

# **Student Mental Health: Effects on Teacher Evaluations and Student Attrition**

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This research combines constructs from teacher evaluation models (D'Apollonia & Abrami, 1997; Gent, 1981; Marsh & Roche, 1997), constructs from student retention models (Tinto 1975) and constructs from a depression scale (Ratloff, 1985) to form a comprehensive model to verify underlying factors leading to student attrition. Key student retention constructs in our model include social integration, institutional commitment, goal commitment, academic integration and intent to persist, all derived from the Tinto model of student retention and used for many years as indicators of likelihood of student attrition at the university at which the study was conducted. Key teacher evaluation constructs in our model include classroom teaching and effectiveness, grading and feedback, and course preparation and organization, all based on a study by Gent and utilized for over 20 years at the university from which data was collected. A structural equation model was formulated to test the comprehensive model. The study used data collected in Spring, 2008 from undergraduate business and psychology majors that resulted in a sample size of 279. Amos 7.0 was used to test the model. In addition to sufficiently high values of fit indices to verify the model, results confirmed the measurement properties including reliability and convergent validity of the constructs and their indicator variables in the model. Results also showed that the mental or depressive state of the student had a direct impact on the perception of the teacher as well as on both the social and academic integration of the student. The depressive state, however, did not moderate the effect of perception of the teacher on academic integration as hypothesized. Both social and academic integration impacted both institutional and goal commitment. In turn both institutional and goal commitment significantly impacted a student's intent to persist at the university. The relevance of these findings to institutional issues is further discussed in the paper.

## **INTRODUCTION**

Colleges and universities, especially smaller, private universities, are seeking ways to reduce student attrition. A large part of this concern can be attributed to the sensitivity of a balanced budget to levels of enrollment. Universities without large endowments that depend upon student tuition to cover the bulk of general operating expenses can easily find deficits looming with fluctuations in student attrition thereby resulting in budget reductions for departments and inability to adjust salaries for cost-of-living increases much less any form of merit pay. Such reductions can also contribute to faculty turnover, which in turn increases cost of faculty recruitment and pay levels. To better control the rate of student attrition, it is important to understand the underlying causes so that they can be effectively addressed. The college at which the study was conducted maintains a Director of Student Retention who uses data collected from matriculating freshmen along with other administrative data to flag students who have a high likelihood of attrition and intervene to reduce the likelihood of attrition. Because the college also collects data on teacher evaluations, though this data is not used by the Director of Student Retention, it is possible to attempt to model the relationship between the two sets of data in order to better understand the dynamics of attrition. Also, with suicide as one of the leading causes of death among college students—and depression a leading cause of suicide—it behooves administrators to intervene in cases where a student shows signs of possible harm to self or others,. The purpose of this study is therefore to specify and empirically test an extended model of student attrition that incorporates these additional variables and constructs so as to better understand the underlying causes of a wider variety of student behaviors that include potential for attrition, but are not limited to such.

## **BACKGROUND**

### **Student Retention Model**

The student retention literature has been developing for over 35 years. Early efforts to employ theory in developing models of dropout/

persistence actually began in 1970 with Spady's work. Spady (1970) used social integration theory to explain persistence/dropout behavior. Building on this effort, Tinto (1985) expanded Spady's work into a more comprehensive model by using both social integration theory and Durkheim's (1951) suicide theory. The key premise in Tinto's (1975) model is that as students are integrated into and become more interdependent with both the academic and social elements of a college or university, the probability that a student will leave the university declines. This interdependence between the student and institution involves developing compatibility between a student's motivation, drive and academic ability and the academic and social characteristics of the college or university environment. In addition, a student's commitment to an educational goal plus a commitment to stay at the school are important factors in the student's decision to persist. In a test of Tinto's model using freshmen subjects, Pascarella and Terenzini (1980) found that institutional and goal commitments had the greatest effect on student retention. Interaction with faculty and faculty concern for student development and teaching had the second and third greatest effects respectively.

Despite the seemingly comprehensive nature of Tinto's model, there were other factors which his model did not consider. Working from a different theoretical base, Bean (1982) proposed an alternative comprehensive model which included external factors. Bean's (1982) model was based on both process models of organizational turnover and the Theory of Reasoned Action (Fishbein & Ajzen, 1975). This theory posits that attitudes toward attrition form from beliefs which are a function in turn of student experience with the school/institution. Attitudes develop that lead to intent to either persist or drop out. A major contribution of Bean is the inclusion of external factors as antecedent constructs. External factors both directly (e.g., finances) and indirectly (e.g., influence of parents and friends mediated by institutional fit) affect intent to persist. Some factors (e.g., finances, opportunities to transfer to other schools) have both a direct and indirect (mediated by intent) effect on behavior. Both models have been tested under a variety of conditions using students from a variety of institutions ((e.g., Bean 1983; Cabrera et al., 1992;

Christie & Dinham 1991; Kember 1989; McConnell Castle 1993; Pascarella & Chapman 1983; Tinto 1988, 1993, 2010; Zajacova, Lynch, & Espenshade 2005). Comprehensive tests using structural equation modeling techniques have provided insight into comparative performance of the Tinto and Bean models (Cabrera, Castaneda, Nora & Hengstler, 1992; Cabrera, Nora, & Castaneda, 1993). Cabrera et al. (1992) found empirical evidence that:

- persistence was mediated through intent for both models.
- the models (i.e., theories) were complementary, not mutually exclusive
- external factors had a significant effect on persistence, supporting Bean's inclusion of them
- two constructs were found to be equivalent across models:
  1. Courses (Bean) = Academic Integration (Tinto)
  2. Institutional Fit and Quality (Bean) = Institutional Commitment (Tinto)

In Bean's model the construct "courses" is indicated by a single variable—satisfaction with the course curriculum—while in Tinto's "academic integration" is indicated by two measures, one of which is satisfaction with the academic experience. In Bean's model the construct "institutional fit and quality" is indicated by four measures, one of which is the feeling the student belongs at that school, while in Tinto's "institutional commitment" is indicated by the single item measuring confidence the student had that the right decision was made to attend the chosen school. In subsequent research, Cabrera et al., (1993), provide a comprehensive statistical test of the nomological validity of an integration of Bean's and Tinto's models. Confirmatory factor analysis (CFA) confirms the measurement properties to be identical as specified in the Cabrera et al., (1992), study. Key findings also include:

- the external factor effects were stronger and more complex than portrayed and confirmed in empirical tests of Bean's model

- intervention efforts cannot be simply? and singly applied, but must combine a variety of support services to respond to both direct and indirect effects observed in the model

### **Teacher Evaluation Model**

There are a large number of studies employing scales to measure student evaluation of teachers (SET) (cf. Marsh & Roche, 1999). One criticism of the scales has been the correlation of ratings with the leniency of grading that may bias responses. The bias, however, may be removed (Greenwald & Gillmore, 1997). Also among the issues faced in studies utilizing these scales is the dimensionality of the SET scales as discussed below.

A number of past studies have demonstrated multidimensionality of evaluation scales. There appear to be at least four different student evaluation of teaching (SET) scales in the literature. One of these is the SEER scale developed by Marsh. It consists of 35 items and is divided into sections identified by a subhead. The SEER scale has been shown to have 9 dimensions (Marsh & Hocevar, 1984), but the dimensionality has been challenged by Abrami and d'Apollonia (1991) who performed a principal components analysis to show that the SEER scale has at most only 2 dimensions. d'Apollonia and Abrami (1997) also found unidimensionality for five other student evaluation scales.

One reason for the finding of a single dimension derives from information processing theory which posits that an overall schema exists in the mind of the student for the individual being rated. This schema functions to reduce cognitive effort and to cue the student's response to more specific items similar to the way a halo effect influences all ratings (d'Appolonia & Abrami, 1997; Trzebinski 1985). Consequently, it is reasonable to assume that distinctions among the various dimensional capabilities of teachers may be masked by this general impression.

### **Mental Health Model - Depression**

A majority of studies of depression have used students as subjects, most likely because they are readily available. One of the most widely used

scales to measure depression is the Beck Depression Inventory (BDI) (Beck, Ward & Mendelson, 1961). This scale has been shown to be highly valid, however, application of the scale has also shown that depression among college students may be relatively transient (Hammen, 1980). Nevertheless, for a fair number of students, depression is more persistent over time. Two important questions relevant to our study are what causes depression in students and how do they cope with it. Pisarik (2009) addresses the causes in a study of the motivational orientation that leads to student burnout. Burnout appears to be lower in students who have a higher level of intrinsic motivation which may appear in the form of goal orientation, a key construct in the student attrition model (Tinto, 1975).

Recent studies have shown a relationship between depression, stress and academic performance (Leino & Kitch, 2005). These investigators report that “The data show that a relatively high percentage of the students had received a lower grade, an incomplete or dropped the class due to depression/anxiety disorder/season affect disorder, which highlights these health problems as important student retention issues” (Leino & Kitch, 2005, p. 71).

Wintre and Bowers (2007 p.220) propose a model adapted from Wintre and Yaffe (2000) of student adaptation and achievement in which the psychological well-being of the student is a key variable in the model. Using the BDI scale, Wintre and Bowers (2007) found that depression had a negative effect on persistence, but that it was mediated by university adjustment. Their findings support past research that also found that depression contributes to student attrition.

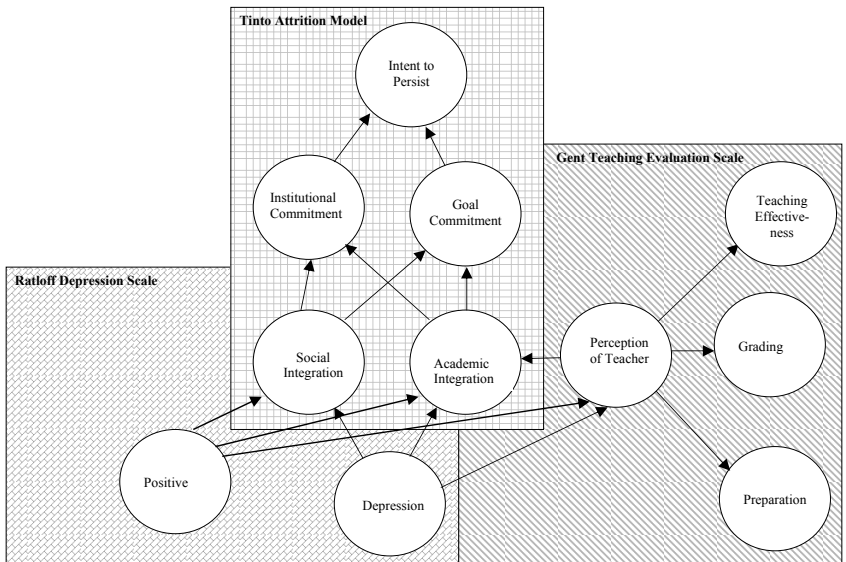
The BDI scale is one of many scales designed to measure depression. In 1977, Radloff developed a depression scale (CES-D) based on previously validated depression scales, including the BDI scale, to measure dimensions of depression. The CES-D scale has been validated in the general population, used extensively over the past 30 years, and has been shown to have high levels of reliability and validity. To provide a better understanding of the nature of student’s psychological condition that may contribute to attrition or, at worst, some act of self-destructive behavior, we incorporate Radloff’s Depression Scale into our study.

**Our Model – Hypothesized Relationships**

Our model incorporating the student retention model, the teacher evaluation model and the depression construct appears in Figure 1. Note that the area in the center contains the student attrition model. The two key constructs leading to UNIntent to Persist, a measure of likelihood of attrition, are Social (SI) and Academic (AI) Integration. Both are mediated by Institutional Commitment and lack of goal commitment, or UNGoal commitment.

The depression state is represented in the model in the left area of Figure 1. Two of the four dimensions found by Ratloff (1977) are used in the model and are represented by the following latent constructs–Depression and Positive (outlook on life). These two constructs in turn are hypothesized to relate directly and indirectly to the retention (Social and Academic Integration) constructs and directly to the teacher evaluation (Perception of Teacher) construct.

**FIGURE 1.** Intent to Persist Model – Integrating Depression, Course Evaluation, Social Integration and Academic Integration.



The teacher evaluation part of the model is shown in the right area of Figure 1. Perception of the Teacher is a second-order construct indicated by the three first-order constructs of (Teaching) Effectiveness, Grading (and Feedback), and Preparation (of Teacher). Perception of Teacher is hypothesized to directly affect Academic Integration.

Academic and Social Integration are hypothesized to directly affect both Institutional and Goal UNCommitment. The term UNCommitment is used because the scaling of the items used to measure Goal Commitment is of the opposite valence relative to scaling of the AI and SI indicators. The same is true of the indicators for the UNIntent to Persist indicators. Both Goal UNCommitment and Academic Integration are hypothesized to directly affect Intent-to-Persist.

## **Methodology**

### ***Operationalization of variables***

Development of the Teaching Effectiveness Scale used in this study began in 1979, when two faculty members undertook a project to develop a student evaluation of faculty instrument for the business school. Uncopyrighted survey instruments from eight other colleges and universities were examined, and items were selected for discussion by faculty. A process of developing new items, rewriting, discussing, and eliminating items ensued, ultimately culminating in a 37-item survey that was administered in the fall of 1979. After a year of pilot-testing and psychometric analysis (Gent, 1981), the instrument was reduced to its current 24-item form. Scales were developed via principal components analysis yielding three principal component or factor composites: classroom teaching effectiveness, grading and feedback, and course preparation and organization.

All constructs, except Depression Health and Perception of Teacher are indicated by two or more reflective indicators. The two depression constructs are measures using the scale items in the CES-D scale (Ratloff 1977). Indicators of Academic Integration, Social Integration, Goal Commitment, Institutional Commitment and Intent to Persist are taken from the scales developed by Miller, Glynn and Neuner (1988).

Because all constructs are represented by reflective measures, we choose to use Amos 7.0 to empirically test our model.

### ***Survey Instrument and Administration***

The survey instrument was developed by incorporating measures taken from the Glynn, Sauer and Miller (2003) study of student retention, the Gent (1981) inventory of survey items used for the past 25 years to measure teacher evaluation, and the scale items for three of the four constructs taken from the study of depression by Ratloff (1977). The survey was created and administered in an online version using CheckBox 4.4 from Prezza.

During the Spring semesters of 2008 and 2009 undergraduate students taking psychology, management and marketing courses at a private college in the northeastern United States were notified by email of the survey and requested to complete it. As an incentive, students were given some form of course credit. Students were instructed to complete the survey for only one course, even though the survey may have been administered in more than one of the courses in which they were enrolled that semester. A total of 307 surveys were completed.

### **Results**

The results of the test of our model using Amos 7.0 are shown in Table 1. The overall goodness-of-fit of the model as indicated by Chi-square is 862.5 with 501 degrees of freedom  $p = 0.000$ . This highly significant Chi-square value indicates a lack of fit. As others have consistently contended and demonstrated, however, the chi-square test is seldom non-significant and therefore a number of other measures of goodness-of-fit have been developed. One set of these is shown in Table 1. IFI = 0.948, TLI = 0.943 and CFI = 0.948 all indicate good fit. These three measures should equal or exceed 0.95 for the model to be considered to have very good fit. All three are close enough to 0.95 to for very good fit. A final measure of goodness-of-fit, namely RMSEA, should be less than 0.50 for the model to have very good fit. For our model RMSEA = 0.40, another indicator of very good fit.

**TABLE 1.** Fit Measures for Intent to Persist Model.

Model	CMIN	DF	P	IFI Delta2	TLI rho2	CFI	RMSEA
Default model	862.540	510	.000	.948	.943	.948	.040

In addition to the very good fit of the overall model, Table 2 provides the significance levels of the indicator variables for the measurement model relating the measured indicator variable to the latent constructs. Significance levels are based on a series of t-tests of the parameters relating the indicator variables to the respective constructs in our model. Table 2 shows that all parameter estimates of the indicator variables are highly significant at the 99% confidence level (CL). This supports the convergent validity of the constructs in our model.

Table 3 and Figure 2 provide the parameter estimates of the structural model relating the latent constructs in our model. As can be most clearly seen in Table 3, all hypothesized relationships except two are significant at the 90% CL. The two non-significant direct relationships are the relationship between the Depression construct and the Perception of Teacher construct and the Depression Construct and the Academic Integration construct. This establishes a high level of nomological validity for our model. The next important result to consider is the sign of the estimated parameters in the structural model.

First consider the relationship between the three teacher evaluation measures—Effectiveness, Grading and Preparation—and the construct Perception of Teacher. Given the valence of the scaling, the relationships should all be positive, and they are.

Second, consider the relationship between both Social (SI) and Academic Integration (AI) and Institutional Commitment. Both should be positive and they are, with Social Integration having a greater impact as can be seen by comparing the standardized regression weights (0.685 for SI versus 0.159 for AI). As expected, given the negative valence of the Goal UNCommitment indicator variables, the parameters relating both

**TABLE 2.** Measurement Model Parameter Estimates.

			Estimate	P
Q28	<---	Social_Integration	1.000	
Q26	<---	Social_Integration	1.372	***
Q40	<---	Goal_UN-Commitment	1.000	
Q38	<---	Goal_UN-Commitment	1.000	***
Q39	<---	UN-Intent_to Persist	1.000	
Q42	<---	UN-Intent_to Persist	.735	***
Q51	<---	Depression	.998	***
Q48	<---	Depression	.932	***
Q43	<---	Depression	.856	***
Q50	<---	Positive	1.000	
Q47	<---	Positive	1.028	***
Q45	<---	Positive	.974	***
Q44	<---	Positive	.783	***
Q5	<---	Grading	1.000	
Q6	<---	Grading	.880	***
Q7	<---	Grading	1.322	***
Q8	<---	Grading	.928	***
Q9	<---	Grading	1.125	***
Q2	<---	Effectiveness	1.000	
Q3	<---	Effectiveness	1.095	***
Q4	<---	Effectiveness	1.647	***
Q10	<---	Preparation	1.000	
Q11	<---	Preparation	1.400	***
Q13	<---	Preparation	1.157	***
Q14	<---	Preparation	.809	***
Q15	<---	Preparation	1.408	***
Q46	<---	Depression	1.000	
Q24	<---	Institutional_Commitment	1.000	
Q25	<---	Institutional_Commitment	1.171	***

TABLE 2. (continued)

			Estimate	P
Q27	<---	Institutional_Commitment	.904	***
Q37	<---	Academic_Integration	.865	***
Q33	<---	Academic_Integration	.869	***
Q34	<---	Academic_Integration	.993	***
Q36	<---	Academic_Integration	1.000	

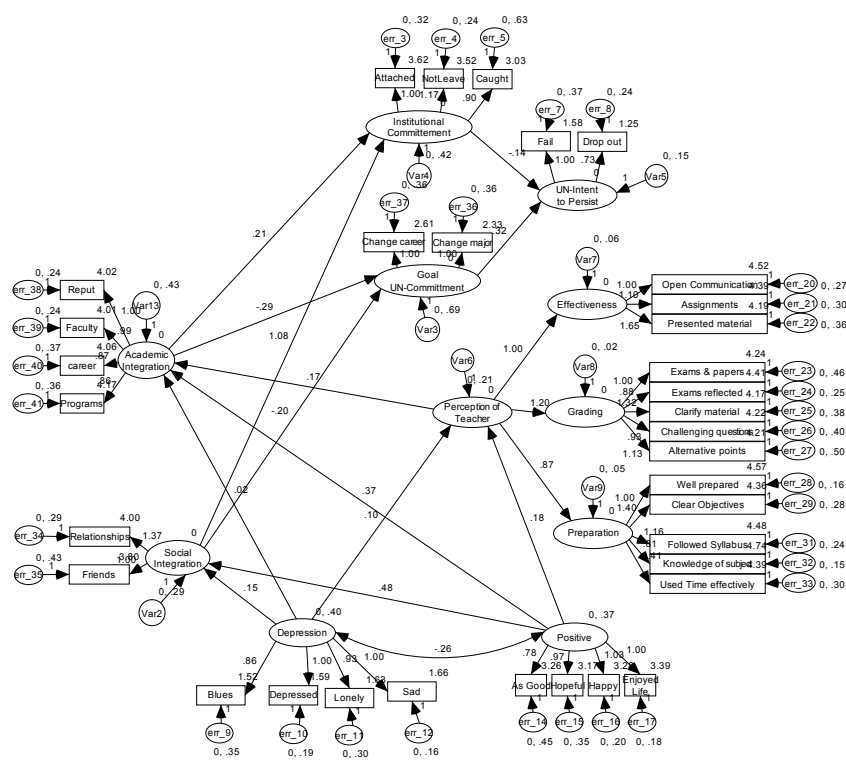
TABLE 3. Structural Parameter Estimates for Intent to Persist Model.

			Estimate	P
Perception of_Teacher	<---	Depression	.095	.126
Perception of_Teacher	<---	Positive	.182	.006
Social_Integration	<---	Depression	.153	.060
Social_Integration	<---	Positive	.485	***
Academic_Integration	<---	Perception of_Teacher	.172	.035
Academic_Integration	<---	Depression	.022	.807
Academic_Integration	<---	Positive	.368	***
Institutional_Commitment	<---	Academic_Integration	.213	***
Institutional_Commitment	<---	Social_Integration	1.082	***
Goal_UN-Committment	<---	Social_Integration	-.195	.025
Goal_UN-Committment	<---	Academic_Integration	-.290	***
UN-Intent_to Persist	<---	Goal_UN-Committment	.322	***
UN-Intent_to Persist	<---	Institutional_Commitment	-.141	***
Effectiveness	<---	Perception of_Teacher	1.000	

TABLE 3. (continued)

			Estimate	P
Grading	<---	Perception of Teacher	1.200	***
Preparation	<---	Perception of Teacher	.867	***

FIGURE 2. Structural Parameter Estimates for Intent to Persist Model.



SI and AI to Goal UNCommitment are both negative, with Academic Integration having a greater impact based on the standardized coefficients ( $-.133$  for SI versus  $-.233$  for AI).

Third, consider the relationship between Institutional Commitment and UN-Intent to Persist. Again, as would be expected, given the negative valence of the indicator variable for UN-Intent to Persist, the structural parameter is negative. Also, the parameter relating Goal UNCommitment and UN-Intent to Persist is positive as would be hypothesized.

Fourth, the relationship between the construct Positive, which measures the general positive outlook on life, is positively related to SI, AI, and Perception of Teacher. Given that Perception of Teacher is directly, positively related to AI indicates both a direct and indirect effect of Positive on AI. This emphasizes the role of the teacher in contributing to the AI of the student as well as the role of the student's attitude in evaluation of the teacher/course.

Finally, the one result that is counterintuitive is the finding of a positive relationship between the Depression construct and the SI construct. Why should those who feel more depressed and negative toward life have a greater level of social integration? This is discussed in the Discussion section that follows.

Table 4 provides the squared multiple correlations (SMC) of the constructs in the model. These values indicate the proportion of variance in the construct that is explained by the empirical test of the model. The low SMCs of Academic Integration, Social Integration, and Goal UNCommitment, but most of all of the construct Perception of Teacher are somewhat perplexing. Such a low SMC for Perception of Teacher may be explained by the fact that it is a second-order construct that is indicated by three first-order constructs, two of which may not be highly related to each other.

## Discussion

The primary contribution of this research is the inclusion of both depression constructs and teacher evaluation measures in a model of student attrition. One question that was answered was how the students' state of depression might influence their desire to persist in college. It appears

**TABLE 4.** Squared Multiple Correlations of Constructs in Intent to Persist Model.

	Estimate
Perception_of_Teacher	.031
Academic_Integration	.118
Social_Integration	.162
Institutional_Commitment	.522
Goal_UN-Committment	.080
Preparation	.772
Effectiveness	.792
Grading	.953
UN-Intent_to Persist	.417

that the more negative or depressed the student feels, the more likely he or she is to feel withdrawn from the college society, perhaps to the extent that there is no relationship between their innermost feelings of depression and the manifestation of these feelings in being able to reflect them in their self-report of their level of AI or their teacher evaluations as is evidenced by the non-significant relationship between Depression and AI or Perception of Teacher. The unexpected positive relationship between Depression and SI may possibly stem from the desire to break out of the depressive slump by seeking out fellow students for companionship and comfort, hence having a sense of SI with their closest peers, if not the institution. In general the lack of relationship between Depression and AI in particular is evidence of isolation from the academic society of the college community. Perhaps it is the last step prior to actual withdrawal: the student may be so depressed as to feel very disconnected. On the other hand, the strong relationships between the Positive construct and AI, SI, and Perception of Teacher indicates how much more integrated the student with a positive disposition feels and how this feelings bubbles over into all aspects of his or her relationship with the academic community.

Another finding that contributes to an understanding of variables that affect attrition is the role of individual courses. The Perception of Teacher construct was formed based on the evaluation of only one teacher in one section of one course in which the student was enrolled at that time. Even though it is but one of several courses that the student is taking that semester, the effects of that teacher in that single course are significant.

Future research needs to address a number of factors that may influence constructs in this model. Ideally one would like to account for all of the factors that influence student attrition. Such a model may be impossible to empirically estimate. Student evaluations of all courses being taken in that one semester would have to be included, and because students in the sample are taking different courses though they may all be together in one of their courses makes it virtually impossible to eliminate the confound of variety of courses and sections of courses.

Other aspects of attrition not considered here include the ever-changing state and environment of the student over time. While freshmen account for the highest rate of attrition at the college from which this sample was drawn, losses of students in their sophomore and junior year also have an impact on the college enrollment and budget. Glynn, Sauer and Miller (2003, p. 46) contend that "Persistence is an evolutionary process that will be influenced to a greater or lesser extent by a variety of variables and constructs that increase or decrease in their relative importance over a student's tenure. At any point in time during a student's educational process the effect of variables and constructs needs to be individually evaluated. For example, a sophomore may be influenced to withdraw for different reasons than a junior."

To address the issue of the student's transient state of depression and its impact on the validity of the model, an alternative methodology may be appropriate. Recently, Ishitani (2008) applied the Event History method (DesJardins, Ahlburg & McCall, 1999; DesJardins, 2003) to the study of the attrition of transfer students over time. The event history model is a reduced-form version of the structural models of student attrition. Essentially it is a regression model in which the time to an event such as

dropping out of college is explicitly modeled mathematically. The Event History method may also be useful in modeling the effect of depression over time, especially because it has been shown to be transient in some students (Hammen, 1980). This is left for future research to address.

Consideration should also be given to the mode of departure in evaluating the factors leading up to departure (Wintre, Bowers, Gordner & Lange, 2006). The mode chosen for departure may or may not be a behavioral response dependent upon the way in which students choose to cope with depression or a sense of lack of integration into the college community. Mode of departure depends upon the reason for departure and includes such options as transferring to another university or college, perhaps because of a major not offered at the current institution, leaving to take a job, leaving for family reasons, dropping out because of grades, temporarily stopping out to earn money to pay for tuition, or being placed on academic probation. Ackermann and Morrow (2008) offer a scale to assess the ways in which students cope with the college environment. This scale includes items that measure how students obtain support from both within and outside the college community. This scale combined with exit mode can help identify the types of cases that are most severe as well as determine their frequency. Subsequent interventions by college personnel may ultimately result in deterring some students from engaging in harmful behaviors and possibly from leaving the university.

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