2006

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Attempting to predict withdrawal from Higher Education using demographic, psychological and educational measures

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Suggested running head: Withdrawal from Higher Education

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Abstract

Demographic, psychological and secondary level examination measures were obtained at the start of undergraduate courses in an attempt to predict first year higher education (HE) withdrawal. As usual, withdrawal was greatest for males. Overall, intrinsic motivation and independent study expectations were better predictors of withdrawal than extrinsic motivation, lack of direction, and psychological health (anxiety and depression) variables. While 23% of the variance in continuance / withdrawal was explained, only 13% of variance was explained when gender and faculty of study were controlled. It is concluded that prediction of withdrawal is easier once students’ behaviours and performance within HE are apparent than it is at the outset of their HE careers. Nevertheless, some suggestions for interventions are made, centring upon the current findings for intrinsic motivation and independent study expectations.
Introduction

The expansion in the number of UK higher education (HE) students over the last decade and a half has resulted in a more socially diverse range of students entering HE. These changes have been particularly evident in the new (post-1992) universities and colleges of HE. With this expansion has come the risk that a larger proportion of students will fail to complete their studies (Yorke, 1999), although national statistics show that ‘continuation rates have remained steady despite the growth of the student population in recent years’ (National Audit Office, 2002, p.13). Nevertheless, HE institutions have come under increasing political pressure to improve completion rates, an emphasis being placed upon institutions’ accountability as publicly funded bodies, and publication of HE ‘league tables’ has acted to increase this pressure.

Premature departure from HE also has important implications for students. For example, it can lead students to have ‘…a sense of failure and inadequacy…’ (McGivney, 1996), to suffer longer periods of unemployment, and to receive lower salaries relative to graduates (Johnes & Taylor, 1991). This said, failure to complete an HE course does not always constitute a negative life event. For example, students may leave a course because they have obtained suitable employment, to take-up a more suitable course or other more suitable training, etc., and 20% of students who leave early return to HE within a year (Johnes & Taylor, 1991; National Audit Office, 2002).

This study sought to identify some of the demographic and psychological factors that are important in explaining withdrawal (both voluntary and, less frequently, at institutional behest because of lack of academic progress). An important feature of the study was its prospective nature: measures were taken on entry to a non-
university HE institution and used as predictors of withdrawal. Thus, unlike retrospective studies (e.g. Davies & Elias, 2003; Ozga & Sukhnandan, 1998; Yorke, Bell, Dove, Haslam, Hughes-Jones, Longden, O’Connell, Typuszak & Ward, 1997) such an approach does not consider the reasons that students give for their withdrawal. However, a prospective approach does enable researchers to consider the feasibility of predicting students’ withdrawal at the start of their HE careers, with the goal of intervening as early as possible to prevent the withdrawal of those identified as being particularly at risk.

A recent summary of the literature concluded that lack of commitment / interest, failure of institutions to meet students’ expectations, mature student status and low academic qualifications, are among the factors connected with student withdrawal (Yorke, 2002), and these factors were considered in the present study. Also, there has been little recent attention paid to the possibility that psychological health may be a predictor of early withdrawal. Therefore, two measures of psychological health (anxiety and depression) were included as possible predictors. Finally, gender differences were considered since a welter of statistics show males to be at greater risk of withdrawal than females (Yorke, 1999). The remainder of this Introduction provides a brief review of some previous literature on the factors considered.

*Psychological health*

Studies of withdrawal emphasising psychological health are quite rare. However, although dated, Szulecka, Springett and de Pauw’s (1987) study of first year
withdrawal provides a useful reference point. These authors found that high scores on the short version of the General Health Questionnaire (GHQ: measuring somatic symptoms of psychological disturbance, anxiety and insomnia, social dysfunction and severe depression) were predictive of withdrawal for non-academic reasons. Based both upon their GHQ data and upon data concerning problematic family relationships and previous personal and familial psychological problems, they concluded that psychological disturbance is likely to be a prominent cause of early HE withdrawal and that psychological counselling may help address this. Bearing this in mind, we considered the psychological health variables of anxiety and depression.

**Motivation and student preparedness**

Again, literature on factors that motivate HE students to enrol on courses is scarce (Jacobs and Newstead, 2000), as is that on motivational factors surrounding continuance and withdrawal (Yorke, 1999). Psychologists have advanced many different theories of motivation (see e.g. Franken, 1998). However, two types of motivation that are particularly relevant to persistence, and therefore particularly relevant to the issue of HE withdrawal, are intrinsic and extrinsic motivation (Franken, *ibid*). In the present context, the former concerns studying for its own sake, because of interest, etc., and the latter studying to enhance job prospects, to obtain a better life-style, etc. Both types of motivation are likely to act as a positive force for learning although they have been associated with different learning styles. Thus, (Entwistle, 1988) noted that intrinsic motivation is associated with a deep approach, involving gaining an understanding of material, critically analysing it and relating it to
previously learned material. On the other hand, extrinsic motivation is associated with a surface learning approach, involving the rote learning of material. Not surprisingly, the better understanding fostered by the deep learning approach leads to superior examination performance (Entwistle, 1988). Nevertheless, historically, studies have tended to support the assumption that students entering HE with either high intrinsic or extrinsic motivation are more successful than those for whom neither of these is true (Beard and Senior, 1980), and recent evidence suggests that lack of intrinsic motivation may be an important factor in withdrawal, a nationwide survey of withdrawing students showing that almost half agreed with the statement ‘The course was not as interesting as I had expected’ (Davies and Elias, 2003). There was also a hint in Davies and Elias’ study that low extrinsic motivation played a part in some withdrawal decisions too; just over a third of people agreeing that they would have liked more careers advice before entering their course. Given these findings, we included measures of both types of motivation as predictors of withdrawal.

Where students enter HE without either high intrinsic or extrinsic motivation they may have entered for reactive reasons and display lack of direction, and the essentially synonymous concepts of reactivity and lack of direction constitute another potentially useful explanation of withdrawal. For example, qualitative work of Ozga and Sukhnandan (1998) shows withdrawing students as being more likely to have entered HE for reactive reasons (e.g. expectations of significant others, because it was the natural thing to do, etc.), than for ‘pro-active’ intrinsic or extrinsic motivational reasons. The data suggested that completion was greater for students entering for pro-active reasons because their more pro-active institutional and course choices led to greater compatibility with their institutions and courses relative to those entering reactively. This said, in a quantitative vein, Sadler-Smith (1996) found that in general
lack of direction scores on Entwistle and Tait’s (1994) Revised Approaches to Studying Inventory (RASI) were not good predictors of Business Studies students’ academic performance. Nevertheless, as a final motivational issue, we examined whether lack of direction is related to withdrawal.

In addition to poor motivation, another reason for disaffection, and ultimately withdrawal, might be erroneous expectations as to what a HE course involves. In particular, one of the main differences between preceding levels of education and HE is the extent to which independent study is expected. Students entering HE with the unrealistic expectation that they will be given all the information needed to be successful, as is often the case at preceding levels, may have problems adjusting to the high degree of independent study expected in HE, and, moreover, such students may feel aggrieved because of the institution’s failure to fulfil their side of an implicit psychological contract (Argyris, 1960). One self-report study has shown such problems as occurring for around one third of students sampled (Lowe & Cook, 2003). Not surprisingly then, the 2002 National Audit Office report singled out the over-reliance on ‘spoon-feeding’ engendered during previous educational stages as a major preparedness factor causing premature withdrawal. Furthermore, the need to develop ideas independently may be at variance with many students’ epistemological beliefs. Here, students believing that knowledge and theories are definitively correct or incorrect and who consider it the role of educational tutors to furnish them with correct knowledge are less likely to complete their studies than those believing that knowledge is dependent upon the perspective taken, is constructed by the individual, and that a tutor’s role is to facilitate the student’s ability to carry out these processes towards achieving an understanding of the issues and concepts involved (Kember,
Thus, the present study included a measure of independent study expectations as a possible predictor of withdrawal.

*Education*

Previous studies have shown that lower A level grades are associated with a greater likelihood of withdrawal and poorer degree classification (Yorke, 1999). Thus, there is evidence that lower entry qualifications lead to academic problems which then result in withdrawal, and the responses of just over half of the respondents in Davies and Elias’ (2003) study suggested that difficulties in keeping-up academically were a factor in their withdrawal. Nevertheless, McGivney (1996) concluded that motivation and institutional support are more important determinants of progression than entry qualifications.

We used GCSE performance (and equivalent O level and CSE performance) as a predictor of withdrawal since the presence of a large number of non-traditional students in the intake of the institution involved meant that many students did not enter on the basis of A levels. The study took account of previous work showing that average GCSE / O level / CSE performance, rather than number of qualifications or total number of points using a points for grades scoring system, is an effective predictor of HE performance in the type of institution under consideration (Charlton, 1997).

*Age*
Although McGivney (1996) stated that reports from some UK HE institutions show that mature students are no more likely to withdraw prematurely than traditional students, recent statistics for England show that mature students are at greater risk of non-completion (National Audit Office, 2002), and therefore we asked whether age is a predictor of withdrawal.

Older students are likely to differ from younger students in a number of respects. They are more likely to be married, have children and be based at home, and will therefore typically have more demands on their time resulting in lesser social integration with other students, greater problems in obtaining academic support, and less study time. If commitment to their studies is low, these external pressures can make them particularly prone to withdraw (Tinto, 1993). On the other hand, because of greater financial commitments, mature students entering HE typically put a greater emphasis upon the employment prospect enhancing element of HE, rather than seeing it as a natural part of the transition to adulthood as is often the case with traditional students (Tinto, *ibid.*). This is one positive factor that may partially counterbalance the previously mentioned negative factors, and, although Tinto’s work concerns the US, recent research suggests that this might apply in the UK too. Here, Ozga and Sukhnandan (1998) concluded that mature students are better prepared for HE than traditional students and have better developed reasons for entering HE, both in terms of interest and in terms of the employment enhancing prospects of HE. Support for the idea that younger students are less well prepared also comes from the finding that wrong choice of course was the largest factor influencing withdrawal of students aged 21 and under in Davies and Elias’ (2003) survey. Ozga and Sukhnandan concluded that mature students tend to withdraw because of either an increased need to be
present at home or because of an increased need to earn more money. Again, this latter point is supported by Davies and Elias (2003) where financial problems were the most prominent factor influencing withdrawal among students aged over 21.

**Gender differences**

A robust and long-standing feature of HE withdrawal statistics is a five percentage-point gender disparity with males being more likely to withdraw. These findings display consistency across UK universities during the 1970s and 80s, polytechnics and colleges during the early 1990s and a mid-90s study conducted in the US (Yorke, 1999). Differences have also been found in the reasons males and females give for withdrawing. For example, a major study involving six HE institutions in North West England found that although there was equality in the extent to which males and females felt that they had made the wrong choice of course, males were more likely to cite the lack of commitment associated with this as an important reason for withdrawal. Males were also more likely to cite financial problems, poor study skills, poor academic progress, finding their studies difficult and a course’s lack of utility in fulfilling their career aspirations as important reasons for withdrawal. Females were more likely to cite health problems (including pregnancy), emotional problems concerning other people, homesickness and the needs of dependants as being important (Yorke et al., 1997).

The above observations hint that motivational problems might be particularly relevant to male withdrawal. However, where gender differences are found, studies generally show greater female intrinsic motivation but greater male extrinsic
motivation (Severiens & ten Dam, 1998). This makes sense given the traditionally greater societal pressure on males to be vocationally successful. But, greater male extrinsic motivation is at odds with the finding that males are more likely than females to enter HE for reactive reasons (Lowe and Cook, 2003). Although, space constraints meant that it was not possible to give detailed consideration to reasons for any gender difference in the present paper, it was hypothesised that, given the long standing pattern of withdrawal, there would be greater male withdrawal, and it was also possible to consider the extent to which the presently considered set of variables was capable of accounting for this.

The present study

To summarise, we examined the relationships of demographic, educational, psychological health, motivational, and study preparedness variables with withdrawal in a non-university HE institution with a large intake of students from non-traditional backgrounds. Two types of motivational factor were considered, it being expected that low intrinsic motivation and low extrinsic motivation would be associated with greater withdrawal. It was also expected that lack of direction, low independent study expectations, poorer previous educational performance, and greater anxiety and depression would help explain withdrawal. Once bivariate differences between continuing and withdrawing students had been identified, logistic regression analysis was conducted to assess the viability of performing early predictive analyses enabling the identification of people who are at risk of non-completion during their first year in higher education. The study was limited to the first year since the majority of
withdrawals (e.g. 67% in Davies and Elias’ [2003] survey) occur during this period, and with the lapse of time the predictivity of measures taken at the start of a course will wane as circumstances change and other factors come into play.

Method

Design

A fundamentally correlational design was adopted, an assortment of analyses being conducted to examine differences between continuing and withdrawing students.

Participants

Participants consisted of 143 students newly enrolling for the first year of modular degree courses at a HE institution in the North-West of England during the 2001-02 academic year. To enhance generalisability, data was collected from students studying subjects in three faculties. Sixty four students were studying Psychology and Life Sciences, 54 were studying Business and 25 were studying Technology. The 143 students consisted of 84 females (mean age = 22.04 years, SD = 6.04 years) and 59 males (mean age = 21.93 years, SD = 5.35 years). The gender balance varied across faculties, with females outnumbering males in both Psychology and Life Sciences (47 females and 17 males) and Business (32 females and 22 males), but males outnumbering females in Technology (5 females and 20 males).
Materials

The four questionnaires relevant to the present paper were presented as part of a booklet containing a total of seven questionnaires.

A biographical questionnaire obtained data on gender, age, and educational qualifications. A scoring system was devised for educational qualifications at GCSE, CSE and O level: For GCSEs and O levels, 8 points were allotted for an A* grade, 7 points for an A grade, 6 points for a B, down to 1 point for a G and 0 points for a U. For CSEs a Grade 1 was considered equivalent to an O level Grade C, etc. Points were summated and divided by the number of GCSEs to give an average performance index.

A purposely designed instrument (the Motivations for Entry to Higher Education Scale: MEHES) aimed to measure students’ motivations for entering HE. A new instrument was preferred to existing scales such as the Academic Motivation Scale (AMS: Vallerand, Pelletier, Blais, Brière, Senècal & Vallières, 1992) and the RASI (Entwistle & Tait, 1994) because of the present emphasis on motivations at entry, and because of doubts about the psychometric properties of the AMS scales (Cokley, Bernard, Cunningham & Motoike, 2001) and the RASI Lack of Direction subscale (Duff, 1997; Sadler-Smith & Tsang, 1998). The MEHES consisted of statements concerning lack of direction (e.g. entering HE ‘Because there was no obvious alternative’), intrinsic reasons for enrolling (e.g. entering HE ‘Because I have always wanted to study the subject(s) I will be studying’) and extrinsic reasons for enrolling (e.g. entering HE ‘So that I will not have a dead-end job’). Participants
responded on a five-point Likert-type scale with points labelled from Strongly Disagree to Strongly Agree. Factor analysis of data resulted in the identification of three factors interpretable as Lack of Direction (7 items), Intrinsic Motivation (8 items) and Extrinsic Motivation (5 items). Space constraints prevent presentation of the factor analytic results. However, further details of the factor analysis and item wordings for the questionnaire subscales based upon this analysis are available from the authors. For each subscale, recoded responses were summated to give a scale score. High scores corresponded with the subscale labels: greater lack of direction, highly positive intrinsic motivation and highly positive extrinsic motivation. Minimum and maximum possible scores were respectively 7 and 35 for Lack of Direction, 8 and 40 for Intrinsic Motivation, and 5 and 25 for Extrinsic Motivation. Cronbach’s $\alpha$ coefficients for the study data took acceptable values of .82 for the Lack of Direction subscale, .78 for the Intrinsic Motivation subscale, and .74 for the Extrinsic Motivation subscale. Test-retest coefficients (Pearson’s $r$) for 42 psychology students with a test-retest interval of approximately six weeks were 0.78 ($df = 40$, $P<.0005$ one-tailed), 0.75 ($df = 40$, $P<.0005$ one-tailed) and 0.66 ($df = 40$, $P<.0005$ one-tailed) for the Lack of Direction, Intrinsic Motivation and Extrinsic Motivation subscales respectively. The last mentioned coefficient is marginally lower than is desirable. However, the time between testing and re-testing constituted students’ first six weeks in HE and some re-appraisal of their motivations might have occurred. In these circumstances such a coefficient appears reasonable.

In the absence of any available measure of independent study expectations, it was also necessary to construct such a measure. Thus a seven statement Independent Study Expectations (ISE) subscale constituted part of a second instrument (the Higher Education Expectations Questionnaire: HEEQ) which was rooted in a psychological
contracts approach (Argyris, 1960). This approach provides a framework for understanding the emerging relationship between two or more parties that is based on tacitly agreed expectations about contribution and reward. Participants responded to the ISE statements (e.g. ‘I expect course handouts to contain all of the information I need to pass course assignments’) on a five-point Likert-type scale with points labelled as for the MEHES. Responses were numerically recoded from 1 to 5, and total scores were obtained by summat ing responses to items, with high scores indicating greater independent study expectations. Cronbach’s $\alpha$ was .74. Minimum and maximum possible scores were 7 and 35 respectively. A Pearson’s $r$ test – retest coefficient for 41 psychology students with a one month test – retest interval was acceptable with a value of 0.77 ($df = 39, P < .0005$ one-tailed). Again further details of the factor analytic development of the HEEQ and item wordings are available from the authors.

The 14 statement Hospital Anxiety and Depression Scale (HADS: Zigmond & Snaith, 1983) measured anxiety and depression. Seven items tap anxiety and seven tap depression. For each item, respondents select one of four response options indicating the extent to which a statement is currently true for them (response option wordings being tailored to each item). Responses are coded on a 0 - 3 scale and summed to give total scores, with high scores indicating greater anxiety and depression. Minimum and maximum scores on each subscale take values of 0 and 21. For the present data, Cronbach’s $\alpha$ was .81 and .71 for the Anxiety and Depression subscales respectively.

Procedure
Students in classes nominated by heads of department were asked to complete the questionnaire booklet as part of an institutional student retention initiative during the induction period. There was no penalty for failure to complete the booklet. It was left to lecturers' discretion as to whether the booklet was completed during class time or taken away and returned later. Completion of the whole questionnaire booklet took around one hour.

Results

*Bivariate relationships and associations with withdrawal*

Of the 143 students providing complete data sets, 31 (21.7%) were listed as withdrawing by the start of the second year. The first group of analyses constituted *t*-tests of differences between continuing and withdrawing students (see Table 1). Given that, contrary to hypothesis, the mean anxiety and lack of direction scores were greater for continuing than withdrawing students, *t*-tests were not performed for these variables. Otherwise, differences in means were all in the directions hypothesised: withdrawing students were older, exhibited lower average GCSE performance, lower independent study expectations, greater depression, and lower intrinsic and extrinsic motivation. In terms of Cohen’s *d* the result for independent study expectations represents a medium effect size (.50 – Cohen, 1988), that for intrinsic motivation represents a small to medium effect size, and the effect sizes for anxiety, depression, extrinsic motivation and average GCSE performance can be considered small (in the
region of .20). Of the six variables analysed, only two significant differences were found: withdrawing students exhibited significantly lower independent study expectations and intrinsic motivation. Note that adjusting $P$ using Bonferroni’s method ($P = 0.05/8 = 0.006$) to limit the familywise Type I error rate to .05 for the six tests on the eight variables in Table 1 results in only the test for independent study expectations being significant.

--- Insert Table 1 Here ---

Two cross-tabular analyses were performed to examine the associations between continuation status and both gender and faculty.

The first analysis showed that of the 84 females, 10 (12% of females) withdrew, while of the 59 males, 21 (36% of males) withdrew. The associated chi-square statistic was significant ($\chi^2 = 11.45$, $df = 1$, $P = 0.001$, effect size $w = 0.28$). Hence, there was a difference in withdrawal rates of 24 percentage-points, with a greater proportion of males withdrawing.

The second analysis examined faculty differences. Results showed that of the 64 Psychology & Life Sciences students, 8 (12.5%) withdrew, of the 54 Business students, 12 (22%) withdrew, and of the 25 Technology students, 11 (44%) withdrew. The chi-square test showed a significant association between faculty membership and withdrawal ($\chi^2 = 10.52$, $df = 2$, $P = 0.005$, effect size $w = 0.27$), and comparison of observed and expected frequencies showed that withdrawal was proportionately greater in Technology and proportionately lower in Psychology & Life Sciences, with little difference between the two types of frequency for Business.
Differences in independent variables across faculty and gender

To help illuminate possible reasons for the previously reported gender difference in withdrawal, eight 3 x 2 independent groups ANOVAs were conducted with faculty and gender as independent variables and each continuous variable which was to be entered into the later logistic regression analysis as a dependent variable. The only analysis revealing any significant main effects or interactions was that for average GCSE performance, in which there was a significant main effect for Gender ($F_{1,137} = 6.02, P = .015, \text{partial } \eta^2 = .042$), with females ($M = 5.27, SD = 0.83$) outperforming males ($M = 4.88, SD = 0.87$).

Logistic regression

Subsequent to the above analyses, sequential logistic regression analysis with faculty, gender, age, average GCSE performance, independent study expectations, anxiety, depression, extrinsic motivation, intrinsic motivation and lack of direction as predictors of the dichotomous Status (continuing / withdrawing) dependent variable was performed. All variables were included as predictors since it was possible that hypotheses that were not supported in the previous bivariate analyses would be supported in the multivariate context\(^1\).

Because bivariate analysis identified cross-faculty differences in withdrawal rates, two dummy variables representing faculty (psychology vs. non-psychology and business vs. non-business) were entered in the first stage of the analysis to provide statistical control for faculty differences. A chi-square test comparing a constant only
model with the model including the Faculty variables showed that the latter model was significantly better (Block^2 and Model^3 \chi^2 = 9.79, df = 2, P = .008), this reflecting the result of the bivariate analysis. At this point, R^2 was .074. and the dummy variable contrasting the Psychology and Life Sciences with the other students was significantly predictive (B = 1.70, Wald test statistic = 9.52, df = 1, P = .002), reflecting the former students lesser withdrawal rate.

Entering Gender on the second step again significantly improved the model (Block \chi^2 = 5.69, df = 1, P = .017), the Model containing both Faculty and Gender remaining significantly better than a constant only model (Model \chi^2 = 15.48, df = 3, P = .001), with an R^2 of .100. Statistics for the Gender variable individually showed that male withdrawal was still greater when faculty differences in withdrawal were controlled (B = -1.10, Wald test statistic = 5.56, df = 1, P = .018). Also, the dummy variable contrasting the Psychology and Life Sciences students with the other two groups of students remained significantly predictive (B = 1.19, Wald test statistic = 4.03, df = 1, P = .045). Summarising, we can conclude that gender differences in withdrawal were not simply an artefact of cross-faculty differences in withdrawal.

As the final demographic variable, at the third stage Age was included. This did not significantly improve the model (Block \chi^2 = 0.42, df = 1, P = .519), although the model including Faculty, Gender and Age was still significantly better than a constant only model (Model \chi^2 = 15.90, df = 4, P = .003), with an R^2 of .103. While Age was not significantly predictive of withdrawal, Gender remained predictive (B = -1.10, Wald test statistic = 5.55, df = 1, P = .019), as did the dummy variable contrasting the Psychology and Life Sciences students with the other two groups of students (B = 1.21, Wald test statistic = 4.09, df = 1, P = .043).
In a final step, Average GCSE performance, independent study expectations (ISE), lack of direction, intrinsic motivation, extrinsic motivation and depression were entered. Including these six variables significantly improved the model (Block $\chi^2=19.78$, $df=7$, $P=.006$), with the model containing all variables continuing to be better than a constant only model (Model $\chi^2=35.67$, $df=11$, $P=.0002$) and an $R^2$ of .232. Hence, the logistic regression model containing all the predictors can be said to predict 23.2% of the variance in the Status variable. However, when the variance accounted for by faculty, gender and age in the previous steps of the analysis is subtracted, it can be seen that the last block of variables only accounted for around 13% of the variance in withdrawal. Table 2 shows statistics for all individual variables in the final model. Here, it can be seen that only independent study expectations and intrinsic motivation were significantly predictive when all other variables in the analysis were controlled, with the former variable being the better predictor. Thus, people having lower independent study expectations and intrinsic motivation were at greater risk of withdrawal. At this point, neither Gender nor the dummy variable contrasting the Psychology and Life Sciences students with the other two groups of students was significantly predictive.

Despite the fact that the model including all variables was significantly predictive, the classification figures in Table 3 show that the model’s utility in terms of correctly classifying people as continuing or withdrawing was not particularly good: bearing in mind that it would be possible to achieve a correct classification rate of 78.32% by simply classifying the whole sample as continuing, the overall correct
classification rate of 79.72% is not particularly impressive. With respect to practical utility, looking at things in two other slightly different ways, the positive predictive value of the model (the ability of the model to correctly identify withdrawing students) was 56.25%, and the negative predictive value of the model (the ability of the model to correctly identify continuing students) was 82.68%.

----- Insert Table 3 Here -----

Discussion

At around 22% for the first year of courses, withdrawal for the present sample was at the high end of UK withdrawal statistics although by no means abnormal for an institution with a high proportion of mature students (National Audit Office, 2002). In both the bivariate and multivariate contexts, analyses showed that there were reliable differences between continuing and withdrawing students with respect to independent study expectations and intrinsic motivation, with withdrawing students having lower independent study expectations and lower intrinsic motivation.

In the bivariate context, independent study expectations were the best predictor of withdrawal, those students with lower expectations being less likely to continue. This supports Lowe and Cook’s (2003) contention that the substantial minority of students whom they found to have difficulties in adjusting to the amount of independent study required in HE were at greater risk of withdrawal. Continuing students also exhibited greater intrinsic motivation. Thus, studying because of interest
in the subject matter, quite reasonably, appears to be associated with the persistence of students.

In addition to existing in the bivariate context, both of the above relationships existed in the multivariate context. This indicates that the predictive utility of independent study expectations and intrinsic motivation is not a function of factors such as gender differences, previous educational performance or area of study. Therefore, efforts to address issues in these two areas might play a useful part of institutional retention strategies. With respect to independent study expectations, one way forward would be to make the relevant students’ expectations more realistic (Sander, Stevenson, King & Coates, 2000) by placing particular emphasis upon the need for independent study and teaching the required skills during introductory modules (e.g., the Learning to Learn modules run in many institutions).

The observation that lower intrinsic motivation was predictive of withdrawal is consistent with retrospective survey findings that high numbers of withdrawing students express the opinions that they made the wrong choice of course and that courses were not as interesting as expected (Davies & Elias, 2003). One implication of this is that institutions should avoid over-zealous marketing in their attempts to attract students. Also, and perhaps more realistically, greater attempts to ensure that students’ courses match their interests may also bear fruit.

The risk that students may enrol for courses that they are not particularly interested in is likely to be greatest when they hurry their decision to enter HE and apply for a course only shortly before it commences. For example, withdrawing students applying through the clearing system are more likely than those applying through UCAS to cite wrong choice of course as a factor in their withdrawal (Davies & Elias, 2003). Additionally, non-completers tend to be on courses which are not their
first choice and one reason for this is a lack of places available on their preferred choice of course (Ozga & Sukhnandan, 1998). It may be, then, that hurried entry leaves students with little time to find a course which provides a close enough match to their interests, and admissions tutors should be particularly aware of the possible need to provide a counselling service to students applying late, with the aim of placing them on a course which suits their needs and interests. Given that students are on a course, an obvious point to make is that tutors should make sure that material is presented in a way that enthuses students, since in Yorke’s (1999) study 31% and 23% of withdrawing students cited unsuitable teaching and quality of teaching respectively as having a moderate or considerable influence upon their decision to withdraw. Also, forming strong tutor – student relationships enhances student motivation and thereby discourages withdrawal (Bennett, 2003).

Although the extrinsic motivation of continuing students was greater than that for those not continuing, the effect size was smaller than that for intrinsic motivation and led to a non-significant result. This suggests that studying because a course enhances prospects of obtaining entry to a desired occupation, or simply better employment of any kind, may not be as important a determinant of persistence as studying because of interest in the subject matter. Also, withdrawing and continuing students did not differ with respect to lack of direction, the effect being in the opposite direction to that predicted but negligible in size. This mirrors Sadler-Smith’s (1996) finding that lack of direction was not predictive of academic performance. One possible reason for the current result could be the partial counterbalancing of any effect of lack of direction causing withdrawal, by an effect whereby students who lack direction stay in HE (but perhaps perform comparatively poorly) precisely because of the lack of direction-linked factors that have brought them there in the first place: the
lack of any viable alternative, uncertainty as to what else to do, etc. Future work might investigate this possibility.

While the average GCSE performance of continuing students was better than that for those withdrawing, the effect size was smaller than for both types of motivation and independent study expectations, and was not large enough to obtain a significant result. This supports McGivney’s (1996) conclusion that motivation is of greater importance than educational qualifications in determining progression. (It is also useful to note that checks confirmed that A level performance did not predict withdrawal, and that there was non association between possession / non-possession of A levels and continuance / withdrawal.)

Neither anxiety nor depression predicted withdrawal. This contrasts with the findings of Szulecka et al. (1987), who took differences in anxiety, social dysfunction and depression to be instrumental in explaining withdrawal. In fact, for the present data there was a small effect (in Cohen’s, 1988 terms) whereby likelihood of withdrawal decreased as anxiety increased. Such a result obviously needs replication before any weight is attached to it. But, if robust, the result may indicate that greater anxiety can result in greater academic effort, resulting in better performance and therefore lower likelihood of withdrawal. In contrast, low anxiety may lead to complacency and lack of effort, with consequent poorer performance and a greater likelihood of withdrawal. If the present result were replicated, further longitudinal work would be useful to verify such reasoning. On the other hand, the fact that differences in psychological health on entry to HE were not presently predictive of withdrawal in the ways that were hypothesised says nothing about the extent to which deterioration in psychological health as a course progresses is a cause of withdrawal. Such issues may be particularly salient in institutions such as the present one where...
the majority of students and their families have relatively modest financial means. For example, work at one new university has shown that increasing student debt is related to increases in the number of hours students spend in paid employment, poorer psychological health, and greater consideration of abandoning studies (Roberts, Golding, Towell & Weinreb, 1999).

There was a gender disparity of 24 percentage-points with males being less likely to continue. Also, among the variables considered, other than that for faculty membership, the only gender difference identified was that for average GCSE performance, with females performing better.

The gender difference in withdrawal was far in excess of the five percentage-point disparity generally cited (Yorke, 1999). However, gender did not significantly predict withdrawal when other variables were taken into account during logistic regression analysis. Thus, in combination, other variables in the analysis were able to account for the gender difference in withdrawal. Exploration of this issue is beyond the scope of the present paper and will be reserved for a future article.

A final factor considered was age. Despite the overall National Audit Office (2002) statistics showing that mature students are more likely to withdraw than traditional students, the present data supported McGivney’s (1996) observation that this is not the case in all UK HE institutions. Although there are a number of possible reasons for this variation across institutions (e.g. differences in feelings of isolation according to the student age profile of institutions, differences in subject mix, etc), more research is needed in this area.

*Concluding comments*
The findings that intrinsic motivation and independent study expectations are useful in predicting withdrawal are consistent with Ozga and Sukhnandan’s (1998) conclusions that students who were on their preferred course were more likely to complete than those who were not, because this reflected their long-standing interests, and that non-completers were less well prepared in terms of the academic demands made by HE courses. The result for intrinsic motivation also supports ‘…the general consensus that high levels of motivation have a substantial influence in overcoming the potential problems faced by students at risk of withdrawal’ (Prescott & Simpson, 2004, p.249).

As far as intervention is concerned, the results suggest that enhancing efforts to counsel students as to their reasons for entering HE and their reasons for choosing specific courses prior to entering may reap dividends in boosting HE completion rates. In many instances such a function may be played by careers officers or other staff at the tertiary level of education.

In accounting for 23% of the variance in continuance / withdrawal, the predictivity of the present data can be considered to be reasonable, although classification results were unspectacular, and this overall figure included the predictivity afforded by faculty membership and gender. This suggests that, in addition to individual difference variables, faculty differences with respect to issues such as teaching style (see e.g. Entwistle & Ramsden, 1983; Ramsden, 1997), teaching quality and the extent to which a department’s academic culture is supportive of learning (Yorke, 2002) may also help account for withdrawal at the institutional level. With faculty, gender and age controlled, educational and psychological variables predicted only 13% of the variance in continuance / withdrawal. In addition to some of the issues considered presently, Yorke (2002) also cited finance (a factor
that is likely to become even more salient with the introduction of top-up fees in the
UK from 2006 onwards), a working class background, wrong choice of programme
and the intervention of other commitments as factors that are associated with
withdrawal. Although some of these variables would be easier to include in a
predictive model than others, it is possible that expanding the present model to take
account of some these factors would enhance the identification of students who may
be at risk of withdrawal. Nevertheless, the present findings compare well with studies
such as that conducted in the US by Ting and Robinson (1998) where it was possible
to predict up to 29% of the variance in first year students’ Grade Point Average using
previous academic performance, psychosocial and demographic variables as
predictors, but where it was only possible to predict 1.5% of the variance in retention.
This latter result was said to be consistent with other similar studies reviewed by Ting
and Robinson, and emphasises the fact that the prediction of withdrawal is far more
difficult than predicting academic performance, and that the reasons why any
particular student decides to withdraw from HE or has to depart because of academic
failure are often complex and multifarious. It is also important to note that it is far
easier to predict withdrawal once courses are underway, and students’ commitment is
apparent, than at the start of courses, since in the former situation recent UK work
shows that factors such as poor attendance and greater amount of time to produce
work are indicators of likely withdrawal (Prescott & Simpson, 2004).

Notes

[1] Variables were standardized to allow direct comparison of logistic regression
coefficients.
The Block $\chi^2$ test fulfils a similar function to the F-test assessing the significance of $R^2$Change in multiple regression.

The Model $\chi^2$ test performs a function similar to the ANOVA used to assess the significance of the overall predictivity of a model in multiple regression.

In preference to reporting the more esoteric Nagelkerke $R^2$ value output by SPSS, values of $R^2$ analogous to $R^2$ in multiple regression analysis were obtained by using predicted scores at each stage of the analysis as predictors of Status in an ordinary linear regression analysis (Tabachnick & Fidell, 2001).

References


Yorke, M., Bell, R., Dove, A., Haslam, L., Hughes-Jones, H., Longden, B., O’Connell, C., Tyuszak, R., & Ward, J. (1997) Undergraduate non-

Table 1. Descriptive statistics, effect sizes (ES) and t-test results (one-tailed) for differences between withdrawing ($n = 31$) and continuing ($n = 112$) students.

<table>
<thead>
<tr>
<th>Status</th>
<th>Continuing</th>
<th>Withdrawing</th>
<th>ES</th>
<th>t-test ($df=141$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>7.71</td>
<td>3.72</td>
<td>6.74</td>
<td>3.09</td>
</tr>
<tr>
<td>Depression</td>
<td>2.85</td>
<td>2.29</td>
<td>3.49</td>
<td>2.64</td>
</tr>
<tr>
<td>Motivational</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrinsic Motive</td>
<td>18.21</td>
<td>3.87</td>
<td>17.39</td>
<td>4.15</td>
</tr>
<tr>
<td>Intrinsic Motive</td>
<td>29.27</td>
<td>4.63</td>
<td>27.29</td>
<td>4.76</td>
</tr>
<tr>
<td>Lack of Direction</td>
<td>15.27</td>
<td>5.28</td>
<td>15.23</td>
<td>5.75</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>21.87</td>
<td>5.46</td>
<td>22.45</td>
<td>6.76</td>
</tr>
<tr>
<td>GCSE Average</td>
<td>5.16</td>
<td>0.85</td>
<td>4.93</td>
<td>0.91</td>
</tr>
<tr>
<td>ISE</td>
<td>16.54</td>
<td>3.80</td>
<td>14.55</td>
<td>3.76</td>
</tr>
</tbody>
</table>
Table 2. Logistic regression analysis results with all variables entered.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Wald test</th>
<th>P (df=1)</th>
<th>R</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty 1</td>
<td>1.17</td>
<td>3.23</td>
<td>.072</td>
<td>.096</td>
<td>3.24</td>
</tr>
<tr>
<td>Faculty 2</td>
<td>1.04</td>
<td>2.48</td>
<td>.115</td>
<td>.060</td>
<td>2.84</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.86</td>
<td>2.81</td>
<td>.094</td>
<td>-.078</td>
<td>0.42</td>
</tr>
<tr>
<td>Age</td>
<td>0.49</td>
<td>2.46</td>
<td>.117</td>
<td>.058</td>
<td>1.63</td>
</tr>
<tr>
<td>Average GCSE</td>
<td>-0.02</td>
<td>0.01</td>
<td>.931</td>
<td>.000</td>
<td>0.98</td>
</tr>
<tr>
<td>ISE</td>
<td>-1.00</td>
<td>9.29</td>
<td>.002</td>
<td>-.234</td>
<td>0.37</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-0.44</td>
<td>2.24</td>
<td>.134</td>
<td>-.043</td>
<td>0.64</td>
</tr>
<tr>
<td>Depression</td>
<td>0.47</td>
<td>2.74</td>
<td>.098</td>
<td>.074</td>
<td>1.61</td>
</tr>
<tr>
<td>Extrinsic Motivation</td>
<td>-0.20</td>
<td>0.51</td>
<td>.477</td>
<td>.000</td>
<td>0.82</td>
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<tr>
<td>Intrinsic Motivation</td>
<td>-0.75</td>
<td>6.70</td>
<td>.010</td>
<td>-.188</td>
<td>0.47</td>
</tr>
<tr>
<td>Lack of Direction</td>
<td>-0.76</td>
<td>0.06</td>
<td>.799</td>
<td>.000</td>
<td>0.93</td>
</tr>
</tbody>
</table>
Table 3. Classification table after the final stage of the logistic regression analysis.

<table>
<thead>
<tr>
<th>Observed</th>
<th>Continuing</th>
<th>Withdrawing</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing</td>
<td>105</td>
<td>7</td>
<td>93.75</td>
</tr>
<tr>
<td>Withdrawing</td>
<td>22</td>
<td>9</td>
<td>29.03</td>
</tr>
<tr>
<td>Overall</td>
<td>79.72</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Predicted

<table>
<thead>
<tr>
<th>Continuing</th>
<th>Withdrawing</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>