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Perceived fit with an academic environment: Attitudinal and behavioral outcomes

Neal Schmitt [a,*], Frederick L. Oswald [a], Alyssa Friede [b], Anna Imus [a], Stephanie Merritt [c]

[a] Department of Psychology, Michigan State University, E. Lansing, MI 48824-1116, USA
[b] Department of Management, DePaul University, 1 East Jackson Blvd, Chicago, IL 60604, USA
[c] Department of Psychology, University of Missouri, St. Louis, MO 63121-4499, USA

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Abstract

Because person–organization fit relates to important outcomes, and because fit is a time-dependent process, there exists a need to model longitudinal data related to fit. In a multi-university sample ($N = 1174$), we tested hypotheses concerning person–organization fit and various behavioral and attitudinal outcomes; correlations between changes in these variables over time, and the correlates of these changes. Using autoregressive modeling and latent growth curve modeling, results indicated that academic fit leads to academic satisfaction, which in turn leads to turnover intent, and to a lesser extent GPA and class absenteeism. Changes in academic fit correlated highly with similar changes in satisfaction and GPA and with opposite changes in turnover intent. Academic satisfaction did not correlate with subsequent organizational citizenship behavior (OCB) as predicted; changes across these domains were significantly related, but were small. Consistent with our hypotheses, Realistic interests correlated negatively with changes in academic fit and satisfaction. Investigative interests were correlated positively with changes in fit and initial satisfaction levels. We conclude by discussing implications, limitations, and future research concerning the longitudinal analysis of person–organization fit.

Keywords: Academic satisfaction; Realistic and investigative interests; College-student outcomes; Autoregressive model; Latent growth model; Fit

1. Introduction

The fundamental idea that individuals' fit with their environment has a subsequent impact on their attitudes and behavior is a notion that the psychological research literature has supported for decades (e.g., Kristof-Brown, Zimmerman, & Johnson, 2005; Edwards, 1991). The present study adds to this literature base by examining the notion of person–environment fit not as a static process but as a process that unfolds over time; we measure, model and analyze longitudinal data to improve our understanding of person–environment fit as

* Corresponding author. Fax: +1 517 432 2476.
E-mail address: Schmitt@msu.edu (N. Schmitt).

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a dynamic process. Person–environment fit (PE fit) has been defined by Kristof-Brown et al. fundamentally as the "compatibility between an individual and a work environment that occurs when their characteristics are well matched" (p. 281). General types of fit include complementary fit and supplementary fit (see Kristof, 1996; Muchinsky & Monahan, 1987), with complementary fit referring to a reciprocal relationship, where individuals and organizations have something of value to offer one another. For example, an individual may provide mechanical skills to an organization seeking those skills; in return for this, an organization provides the individual with rewards they seek (e.g., salary, job autonomy). Supplementary fit refers to the similarity or alignment between individual and organizational values or personality-related characteristics. For instance, both the individual and the organizational culture value diversity. Benefits to individuals and organizations may accrue through this similarity or indirectly as a result of it. Kristof-Brown et al. define a variety of ways one can achieve fit and describe four major types of PE fit that may be considered: person–job fit, person–organization fit, person–group fit, and person–supervisor fit. The authors also acknowledge the additional complexity of considering the substantive domains of content by which to assess fit. Indices of fit have been derived from various psychological domains. There is a large body of career and vocational literature that historically focuses on the degree to which an occupation fits individuals' interests (e.g., Holland, 1985; Oswald & Ferstl, 1999), desired rewards (e.g., Dawis & Lofquist, 1984), personal values (e.g., Cable & Judge, 1996; Schneider, Goldstein, & Smith, 1995), and level of ability and skill (e.g., Gottfredson, 1986; McCormick, Jeanneret, & Meecham, 1972; Reeve & Heggestad, 2004; Wilk & Sackett, 1996), either alone or in combination. Kristof-Brown et al. provide a meta-analysis of the relationships between fit indices defined in terms of these domains and a set of outcomes defined as pre-entry (e.g., firm attraction and job acceptance) and post-entry (e.g., withdrawal, performance, strain). By comparison, previous reviews of the literature on fit (Edwards, 1991; Kristof, 1996; Verquer, Beehr, & Wagner, 2003) have either been qualitative or limited in scope.

The comprehensive and quantitative nature of the Kristof-Brown et al. review (2005) allowed for more precise statements about the nature of fit and its relationship with important organizational outcomes. First, most of the relationships examined were practically significant, and credibility intervals around estimates did not include zero, with the latter point supporting the notion that validities across situations and studies are generally in the same direction as the overall meta-analytic estimate. After correcting for measurement error variance, correlations for person–organization fit with job satisfaction (.44, $k = 65$), organizational commitment (.51, $k = 44$) and intent to quit ($-.35$, $k = 43$) were moderately large. The correlation of person–organization fit with overall performance was near-zero (.07, $k = 22$); fit-performance correlations were higher when performance was distinguished by task performance (.13, $k = 17$), and contextual performance (.27, $k = 13$). Correlations of person–organization fit with tenure (.03, $k = 28$), turnover ($-.14$, $k = 10$), and withdrawal ($-.05$, $k = 7$) were smaller. Two other recent meta-analytic reviews by Hoffman and Woehr (2006) and Arthur et al. (2006) provide correlational results that parallel those of Kristof-Brown et al. (2005). Thus, given previous definitions of supplementary and complementary fit, and given the two relevant meta-analytic correlations between fit and satisfaction, which are large but nowhere close to unity after correcting for measurement error, the fit and satisfaction constructs, at a general level, appear to be both conceptually and empirically distinct. In fact, in a sample of salespeople across multiple organizations, Cyr and Westerman (2004) found good empirical support for a mediated model, where person–organization fit on personality and values predicted job satisfaction, which in turn predicted intent to remain in the organization, even after statistically controlling for race, gender, ability and age.

Based on a similar mediation model, where satisfaction mediates the relationship between fit and important outcomes, this paper proposes a number of hypotheses about the nature and impact of fit and then tests them in a multi-institution college student sample. We believe that the literature demonstrating the impact of fit in the employment context generalizes quite readily to the college-student situation. In fact, much of the person–organization fit literature in the vocational area involves the relationship between choices and characteristics of college students or students transitioning into college on college outcomes (e.g., fraternity and sorority membership on cognitive development, Pike, 2000). The present study investigates the degree to which person–organization fit influences academic satisfaction in the near term and various behavioral outcomes in the long term. Although the motivational and work contexts of employers and students differ in many respects, there are also many important similarities from a psychological perspective: variables of interest in the employment context—such as organizational citizenship behaviors, commitment and attraction as well as intent to quit and organizational withdrawal—are directly translatable or have analogs in the academic

context as well. In addition, grade point average provides an overall performance index as reasonable and consequential as any supervisory rating in the employment context.

In the case of both pre-entry and post-entry outcomes, Kristof-Brown et al. (2005) reported that the relationships between person and organization fit and attitudes (e.g., job satisfaction) were stronger than the relationships with other behavioral or "objective" outcomes (e.g., salary; also see early empirical results by (Bretz & Judge, 1994), that are similar). Some of this difference is almost certainly due to method bias effects, given that fit and attitudes are both self report, and the sources of most other outcomes were not self report. The fact that much of the past literature is based on cross-sectional data likely makes the method bias explanation an even greater concern. However, Kristof-Brown et al. point to another potential explanation: Many times people cannot act on fit perceptions due to a variety of personal and situational constraints, including the inability to find a new position, a spouse's employment in a local area, fear of not getting an alternate position, or simple indecision. This makes it likely that attitudes will often be affected by perceptions of fit well before actual behaviors can be changed. This suggests a causal sequence that occurs over time, and thus fit-related questions might be better answered by longitudinal data that, notably, previous studies to-date have lacked. It also suggests the first hypothesis evaluated in this paper, which relates fit to satisfaction and outcomes over time:

H 1. Person–organization fit is correlated positively with subsequent satisfaction, which in turn is correlated with subsequent behavioral outcomes; specifically, a negative correlation with turnover intent and a positive correlation with performance.

H 1a. Linear changes in person–organization fit over time are related to linear changes in satisfaction and performance in the same direction and to linear changes in turnover intent in the opposite direction.

In the meta-analyses conducted by Kristof-Brown et al., person–organization fit was also most highly correlated with contextual performance. Contextual performance often refers to voluntary behavior that goes beyond the usual expectations dictated by formal job descriptions, or in the college setting it refers to voluntary behavior that goes above and beyond the role of student who simply attends class and completes assignments.

There is evidence that people who are dissatisfied tend to be more frequently absent from work (Dalton & Mesch, 1991; Martocchio, 1994; Nicholson & Johns, 1985) though absenteeism is also dependent on group-level factors such as the culture of absence and organizational policies. It should be noted that in many college settings, absenteeism from classes is not without consequence, but there are rarely direct sanctions, and class attendance is completely voluntary. Hence, given that personality-contextual performance relationships tend to be stronger in "weak" situations that allow volitional behaviors to be expressed (Beaty, Cleveland, & Murphy, 2001), we expect to observe stronger relationships between fit with satisfaction and absenteeism in the college setting that are at lest as strong as those observed in an employment context. This logic leads to a second longitudinal hypothesis:

H 2. Person–organization fit is correlated positively with subsequent satisfaction and in turn, satisfaction is correlated negatively with subsequent absenteeism.

H 2a. Person–organization fit changes are correlated negatively with changes in absenteeism.

Organizational citizenship behavior (Organ, 1988, 1997) is a type of positive contextual performance found to be correlated positively with job satisfaction (Schnake, 1991). Behavior that supports the university (which is the organization in this instance), such as working on university-sponsored community events, helping with the orientation or tutoring of new students, and engaging in fund raising activities are behaviors that certainly do not contribute directly to a student's GPA, but in the aggregate at least, are very important to most colleges and universities. Many if not most university mission statements state that they seek to develop students who are well rounded, community-oriented, and "team players." Our hypothesis regarding organizational citizenship behavior is the following:

H 3. Person–organization fit is correlated positively with subsequent satisfaction, and satisfaction, in turn, is correlated positively with subsequent organizational citizenship behavior.

H 3b. Changes in person–organization fit are paralleled by changes in satisfaction and organizational citizenship behavior in the same direction.

As alluded to previously, the content of various indices of person–environment fit has varied across research studies. Specific to this study, we operationalize fit as the degree to which students feel that their sense of what is academically important to them is consistent with their perception of what their university and professors value. Certain aspects of fit are likely to vary across institutions that differ in the nature of their missions, faculty and staff, and student bodies. However, the aspects of fit that are of interest in the present research deal with things that are likely to be shared across students at different institutions such as the perceived need for competent professors, course availability, and having classmates with similar academic interests. The type of students and type of professors, courses, and classmates may well differ across colleges, in line with an attraction–selection–attrition model (Schneider et al., 1995), but even so we argue that the phenomenon of person–organization fit would still be the same across colleges. Specific aspects of the college environment may moderate general person–environment fit relationships, but the focus of our research and the available data preclude these more refined analyses across institutions.

1.1. Correlates of change in fit and satisfaction

As outlined above, in adapting to a new environment as a college student, perceptions of the types of fit just mentioned are likely to change over time, and such changes should have an impact on subsequent attitudes and behavior. In considering what factors might predict such change, we investigated the role of student interests and personality. The role of interests in determining fit has been investigated and documented over the past several decades; in fact, Holland's Theory of Careers (Holland, 1985, 1997) has decades of research support and is in fact a broad theory of person–occupation fit and person–environment fit. Holland and his colleagues have proposed six basic vocational interests related both to personality and the environment in which individuals work: Realistic, Investigative, Artistic, Social, Enterprising and Conventional. These interests form a hexagon in terms of their similarity and correlations with each other (see Rounds & Tracey, 1993; for a review and examination of the structure of interests). Consistent with the notion that a fit between person and environment is an important determinant of attitudes and behavior, Holland has developed measures of both individuals and environments that reflect the six basic interest patterns.

The present study focuses on Holland's Realistic and Investigative interests, because we believe they are most likely to be central to the perceptions of fit among entering college students, who are likely to be taking mostly general education requirements at their respective universities and then deciding on more specialized courses for their major that are taken later. Those with high Investigative interests will find that their interests are more congruent with the interest of most college professors teaching the early general education classes that are usually required of freshmen and sophomore students. It is our hypothesis that students whose scores on the Investigative dimension are relatively high will feel that required introductory courses in natural and social sciences and humanities fit their interests best. Students who are high on the Realistic dimension are better satisfied by more mobility, activity rather than passivity, and the applications of science rather than theory. Given the nature of the required courses most college students take in their first several semesters, we feel those students with relatively high scores on the Realistic dimension will feel that they do not fit academically. They will feel that these general courses are irrelevant to their real interests. Because majors most attractive to those with high Investigative and Realistic interests differ, we believe that in this initial stage of a students' college career, Realistic and Investigative interests are most likely to generate subsequent changes in their perception of fit. For Investigative interests, perceptions of fit should be related positively to change (high levels of Investigative interests will be associated with positive changes in fit while low levels of Investigative interests will be associated with negative changes in fit) while Realistic interests should be related negatively to changes in fit perceptions. Of the six vocational interests, Realistic and Investigative interests show the highest positive correlations with measures of cognitive ability (Ackerman & Heggestad, 1997), which suggests that both would lead to attract individuals to the college setting; however our sense is that with regard to fit in college, these interests are distinct. Specifically, Investigative interests are more consistent with the course work a student will encounter in their first couple of years in college, whereas strong Realistic interests are related more

to "hands on" types of occupations and will likely produce a sense of misfit with the majority of early academic course work, particularly as the academic work continues over time and the misfit becomes more evident. Hence we propose the following two hypotheses:

H 4. Realistic interest scores are correlated negatively with change in fit and satisfaction outcomes over time.

H 5. Investigative interest scores are correlated positively with changes in fit and satisfaction over time.

In summary, we measured college students' perceptions of fit and academic satisfaction over three time points in the first three semesters of their college experience. We had two major goals. First, we tested the causal notion that fit perceptions lead to satisfaction which in turn leads to various attitudinal, behavioral and performance outcomes. Second, we extended this mediated model by testing the degree to which two interest variables are correlated with changes in fit and satisfaction over time.

2. Method

2.1. Sample

Participants were 1174 incoming first-year undergraduates across 10 U.S. colleges and universities that included large state-schools, highly selective institutions, and historically Black colleges. These students had been recruited to participate in a related data collection effort at the beginning of their college experience, and at that point in time they supplied demographic information and permission to be re-contacted at later dates. They also granted permission for us to obtain their GPA data from university officials. All students were paid $40 to complete the initial measures in 2 h. The total sample size across all 10 schools was 2771. The average age of our participants was just over 18 years; over 97% of our sample was either 18 or 19 years of age. Sixty-four percent of the sample was female, 96% were U.S. citizens, and 94% indicated that English was their native language. Ethnically, this sample was 55% Caucasian, 25% African-American (due to intentional oversampling of this subgroup), 6% Hispanic, 7% Asian, and 7% other ethnicities.

2.2. Time 1, 2, and 3 data collections

Of the original 2771 participants, 2631 (95%) granted us permission to re-contact them in order to solicit their participation in future paid research studies. For our Time 1, Time 2, and Time 3 survey administrations, we contacted all 2631 students and solicited their continued participation. The Time 1 survey was administered in December 2004 (at the end of participants' first semester in college), the Time 2 survey was administered in April 2005 (near the end of participants' second semester in college), and the Time 3 survey was administered in November 2005 near the end of their third college semester. A total of 1234 (47%) students provided useable data at Time 1, 1044 (40%) provided useable data at Time 2, and 904 (34%) provided useable data at Time 3. As described below, missing data imputation procedures provided data for 1174 individuals. Table 1 provides a comparison of the demographics of the initial 2771 respondents to the demographics of the group of people whose responses to the last three waves of data collection were used in our analyses. As can be seen, the final sample with complete data has a smaller proportion of African American students and a correspondingly greater proportion of Caucasians and Asian Americans. The average SAT/ACT scores and high school GPAs of the final sample were higher than those of the initial respondent group. Gender and major breakdowns were very similar across the two sets or respondents.

Because of missing data across the three waves of data collection, we used PRELIS 2.71 to impute missing values for the respondents to the last three surveys. Multiple imputation provided data for analysis purposes for 1174 participants. Using a likelihood function that assumes the missing data structure is conditional only on the variables in the model and not unspecified variables external to the model (i.e., data are missing at random, Schafer, 1997), the expectation–maximization algorithm was used to generate missing values ten times, creating ten data sets. Each data set was used as input to LISREL, and then parameter estimates across each analysis were averaged for the purposes of evaluating the structural models discussed below. Very few data sets are needed to achieve a stable average (Schafer & Grahamp. 166, 2002).

Table 1
Demographic description of respondents to three waves of data collection

Variable	Initial sample	Final sample
Gender		
Male	36%	35%
Female	64%	65%
Ethnicity		
Hispanic American	6%	6%
Asian American	8%	13%
African American	26%	11%
Caucasian	59%	71%
Major		
Undeclared	12%	14%
Business	15%	15%
Engineering	12%	10%
Fine Arts/Humanities	9%	11%
Social Science	17%	16%
Natural Science	17%	20%
Other	17%	14%
SAT/ACT (standardized)		
Mean (*SD*)	.61 (.92)	.98 (.82)
High school GPA		
Mean	3.50 (.43)	3.63 (.36)

Note. $N = 2771$ at Time 1 (beginning of student's first semester); $N = 1174$ for those responding to follow-up surveys.

All recruiting at Times 1, 2, and 3 was conducted via e-mail. For each administration, three to four e-mail communications were sent to the e-mail address provided by participants on their "permission to recontact" forms. The first e-mail was a pre-notice advising participants that they would be receiving a formal invitation to participate in research in the near future. The second e-mail was the research invitation giving details about the survey and compensation, and the third and fourth e-mails were reminders about the survey.

In order to facilitate data collection, we created an Internet-based survey. Participants could complete this survey from any computer with access to the Internet. All aspects of the experimental process, including consent and debriefing, were completed via this web survey. In return for completing our web-based survey at each time point, participants received an electronic gift certificate for $20, which was redeemable at Amazon.com®. In addition, for each administration, all participants were entered into a drawing for an additional $100 cash prize.

2.3. Measures

2.3.1. Fit

Academic fit was measured with a six item scale (see Table 2 for the full set of items). Students responded to the fit items on a five-point Likert-type scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The items reflected person–environment fit items of a supplementary nature related to the academic context. The alpha coefficient of this measure was .75.

We recognize that fit measures are controversial (Edwards, 1991; Kristof-Brown et al., 2005; Meglino & Ravlin, 1998). Direct or perceptual measures of fit as used in this study request that respondents indicate how well they think their characteristics or values match those they perceive accrue to some organization or environment. Indirect measures require that respondents rate themselves and the organization on various fit dimensions. For indirect measures, the organization's characteristics can also be rated by an external observer(s). Degree of fit is then computed using difference scores, interactions, or polynomial regressions. Our approach in this paper is consistent with what we perceive to be a developing consensus in this area that direct

Table 2
Academic satisfaction and academic fit items

Satisfaction

1. All in all, I am satisfied with the education I can get in this school
2. I'm satisfied with the intelligence of my teachers here
3. I'm satisfied with the extent to which my education will be useful for getting future employment
4. I'm happy with the amount I learn in my classes
5. I'm satisfied with the extent to which attending this school will have a positive effect on my future career

Fit

1. The courses available at this school match my interests
2. I know other students here whose academic interests match my own
3. My current courses are not really what I would like to be doing[a]
4. All things considered, my current major suits me
5. I feel that my academic goals and needs are met by the faculty at this school
6. I am able to use my talents, skills, and competencies in my current courses

[a] Item was reverse scored.

and indirect measures are only weakly related (and index different constructs) and that both have value. For example, perceived values congruence has been found to be related to hiring recommendations and decisions, whereas direct measures have not (Cable & Judge, 1997). When researchers are interested in perceptions of fit, as is the case in the study reported in this paper, direct measures are considered appropriate (Edwards, Cable, Williamson, Lambert, & Shipp, 2006; Kristof-Brown et al., 2005).

2.3.2. Satisfaction

Satisfaction with academics at the institution students attended was measured using the same response scale as was used for the fit items. The 5-item academic satisfaction scale is presented in Table 2 The alpha coefficient for the satisfaction scale was .81.

2.3.3. Outcome—GPA

Grade point averages (GPA) were obtained from the registrar's office at each of the 10 universities for each of the participating students' first three semesters (note our data collection occurred at the same point in time that students completed each of these terms). Because admissions policies at the 10 schools were different, students with widely different SAT/ACT scores were admitted; therefore we statistically adjusted students' first-year college GPA using a procedure that College Board employs in assessing the validity of the SAT in similar instances. Specifically, we first standardized the GPA variable within each university. We then regressed the standardized grades across universities on the ability measure (i.e., the summed composite of SAT and ACT scores) along with a set of nine dummy variables representing the 10 colleges and universities. The coefficients for the dummy variables indicate the differences in grades that would be expected for students with comparable SAT scores at the various universities. Grades for students at each school were then adjusted by that school's regression coefficient such that students at universities with higher average SAT scores received a relatively higher adjusted college GPA, and conversely, students at universities with lower average SAT scores received a relatively lower adjusted college GPA. This procedure was performed separately for each of the three semesters at which data were collected.

2.3.4. Outcome—Absenteeism

Skipping classes and being late to classes may be proximal evidence of physical and psychological withdrawal from the university community, which in turn may be correlated with eventual transfer to another college or with dropping out of college entirely. Students answered two items referring to the number of times they had missed classes in the past six months for "avoidable" reasons (i.e., unexcused absences such as for oversleeping) and "unavoidable" reasons (i.e., excused absences such as for personal illness). Because unexcused absences should be more under the volitional control of the student than excused absences, the number of unexcused absences on the part of respondents was used as the outcome of interest. It was assessed

using a single item with five response options ranging from "missed less than five times" to "missed more than 30 times." No internal consistency reliability coefficient can be calculated from this one item, but given the fairly objective nature of the measure, evidence from Johns (1994) that self-report and actual absenteeism correlated .59 among utility employees in the sample who identified themselves, evidence that self reports of college GPA tend to correlate above .90 with actual GPA, and the final fact that students had no motivation or consequence for distorting their reported absenteeism, we felt confident in the psychometric quality and accuracy of this outcome measure. Furthermore, any bias to under-report absenteeism would likely work against confirmation of our hypotheses and empirical results would therefore be conservative.

2.3.5. Outcome—Withdrawal intentions

Students' intentions to drop out or transfer were assessed using two self-report items on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The items were "I intend to be enrolled at this school 6 months from today" and "I intend to transfer to a different school at or before the end of this academic year" (reverse coded). The two items were correlated .73 and alpha for the two-item construct was .84. We had attempted to obtain actual dropout data from these students by recontacting students whose semester grades had stopped being recorded by the registrar. This effort, though conducted in earnest, was difficult and unsuccessful. Thus, the intent to withdraw measure is our focus, with the notion being that withdrawal intentions do predict actual dropout, especially given the specificity of the questions asked.

2.3.6. Outcome—Organizational citizenship behaviors (OCBs)

OCBs refer to non-required behaviors that promote the welfare of the university (Organ, 1988). This measure consisted of a series of 15 five-point Likert-type scales with responses varying from "strongly disagree" to "strongly agree." Example items included "Gone out of your way to make new students feel welcome at school," "Defended your school when other students tried to criticize it," and "Participated in student government or other clubs that try to make your school a better place." Alpha for this scale was .86.

2.3.7. Interest correlates

Participants' vocational interests were assessed using a 56-item measure taken from Prentice-Hall's Career Interest Program (Clark, 2001). This measure is based on Holland's (1985) RIASEC taxonomy. Only responses to the 10 Investigative and 9 Realistic items were used in this study. Participants viewed phrases representing job tasks from each of the six RIASEC dimensions, such as "Refinish furniture" (Realistic), or "Research solutions to environmental problems" (Investigative). Participants rated the extent to which they would like to perform each activity on a five-point Likert-type scale ranging from 1 = Like very much to 5 = Dislike very much. Coefficient alpha for the Realistic Interest measure was .79; the alpha for Investigative Interests was .87. In the sample of 1174 students, 185 would have been classified as Type R (highest scores on the Realistic dimension) and 195 would have been Type I (highest scores on the Investigative dimension). However, our interest was not in analyzing the responses of a particular type of student; in fact, coding an individual's highest score as 1 and the others' scores as 0 would have removed most of the variability on the dimensions of interest. Interest scores were treated as continuous variables in all the analyses described below.

2.4. Data analyses

The scales described above were refined so as to achieve adequate internal consistency reliabilities. In this process, some items were eliminated based on the fact that item total correlations indicated that they did not measure a construct as well as other items in the measure. Resolution of reliability issues prior to structural equation modeling is consistent with the recommendations of Anderson and Gerbing (1988). In addition, measurement invariance across the three time points of measurement was assessed as recommended by Chan (1998). In the latter analysis, we used LISREL 8.7 (Scientific Software, 2004). To compare models, we used the usual chi-square difference test (Bentler & Bonett, 1980) and four indices of overall model fit: The root mean square error of approximation (RMSEA; Steiger, 1990), the standardized

root mean square residual (SRMR), the comparative fit index (CFI; Bentler, 1990) and the non-normed fit index (NNFI; Bentler & Bonett, 1980). In assessing measurement invariance, we confirmed that the nature of the construct measured across time did not change (configural invariance) and that the relationships between indicators of a construct and the construct itself did not change across the three waves of data collection (metric invariance). The invariance analyses are not presented here, but may be obtained from the first author of this paper. All outcome measures were invariant across time, and invariance constraints were retained in subsequent analyses.

The first three hypotheses were evaluated using autoregressive and latent growth models (LGM). The key feature of autoregressive models is that they allow past values of a variable to predict the future value of that variable. Autoregressive models were used to evaluate the cross-lagged effects hypothesized in H1 to H3 (see Cole, Peeke, Dolezal, Murray, & Canzoniero, 1999 for a similar example). The LGM estimates separate "growth" trajectories for each individual case. The mean and variance of the intercepts and slopes summarizes individual trends, and each individual's intercept and slope summarizes his/her initial value and growth over time. Furthermore, in cross-domain analyses, the individual intercepts and slopes from one variable can be correlated with the individual intercepts and slopes of other variables (e.g., Willett & Sayer, 1996) to answer whether the initial status of one variable correlates with the initial status of another variable (e.g., intercept correlations, where intercepts are scaled to the initial time point) or whether change in one variable is related to change in another variable over time (i.e., slope correlations). Intercepts and slopes can also be correlated with other individual differences variables in an attempt to understand what correlates with a variable's initial status and change over time (Willett & Sayer, 1994). Hypotheses H1a to H3a were tested using multivariate LGM (see Chan, Ramey, Ramey, & Schmitt, 2000). Hypotheses H4 and H5 were tested using LGMs that incorporated the interest and personality variables as correlates of the intercepts and slopes of the change trajectories. Occasionally, autoregressive and LGM analyses have been seen as competing versions of the analysis of change, but more recently Curran and Bollen (2001) have argued that they are complementary methods and in fact have proposed an autoregressive latent trajectory model that combines both. For purposes of simplicity in analysis and interpretation and because we had only three waves of data, we employ these two models of change separately in the evaluation of our first three hypotheses.

In our LGM analyses, the first step involved developing a model of change for each variable independently. A series of nested univariate LGMs were fit to the data for each variable. In these models, equality constraints were placed on the factor loadings, reflecting the fact that metric invariance over time had been established, and the residuals associated with the same item across time were allowed to covary. In the second phase of the LGM analyses, we tested multivariate LGMs to assess the degree to which intercepts and slopes of two or more variables of interest covaried. These covariances provided information concerning the extent to which change in one variable coincided with change in a second variable. Their magnitude and statistical significance allowed for a test of Hypotheses 1a to 3a. In the third phase of the LGM analyses, interest and personality variables were incorporated in the model as hypothesized determinants of the intercepts and slopes of fit, satisfaction and the various student outcomes. These analyses provided tests of H4 and H5.

3. Results

In Table 3, we present the means, standard deviations, and intercorrelations of the primary variables at each of the three points in time. Each of the multi-item measures was divided into three parcels to allow for latent variable analyses; item parcels were formed randomly. The correlations in this table provide some preliminary support for our hypotheses: The fit and satisfaction measures are correlated with Turnover Intent and Organizational Citizenship Behaviors (OCBs) at all three time points. Correlations of academic fit and satisfaction with GPA are lower though statistically significant in most instances. As indicated in our description of the measures, coefficient alphas for the multi-item measures ranged from .75 to .90, although reliabilities of the parcels were correspondingly lower. No reliability estimates for absenteeism and GPA data were available, although the past literature and correlational patterns found in the present study both suggest good reliability. Matrices used as input for the structural equation modeling can be obtained from the senior author.

Table 3
Means, standard deviations, and intercorrelations of study variables

	Variable	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.	AFit-1	3.80	.57	1.00																			
2.	AFit-2	3.80	.53	.63	1.00																		
3.	AFit-3	3.82	.57	.53	.61	1.00																	
4.	ASat-1	4.18	.52	.55	.43	.41	1.00																
5.	ASat-2	4.08	.51	.44	.61	.46	.56	1.00															
6.	ASat-3	4.06	.54	.42	.47	.67	.48	.58	1.00														
7.	TI-1	1.49	.80	−.33	−.27	−.24	−.36	−.30	−.19	1.00													
8.	TI-2	1.53	.87	−.24	−.33	−.31	−.26	−.40	−.27	.59	1.00												
9.	TI-3	1.58	.82	−.29	−.31	−.46	−.29	−.37	−.42	.44	.62	1.00											
10.	GPA-1	3.36	.75	.12	.17	.12	.13	.13	.10	−.10	−.18	−.15	1.00										
11.	GPA-2	3.29	.81	.08	.20	.19	.11	.20	.17	−.16	−.27	−.26	.66	1.00									
12.	GPA-3	3.06	.99	.10	.21	.22	.11	.23	.16	−.23	−.43	−.40	.61	.70	1.00								
13.	OCB-1	2.81	.82	.26	.19	.21	.21	.19	.13	−.22	−.21	−.21	−.13	−.05	−.03	1.00							
14.	OCB-2	2.88	.60	.21	.21	.18	.10	.19	.11	−.17	−.23	−.15	−.07	−.06	.00	.73	1.00						
15.	OCB-3	2.87	.62	.23	.17	.27	.15	.18	.22	−.12	−.14	−.23	−.08	−.03	−.02	.73	.72	1.00					
16.	ABS-1	1.43	.28	−.07	−.06	−.03	−.05	−.02	−.07	.00	.02	.00	−.13	−.09	−.11	.00	.00	.03	1.00				
17.	ABS-2	1.77	.95	−.06	−.07	−.05	−.08	−.08	−.06	.01	.04	−.01	−.10	−.17	−.12	−.05	−.05	−.07	.46	1.00			
18.	ABS-3	1.64	.84	−.06	−.07	−.10	−.09	−.11	−.12	.01	.03	.07	−.12	−.18	−.27	.02	.03	.06	.29	.46	1.00		
19.	Real	3.13	.77	−.09	−.05	−.01	−.05	−.04	.01	.05	.03	.02	.04	.06	.04	.08	.02	.08	.09	.03	.02	1.00	
20.	Invest	2.98	.84	−.10	−.06	−.13	−.09	−.09	−.08	.06	.04	.02	−.09	−.08	−.08	.12	.07	.11	.02	.03	.01	.43	1.00

3.1. Results of the autoregressive analyses

The first three hypotheses were evaluated using autoregressive models in which measures of academic fit led to academic satisfaction measures and these measures in turn led to various student outcome variables. Fig. 1 displays the general model, and Table 4 presents the parameter estimates in this model for the various outcomes. In addition, we estimated the construct-to-indicator parameters relevant to the proposed measurement model and the covariances between the fit, satisfaction and outcome constructs at Time 1. Arguments supporting Hypotheses 1–3 suggested the fit → satisfaction → student outcome sequence, but Fig. 1 also indicates that parameters relevant to a reversed sequence of events were also estimated; namely outcomes → satisfaction → fit. To test the degree to which each of these sequences is more empirically plausible, we compared these two sequences to models in which the parameters for the two sequences were constrained to be equal across time points (e.g., Fit1 → Satisfaction2 is equal to Satisfaction2 → Fit1). A significant difference in the chi-square tests associated with these nested models indicates that one causal sequence is better supported by the data than the reverse.

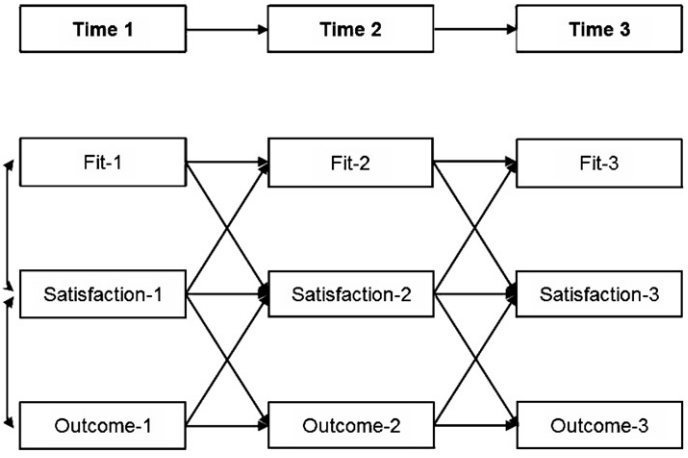

Fig. 1. Autoregressive Model Reflected in Hypotheses 1–3.

Table 4
Results of autoregressive analyses of fit, satisfaction, and outcomes (Hypotheses 1–3)

Parameter estimate	GPA	Turnover intent	Absenteeism	OCB
Fit1 → Fit2	1.32*	1.33*	1.32*	.87*
Fit2 → Fit3	.74*	.70*	.74*	.83*
Sat1 → Sat2	.17*	.18*	.17*	.59*
Sat2 → Sat3	.48*	.53*	.48*	.59*
Out1 → Out2	.66*	.54*	.45*	.90*
Out2 → Out3	.68*	.67*	.46*	.89*
Fit1 → Sat2	.63*	.63*	.63*	.15*
Fit2 → Sat3	.30*	.25*	.30*	.19*
Sat1 → Fit2	−.49*	−.50*	−.49*	−.06
Sat2 → Fit3	.09*	.13*	.09*	−.04
Out1 → Sat2	.02	.02	.03	−.03
Out2 → Sat3	.04	−.02	−.01	.07*
Sat1 → Out2	.03	−.15*	−.07*	.06*
Sat2 → Out3	.11*	−.20*	−.08*	.00
$\chi^2(df)$	1852.74(176)	2277.90(215)	1616.85(176)	2235.53(276)
CFI	.95	.95	.96	.96
NNFI	.94	.94	.95	.96
RMSEA	.09	.09	.09	.08
SRMR	.06	.08	.06	.04

Note. All parameter values are completely standardized. In addition to those parameters, concurrent correlations between Fit, Satisfaction, and Outcome constructs were estimated as well as the construct to indicator parameters that were part of the measurement model.
$p < .05$.
* Refers to statistically significant unstandardized parameter.

3.1.1. GPA and turnover intent: Hypothesis 1

The second column of Table 4 contains the parameter estimates for GPA involving fit and satisfaction. The model including academic fit and academic satisfaction fits the data reasonably well ($\chi^2 = 1852.74$, $df = 176$, $p < .01$; RMSEA = .09; SRMR=.06; NNFI = .94; CFI = .95). Hu and Bentler (1998) recommend values of .08 for the RMSEA index and .95 for the other two indices as indicators of good fit. Parameter estimates linking fit and GPA at different points in time are positive and significant, but those for satisfaction are negative. The satisfaction measures are correlated positively with fit across time, so the negative parameters in the SEM analyses for the satisfaction to fit parameters are suppressor effects resulting from the high colinearity among the measured variables.

In the case of the GPA outcome, the model supports Hypothesis 1 in that academic fit at Times 1 and 2 appears to lead to academic satisfaction at Time 2, but academic satisfaction is significantly related to GPA only from Time 2 to Time 3. Our conclusion is that fit does lead to satisfaction, and that satisfaction has some influence on GPA across the latter two time points in the study.

To test whether fit leads to satisfaction or the reverse, we compared the model summarized in Column 2 of Table 4 with a model in which these lagged correlations were constrained to equality. Chi-square difference tests with one degree of freedom provided significance tests for these parameter comparisons. These tests were significantly different ($p < .05$) in all but one case (satisfaction and GPA for Time 1 and Time 2). Fit does appear to lead to satisfaction rather than the reverse, particularly for the Time 1 to Time 2 period. Satisfaction leads to GPA, but only between Times 2 and 3 and the parameter is smaller than those relating fit and satisfaction (see Column 2 of Table 3).

When turnover intent is the outcome variable, the model involving academic fit and satisfaction and turnover intent fit the data well ($\chi^2 = 2128.86$, $df = 215$, $p < .01$; RMSEA = .09; SRMR=.08; NNFI = .95; CFI = .96). In this case, parameter estimates were consistent with Hypothesis 1; that is, the fit measures at Times 1 and 2 were significantly related to satisfaction at Times 2 and 3, and satisfaction indices were significantly and negatively related to turnover intent at the next data collection. The negative relationship was expected, as this indicates that higher levels of satisfaction are associated with lower levels of turnover intent.

This model of fit, satisfaction, and turnover intent was also compared to models in which parameters relating constructs at contiguous time intervals were constrained to equality. These model comparisons indicated that fit led to satisfaction both in comparing Time 1 and Time 2 parameters and Time 2 and Time 3 parameters. Satisfaction also led to turnover intent, but only between Time 2 and Time 3.

3.1.2. Absenteeism: Hypothesis 2

Fit indices for the Absenteeism model that includes academic fit and academic satisfaction indicate a good fit to the data ($\chi^2 = 1616.85$, $df = 176$, $p < .01$; RMSEA = .09; SRMR = .06; NNFI = .95; CFI = .96). As for the analyses involving turnover intent, fit leads to satisfaction. Satisfaction is negatively and significantly related to absenteeism, but the parameters are relatively small. In all cases, the direction of the effect appears to be consistent with our hypothesis; that is, fit leads to satisfaction which, in turn, leads to less absenteeism.

3.1.3. Organizational citizenship behavior: Hypothesis 3

The Organizational Citizenship model involving academic fit and satisfaction variables also fit the data well ($\chi^2 = 2185.22$, $df = 301$, $p < .01$; RMSEA = .08; SRMR = .06; NNFI = .96; CFI = .97). Parameter estimates were consistent with the notion that fit precedes satisfaction and to a minimal extent that satisfaction leads to Organizational Citizenship Behavior (OCB). The Satisfaction1 to OCB2 parameter estimate was significant, but negative and the Satisfaction2 to OCB3 parameter estimate was small and non-significant. Comparisons of constrained parameters with the model summarized in Column 5 of Table 4 indicated that fit led to satisfaction, but that there was no evidence of the hypothesized relationship between satisfaction and OCB.

Overall, the results of tests of Hypotheses 1–3 and the general model depicted in Fig. 1 indicate a reasonable fit to the data. There is substantial evidence that fit leads to satisfaction, but less evidence that satisfaction leads to the various outcomes considered. The strongest evidence for a satisfaction–outcome relationship was observed for turnover intent, and less so for GPA and class absenteeism. OCBs and satisfaction were not related significantly in the hypothesized direction.

Another question about the relationship between these constructs is represented by Hypotheses 1a to 3a. In these instances, we are examining covariation between change across time in these variables. Data relevant to these hypotheses are examined in the next section.

3.1.4. Latent growth models of the relationships between change in fit, satisfaction and GPA and turnover intent: Hypothesis 1a

The multivariate latent growth model (MLGM) of academic fit, academic satisfaction, and GPA fit the data reasonably well ($\chi^2 = 914.71$, $df = 168$, $p < .01$; RMSEA = .06; SRMR = .05; NNFI = .97; CFI = .98). Parameter estimates from this analysis are contained in the first column of numbers in Table 5. All intercept factor loadings were fixed at 1.0 as is customary in LGM analyses; this along with the slope parameter of 0 at Time 1 leads to the intercept reflecting the initial status of the research participants on the latent constructs. The slope factor loadings were fixed based on the results of the univariate LGM analyses of fit, satisfaction, and GPA. In all cases, linear models appear to be reasonable representations of the slopes of these variables. The parameters of primary interest relative to Hypothesis 1a are the variances and covariances between the intercept and slope factors. Variances of all slope and intercept factors were statistically significant, supporting the existence of individual differences in both the starting point of students and the slope reflecting their change over time. Covariances between intercept and slope parameter estimates for fit and satisfaction were negative, indicating that those individuals who were lower on any of these variables at Time 1 also tended to be the individuals who improved most over the three time points, and those who were higher on any of these variables tended to increase less or in some cases decline. It is worth cautioning that negative covariances between slope and intercept can in part be driven by regression to the mean effects caused by extreme scores at Time 1 (see simulation work by Marsh & Hau, 2002). The covariance between slope and intercept parameters for GPA were positive indicating that those who started with high GPAs also saw their GPA increase most rapidly over the three time periods. Covariances between intercepts across domains ranged from .19 to .95, indicating positive relationships between the initial status of the participants on all three variables. The covariation between the slopes across all three domains was statistically significant and positive. In stan-

Table 5
Results of multivariate latent growth modeling of fit, satisfaction, and student outcomes

Parameter estimate	GPA	Turnover intent	Absenteeism	OCB
Slope → Fit 1	0	0	0	0
Slope → Fit 2	1	1	1	1
Slope → Fit 3	2	2	2	2
Slope → Sat 1	0	0	0	0
Slope → Sat 2	1	1	1	1
Slope → Sat 3	2	2	2	2
Slope → Out 1	0	0	0	0
Slope → Out 2	1	1	1	1
Slope → Out 3	2	2	2	2
Intercept variances				
Fit	1.00*	1.00*	1.00*	1.00*
Satisfaction	1.00*	1.00*	1.00*	1.00*
Outcome	1.00*	1.00*	1.00*	1.00*
Slope variances				
Fit	1.00*	1.00*	1.00*	1.00*
Satisfaction	1.00*	1.00*	1.00*	1.00*
Outcome	1.00*	1.00*	1.00*	1.00*
Intercept covariances				
Fit – Satisfaction	.95*	.95*	.95*	.94*
Fit – Outcome	.19*	−.47*	−.05*	.40*
Sat – Outcome	.22*	−.52*	−.11	.30*
Slope covariances				
Fit – Satisfaction	.95*	.95*	.95*	.95*
Fit – Outcome	.96*	−.57*	−.11	.05*
Satisfaction – Outcome	.16*	−.60*	−.04	.07*
Intercept–slope covariances				
Fit – Satisfaction	−.37*	−.36*	−.35*	−.34*
Fit – Outcome	−.01	.09*	−.04	−.02*
Satisfaction – Fit	−.47*	−.43*	−.48*	−.42*
Satisfaction – Outcome	.16*	.08	−.11*	−.02*
Outcome – Fit	.03	.14*	.05	.05*
Outcome – Satisfaction	−.02	.32*	−.03	.07*
Fit – Fit	−.24	−.25*	−.24	−.26*
Satisfaction – Satisfaction	−.21	−.22	−.23	−.23*
Outcome – Outcome	.53*	−.46*	−.32*	.02
$\chi^2(df)$	914.71(168)	1094.73(208)	871.44(168)	1180.60(297)
CFI	.98	.98	.98	.98
NNFI	.97	.98	.97	.98
RMSEA	.06	.06	.06	.05
SRMR	.05	.05	.05	.05

Note. OCB, organizational citizenship behavior. Slope loadings were fixed based on the results of univariate LGM analyses. Intercept loadings were all fixed at 1.00 and are not presented in the table. Parameter estimates are completely standardized with the exception of the fixed parameters.

$p < .05$.

* Indicates a statistically significant unstandardized parameter estimate.

dardized terms, all the covariances were substantial, indicating that individuals' predicted linear changes in GPA over time were closely paralleled by similar changes in perceptions of fit and student satisfaction.

The model of cross-domain relationships between academic fit, academic satisfaction, and Turnover Intent fit the data very well ($\chi^2 = 1094.73$, $df = 208$, $p < .01$; RMSEA = .06; SRMR = .05; NNFI = .98; CFI = .98). There was significant variability in all slope and intercept factors (see the column of numbers in Table 5). As was true in other models, the intercept and slope parameter estimates for the individual constructs covaried negatively, indicating that those persons who started with high values on these indices changed less than others

who started at lower levels. Covariations between intercepts were statistically significant and indicated a positive relationship between fit and satisfaction and negative relationships between these constructs and turnover intent. Change in slopes over time covaried significantly across all three domains. These findings, particularly those for the cross-domain covariation between slopes, are all supportive of Hypothesis 1a.

Overall, the model of academic fit, academic satisfaction, and Absenteeism fit the data well ($\chi^2 = 871.44$, $df = 168$; RMSEA = .06; SRMR = .05; NNFI = .97; CFI = .98). There were significant differences in all intercept and slope factors. Cross-domain relationships between intercept factors were all statistically significant, but the parameters for the fit–satisfaction and satisfaction–absenteeism relationships were relatively lower. Only the slope factor covariance between fit and satisfaction was significantly related, so while overall this model provided excellent fit to the data, the covariation between parameter estimates provided little support for Hypothesis 2a. Parameter estimates, based on the models of fit and satisfaction for organizational citizenship behavior (OCB), are presented in the last column of Table 5. The model again fit well ($\chi^2 = 1180.60$, $df = 297$; RMSEA = .05; SRMR = .05; NNFI = .98; CFI = .98). There were significant individual differences in all intercept factors and slope factors. Initially, academic fit was related significantly to both academic satisfaction and OCBs, and academic satisfaction was significantly related to OCBs. Cross-domain slope factors of fit and satisfaction, fit and OCBs, and satisfaction and OCBs covaried significantly, but the latter two parameters were quite small (i.e., .05 and .07). Overall there is evidence in support of Hypothesis 3a, though the effects between satisfaction and OCBs are non-supportive.

3.2. Interest correlates of fit and satisfaction growth parameters

MGLM analyses provided tests of Hypotheses 4 and 5. In these analyses, the hypothesized interest correlates of change were included in the model depicted in Fig. 2 as predictors of the intercept and slope parameters associated with the fit and satisfaction constructs. Similar models have been presented by Willett and Sayer (1994, 1996) and tested by Chan et al. (2000) and Schmitt, Sacco, and Chan (1999). The interest correlates were included as hypothesized determinants of slope and intercept factors associated with fit and satisfaction.

The standardized parameter estimates leading to each of the slope and fit latent variables are presented in Table 6. As can be seen, Realistic Interests are correlated significantly and negatively with the fit and satisfaction slopes. The negative relationship with these two slope factors is consistent with the rationale posited in the introduction in that higher Realistic interests will be associated with a decrease in perceptions of fit over time and less of an increase or even a decline in academic satisfaction over time.

Table 5 also provides results for Hypothesis 5. The table shows a significant positive relationship between the Investigative Interests slope and the fit slope as well as initial status on the satisfaction construct. The relationship between slope covariances supports Hypothesis 5.

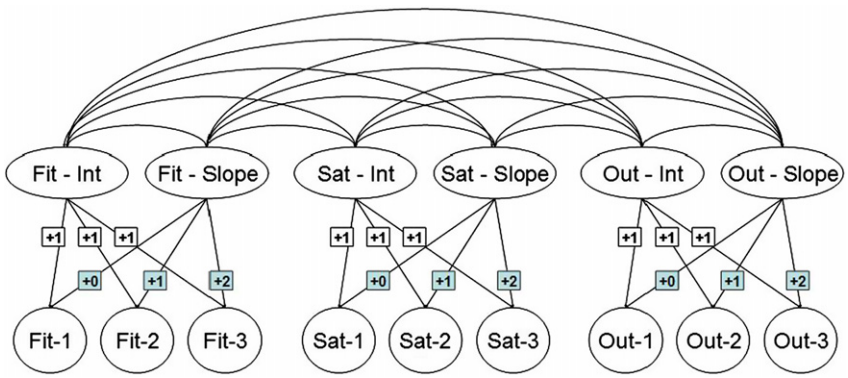

Fig. 2. Latent growth model used to test Hypotheses 1A–3A. All relationships between fit and slope constructs were estimated though only some are presented. In addition, parameters associated with the measurement models for each of the Satisfaction, Fitness, and Outcome variables (with the exception of GPA and Absenteeism) were estimated.

Table 6
Interest correlates of fit and satisfaction intercept and slope factors

Factor	Investigative	Realistic
Fit intercept	.05	.07
Fit slope	.17*	−.21*
Satisfaction intercept	.11*	.02
Satisfaction slope	.05	−.15*

* Indicates a statistically significant standardized parameter estimate.

4. Discussion

The numerous hypotheses and related analytic models in this paper were all aimed at testing the notion that fit would predict future satisfaction, which in turn would predict several college-student outcomes such as GPA, turnover intentions, absenteeism, and organizational citizenship behaviors. Furthermore, instances of this general longitudinal model were not only tested in isolation; they were compared against an alternative model where the causal chain was reversed—from outcomes, to satisfaction, to fit. In this regard, the general notion that fit leads to satisfaction, and satisfaction leads to outcomes, receives support.

The fit–satisfaction–outcome chain was empirically supported for academic fit leading to academic satisfaction, which in turn predicted turnover intent, GPA, and absenteeism. (Hypotheses 1 and 2). Satisfaction was not related to OCBs from Time 2 to Time 3 and negatively from Time 1 to Time 2; both findings are inconsistent with Hypothesis 3. Changes in academic fit and satisfaction led to corresponding changes in satisfaction, GPA, and turnover intent in the hypothesized directions (Hypothesis 1a). Support for Hypothesis 2a relating to changes in absenteeism were not found.

Two substantive conclusions resulted from our empirical attempt to use vocational interest variables to predict initial status and change over time in the fit and satisfaction variables. The first is that the Realistic Interests variable was correlated negatively with changes in academic fit and satisfaction over time. Our interpretation is that higher levels of the more "hands-on" jobs found in the Realistic category would be associated with lower levels of academic fit and satisfaction and decreases in perceived fit and satisfaction over time. Secondly, we found that Investigative interests were positively related to changes in fit over time as well as initial student satisfaction.

Perhaps the clearest result is the general support for our hypotheses that model the academic fit and satisfaction variables. These variables behaved consistently with our hypotheses in that initial status and changes in these variables both covaried highly and in the same direction. It also appears that the data are consistent with the hypothesis that fit leads to satisfaction across time. Even though parameter estimates were smaller, it was also the case that satisfaction appears to lead to three of the four outcomes considered in this research; namely, GPA, turnover intent, and absenteeism.

Insofar as our study examines variables previously studied, we can also compare our results with previous research and theory. The academic fit measures correlated an average of −.30 with turnover intent across all three time points in the study; Kristof-Brown et al. (2005) reported a corrected meta-analytic estimate of this correlation of −.35, and Arthur, Bell, Doverspike, and Villade (2006) of −.25.Their estimates of correlations with actual performance were lower, as were ours; the mean correlation across all three time points reported in Table 2 for academic fit was .09, where Kristof-Brown et al. (2005) estimated this correlation to be .07 and Arthur et al. (2006) to be .15. Our correlations between corresponding measures of fit and satisfaction were generally similar to or higher than the Kristof-Brown et al. and Arthur et al. meta-analytic estimates of .44 and .36, respectively. Regarding fit correlations with OCBs, Kristof-Brown et al. reported a meta-analytic correlation of .26 ($k = 9$), and in another meta-analysis, Hoffman and Woehr (2006) reported an average observed r of .17 ($k = 13$). Our average correlation across three time points was −.18 for academic fit (lower values on our OCB measure indicated higher level of OCB activity). Regarding fit and attendance, correlations tended to be quite low in both instances (absolute values <.10), but negative as expected. Other studies have shown similarly low and non-significant correlations between fit measures and absenteeism (e.g., Adkins, Ravlin, & Meglino, 1996; Meglino, Ravlin, & Adkins, 1989). Overall, our fit measures correlated better with satisfaction and OCB measures than has been true in the past. Correlations with turnover intent and performance were similar

to past research. This is contrary to the results reported by Hoffman and Woehr, who found that correlations between person–organization fit and task performance were actually slightly larger than correlations between fit and OCBs. These two meta-analyses both involved data collected in work organizations; with the few exceptions cited in this paragraph, the results of our study of student outcomes is very similar to the cumulative research conducted in work organizations, although our comparison of results is qualified by the important fact that fit measures differ across studies both conceptually and operationally.

We suggest a few practical applied implications of our findings that may extend themselves readily to other academic institutions as well as work organizations. Given that there is causal support from fit, to satisfaction, to important criteria (more so than vice-versa), then the implication is that fit is the primary driver to be addressed before an individual is to enter any educational institution or organization, if an overarching goal is to obtain more effective outcomes at the level of the individual. Ways to address fit perceptions include providing individuals with realistic previews of the environment to which they are making application and intend to enter. For instance, in college, some entering freshmen may have very little idea about what college-level courses are like, how much latitude they have in choosing among them, and how much work is required in them. A person–organization fit study could conduct such a preview prior to the point of application as a recruiting tool, with the hypothesis that the mean difference in fit level between those who decide to apply and those who do not is greater than the mean difference between those who are not exposed to the preview. It might also be helpful to engage similar-age peers within the institution to serve as role models from the very onset, thereby providing more accurate and continuous assessments of fit. In college, just as at work, informal mentors are useful in providing information on a continuous basis that might supplement a more formal orientation session, and they can provide social as well as professional and psychosocial support (Chao, Walz, & Gardner, 1992). Such informal mentoring is likely to happen anyway, in colleges and organizations, but these institutions could provide guidelines for a mentoring process that assists in the development and evaluation of fit. Another suggestion is more from a personnel selection perspective, and that is to assess individuals' level of fit prior to entering a college or organization. In our study, academic fit was not directly assessed at the point of application to college, and the restriction of range on fit is incidental at most. If variables such as fit, Realistic and Investigative interests were measured at the point of application, scores could at the very least be provided back to the applicant to note that satisfaction and outcomes such as a high GPA, low absenteeism and low likelihood to quit is either more (or less) likely in applicants who have a similar profile of scores. Finally, for those students high in Realistic Interests, it might be advisable to include curricular elements that relate more directly to their long term vocational interests than do the general liberal arts courses that most students are required to take in the first semesters of college.

It is obvious that these practical suggestions are general, and implementing them requires careful attention to previous research that has drawn attention to the importance of the manner in which fit is operationalized (see Edwards et al., 2006). The measures in this study were direct measures of person–organization fit that are best characterized as indices of the view that students had of the degree of match on values dimensions, which was the focus of Chatman's (1989) original theoretical treatise on person–organization fit. This operationalization of fit is consistent with Kristof-Brown et al. (2005) finding that this approach had produced the best estimates of fit-outcome relationships. Because perceptions of the person and environment have shown weak relationships between actual measures of the person and environment (Edwards et al., 2006, pp. 822–823), it follows that various operationalizations of fit are found to be only moderately correlated, which suggests that other forms of fit might contribute incrementally to the prediction of attitudes and behavior. For example, Kristof-Brown et al. (2005) found that the fit between work demands and worker ability was most strongly related to strain and performance outcomes. This would suggest one possible reason for the relatively low correlations with the absenteeism outcomes: If absenteeism is evidence of some level of student strain or stress, then a fit measure that reflects the degree to which a student believes that the academic demands of university life are too great may be better related to absenteeism than was the academic fit measure we used in the present study.

The major contribution of this study lies in the use of a longitudinal data set to examine fit, which we and others (e.g., Harrison, Price, Gavin, & Flory, 2002) have argued is inherently a longitudinal phenomenon. Relatedly, we also provide a methodological advancement by using autoregressive and LGM analyses to model and evaluate research questions related to change in fit over time and the hypothesized relationships between fit and outcomes of importance. Some previous studies have examined the impact of fit on outcomes,

but the number of such studies is small, both in absolute terms and relative to other studies involving fit (see Table 2 of Kristof-Brown et al., 2005). The comparisons between cross-sectional and longitudinal designs indicate there are not large differences in effect size estimates, but effect sizes from longitudinal studies are generally smaller. This study also represents a significant extension of concepts arising from work-related contexts in their application to a student situation, and our results indicate their meaningfulness for academic situations.

Finally, the present study has some obvious limitations. First, the respondent group with complete data was more capable academically (higher average GPA) and different demographically (more Caucasian and less Hispanic and African-American) than the original sample due to the differential attrition of participants. Given this knowledge, we still imputed missing data under missing at random (MAR) assumptions, meaning that our missing data structure is conditional only on the variables in models we tested. The MAR assumption is a traditional one that is difficult if not impossible to test, and we acknowledge that the fact our longitudinal data may violate MAR assumptions. That said, results from imputing missing data did not differ markedly from those conducted under listwise deletion; when parameters differed they were more strongly in the hypothesized direction. Second, all but the performance outcome were self reports of attitudes or behavior. Having a time lag between data collections alleviates some concern about common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), but it certainly does not eliminate it. Self-report bias is perhaps the most important concern for the turnover intent measure, although our correlational results are conservative to the extent that students inflated their responses and did not admit their desire to leave college. An actual measure of turnover may have been preferable; however the relatively small number of students from the original sample who had actually left school precluded a meaningful statistical analysis of actual turnover. Third, even though the longitudinal design provides stronger support for a given causal sequence, the data presented remain correlational. It would, however, be hard to conceive of a field study with a feasible experimental manipulation of fit that also controls for factors external to the aim of the research hypotheses. Researchers must therefore employ various alternate means of strengthening tests of causal attributions including the collection of longitudinal data.

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