COURSE ENGAGEMENT AS A MEDIATOR BETWEEN STUDENT-INSTRUCTOR PERSONALITY FIT AND ACADEMIC OUTCOMES

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FOREWORD

This thesis is written in accordance with the style of the *Publication Manual of the American Psychological Association (6th Edition)* as required by the Department of Psychology at Appalachian State University

I would like to thank my thesis chair, Dr. Tim Huelsman, for his advice and guidance throughout the thesis process. I would also like to thank my thesis committee members, Dr. Shawn Bergman and Dr. Sandra Gagnon, for their assistance and enthusiasm in this project.

I wish to dedicate this thesis to my parents. It is their continued love and support that has made my graduate experience possible.

Running head: FIT AND ENGAGEMENT

Course Engagement as a Mediator between Student-Instructor Personality Fit and Academic Outcomes

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Abstract

While the positive effects of personality similarity on attraction are well established, this research has made a limited transition to the person-environment (P-E) fit research. Following Schneider's (1987) attraction-selection-attrition model based on similarity-attraction literature, the following study proposes that student-instructor relationships characterized by high levels of perceived personality congruence (i.e., fit) will lead to more motivated and engaged students. The study proposes a model to explain the relationship between student-instructor fit, student course engagement, and student outcomes, whereby engagement should mediate the relationship between perceived student-instructor personality fit and student outcomes of course performance, course satisfaction, and commitment to the academic discipline. A sample of introductory psychology course students completed perceived personality fit and student course engagement questionnaires midway through the semester and final course evaluations at the close of the semester. The proposed theoretical model was not supported; however, findings indicated a significant relationship between personality fit and elements of engagement. Furthermore, some factors of engagement discriminately predicted course outcomes. The proposed role of engagement as a mediating variable was only moderately supported in the fit-satisfaction relationship. Modifications to the proposed model are explored and implications for future research in student-instructor fit and student course engagement are discussed.

Course Engagement as a Mediator between Student-Instructor Personality Fit and Academic Outcomes

Person-environment (P-E) fit literature focuses on the extent to which individual outcomes in a shared environment are a reflection of the interaction between the person and the environment. P-E fit is characterized as the matching or compatibility of the characteristics of the individual with those of his or her environment (Kristof-Brown, Zimmerman, & Johnson, 2005). Research in organizational behavior has been profoundly impacted by this burgeoning topic, and scholars continue to differentiate various conceptualizations and measurements of "fit" (Cable & Edwards, 2004; Edwards, Cable, Williamson, Lambert, & Shipp, 2006). From the perspective of the organization, P-E fit has been shown to provide a number of positive outcomes spanning the life of the employee's experience with the organization, ranging from initial perceptions of the organization to organizational commitment, job satisfaction, and intent to turnover (Amos & Weathington, 2008; Devendorf & Highhouse, 2008; Verquer, Beehr, & Wagner, 2003). Perceptions of fit can also affect potential employees' evaluations of the organization. Candidates' perceptions of fit with the recruiting organization have a significant effect on job choice intentions (Cable & Judge, 1996). Therefore, the effects of P-E fit have been shown to be bidirectional, whereby assessments of fit are not only made by employees of the organization, but also by the organization of employees. For instance, Cable and Judge (1997) found a significant relationship between interviewers' subjective fit assessment and hiring recommendations to the organization, which in turn effect hiring decisions. In both the direct and the bidirectional cases, fit leads to positive outcomes.

With such promising results displayed in the context of work, it follows that the study of P-E fit in additional organizational domains could prove equally beneficial (Kristof, 1996). A number of findings support a strong potential for extending the fit literature to the person-environment interaction between students and academic environment, institution, or instructor (Feldman, Smart & Ethington, 2004; Lau & Nie, 2008; Porter & Umbach, 2006; Westerman, Nowicki, Plant, 2000).

Just as other organizations benefit from member satisfaction, commitment, and engagement, academic institutions can benefit from student satisfaction, commitment, and engagement (Furrer & Skinner, 2003; Skinner, Zimmer-Gembeck & Connell, 1998). Consistent with organizational behavior research on fit, Westerman et al. (2000) found evidence that college student performance and satisfaction were predicted by congruence between student and instructor personality and values, as well as congruence between the student and the classroom environment. Furnham and Chamorro-Prezumic (2005) recognized the effect of students' individual differences in personality on their preferences for lecturers, showing that more open or agreeable students preferred lecturers similar in their levels of openness and agreeableness.

Research on sense of belonging in the classroom, a construct in the academic literature similar to fit, has shown associations with students' academic self-efficacy, intrinsic motivation, engagement, performance, and task value (Freeman, Anderman, & Jensen, 2007; Furrer & Skinner, 2003; Goodenow, 1993; Goodenow & Grady, 1993; Solomon, Watson, Battistich, Schaps, & Delucchi, 1996). Freeman et al. (2007) found that it was students' sense of relatedness with teachers that most strongly influenced perceived control and academic performance. Further evidence for the fit concept has shown positive

associations between students' sense of relatedness and student engagement, academic performance, and perceived control (Furrer & Skinner, 2003). From this research it appears that students' evaluations of their overall classroom environment, as well as their instructor, presumably the figurehead of the environment, influence their affective and behavioral outcomes.

For students pursuing higher education, there often is a dramatic cultural shift, or ecological transition, that occurs between high school and college (Bronfenbrenner, 1979). Midgley, Middleton, Gheen, and Kumar's (2002) stage-environment fit theory proposes that positive outcomes are the result of the alignment between the changing of students' needs and opportunities to satisfy those needs. This model has clear implications for fit research in the academic environment. Given the central role of the instructor in the classroom environment, the extent to which the student perceives similarity between themselves and the instructor will create a sense of relation and attraction for the student thereby satisfying the students need to belong. Due to this congruent relationship, personality fit between student and instructor should positively impact students' ability to transition to, and ultimately thrive in their new environment. Universities should make an effort to capitalize on this knowledge as researchers work to better understand how best to engage students as they enter this new environment. Student engagement has become a primary concern in educational research and evidence indicates that it is through the action of student engagement that motivation leads to positive learning outcomes for the student (Furrer & Skinner, 2003). To this effort, past research indicates that the student-instructor relationship may be a gainful avenue of investigation.

Student-Instructor Fit

As previously discussed, there are a number of positive organizational outcomes associated with P-E fit (Kristof, 1996); however, the concept of fit is more involved than often indicated. P-E fit can be considered an umbrella for a number of different types of fit, including person to organization (P-O) fit, person to group (P-G) fit, person to supervisor (P-S), or person to person (P-P) fit (Kristof, 1996; Devendorf & Highhouse, 2008). Furthermore, fit can be determined based on any number of measurable attributes, with the most common being goals, values, and personality. With such complexity, it is imperative when researching fit to clarify the type of fit and attribute for fit that is being investigated.

In characterizing fit, there also can be a distinction made between subjective (or perceived) fit, and objective (or actual) fit. Perceived fit refers to the individual's subjective evaluation of the environment, and involves asking the individual how much they feel they "fit" with the environment (Kristof, 1996). Conversely, objective fit involves measuring the person and environment separately and determining the difference between those scores, eliminating subjective evaluation (Kristof, 1996). Evidence indicates that in both the organizational setting and the educational setting it is the perception of fit that is more influential (Ostroff, Shin & Kinicki, 2005; Wessel, Ryan & Oswald, 2008). Pervin (1968) addresses this point specifically, concluding that behavior can be better understood when taking into account the perceived environment rather than the actual environment. Further evidence supports that the perception of the environment is the stronger indicator of attitudes and behaviors in situations (Endler & Magnusson, 1976). Therefore, perceived fit should relate more strongly to outcome variables than actual fit (Cable & DeRue, 2002). Based on

these findings the fit relationship that will most strongly influence classroom level outcomes would appear to be the student's perceived personality congruence with the course instructor.

Many researchers take a macro perspective when investigating student-environment or student-organization fit, focusing on students' fit with the university or campus environment. However, in viewing personality fit at the course level we will consider only the classroom environment. At this level, research suggests that because the instructor's personality is dominant in the environment, it may shape the personality of the students' course environment (Westerman et al., 2000). Although the present study is confined to the student-instructor personality fit relationship, these findings indicate that this study may have further implications for fit with the overall classroom environment as well.

Early organizational theory indicated that congruence between the personality of the individual and the overall personality of the organization would translate into greater individual success (Tom, 1971). However, after this early conceptualization of personality-environment congruence, more recent research has begun to focus on value congruence as the primary indicator of fit (Kristof, 1996). Although little contemporary fit research in organizations has looked directly at the effects of personality fit, the similarity-attraction literature provides a strong argument for returning to personality congruence.

Byrne (1971) has firmly established the positive relationship between personality similarity and interpersonal affect that has come to be a foundational relationship in social psychology. Multiple theoretical explanations have been offered for this relationship including positive reinforcement of personal characteristics (Byrne, Griffitt, & Stefaniak, 1967), in-group identification (Ashforth & Mael, 1989), and facilitation of interaction and feelings of comfort (Cable & Turban, 2001). Carli, Ganley, and Pierce-Otay (1991) provided

further evidence for the effects of personality similarity on friendship formation and interpersonal satisfaction. The associations that personality congruence has shown with individual reinforcement, identification, and increased interaction indicate that personality is a salient variable when considering fit in one-on-one relationships, and the investigation of positive individual outcomes. These results are particularly influential in the context of investigating the importance of student-instructor personality fit for student development.

In conjunction with this hypothesis, Deci and Ryan's (1985) self-determination theory provides a causal explanation for the link between students' sense of attraction and their motivational outcomes. When behavior is self-determined and basic needs are satisfied, the perception of control, or "locus of causality," is internal; the motivation and drive for the behavior are internally regulated and the approach to a task will be decidedly different than if motivation were externally regulated. Thus, performance will be optimized (Deci & Ryan, 1985; Deci, Vallerand, Pelletier, & Ryan, 1991). The premise of this theory states that individuals have three basic psychological needs: need for autonomy, need for competence, and need for relatedness. Furthermore, the "satisfaction of these psychological needs is essential for psychological growth, optimal functioning, and well-being" (Greguras & Diefendorff, 2009, p. 465).

Self-determination theory posits that students' perceived personality congruence with their instructor should create an attraction, connection, and commitment in the student and through this attraction, satisfy the student's basic human need for relatedness. The satisfaction of this need should result in students' behavior in the classroom becoming more self-determined, with the characteristics of motivation becoming more internalized with an "orientation toward mastery and intrinsic motivation" (Freeman et al., 2007, p. 204).

Furthermore, self-determined students experience greater affective commitment to the environment (Greguras & Diefendorff, 2009).

Meyer, Becker, and Vandenberghe (2004) outlined an organizational model in which the affective commitment of employees and the subsequent internalization of the organization's goals lead employees to achieve more difficult goals and exercise greater effort and persistence in achieving them, leading to increased performance and satisfaction. By applying this model to the educational context, and in conjunction with educational research, it is a reasonable speculation that through the increased commitment and internalization of motivation associated with personality congruence, students become more achievement oriented, engaged, and successful class participants (Appleton, Christenson, & Furlong, 2008; Furrer & Skinner, 2003; Meyer et al., 2004).

Additional evidence in the organizational literature for the similarity-attraction phenomenon has been clearly outlined in Schneider's (1987) attraction-selection-attrition model (ASA). The ASA model states that individuals are attracted to, select into, and remain with, organizations in which other employees have personalities and characteristics similar to themselves (Schneider, 1987). Numerous research studies have provided support for the ASA model in a number of contexts including a controlled laboratory setting and field studies (Schneider, Goldstein, & Smith, 1995). Additionally, research has specifically tested the attrition effects of heterogeneity with results indicating that within-group dissimilarity is positively associated with turnover rates (Jackson et al., 1991). Corroborating this evidence, college-aged students have been shown to be more attracted to employers in which other employees are rated as similar to themselves overall (Devendorf & Highhouse, 2008).

The target of employees' perceptions of fit can extend beyond the organization or employee peer group. Personality similarity has also been shown to influence strongly the supervisor-subordinate relationship. In these instances, where personality similarity is high, trusting and high commitment relationships were more likely to form, promotion decisions were positively influenced, and there was a more favorable leader-member exchange (Schaubroeck & Lam, 2002). Furthermore, organizational literature indicates that employee-manager fit is more important than fit between the employee and the work group, and employee perceptions of fit are related to outcomes of satisfaction, commitment, and turnover intentions (Ostroff et al., 2005).

Based on the Schneider's (1987) ASA model it is expected that students will be more attracted to, and more likely to select into an environment which holds a personality more similar to their own. Given the behavioral constraints of a classroom environment, the act of selecting into the environment will come in the form of engagement, whereby the student shows a higher commitment to the course, the material, and the discipline. Furthermore, university policy does not allow students to remove or change a course after roughly three weeks into the semester. Therefore, attrition is not possible in the classroom environment. Consequently, the student may react to a dissimilar environment with attrition-like behavior by becoming less engaged, or disengaged.

While support for personality fit in the education literature is not as robust, particularly in the instructor-student relationship, findings from organizational studies should extend to this context. Students' personalities influence their choices of college major, indicating that similar personalities are drawn to certain vocations (Porter & Umbach, 2006).

Research also has shown that students tend to prefer lecturers with personality traits similar to their own (Furnham & Chamorro-Premuzic, 2005).

These findings suggest that personality congruence is a factor in the socialization, relationship formation, communication, and connection between two people. Furthermore, perceptions of fit increase an individual's sense of investment and commitment. Educational literature findings support the influence of an accepting and supportive teacher-student relationship and recognize it as a positive indicator of students' effortful engagement and achievement (Hughes, Luo, Kwok, & Lloyd, 2008). Therefore, the similarity between the personalities of the individual students and the instructor should meaningfully affect the students' connection and communication with the instructor and presumably their connection and commitment to material presented by the instructor.

Student Engagement

Like P-E fit, engagement is a concept that has been investigated in both the academic and organizational literature. While engagement is a relatively new concept, it has received considerable attention for both educational and practical applications and is regarded as a highly desirable, if not necessary, attribute for organization members (Macey & Schneider, 2008; Seijts & Crim, 2006). Engagement has been discussed in conjunction with a number of different organizational variables including satisfaction, commitment, involvement, positive affectivity, and extra-role behavior (Macey & Schneider, 2008). However, academic literature has made considerable strides in recognizing engagement's discriminance from these concepts.

Kahn (1990) discussed engagement as the "the harnessing of organization members' selves to their work roles" (p. 694). Furthermore, present research views engagement as the

extent to which an employee is involved in the organization and willing to exert discretionary effort on its behalf (Seijts & Crim, 2006). Each of these descriptions of engagement relates strongly to a sense of association or connection with the environment. This connection increases members' propensity to become engaged in the organization. It is through members' engagement, rather than the initial connection, that organizations obtain the associated benefits.

Therefore, is it not surprising that engagement has shown associations with a number of advantageous outcomes similar to those of P-E fit. Research indicates that engagement is positively associated with organizational member's satisfaction, productivity, and intent to remain with the organization (Harter, Schmidt, & Hayes, 2002). In the academic literature, research has indicated that students who are engaged in the classroom and in the organization show higher achievement related outcomes, lower rates of dropout, greater satisfaction, and better performance (Fredricks, Blumenfold, & Paris, 2004; Furrer & Skinner, 2003; Hughes et al., 2008; Wefald & Downey, 2009). Based on these findings, it is clear why many organizations engage in efforts to increase engagement.

As previously discussed, the multifaceted nature of engagement has made the concept difficult to operationalize; however, contemporary research literature typically describes engagement as consisting of three parts: behavioral engagement, affective or emotional engagement, and cognitive engagement (Fredricks et al., 2004). The two most commonly cited and analyzed forms of engagement are behavioral engagement, which involves participation and effort, and affective engagement, which involves reactions to teachers, identification with the classroom and instructor, and attitude towards learning (Appleton et al., 2008; Fredricks et al., 2004). Cognitive engagement has been more recently included in

definitions as a component of engagement that refers to students' investment in learning and personal goals (Appleton et al., 2008). Some researchers have indicated that engagement may include a component focusing on the interpersonal interaction between students and teachers (Handelsman, Briggs, Sullivan, & Towler, 2005). Research indicates that student-teacher interaction is directly associated with student engagement as well as indirectly through students' perceptions of the teacher (Skinner & Belmont, 1993). Further, in the face of academic hardship, students who indicate a good relationship with their teacher are less likely to be disheartened by their situation (Connell & Wellborn, 1991).

While the previous paragraph describes a broader framework for the concept of engagement, recent research has identified a four-factor structure related specifically to student course level engagement (Handelsman et al., 2005). These factors include skills engagement, emotional engagement, participation engagement, and performance engagement. These factors are similar in description to the previous three factors; however, the student course engagement conceptualization further separates behavioral engagement into skills engagement and participation engagement. Skills engagement refers to students' practice of skills that support learning including studying, reading, and note-taking behaviors. This factor is considered to be most closely associated with students' course performance (Handelsman et al., 2005). Emotional engagement is the extent to which students become emotionally involved and internalize the course material, and as such is associated with intrinsic outcomes, or feelings regarding the course (Handelsman et al., 2005). Furthermore, emotional engagement includes students' real life application of, and desire to learn the material. Participation engagement, also considered interactive engagement, refers to the extent of students' relationships with others in the course and includes such examples as class

involvement, group participation, and interaction with the professor. This factor has shown positive correlations with course exam performance, and is considered to be tied to both intrinsic and extrinsic elements of the course (Handelsman et al., 2005). Finally, performance engagement includes students' engagement as it relates to performance outcomes, including grades and confidence in performance (Handelsman et al., 2005).

Much like research on P-E fit, many assessments of student engagement are focused at the "macro" level, recognizing engagement at the organization or university level. However, it may be more pertinent to focus on engagement at the "micro" or class level. At the course level, factors affecting student engagement may be more controllable given that professors have direct influence on student's perceptions and clarity of expectations. Furthermore, for college students, the classroom remains the center of the institution's learning structure, and as such acts as the focal point of students' experiences (Tinto, 1997). Therefore, results from the focus of engagement at the course level could be extrapolated to provide implications for overall student engagement at the organization level.

Proposed Relationships

Individuals' perceptions of fit with their environment are positively related to organizational outcomes. Specifically, P-E fit has been associated with increased organizational commitment and job satisfaction, and decreased intentions to turnover (Amos & Weathington, 2008; Devendorf & Highhouse, 2008; Verquer et al., 2003). In the context of an educational institution, the available evidence indicates that students' perceptions of fit significantly increase their performance and satisfaction (Furrer & Skinner, 2003; Westerman et al., 2000). Furthermore, while personality congruence in particular has yielded such positive results (Westerman et al., 2000), the potential for the student-instructor personality

fit relationship has not been thoroughly explored. Based on these findings, it is expected that students' perceptions of personality fit with the instructor will be positively related to students' academic performance, satisfaction, and commitment.

However, the similarity-attraction literature indicates that the student-instructor fit relationship may have implications beyond student performance and satisfaction. Perceptions of fit with the instructor can be expected to increase students' identification, interaction, and commitment to their instructor (Ashforth & Mael, 1989; Cable & Turban. 2001; Schaubroeck & Lam, 2002). Evidence further indicates that personality congruence should increase students' effortful engagement and achievement (Hughes et al., 2008). With these positive outcomes being the basis for student engagement, it is expected that students' perceptions of personality fit with the instructor will display a positive relationship with all four factors of student engagement (see Figure 1).

Furthermore, while no research has specifically tested the relationship, it would appear that the link between personality fit and positive student outcomes occurs partially as a result of the mediation of the motivational state of student engagement. Therefore, without the occurrence of this motivational state, the link between student perceptions of fit and student outcomes might be expected to deteriorate. Based on this reasoning, the proposed model posits that the perceived student-instructor personality fit relationship with student's academic performance, satisfaction, and commitment will be mediated by student engagement, where fit will show a positive relationship with engagement and engagement will show a positive relationship with student outcomes. Expected relationships are outlined in the theoretical model (see Figure 1).

As previously noted, the outcomes associated with student engagement not only have positive implications for students, but also produce outcomes that are highly sought after by academic institutions. This is supported by a robust body of research indicating that student engagement in the classroom and organization has a positive relationship with achievement related outcomes, satisfaction, and performance, and a negative relationship with student dropout rate (Fredricks et al., 2004; Furrer & Skinner, 2003; Hughes et al., 2008; Wefald & Downey, 2009). In following the theory of engagement, it is expected that overall engagement will be related to all outcomes. While there is discriminant validity in the four factors of student engagement (Handelsman et al., 2005), there is not sufficient evidence to postulate if each factor of engagement will be associated with certain individual outcomes. Therefore, the proposed model shows that each of the four factors will be associated with all possible outcome variables (see Figure 1).

Method

Participants

Participants in this study were 181 undergraduate students who received class credit towards their introductory level psychology course at a mid-sized university in the southeastern United State. This study was approved by the Institutional Review Board on August 25, 2009, study number 10-0019 (see Appendix A).

Overview of Data Collection

Data were collected at two measurement periods during the students' fall semester and consisted of self-report surveys administered through an online survey service. The first data collection occurred between the 10th and 14th week of the semester and consisted of the student course engagement measure and perceived personality fit measure. The second data

collection occurred during the final week of the semester extending to three weeks following the conclusion of classes. The second measurement included measurement of students' satisfaction with the course, commitment to the discipline, and overall course performance. All scales are presented in the Appendix B.

Measures

Personality fit. Perceived personality fit was measured using a six item questionnaire measuring students overall perceptions of personality similarity and personality fit with their instructor. Student's responses were measured on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly agree). The coefficient alpha of the six item personality fit measure was .88.

Student course engagement. Students' level of course engagement was assessed using the 27-item Student Course Engagement Questionnaire (Handelsman et al., 2005). The measure was administered during the initial measurement period. This questionnaire assesses course student engagement on four separate dimensions: skills engagement, participation/interaction engagement, emotional engagement, and performance engagement. The measure consists of nine items assessing skills engagement, five items assessing participation/interaction engagement, six items assessing emotional engagement, and three items assessing performance engagement.

Each item was assessed using a 5-point Likert type scale ranging from 1 (Not at all characteristic of me) to 5 (Very characteristic of me). Reliability coefficients for each of the four factors ranged from .80 to .86.

Student Satisfaction. Students' satisfaction with the course was assessed using a four item questionnaire. Items were adapted from Harackiewicz, Durik, Barron, Linnenbrink-

Garcia, and Tauer's (2008) course interest inventory, as well as a single item measuring overall course satisfaction. Each item was assessed using a 5-point Likert type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The coefficient alpha of the four item course satisfaction measure was .84.

Student Commitment to the Discipline. Students' commitment to the discipline was assessed using a four-item measure aimed at determining the likelihood that student's would pursue a course of study in psychology as well as student's opinions on the utility of the discipline. Each item was assessed using a 5-point Likert type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The coefficient alpha of the four item student commitment measure was .76.

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

Results

The means, standard deviations, and correlations among all study variables are presented in Table 1. Bivariate correlations indicate a number of significant relationships among the measured variables within the proposed model. Student-instructor personality fit showed significant correlations with three of the four engagement factors: skills engagement, emotional engagement, and participation engagement. Personality fit demonstrated a significant bivariate correlation with only one outcome variable, satisfaction, and no significant relationship with student commitment or course grade providing evidence against a mediation model. Furthermore, all outcome variables indicated significant bivariate correlations with one another.

The first proposed relationship presented in the model, that students' perceptions of fit with their instructor would be positively related to course outcomes, was partially supported. Student-instructor personality fit showed a significant relationship with student course satisfaction. However, students' perceptions of fit were not significant indicators of students' commitment to the discipline or final course grade.

To test the model in Figure 1, in which student engagement mediates the relationship between student-instructor personality congruence and student outcomes (i.e., course performance, satisfaction, and commitment), a path analysis modeling approach was conducted using AMOS 6.0 (Arbuckle, 1995). Table 2 contains the goodness of fit (GOF) statistics for the proposed model. This table contains additional GOF statistics for alternative models which will be discussed later. The chi-square statistic is the most common indicator of GOF; however, given the dependence on sample size it often indicates a poor model fit when there is in fact acceptable model fit. For adequate model fit a chi-square statistic that is not statistically significant is expected. Three additional indicators of GOF were utilized in the analysis of the model: standardized-root-mean-square residual (SRMR), which is expected to be .08 or less to indicate a good fit, comparative fit index (CFI), expected to be .95 or greater to indicate good model fit, and the root mean square error of approximation (RMSEA), which is expected to be close to .06 or less to indicate good model fit (Cable & Judge, 1997; Hu & Bentler, 1998, 1999).

All measures of GOF for the hypothesized model indicated poor model fit. The chi-square statistic (229.52) indicated that the model was significant at the .01 level, the SRMR (.74), CFI (.42), and RMSEA (.32) statistics were also indicators of poor model fit. Figure 2 contains the standardized path weights and level of significance for the hypothesized model.

While the overall model did not show adequate fit, a number of significant relationships exist within the model, indicating that some of the proposed relationships of the model may be accurate.

There was also partial support for the second proposed relationship, that students' perception of personality fit would significantly predict levels of student course engagement. Perceptions of fit were a significant predictor of student levels of skills engagement, emotional engagement, and participation engagement. However, perceptions of fit were not a significant predictor of students' levels of performance engagement.

It was also implicit in the proposed model that students' levels of engagement on all four factors would show a positive relationship with each outcome variable. Results indicated that significant relationships between engagement factors and course outcomes did exist. Skills engagement displayed a significant relationship with course satisfaction. Emotional engagement had a significant relationship with course satisfaction, commitment, and course grade. Participation engagement showed a significant negative relationship with course grade. Item analysis of the participation engagement factor, however, indicated a null relationship with course grade. Performance engagement demonstrated a significant relationship with course grade. Based on these results, there was some evidence indicating that the four engagement factors differentially affect course outcomes.

The final relationship indicated in the proposed model is that engagement plays a mediating role in the relationship between student-instructor personality fit and the measured outcome variables. Given the lack of a significant relationship between fit and student commitment and final grade, this proposition was not supported. However, fit displayed a standardized indirect effect estimate of .151 with course satisfaction indicating moderate

support for a mediated relationship that engagement mediated the relationship between personality fit and course satisfaction.

Given the poor model fit for the proposed model, model modifications were explored and alternative models were tested. While there is delineation among the four factors of engagement, and it was expected that the factors show discriminant validity in testing, covariance between the factors was a potential confounding element of the hypothesized model. Evidence for this was indicated in the bivariate correlations as all engagement factors demonstrated significant correlation with one another, see Table 1. Furthermore, in reviewing the analysis of the original model, modification indices for covariance values between the residuals for the engagement factors were high, ranging from 12.88 to 42.11. Large values indicate that these variables were attempting to correlate with one another and model fit would be improved if the model accommodated for this relationship. Thus, in the alternative model, the residuals of the engagement factors were allowed to co-vary.

Statistical analysis of the original model also indicated significant covariance among the outcome variables. Given the considerable covariance among the outcome variables (see Table 1), a further modification to the hypothesized model was to allow covariance between the residuals of the outcome variables.

GOF indices for this first alternative model are presented in Table 2. With model modifications added, this alternative model showed improved model fit. While the chi-square statistic remained significant at the .01 level, SRMR (.03), and CFI (.97) indicated adequate model fit. This model showed significant improvement from the hypothesized model.

Standardized path weights for the hypothesized model as well as alternative models are presented in Table 3. Statistical significance for the standardized path weights for the first

alternative model remained relatively stable from the hypothesized model. Emotional engagement remained a significant indicator of course satisfaction and student commitment and performance engagement maintained a significant relationship with final course grade. Skills engagement was no longer significantly related to course satisfaction. Participation engagement maintained a significant negative relationship with final course grade at the .01 level.

Finally, a second alternative model was proposed which modified the relationships between the engagement factors and the final outcome variables. Previous research utilizing the course engagement measurement instrument did not provide concrete evidence to warrant the prediction of a model wherein engagement factors would only be predictive of certain outcome variables. Therefore, the hypothesized model took an exploratory approach, allowing all factors to predict all outcome variables. Given the poor indices of model fit, this approach was not supported. A second alternative model was tested limiting the relationships of the engagement factors to outcome variables associated with the factors item content and description of the factor (see Figure 3). This second alternative model remained in line with the theoretical basis for the construction of the hypothetical model.

The following engagement-outcome correlations remained in the proposed alternative. Skills engagement was only correlated with student satisfaction. Following the view of engagement described by May, Gilson, and Harter (2004), when individuals are able to identify with their work and recognize themselves in their work, they feel more connected and satisfied. Therefore, it was expected that students' ability to utilize their skills in the course would make them more connected, or engaged in the course, and in turn more satisfied by it. Emotional engagement remained correlated with student satisfaction and

student commitment. Again, students' connection to the course material was expected to increase satisfaction. Emotional engagement also involved integrating the course material into life outside of the course. It was expected that this would influence student commitment similar to findings in the organizational literature that engagement reduces employees' turnover intentions (Harter et al., 2002). Participation engagement, as well as performance engagement, remained correlated with the students' final course grade. It was expected that students who more actively engaged in the course with in classroom behavior, and those who felt greater self-efficacy in achieving high performance marks would in fact perform higher. The model with the standardized path weights is presented in Figure 3.

GOF indices for this second alternative model are included in Table 2. Using the previously indicated standards for the indices of fit, this alternative model showed adequate fit. The chi-square statistic was significantly significant at the .05 level. As with the previous model, CFI indicated adequate model fit. The RMSEA statistic obtained was .08 which is an indicator of acceptable model fit (Hu & Bentler, 1999). This model showed significant improvement from the hypothesized model as well as improvement from the first proposed alternative model. All paths in this alternative model showed significant relationships. Emotional engagement remained a significant predictor of both course satisfaction and student commitment. Performance engagement also remained a significant predictor of final course grade. While participation engagement maintained a negative relationship with course grade significant at the .05 level, item-analysis of bivariate correlations with course grade indicate a null relationship.

While the alternative models indicated stronger model fit than the hypothesized model, no model that was evaluated demonstrated excellent model fit. Furthermore, there

was little support for the mediating role of student engagement given the nonsignificant relationship between fit and the majority of the outcome variables.

Discussion

Researchers have proposed a number of positive implications for the congruence between the individuals and attributes of their environment across a number of characteristics and settings (Kristof, 1996). In conjunction with this research, the similarity-attraction hypothesis (Byrne, 1971) and Schneider's (1987) ASA model make it a reasonable assertion that student-instructor personality fit would be an influential element of students' course experience. This is particularly true in reference to students' level of engagement in the course. Research has indicated engagement is an influential outcome of the students' sense of relatedness in the classroom (Furrer & Skinner, 2003). However, little research has directly investigated the relationship between personality fit and engagement, or more specifically, engagement as a mediator between fit and its associated positive outcomes. Given the growing focus on individual engagement and its association with positive outcomes for the individual and the organization (Fredricks et al., 2004; Furrer & Skinner, 2003; Hughes et al., 2008; Wefald & Downey, 2009), this gap in the literature indicates potential for further understanding and exploring the engagement construct.

This study suggests a model that integrates a relationship between fit and engagement and the positive outcomes that have been shown to be associated with both. In this model, engagement acts a mediator between students' perceptions of personality congruence with their instructor and students' satisfaction, commitment, and course grade. While results did not indicate support for the overall model, a number of significant relationships were demonstrated within the model. Most notably, student-instructor personality fit displayed a

significant relationship with skills engagement, emotional engagement, and participation engagement. Thus, perceptions of personality congruence appear to be an important element of the more emotional, effortful, and antecedent focused factors of engagement. These findings are in line with the theoretical argument that fit leads to engagement through increasing students' sense of attraction to the instructor and their sense of belonging in the classroom. Schneider's (1987) ASA model indicates that individuals will select into environments they find to be more like themselves, and students are selecting into their classroom environment through effortful engagement. Those who do not find the environment to be congruent select out through a lack of engagement, or disengagement. Personality fit did not show a relationship with students' performance engagement; these results indicate that while fit appears to influence students' connection and effort towards the course, it does not influence their sense of efficacy towards performance outcomes.

Further findings indicated a number of significant relationships between factors of engagement and individual outcome variables. Skills engagement and emotional engagement were found to be significantly related to course satisfaction. These findings follow previous research on engagement, indicating that individuals who emotionally connect to and have an opportunity to utilize their skills in their environment, in this instance the class material, will be more satisfied (May et al., 2004). However, contrary to the hypothesized model, participation engagement and performance engagement were not associated with course satisfaction. Participation engagement may be modified by the nature of the course sampled. Given class size in an introductory level course, opportunities for participation and interaction may have been limited; therefore, the applicability of participation engagement

would show an insignificant relationship with all outcome variables. This is also a possible explanation for the negative relationship between participation engagement and course grade.

Emotional engagement also showed a significant relationship with student commitment. This relationship is supported by the proposed theory, as students who are more emotionally engaged have selected into the environment, and may treat this course as an indicator of courses in the discipline as a whole. However, all other factors of engagement did not show a significant relationship with student commitment. These results did not support the model. This deviation may be a result of unmeasured variables associated with the measurement of commitment in the introductory course that will be discussed later.

While significant relationships did exist within the model, the overall mediated model was not supported due to the insignificant relationships found between student-instructor personality fit and student commitment and course grade. These results are contrary to findings regarding fit in the organizational literature (Kristof, 2006). Only with regards to course satisfaction was there moderate evidence for a mediated relationship. Again, this may be due to unaccounted for variables in measuring student commitment. In terms of course grade, factors inherent in the level and nature of the introductory course may modify the role that engagement plays in course performance. Implications for future research are discussed later.

Limitations and Strengths

A number of limitations were inherent in this study. First, the nature of the course sampled introduced a number of uncontrolled variables. As previously indicated, class size for the sample population was large (> 50). This provided limited opportunities for engaging behaviors and resulted in potential error in the measurement of student's participation or

interaction engagement. Additionally, the status of academic major declaration for students in an introductory level course varies considerably. This unmeasured variable could influenced the measurement of students' commitment to the academic discipline. Students who had declared a major in an alternative discipline prior to the start of the course may not have intended to take another psychology course regardless of their experience in the course, whereas students who had declared psychology as their major would intend to take another course in the discipline regardless of their classroom experience.

A second potential weakness of this study concerns the assessment of student engagement. Although previous research utilizing the Student Course Engagement Questionnaire indicated discriminant validity among the four factors of engagement (Handelsman et al., 2005), the current results revealed significant correlations among all four factors. The alternative models represent attempts to control for these correlations, but these significant relationships caused difficulty in obtaining adequate model fit. Additionally, the behavioral indicators of engagement measured in the instrument may have been subject to unmeasured factors based on the nature of the course and on their true indication of level of engagement. While a number of positive outcomes have been associated with engagement (Furrer & Skinner, 2003; Harter et al., 2002), there has been considerable criticism that researchers have failed to clearly define the construct and as such have failed to develop a clear and discriminant measure (Macey & Schneider, 2008). Although the chosen measure appeared in line with the theoretical description of engagement, in the population of this study it may have been subject to the limitations frequently associated with engagement measures. Most notably, the measure may have unintentionally measured a number of

additional and related constructs such as extra-role behaviors, course involvement, and individual self-efficacy.

A number of strengths accompany the potential weaknesses described in this study. First, this study extends the investigation of the positive effects of P-E fit, and the concept of engagement to the academic setting. Both of these areas of research have received considerable attention in the organizational literature, but little research has investigated the positive effects in the academic organization. In the proposed model, these concepts are integrated to explain the positive outcomes that have been associated with each. While the full proposed model was not supported, a number of significant results were found among these variables, indicating directions for further research.

Second, this study examined data collected over time and at critical points in the students' course experience. Students' level of engagement and perceptions of fit were assessed during the course of the semester when these elements should be most salient. Additionally, the collection of this data was separated from the collection of students' outcome data, minimizing potential method bias.

Implications and Future Research

As previously indicated, P-E fit has received little attention in the context of academic settings. Results from the current study indicate potential for examining fit in relation to student engagement as well as student course satisfaction. In particular, the current study extends the literature on the effects of perceptions of personality fit and has implications for the similarity-attraction hypothesis (Byrne, 1971) in the student-instructor relationship. Future researchers may extend this investigation to determine if elements of the environment

other than personality are more predictive of student engagement. For example, investigators could compare fit on values or on goals for the course.

Additionally, the current study extends the literature on student course engagement. Engagement is a popular topic in current literature and has shown positive outcomes in both organization settings and academic settings (Furrer & Skinner, 2003; Harter et al., 2002). The current study showed varying results for the engagement constructs and their relationship with course outcomes. This could provide further evidence to the current argument that engagement needs to be more clearly defined and measured in the literature (Macey & Schneider, 2008). Most notably, the affective behavioral elements of engagement should be discriminated from associated constructs such as self-efficacy, extra-role behaviors, and course involvement (Macey & Schneider, 2008). Prior to further investigation in the academic context, researchers should attempt to clearly define what constitutes student engagement and how to accurately measure the inherent factors.

Future research should attempt to control the additional limitations associated with the current study. Most notably, researchers should control for size of the course and variability in students' declaration of their majors. Future research should determine the presence and role of engagement in small and large classes, as well as introductory and upper level courses within a discipline. Given the varying results of engagement in the current study, the role of engagement in course outcomes, particularly course grade, may be modified by elements of the course and the course environment.

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Table 1

Correlations Among Study Variables

Variable	M	SD	1	2	3	4	5	6	7
1. Personality Fit	87.83	8.44	(.882)						
2. Engagement: Skills	3.56	0.58	.208**	(.855)					
3. Engagement: Emotional	3.66	0.66	.339**	.505**	(.842)				
4. Engagement: Participation	3.57	0.74	.340**	.461**	.494**	(.801)			
5. Engagement: Performance	3.07	0.72	.115	.424**	.284**	.359**	(.834)		
6. Course Satisfaction	4.01	0.68	.344**	.359**	.439**	.260**	.214**	(.841)	
7. Student Commitment	3.94	0.65	.111	.143	.372**	.107	.114	.586**	(.763)
8. Course Grade	3.45	0.84	-.003	.200**	.192*	.035	.493**	.241**	.237**

Note: Values on main diagonal (in parentheses) represent Cronbach's coefficient alpha.

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

Table 2

Goodness of Fit Statistics for Hypothesized Model and Proposed Alternative Models

Model	χ^2	*df*	SRMR	CFI	RMSEA
Hypothesized Model	229.5**	12	0.74	0.42	0.32
Alternative Model 1					
Covariance allowed between outcome residuals and between engagement residuals	15.9**	3	0.03	0.97	0.16
Alternative Model 2					
Alt. Model 1 with modified engagement outcome relationships	21.4*	10	0.15	0.97	0.08

Note: df = degrees of freedom; SRMR = standardized-root-mean-square; CFI = comparative fit index; RMSEA = root mean square error of approximation.

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

Table 3

Standardized Path Weights for Hypothesized Model and Proposed Alternative Models

Variables	Hypothesized Model	Alternative Model 1	Alternative Model 2
Fit → Skills	.19**	.19**	.19**
Fit → Emotional	.32**	.32**	.32**
Fit → Participation	.30**	.30**	.30**
Fit → Performance	.09	.09	.09
Skills → Satisfaction	.15*	.15	.20**
Skills → Commitment	-.06	-.07	–
Skills → Grade	.00	.00	–
Emotional → Satisfaction	.36**	.35**	.32**
Emotional → Commitment	.43**	.43**	.37**
Emotional → Grade	.15*	.15	–
Participation → Satisfaction	.01	.01	–
Participation → Commitment	-.04	-.04	–
Participation → Grade	-.21**	-.22**	-.15*
Performance → Satisfaction	.04	.04	–
Performance → Commitment	.04	.04	–
Performance → Grade	.49**	.51**	.52**

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

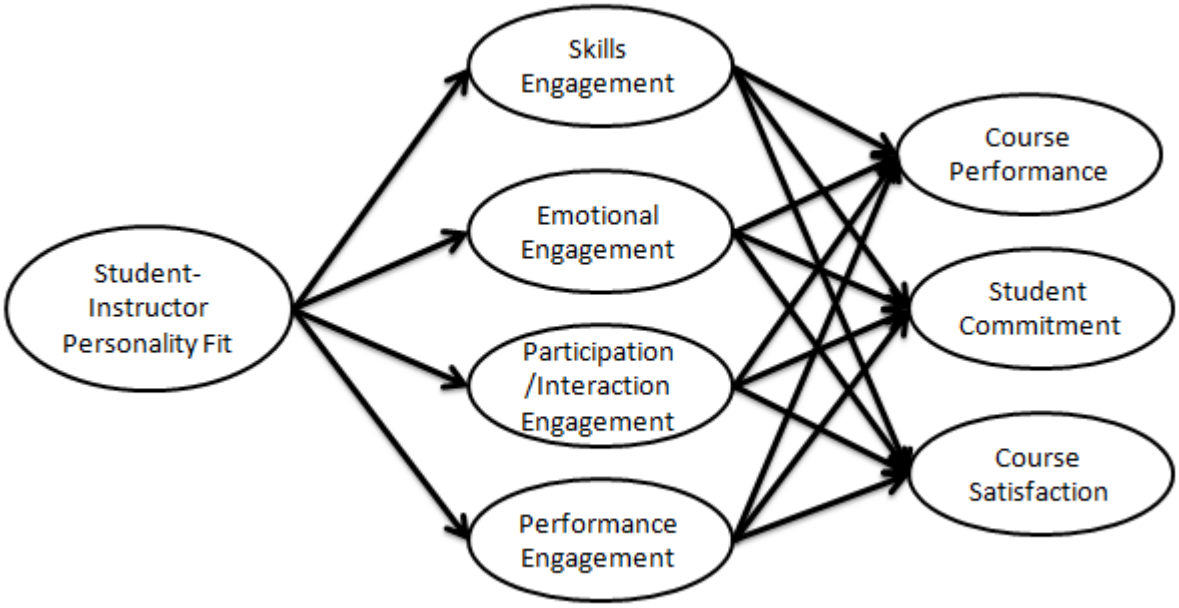

Figure 1. Theoretical model of student engagement as a mediator of student-instructor personality fit and student course outcomes.

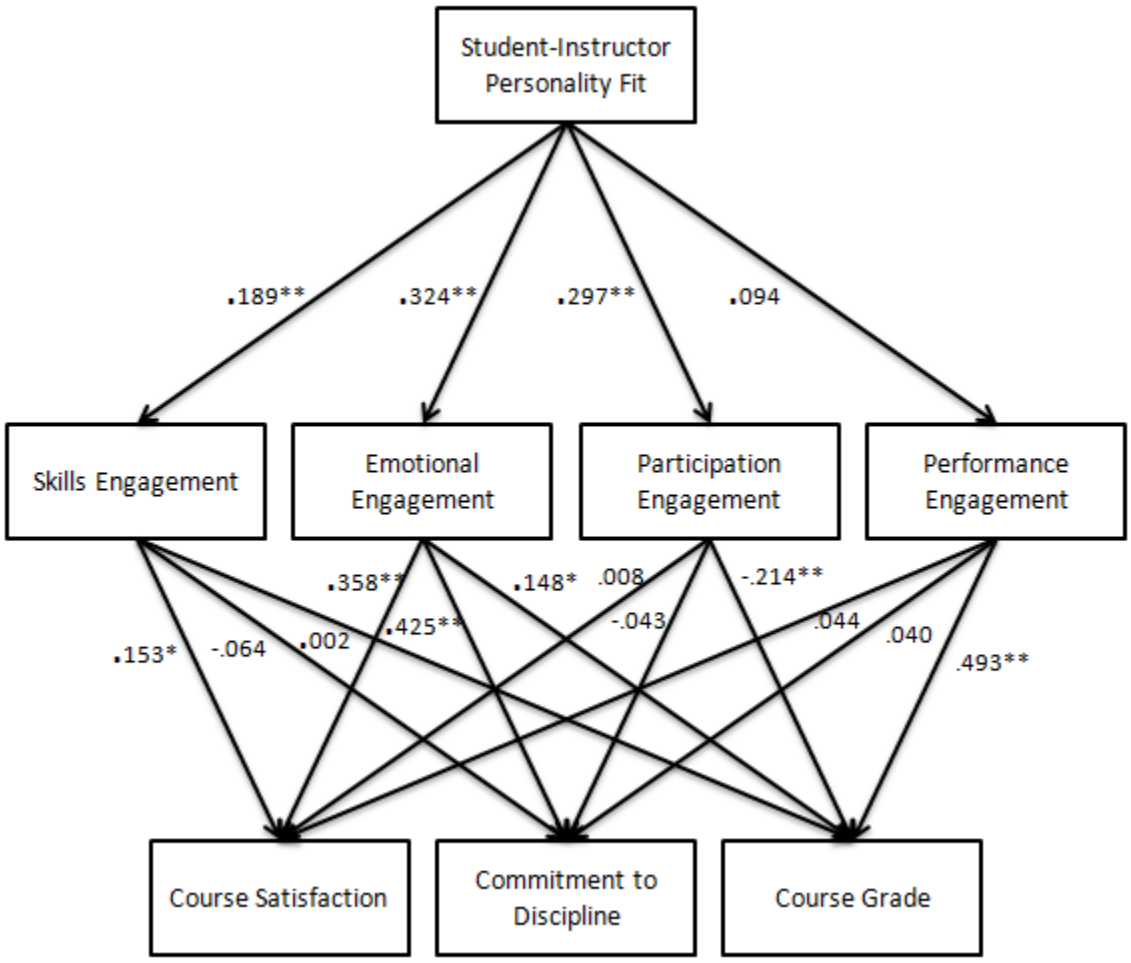

Figure 2. Statistics are standardized path weights for the hypothesized mode of student engagement as a mediator of student-instructor personality fit and student course outcomes. ** p < .05, two tailed; ** p < .01, two-tailed.*

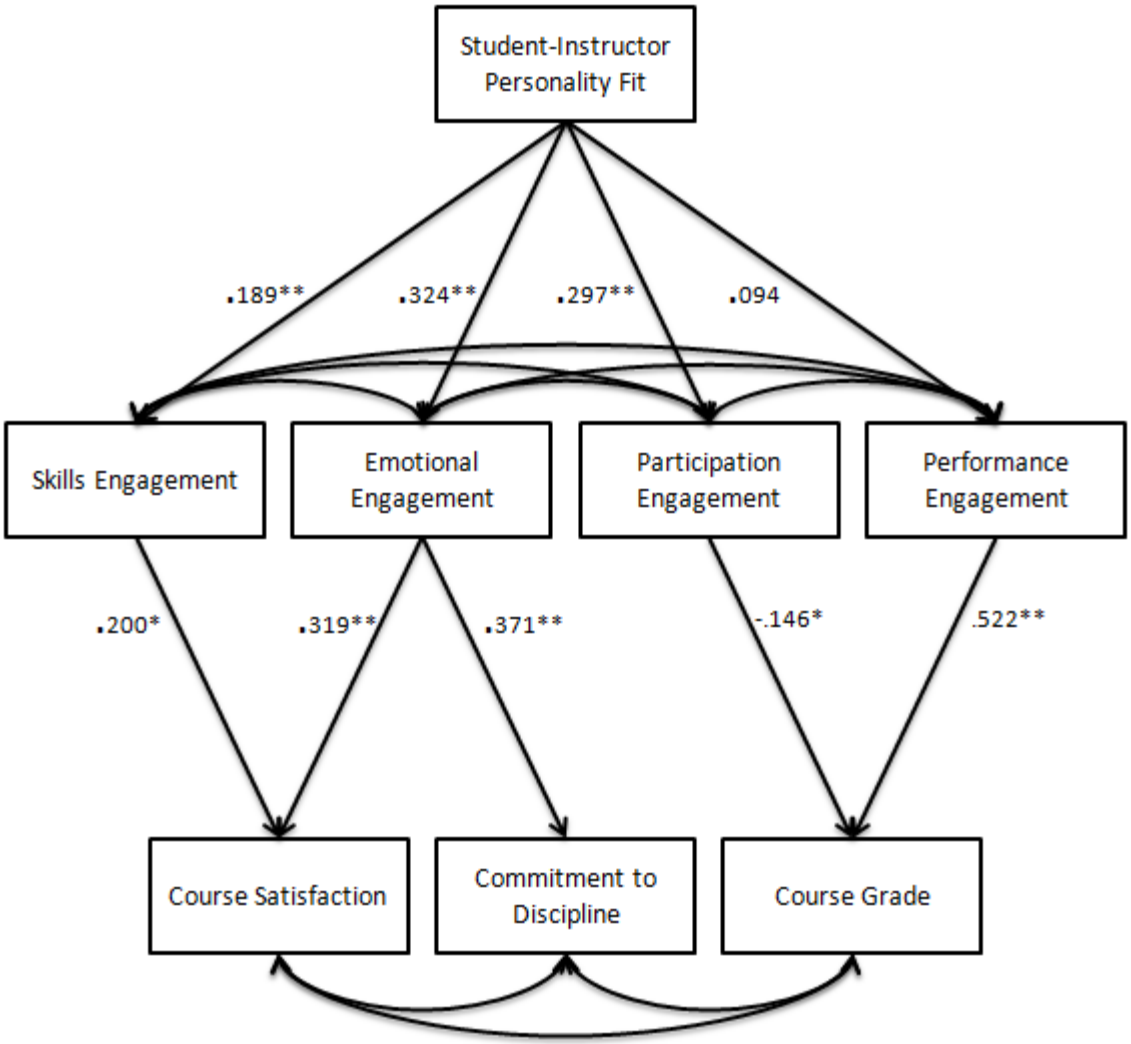

Figure 3. Statistics are standardized path weights for the second alternative proposed model of student engagement as a mediator of student-instructor personality fit and student course outcomes. ** $p < .05$, two tailed; ** $p < .01$, two-tailed.*

Appendix A

Institutional Review Board Approval

Appalachian
STATE UNIVERSITY

INSTITUTIONAL REVIEW BOARD
Research and Graduate Studies
ASU Box 32068
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Web site: http://www.orsp.appstate.edu/compliance/irb/index.php
Email: irb@appstate.edu
Federalwide Assurance (FWA) #1076
IRB #00001458

To: Shawn Bergman
Psychology
CAMPUS MAIL

From:_____
Lisa Curtin, Institutional Review Board

Date: 8/25/2009

RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)

Study #: 10-0019
Study Title: Student-classroom fit, student engagement, and satisfaction and performance outcomes.
Submission Type: Initial
Expedited Category: 7

Approval Date: 8/25/2009
Expiration Date of Approval: 8/24/2010

This submission has been approved by the Institutional Review Board for the period indicated. It has been determined that the risk involved in this research is no more than minimal.

Investigator's Responsibilities:

Federal regulations require that all research be reviewed at least annually. It is the Principal Investigator's responsibility to submit for renewal and obtain approval before the expiration date. You may not continue any research activity beyond the expiration date without IRB approval. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.

You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented. Should any adverse event or unanticipated problem involving risks to subjects occur it must be reported immediately to the IRB.

CC:
Timothy Huelsman, Psychology
Jacqueline Bergman, Management

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Appendix B

Questionnaire Items

Student Course Engagement Questionnaire

1. Making sure to study on a regular basis.
2. Putting forth effort.
3. Doing all the homework problems.
4. Staying up on the readings.
5. Looking over class notes between classes to make sure I understand the material.
6. Being organized.
7. Taking good notes in class.
8. Listening carefully in class.
9. Coming to class every day.
10. Finding ways to make the course material relevant to my life.
11. Applying course material to my life.
12. Finding ways to make the course interesting to me.
13. Thinking about the course between class meetings.
14. Really desiring to learn the material.
15. Raising my hand in class.
16. Asking questions when I don't understand the instructor.
17. Having fun in class.
18. Participating actively in small-group discussions.
19. Going to the professor's office hours to review assignments or tests or to ask questions.

20. Helping fellow students.
21. Getting a good grade.
22. Doing well on the tests.
23. Being confident that I can learn and do well in the class.

Student-Instructor Personality Fit Questionnaire

1. My personality is very similar to my instructor's personality.
2. My instructor's personality is basically the same as my personality.
3. My instructor and I have opposite personalities. (R)
4. There is a good fit between my personality and the personality of my instructor.
5. My personality is not a good fit with the personality of my instructor. (R)
6. My instructor's personality fits well with my personality.

Student Satisfaction 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.

Student Commitment Questionnaire

1. How likely is it that you will major in Psychology?
2. How likely is it that you will enroll in another psychology course?
3. I think the field of psychology is an important discipline.
4. I think the field of psychology is very interesting.

Vita

Matthew W. Lackey was born in Raleigh, North Carolina. He graduated high school from North Forsyth High School in Winston Salem, North Carolina. Mr. Lackey earned a Bachelor of Arts degree in Psychology from the University of North Carolina at Chapel Hill in May 2008. He then went on to receive a Master of Arts degree in Industrial-Organizational Psychology and Human Resource Management from Appalachian State University in May 2010. During the course of his graduate education Mr. Lackey participated in internships in human resources at Allegacy Federal Credit Union in Winston Salem, North Carolina and Blue Cross and Blue Shield of North Carolina in Durham, North Carolina.

Following his education Mr. Lackey intends to pursue a career in external human capital management consulting.