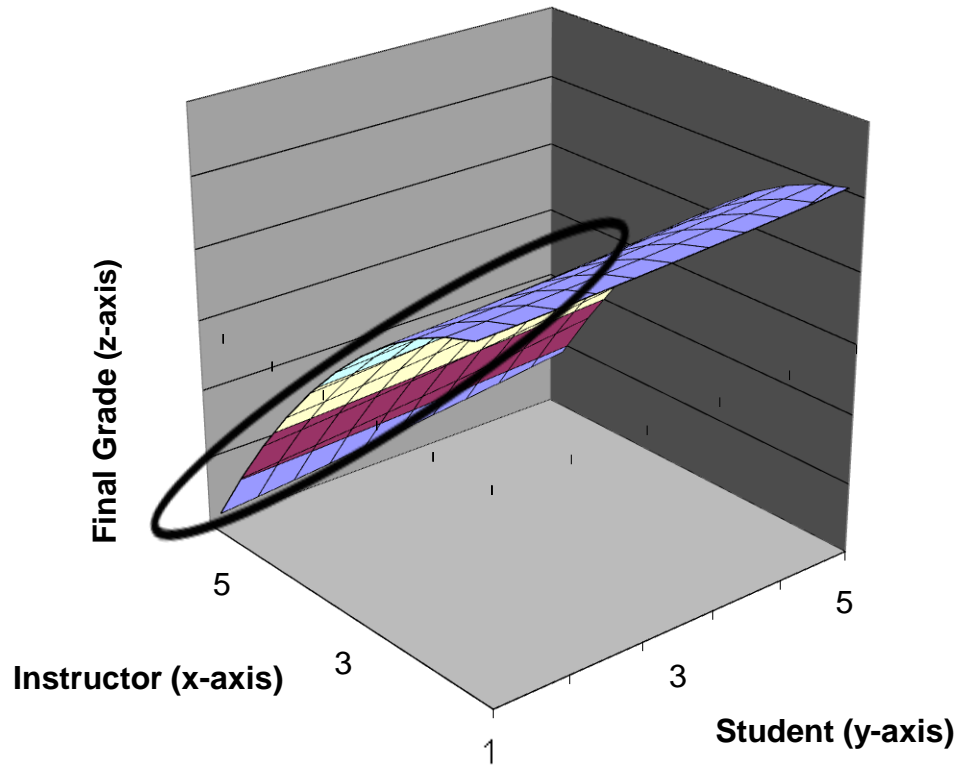
Figure 22. Objective Fit: Functional Form of the Relationship Between Basic Goal Objective with Final Grade. The x-axis represents ratings of students' basic learning goals, y-axis represents ratings of instructors' basic learning goals, and z-axis represents students' final grade.
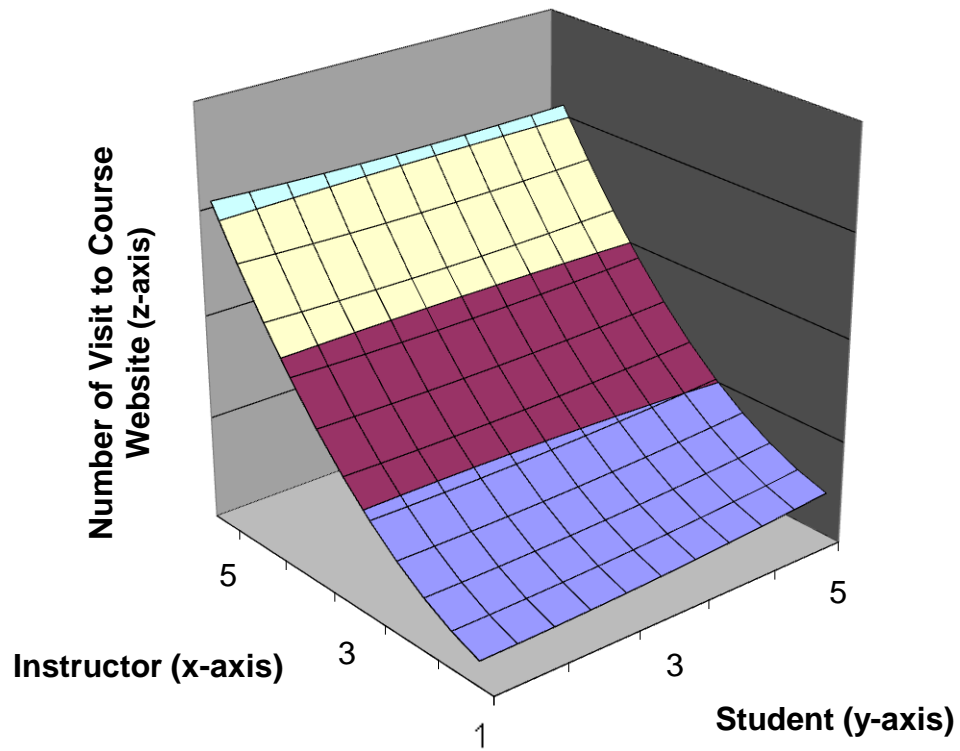
Figure 23. Objective Fit: Functional Form of the Relationship Between Applied Learning Goal with Number of Visits to Course Website. The x-axis represents ratings of students' applied learning goals, y-axis represents ratings of instructors' applied learning goals, and z-axis represents the number of visits students made to the course website.
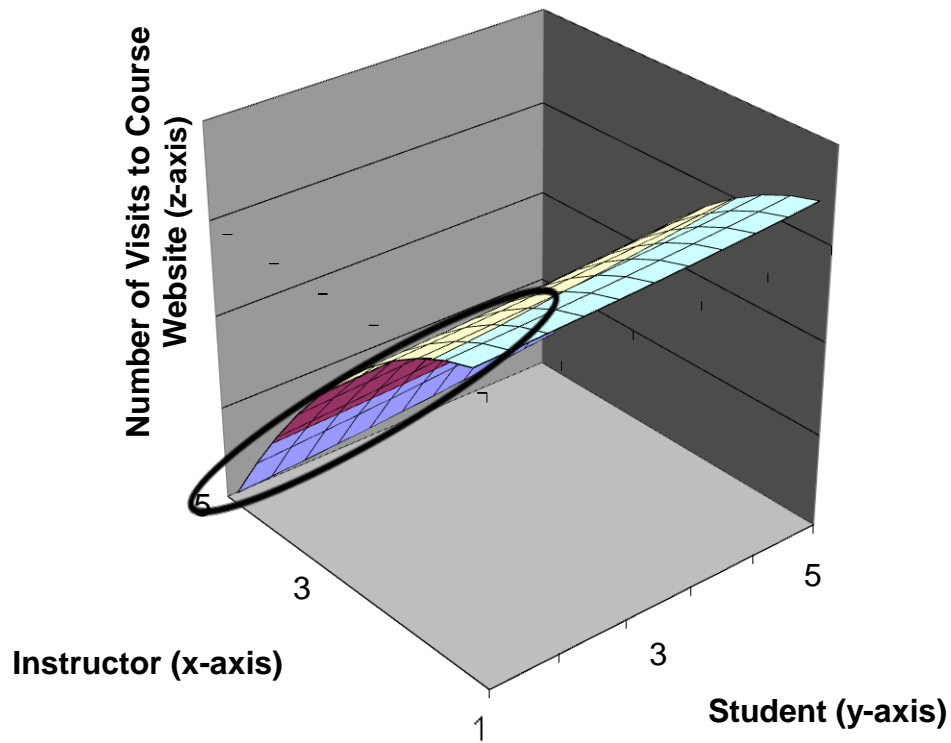
Figure 24. Objective Fit: Functional Form of the Relationship Between Basic Learning Goal with Number of Visits to Course Website. The x-axis represents ratings of students' basic learning goals, y-axis represents ratings of instructors' basic learning goals, and z-axis represents the number of visits students made to the course website.

Vita

Heather G. Jackson was born in Raleigh, North Carolina. She graduated from South Johnston High School in Four Oaks, North Carolina. Ms. Jackson earned a Bachelor of Arts degree in Psychology from the University of North Carolina at Wilmington in May 2009. She then went on to receive a Master of Arts degree in Industrial-Organizational Psychology and Human Resource Management from Appalachian State University in May 2011. During the course of her graduate education, Ms. Jackson participated in a human resources internship at Johnston County in Smithfield, North Carolina. Following her education, Ms. Jackson intends to pursue a career in human resources.