An Application of the Theory of Planned Behavior to Student Retention

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Abstract

Although student integration theory, a sociologically-based model, has been the dominant explanation for student drop-out from colleges for over 40 years, it has received only mixed empirical support in residential colleges and less in non-residential colleges. Psychological theories of active choice and behavior change offer an alternative explanation for drop-out. In research at a non-residential UK university, structural equation modeling was used in two separate studies to compare a model of student dropout based on student integration theory with a psychological model based on the theory of planned behavior (TPB). In the first study (N=633), a model including TPB variables and two key student integration theory variables (academic integration, and social integration) showed good fit to the data, Although all three TPB variables predicted intention to quit, neither of the two student integration theory variables did so. The TPB variables explained over 60% of the variance in student's intention to voluntarily withdraw from college before completing their studies, and intention to withdraw was associated with actual dropout behavior. In the second study (N=180), using alternative measures of student integration theory factors, a model including both student integration theory and TPB variables had acceptable fit, and over 70% of the variance in intention to quit was explained. But only the TPB variables predicted intention to quit significantly. The benefits of adopting a process-based psychological explanation to student retention are discussed.

Introduction

Student retention is an organizational issue of global significance. Students dropping out of college miss the opportunity afforded by universities to develop their critical thinking skills, will tend to earn less in their careers, often leave university with loans to be repaid; universities

with retention problems suffer a significant loss of income; and for countries, higher education systems which can increase social mobility and provide the specialized intellectual and skills required in the 21st century are undermined by high levels of student attrition (Seidman, 2012, pp. 2-3). The importance of retention in higher education is reflected in the wide range of locations in which research on retention has been carried out in recent years, including Australia (Rubin & Wright, 2017), Canada, (Montmarquette, Mahseredjian, & Houle, 2001), Chile (Santelices, Catalan, Kruger, & Horn, 2016), Croatia (Kruzicevic et al., 2012), Denmark (O'Neill, Hartvigsen, Wallstedt, Korsholm, & Eika, 2011), Germany (Voelkle & Sander, 2008), Italy (Gilardi & Guglielmetti, 2011), Latvia (Paura & Arhipova, 2014), Nigeria (Egwu & Anyanwu, 2010), Papua New Guinea (Mannan, 2007), South Korea (Slick & Lee, 2014), and Thailand (Sittichai, 2012). The figures on student drop-out in North America provide an example of the magnitude of this problem, with over 30% of students failing to complete their college studies, a figure which has remained stable over the last 20 years (Morrison & Silverman, 2012).

Although an extensive literature has accumulated on the possible causes of student drop-out, with the number of studies running into thousands (Berger, Ramírez, & Lyons, 2012), there has been little theoretical development in the area since the 1970s-80s. Furthermore, the development that has taken place (Braxton et al., 2014; Guiffrida, 2006; Tinto, 1993) has generally focused on revisions to the dominant, sociological, *student integration theory of retention* developed by Tinto (1975, 1987) or is based on systematizing and organizing research findings rather than on a set of underlying theoretical premises (e.g., Nora & Crisp, 2012a).

Given that voluntarily dropping out of college involves an active choice and a range of cognitive and behavioral adjustments, modern process-based psychological theories of

behavioral change have considerable potential in explaining why some students complete their studies whereas others drop out. The purpose of this article is to address the underrepresentation of process-based psychological theory on student retention by applying a contemporary and well-established theory of choice and behavioral change: the theory of planned behavior (TPB, Ajzen, 1991).

Sociological Theories of Student Retention

Research on student retention began in the 1930's, and, for the first 40 years, almost all of this work was carried out in North America, was atheoretical, methodologically problematic, and statistically underdeveloped (Pantages & Creedon, 1978). Critiques of this research (Bean, 1979; Gekowsk & Schwartz, 1961; Tinto, 1975) stimulated the development of several theories and models designed to explain student retention. The most influential of these explanations, initially developed by Spady (1970, 1971), and expanded by Tinto (Tinto, 1975, 1987, 1993), and now referred to as the student integration model (Cabrera, Nora, & Castaneda, 1993) is essentially sociological and founded on Durkheim's (1897) theory of suicide. Durkheim proposed that the roots of suicide lie in the failure of some individuals to integrate morally and socially into general society. Spady applied this explanation to student drop-out, and suggested that students leave without completing their studies because they lack social integration within the college at which they are studying and because they obtain poor grades. Tinto (1975) extended this idea; proposing that dropout is a result of a series of events which evolve over time. First, pre-college factors (family background, individual attributes, and pre-college schooling) influence the student's initial institutional commitment to the College at which they are enrolled and their goal commitment towards course completion. Second, the student's institutional and goal commitment is modified by the extent to which they are integrated with the

academic system and the social system in the college. According to Tinto, whether or not a student drops out of college is a function of their continuing goal and institutional commitment and these are influenced both by original levels of commitment and by the extent to which they are socially and academically integrated at college.

Tinto's theory has been highly influential. By the beginning of the 21st century it had been cited 775 times (Braxton, Hirschy, & McCleddon, 2004), and it had reached "near paradigmic status" (Braxton, Milem, & Sullivan, 2000). However, empirical support for Student Integration Theory is mixed. Some elements of the theory have been supported. There is evidence that pre-college factors including the students' family background (e.g. Austin 1964; Lembesis, 1965), previous educational experiences (Davis, 1966; Nelson, 1972) and individual student characteristics such as ability (e.g. Sewell and Shah, 1967; Wegner and Sewell, 1970), personality (Pervin, Reik, and Dalrymple, 1966; Vaughan, 1968), and gender (e.g. Astin, 1972; Cochran, 2014; Cope, 1971) affect the likelihood of dropout. There is also evidence that the student's goal commitment at college, (Austin, 1964; Buklin and Bucklin, 1970; Coker, 1968; Krebs, 1971; Medsker and Trent, 1968; Sewell and Shah, 1967; Spaeth; 1970; Weigand, 1953; White 1971), and in particular commitment to the goal of college completion (Hackman and Dysinger, 1970; Marks, 1967; Medsker and Trent; 1968; Spady, 1970) reduce the likelihood of drop out.

However, evidence that two core constructs in Student Integration Theory, academic integration, and social integration, are key drivers of student retention is weaker. In a rare large-scale study, Pascarella and Chapman (1983) examined 2,326 students from 11 institutions of higher education, examining the impact of constructs central to Tinto's models (student background characteristics, academic integration, social integration, goal commitment, and

institutional commitment), on whether or not students dropped out of college. They found that the influence of academic and social integration over and above student background characteristics, institutional characteristics, whether or not students were living on campus, and the major being studied, though statistically significant, was very modest in size, increasing the correct classification of whether students were retained or dropped out by only 1%. This effect was slightly greater in 4-year residential institutions (2%), than in 4-year commuter institutions (1%), and non-significant in the case of 2-year commuter institutions. After examining the extant research literature, Braxton, Sullivan, and Johnson (1997) concluded that there is no strong support for the claim that either social or academic integration influence retention in non-residential (or commuter) institutions. In residential colleges, they found support for the influence of social integration, but not academic integration, on student retention.

Psychological Models of Student Retention

Although the sociological approach initiated by Spady (1970, 1971) and Tinto (1975, 1993) continues to dominate theory and research on student retention (Braxton, et al., 2014; Seidman, 2012), a minority of researchers adopt a psychological perspective. Of these, the most common are studies of the impact on retention of stable individual difference variables such as personality traits and cognitive ability (e.g., Alarcon & Edwards, 2013; Grace, 1957; Hannah, 1971; Suczek & Alfert, 1966; Trent & Ruyle, 1965). These studies, suggest there is a significant, but weak, relation between individual difference variables and retention, though they have been criticized for a lack of generalizability (Sharp & Chason, 1978; Tinto, 1993).

An alternative approach to retention has been taken by Bean and his colleagues (e.g., Bean, 1983, 1988, 1990; Bean & Metzner, 1985; Eaton & Bean, 1995; Metzner & Bean, 1987) who derived explanations for student retention by applying ideas and concepts developed in the

organizational and psychological literatures. They have drawn on accounts of employee turnover in organizations (Bean, 1980, 1983), introduced environmental and social psychological variables (Bean, 1983), and applied theory on behavioral coping and approach-avoidance to the student retention context (Eaton & Bean, 1995). Rather than developing a single elaborated account of retention like Tinto (1975, 1987, 1993), Bean and his colleagues proposed and empirically examined several alternative explanations, collectively now referred to as the *student attrition model* (Cabrera, et al., 1993). This approach emphasizes the importance of students' attitudes, their institutional fit, their intention to persist with the course, and a variety of factors external to the educational institution, including perceptions of the opportunity to transfer colleges, and the perception and encouragement of family and friends.

Cabrera and his colleagues (Cabrera, Castaneda, Nora, & Hengstler, 1992; Cabrera, et al., 1993) set out to empirically test an integrated model of retention which draws upon both the student integration *and* student attrition models. They used structural equation modeling to examine the extent to which variables derived from the social integration approach (social integration, academic integration, and institutional commitment), and the student attrition approach (financial attitudes, encouragement from friends and family, and academic success as revealed by grade point average), predicted both intention to persist at college and whether students actually dropped out. The final model indicated that the influence of social and academic integration on institutional commitment was considerably outweighed by the influence of encouragement from friends and family, that the influence of encouragement from friends and family was also the strongest predictor of intent to persist, which was also predicted by institutional commitment. The two variables predicting actual persistence were academic performance as measured by GPA, and intent to persist.

The data underpinning Cabrera et al.'s model therefore provide considerable support for two of the variables central to the student attrition model (support from friends and family, and GPA). Although the student integration model variables of academic and social integration significantly predict institutional commitment, they do so considerably less strongly that the student attrition variable of encouragement from family and friends. Furthermore, encouragement from family and friends predicts the largest number of other variables in the model (four altogether: academic integration, institutional commitment, social integration, and goal commitment).

Cabrera et al.'s data therefore provide more support for *student attrition model* than it does for *student integration theory*. In addition, it suggests that encouragement from friends and family has considerable influence on intention to persist with the course, and that this intention, together with college results (GPA), jointly have considerable influence on whether or not students drop out of college. However, the social attrition model does not explain why by GPA and encouragement from friends and family strongly predict intention to persist, whereas the student's financial concerns have relatively negligible impact on persistence intention. We suggest that the application of the theory of planned behavior (Ajzen, 1991) offers an explanation for this finding.

The Theory of Planned Behavior and Student Retention

The theory of planned behavior (TPB) is based on subjective utility theory (Savage, 1954). Subjective utility theory assumes that decisions and actions are based on a rational evaluation of the probabilities and values of the outcomes associated with alternatives. People are said to make choices which maximize positive outcomes and minimize negative ones. Within the social sciences, the most widely researched incarnation of the subjective utility model is the

TPB (Ajzen, 1991). According to the TPB, the likelihood that someone will engage in an action primarily depends on how his or her intention to perform it (Ajzen, 1991; Fishbein & Ajzen, 1975). This intention is in turn determined by three principal components: positive or negative attitude towards the behavior in question, subjective norms towards the behavior (effectively the subjective social pressure to perform, or not perform, it), and the individual's perceived behavioral control towards the behavior - that is, the extent to which they believe that they can perform it successfully. Perceived self-control is said to be compatible with Bandura's (1977) concept of self-efficacy (Ajzen, 1991). The more positive a person's attitude towards a behavior, the stronger the social norm to complete it, and the more control the individual perceives themselves to have over whether or not they can complete, the greater their intention to engage in the behavior is said to be.

The predictive and explanatory value of the TPB has been investigated in relation to many aspects of social and organizational behavior, including donating blood, using condoms to prevent AIDS, choosing a career, exercising, and wearing a safety helmet, and it has generally received empirical support (Ingram, Cope, Harju, & Wuensch, 2000; Strader & Katz, 1990; Vincent, Peplau, & Hill, 1998). Of particular relevance to the current study, the theory of planned behavior has been used successfully to predict the decisions of African American students (14-17 years old) to complete high school (Davis, Ajzen, Saunders, & Williams, 2002). Davis and his colleagues found that 51% of the variance in intention to stay at school as explained by the students attitude towards completing the current year, subjective norms, and their perceptions of the degree of perceived control they had over whether or not they would be able to complete.

Ajzen and Fishbein (2005) suggest that if the intention is to predict a particular behavior (e.g. going to a lecture) the appropriate attitude to measure in order to predict whether or not people will engage in the behavior is attitude to that behavior. However, if the intention is to predict whether or not people will engage in a variety of behaviors (e.g. go to different lectures, seminars, and tutorials, study at home, go to college libraries, work on and submit assessments), it is the attitude object that is most important. In the case of student dropout there are several such possible objects including attitude toward the course being studied, attitude towards the college, and attitude towards the location of the college (e.g. campus, or town). The relevance of these attitude objects to the student is likely to vary as a function of their age, living circumstances, and the nature of the college. For example, for young students attending a residential university, and away from their parents for the first time, it may be that the critical attitude objects are the university and/or its location. However, for older students living at home, who are studying part-time and only attending the university a few times every month, it seems likely that their attitude to the course they have chosen will be more important than their attitude to the town or college. In the following studies the focus is on part-time predominantly older (over 25 years) students studying part-time in a College located in a city (London, UK), and therefore the chosen attitude object is their course.

Hypothesis 1: A student's intention to stay (rather than drop out) of College will be positively associated with their attitude towards their course.

Besides attitude, the remaining two elements of the TPB, perceived self-control, and social norms, appear closely aligned with the variables found by Cabrera and his colleagues (Cabrera, et al., 1992; Cabrera, et al., 1993) to be associated with student retention: GPA, and encouragement from friends. First, it seems reasonable to assume that there will be a positive

association between the students' college GPA, and their self-efficacy with regard to successful course completion. Second, the more that students perceive their friends to be encouraging them to complete the course, the more that they may perceive that there is a social norm for them to do so – that by failing to complete the course they will be 'letting their friends down'. Based on the TPB, we propose the following:

> Hypothesis 2: A student's intention to stay (rather than drop out) of college will be positively associated with his or her self-efficacy towards successful completion of their course.
>
> Hypothesis 3: A student's intention to stay (rather than drop out) of college will be positively associated with the extent to which they perceive that significant others believe they should complete their course.

Finally, the current study is carried out in the context of a non-residential institution. Given the lack of empirical support for student integration theory in this context (Braxton, et al., 1997), it was anticipated that the TPB would provide a more effective predictor of dropout intentions here.

> Hypothesis 4: TPB will explain more variance in dropout intentions than student integration theory.

Two studies were carried out to assess the four hypotheses set out above. In the first study the student integration model variables of academic and social integration were each measured with a newly-constructed scale. These two scales were deliberately designed to assess academic and social integration independently. In the second study, academic and social

integration were measured with two previously developed and validated scales in which social and academic integration are measured concurrently.

Study 1

The aim of this study is to examine the fit of models based on (a) student integration theory, and (b) the TPB, to data derived from a non-residential college; and to examine the extent to which these two models predict the student's intention to quit college, and their actual dropout behavior measured 18 to 21 months later.

Method

Participants

Participants were students at a non-residential college of higher education in the specializing in the education of part-time, mature, evening students. Their average age was 35.3 years, 57% were female, and 71% classified themselves as white (with the remainder being 'black and minority ethnic'). 44% were undergraduate (others postgraduate), and 31% were studying full-time (others part-time).

Measures

A series of scales were developed to measure variables relevant to the TPB, the student integration theory, and the intention to quit college. Descriptive statistics on the scales are shown in Table 1.

Theory of Planned Behavior: The TPB addresses beliefs that are domain-specific and thus measures relating to the TPB are necessarily developed such that they reflect the domain of interest (e.g., Shukri, Jones, & Conner, 2016). In keeping with guidelines presented in the literature on TPB-related measures (e.g., Conner & Norman, 2005), items were developed in the present study such that they reflected the domain of interest around student intentions to remain

in their chosen course of study. Three three-item scales were developed to measure attitude towards the object (i.e. the course of study), self-efficacy, and subjective norms toward the attitude object. The three items measuring attitude towards the course were designed to examine the extent to which students felt they were on the wrong course (e.g. "The course I am studying at [name of college] isn't right for me"). Those measuring self-efficacy were concerned with the extent to which participants believed they had the necessary ability to complete the course successfully (e.g. "I have sufficient ability to succeed at [name of college]"). The items measuring subjective norms were concerned with the extent to which participants perceived that significant others such as their family and friends, considered that the course should be completed by them (e.g. "Most people whose opinions I value would want me to stay at [name of college] until my studies are finished").

Student Integration Theory: According to student integration theory, between-student interactions are "central to the development of the important social bonds that serve to integrate the individual into the social communities of the college", and "the greater the contact among students, the more likely individual are to establish social and intellectual membership in the social communities of the college" (Tinto, 1993, p. 118). Significant social contact amongst college students is often made through student friendships, and friendships in schools and universities are associated with a sense of belonging to the education institutions in which they take place (Chipuer, 2001; Goodenow & Grady, 1993; Pittman & Richmond, 2007). For these reasons the quality and quantity of a student's friendships with other students, and their sense of belonging to the university, provide useful indices of the extent to which they are socially integrated within the university. Based on this rationale, social integration was measured in this study with two three-item scales – student friendship (e.g., I have made good friends with one or

more other students at [name of college]), and a sense of belonging (e.g., "I feel that I really belong at [name of college]").

According the student integration theory, academic integration is concerned "almost entirely with the formal education of students" (Tinto, 1993, p. 106). The degree of a student's integration with the academic system is directly linked to the degree of "incongruence or mismatch between the skills and abilities of the individual and the level of demand placed on that person by the academic system of the college" (Tinto, 1993, pp. 116-117). If there is a mismatch between the demands placed on a student by the college, and her abilities and skills, she is unlikely to consider her academic progress and development to be satisfactory. Following from this, academic integration was measured using two three-item scales designed to assess the extent to which the student would feel that their academic progress and development was satisfactory: perceived academic progress (e.g., "I feel very positive about my academic progress so far at [name of college]", and academic development (e.g., "I am developing and growing intellectually as a result of studying at [name of college]').

Retention: The extent to which participants believed that they might quit their course of study before completing it was measured with a further three-item scale (e.g. "I am quite likely to quit [name of college] before my studies are finished"). Finally, information about whether or not participants subsequently withdrew from their studies before completing their course was obtained from the university's central administration.

Procedure

A random sample of two-thirds of all first and second year students at the non-residential college in which the study was undertaken were contacted by email in the middle of the second of three terms (or semesters) in the 2015-16 academic year and asked to complete an online

questionnaire. To do so they were offered the incentive of possibly receiving a £100 voucher in a prize draw. Approximately four months later, in the third term of the 2015-16 academic year, the remaining one-third of students were contacted in the same way and offered the same incentive to complete the survey. In total, 633 students, 8% of all of those contacted, completed the survey. This response rate was similar in the second and third terms.

The survey, which was conducted using Qualtrics, required students to respond to every item in order to avoid missing data. Students were presented with the series of statements measuring the student integration theory factors, the TPB, factors, and intention to quit college. They responded to these items on five-point (strongly disagree to strongly agree) Likert scales.

Information was obtained about whether or not each student had dropped out of the college by December 2017 (i.e. 20 months after the first survey, and 16 months after the second survey).

Results and Discussion

The structure of the items on the eight scales was examined with confirmatory factor analysis using MPlus software. Item responses were treated as categorical, and a weighted least squares means and variance (WLSMV) estimator was used (as was the case in all subsequent analyses reported in this article). A model in which the eight sets of three items were specified as factors had acceptable to good fit, χ^2 (224) = 1138.28, p<.001, RMSEA = .080 (90% CI = .076 - .085), CFI = .956 (Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996). This model (as with all structural equation models reported subsequently in this article), was admissible, with no Heywood cases (i.e. no negative variances or standardized covarianes > |1|).

A structural equation model was then used to examine the extent to which TPB and student integration theory factors predicted the students' intention to quit, and actual withdrawal

behavior. To examine the effectiveness of the TPB in predicting retention, attitude towards the attitude object (course of study), self-efficacy (perceived ability), and subjective norms towards the attitude object (the perceived beliefs of significant others towards course completion) were used to predict intention to quit the course, which in turn predicted whether or not the students had actually quit. To examine the effectiveness of student integration theory in predicting retention, perceived academic growth and perceived academic progress were used to predict an academic integration factor, and the academic integration and social integration factors were used to predict intention to quit. The fit of this structural equation model (SEM) was acceptable, χ^2 (256) = 1303.47, p<.01, RMSEA = .080 (90% CI = .076 - .085), CFI = .96. The predictor factors explained well over half of the variance in intention to quit, R square = .61. However, whilst all three TPB factors predicted intention to quit, neither of the two student integration factors did so. The standardized paths for the model are set out in Figure 1.

Forty-three (7%) of the students completing the questionnaire were no longer enrolled at the university 12 months later. The mean intention-to-quit scores of those who withdrew, and those who did not, were 2.25 and 1.53 respectively. This difference was significant t (631) = 6.17, p<.001. A Cohen's d of 0.76 (90% confidence interval 0.68 to 1.32) indicates a large effect size (Cohen, 1988). Hedge's g was also calculated, and this indicated an almost identical effect size.

The model was successful in predicting intention to quit, explaining 61% of the variance in this factor. Hypotheses 1 to 3 were supported with all three TPB variables making a unique contribution in explaining intention to quit. In contrast, and as predicted in Hypothesis 4, the student integration theory factors of academic and social integration fared less well. Indeed, neither of these factors significantly predicted intention to quit. Therefore, consistent with

Braxton , Sullivan and Johnson's (1997) conclusion that empirical evidence does not support student integration theory in the context of non-residential institutions, this theory was not supported here.

Study 2

For Study 1, four new scales were developed to measure the student integration theory factors of academic and social integration. There were two reasons why previously developed scales designed to measure these two variables were not utilized. First, no such previously developed scales are widely accepted and used. Second, with one exception (the Institutional Integration Scales, discussed below), those which have been used in the past have not been subject to modern, and relatively robust, methods of validation such as confirmatory factor analysis.

The Institutional Integration Scales, which were originally developed by Pascarella and Terenzini (1980), consist of four sub-scales: academic and intellectual development, peer-group interactions, interaction with faculty, and faculty concerns for development and teaching. The psychometric properties of these scales have been investigated in several studies (Baker, Caison, & Meade, 2007; French, 2009; French & Oakes, 2004). French and Oakes present the results of a confirmatory factor analysis indicating that two of the scales (academic and intellectual development, and peer-group interactions) measure a factor which they label *Student.* Student is concerned with aspects of social *and* academic integration in relation to peers and the general university environment. The other two scales (interaction with faculty, and faculty concerns for development and teaching) measure a factor labelled *Faculty*. The Faculty factor is also concerned with both academic *and* social integration, this time in relation to members of

academic staff. French and Oakes explain the overlap of social and academic integration in their scales by pointing out that theory and data suggest that academic and social integration may not be mutually exclusive (Mannan, 2001).

Because the Institutional Integration Scales measure social and academic integration concurrently, they were not suitable for Study 1, where the intention was to assess the extent to which social and academic integration independently predict retention. However, Tinto, the originator of student integration, acknowledged that although academic and social integration are conceptually distinct they are also "mutually independent and reciprocal" (Tinto, 1993, p. 119). The Institutional Integration Scales, whilst not measuring social and academic integration independently, arguably provide a more comprehensive coverage of student integration theory than the scales used in Study 1 because they include items which appear simultaneously relevant to both academic *and* social integration at college (e.g. "I am satisfied with my opportunities to meet and interact informally with faculty").

The purpose of Study 2 is to provide a further test of the four hypotheses proposed in this article using a different sample of students, and an alternative measure of social and academic integration: the Institutional Integrations Scales.

Method

Participants

The participants were students at the same non-residential college of higher education as those in Study 1. Their average age was 30.3 years, 67% were female, and 55% classified themselves as white (with the remainder being 'black and minority ethnic'). 52% were undergraduate (others postgraduate), and 54% were studying full-time (others part-time).

Measures

Descriptive statistics on the scales are shown in Table 2. The three sets of three-item scales developed to measure the TPB factors in Study 1 were used again here, the only modification being that the one of the items designed to measure self-efficacy was amended so that it was keyed in the same direction as the other items measuring this factor to improve the factor-item correlation. The final item set is shown in the Appendix. The student integration model factors were measured with the Institutional Integration Scale items recommended by French and Oakes (2004), the only exceptions being that two items (relating to choice of major and whether or not students were dating were omitted as students in the college in which the study was conducted have no choice of major, and are typically considerably older than that which would involve dating, many being married with children), and because the term faculty is rarely use in the college references in the items to "faculty" were replaced with references to "academic staff" . These consist of nine items measuring peer-group interactions, six items measuring academic and intellectual development, five items measuring interaction with faculty, and five measuring faculty concerns for development and teaching.

Because there were a total of 25 items in the Institutional Integrations Scales, and the sample size of 180 was modest, we adopted an item parceling strategy in the present study. Item parceling is a common practice in structural equation modeling where the aim is to reduce the number of parameters required for estimation (Bandalos & Finney, 2001) and as an approach towards improving the distributional characteristics of observed variables (Brown, 2006). Here the items in the Institutional Integration Scales were summarized into six item parcels, with each parcel consisting of the mean score, for each participant, across several items. Specifically, two peer-group interactions parcels were created by taking the mean of two random sets (of five and

four) items from the nine peer-group interaction items; two academic and intellectual development parcels were created by taking the mean of two random sets of four items from the eight in the academic and intellectual development set, one parcel of five items was created by taking the mean of the five interaction with faculty items, and a parcel of five items was created by taking the mean of the five faculty concerns for development and teaching items. The extent to which participants believed that they might quit their course was assessed with the three-item scale used in Study 1.

Procedure

Students attending a lecture (one undergraduate and the other postgraduate) held at the end of the first term (semester) of the first year of their degree course in 2017 were asked to complete a 'paper-and-pencil' questionnaire. None of these students had been present at the college when the Study 1 was conducted. 180 students, 97% of the total, completed the questionnaire. As in Study 1, the students were presented with the series of statements measuring the student integration theory factors, the TPB, factors, and intention to quit college, and responded to these items on five point (strongly disagree to strongly agree) Likert scales.

Results and Discussion

The structure of the nine TPB items was examined with confirmatory factor analysis using MPlus software. A model in which three items specified each of the three TPB scales had very good fit, χ^2 (24) = 42.06, p=.01, RMSEA = .065 (90% CI = .030 - .097), CFI = .989.

The extent to which the student integration theory, and TPB, predicted the student's intention to quit was assessed with a structural equation model. In this model the factor of intention to quit college was predicted with (a) the three TPB factors of attitude towards the attitude object (course of study), self-efficacy (perceived ability), and subjective norms towards

the attitude object (the perceived beliefs of significant others towards course completion), and (b) the two student integration theory factors of Student and Faculty. The Student factor predicted the two peer-group interaction parcels and the two academic and intellectual parcels. The Faculty factor predicted the interactions with faculty parcel and the concern for development and teaching parcel.

The fit of this structural equation model (SEM) was acceptable to good, χ^2 (120) = 273.61, p<.01, RMSEA = .084 (90% CI = .071 - .098), CFI = .955. When alternative (randomly selected) item parcels were used for the peer-group interaction, and the academic and intellectual development, the fit of the model remained acceptable to good. The standardized paths for the model are set out in Figure 2. The model predicted 73% of the variance in the intention to quit factor. All three TPB factors had statistically significant paths to intention to quit, but neither of the two student integration theory factors, Faculty or Student, had statistically significant paths to intention to quit.

The results of supported all four hypotheses. As in Study 1, the three TPB factors of attitude to the course, perceived social norms, and self-efficacy predicted intention to quit, this time with almost three quarters of the variance explained. However, again replicating the results of Study 1, neither of the two student integration theory factors of Student and Faculty, designed to measure the social and academic integration factors of Student Integration Theory, made a significant contribution in explaining variation in the students' intention to quit the college.

General Discussion

To our knowledge, the two studies reported in this article are the first to examine the effectiveness of the theory of planned behavior in explaining student retention in higher education. Both studies, carried out in a non-residential university, strongly supported the utility

of the TPB in predicting students' intention to quit college, and in the first study, where data on actual student dropout was available, the theory predicted this also. In contrast, even though academic and social integration were measured using alternative scales in the two studies, neither of these variables made a significant contribution in models explaining the variance in intention to quit, and nor did either scale directly predict actual dropout behavior in these models.

The application of the TPB here enhances the psychological approach to student retention proposed by Bean and his colleagues (e.g., Bean, 1983, 1988, 1990; Bean & Metzner, 1985; Eaton & Bean, 1995; Metzner & Bean, 1987). Rather than suggesting that the decision to leave college requires a unique form of psychological or sociological explanation, the TPB model situates a student's choice about whether or not to leave college as just one of the many decisions in which they and others way up the pros and cons of engaging in one action or another. Student choice about whether or not to quit college, like many other choices faced be people in their everyday lives (Ingram, et al., 2000; Strader & Katz, 1990; Vincent, et al., 1998) is influenced by their attitude, self-efficacy, and their perception of relevant social norms. This does not imply that objective environmental factors such as family demands, financial difficulties, or poor health are unimportant in influencing whether or not students drop-out of college. Rather, these objective factors are said to influence behavior indirectly by affecting social norms, self-efficacy, and attitudes towards completing the course of studies (Davis, et al., 2002).

In previous research on the student attrition model of student retention (Cabrera, et al., 1992; Cabrera, et al., 1993), student GPA, and the degree of encouragement they experience from friends and family have been found to predict intention to quit college better than their financial concerns. No explanation was offered for this. The TPB provides a theoretical framework to examine these findings because predictor variables can be categorized as those

relating to attitude, self- efficacy, and social norms. Viewed through the TPB framework, GPA, encouragement from friends and family, and financial concerns are not simply predictor variables, they are different types of predictor variables. GPA and financial concerns are relevant to self-efficacy because they are likely to influence the student's belief that they can complete their course successfully. Support from friends and family may influence self-efficacy also, but it may also shape the student's perception of social norms relating to their studies – if they perceive significant others to want or expect them to complete their studies, they will probably want to avoid letting them down.

The TPB may also be used to frame and position the results of much other research on retention. Since the student integration theory of retention was developed nearly 40 years ago, there have been a very large number of often statistically sophisticated empirical studies on student dropout. These have contributed to knowledge by drawing attention to more and more variables that may influence retention, and attempts to synthesize this have clustered these variables conceptually under headings such "environmental", "academic", "background", "social experiences", "campus climates", and "mentoring experiences" (for examples, see Bean & Metzner, 1985; Nora & Crisp, 2012b) with some clusters predicted, without any apparent underlying theoretical justification, to causally influence other clusters in a complex causal pathway leading to the student retention. The TPB offers a framework for organizing and structuring such variables. For example, academic self-efficacy would be expected to mediate the relationships between previous academic experiences and intention to quit college, and mentoring experiences might influence social norms relating to completion, academic self-efficacy, and attitude towards the course.

The psychological model of student retention based on the theory of planned behavior proposed in this article has advantages over the sociologically-derived model of student integration theory. First, the psychological approach benefits from conceptual parsimony and is easier to test. Although academic and social integration are direct predictors of dropout in student integration theory, they are related to a complex set of other variables. Tinto's (1975) student integration theory involves nine separate variables, nine causal pathways, and three proposed associations between variables. In a later version of his theory, Tinto (1993) elaborates his model to include 16 variables, 10 causal pathways, and 10 proposed associations between variables. A revision to the theory by Guiffrida (2006) is even more complex, proposing 20 variables, 10 causal pathways, and 15 associations between variables. The complexity of student integration theory is further increased by the nature of the variables to which it refers because they are positioned at several different levels of analysis, including the individual (e.g. motivational orientation), the social (e.g. cultural norms), and at the interface between the individual and institutional systems (e.g. the effect of university academic systems on the student) (Guiffrida, 2006; Tinto, 1975, 1993). Furthermore, variables relevant to student integration theory (e.g. "intellectual development" (Tinto, 1975), "faculty/staff interactions" (Tinto, 1993) and "family background" (Guiffrida, 2006) are inherently difficult to operationalize. In contrast, the TPB approach to student retention involves only three variables (attitudes, perceived social norms, and perceived control), all at the level of the individual level of analysis. The psychological TPB model is therefore considerably simpler, more ontologically parsimonious, and easier to falsify, than student integration theory.

Second, unlike student integration theory, the TPB approach to student retention can be theoretically integrated with many other accounts of behavior change: student drop-out behavior

is just one of many manifestations of attitudes, norms, and perceived control affecting decisions and behavior which have been studied (Ajzen, 1991; Ingram, et al., 2000; Strader & Katz, 1990; Vincent, et al., 1998). This is because the TPB approach positions student retention not as a fundamentally stand-alone area of theory and research, but rather as one of many other examples of attitudinal and behavioral change in which attitudes, self-efficacy, and perceived social norms play a key role. In contrast, Tinto's model, apart from its close relation to Durkheim's (1897) explanation for suicide, is theoretically isolated, treating dropout as a special event requiring a novel explanation.

Notwithstanding the clear differences between student integration theory and the TPB, it should be noted that when applied to student retention, the attitude, and perceived control components of the TPB are related to Tinto's concept of academic integration. This is because Tinto views the extent to which the student is academically integrated with the college as in part reflecting his or her academic progress (Tinto, 1993, p. 120), as well as other factors such as the extent of contact with academic staff in the context of formal education, in classrooms and laboratories (Tinto, 1993, p. 106). From the standpoint of the TPB, perceived academic progress is likely to influence a student's attitude towards his or her course and self-efficacy towards successful course completion. The conceptual overlap between the academic progress aspects of academic integration (student integration theory), and the attitude object and self-efficacy components of the TPB, is reflected in the significant correlations between the scales measuring these variables in Tables 1 and 2.

Although the studies reported here showed consistent findings across two samples, using two different measures of academic and social integration, it should be noted they were conducted in a single education institution in the UK. Future research could examine the relative

merits of the TPB approach to student retention, and the student integration, and student attrition models, in other colleges (residential and non-residential) and in other countries. In doing so researchers should consider using attitude objects in addition to the course of study (such as the university, and the location of the university) when students have options in relation to these.

Second, the response rate of 8% in Study 1, was low, and it is not possible to discount the possibility that the students sampled differed systematically from those who chose not to complete the questionnaire. In Study 2 almost all of the students attending the lectures at which the survey was administered completed it, though some students were absent from these lectures. Third, the generalizability of the findings are limited by the nature of the items chosen to measure the constructs, though this problem was mitigated by using alternative sets of items to measures the student integration theory factors across the two studies.

Implications and recommendations

We interpret the results of this study as indicating that the TPB offers a promising, psychologically-based, account of student retention. The three factors on which the model is grounded provide a theoretical framework which can be used by to organize and systematize the large number of factors linked empirically with student retention (see, for example, Nora & Crisp, 2012b). Research is now needed to examine the effectiveness of this approach to student retention in other colleges and types of college (including residential ones). An important outcome of the success of the TPB in the research reported in this article is that it suggests novel approaches to improve student retention. If student's tend to drop out of college as a result of having a negative attitude to their course this suggest that institutions might do more to help student's choose the right course for them at the outset, and to make courses appear more enjoyable, stimulating, and worthwhile, after enrollment. If, as evidence suggests here, social

norms are important, steps might be taken encourage a student's family and other significant others to support him or her. And finally, the student's belief that they can successfully complete their studies might be enhanced by steps such as providing more encouraging feedback on assignments, and verbally praising progress in lectures and seminars.

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Table 1

Study 1: Theory of Planned Behavior, Social Integration Theory, and Intention to Quit Scales: Means, Standard Deviations, Coefficients Alpha, and Correlations

	Mean	SD	1	2	3	4	5	6	7	8
1. Attitude object	4.23	0.75	**.85**							
2. Self-efficacy	4.20	0.64	.36	**.79**						
3. Norms	4.16	0.74	.29	.23	**.89**					
4. Belonging	3.43	1.02	.33	.27	.33	**.84**				
5. Friendship	3.37	0.88	.19	.18	.19	.47	**.86**			
6. Perceived progress	3.80	0.76	.39	.53	.27	.51	.30	**.90**		
7. Perceived growth	4.04	0.70	.41	.29	.30	.65	.28	.63	**.81**	
8. Intention to quit	1.58	0.75	-.44	-.34	-.44	-.29	-.10	-.42	-.40	**.83**
9. Actual dropout	.06	.25	-.11	-.14	-.08	-.06	-.01	-.17	-.09	.24

Note: All correlations of .08 and over were significant at the 0.05 level (2-tailed).

Coefficients alpha are shown in bold on the diagonal.

Table 2

Study 2: Theory of Planned Behavior, Social Integration Theory, and Intention to Quit Scales: Means, Standard Deviations, Coefficients Alpha, and Correlations

	Mean	SD	1	2	3	4	5	6	7	
1. Attitude object	4.24	0.74	**.73**							
2. Self-efficacy	4.14	0.62	.20	**.85**						
3. Norms	4.40	0.68	.23	.43	**.83**					
4. Peer-group interaction	3.77	0.46	.11	.27	.23	**.71**				
5. Academic and intellectual development	3.56	0.60	.04	.17	.22	.46	**.81**			
6. Interactions with faculty	2.99	0.80	.13	.02	.04	.41	.36	**.86**		
7. Faculty concerns for development and teaching	3.83	0.64	.11	.08	.20	.52	.42	.41	**.78**	
8. Intention to quit	1.55	0.75	-.46	-.34	-.39	-.12	-.19	-.13	-.14	**.70**

Note: All correlations including and above .17 were significant at the 0.05 level (2-tailed). Coefficients alpha are shown in bold on the diagonal.

Figure 1

Structural equation model of the relations between the theory of planned behavior factors, the student integration theory factors, intention to withdraw, and actual withdrawal. Paths to items, and correlations between factors, are omitted. Non-significant ($p>.05$) between-factor paths are shown with dotted lines.

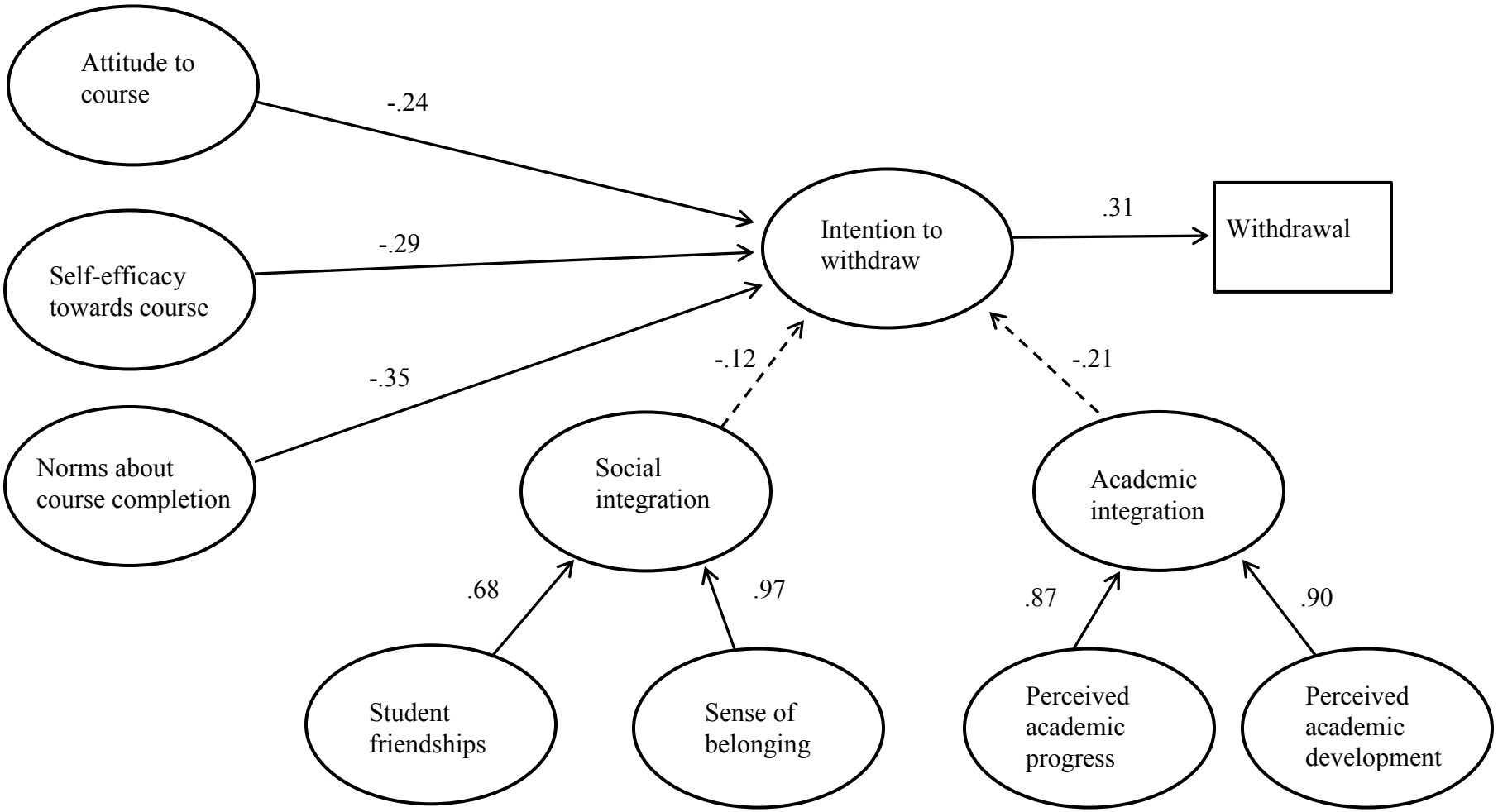

Figure 2

Structural equation model of the relations between the theory of planned behavior factors, the student integration theory factors, and intention to withdraw. Paths to items, and correlations between factors, are omitted. Non-significant (p>.05) between-factor paths are shown with dotted lines.