Academic success and failure: Student characteristics and broader implications for research in higher education.

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Academic success and failure: Student characteristics and broader implications for research in higher education

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Abstract

The paper reports on the findings of a funded research project which investigated factors related to academic success and failure in a Faculty of Arts. The project initially aimed to explore failure which resulted when students remained enrolled but submitted no items for assessment. The initial aim was to investigate whether the problem resided essentially in characteristics of non-completing students, or whether there were institutional factors associated with courses which facilitated failure. However, the wealth of data made available to the researchers also permitted the analysis of factors related to academic success. The paper discusses the student characteristics which were found to be clearly related to academic success and failure – including gender, university entry score, and mode of enrolment. The paper also explores implications of the findings for “mass” higher education. It concludes that a profitable approach to research on student success and failure might be to investigate the strategies which students develop to effectively cope (or not cope) with competing life demands.

Background

Initially, this study was undertaken to explore a particular type of academic failure in the Faculty of Arts at a large commuter university. It had been noted that a proportion of students recorded grades of FNS – that is, these students enrolled in a course but submitted no work for assessment and hence failed. A particular aim of the project was to investigate whether the problem resided essentially in personal characteristics of non-completing students, or whether there were institutional factors associated with courses or programs that facilitated failure, or a combination of both.

The project soon broadened to incorporate other forms of academic failure because early analyses suggested that differing demographic and course factors might be associated with different types of failure. In addition to FNS, factors associated with the grades F (“normal” failure) and WF (failure resulting from late course withdrawal) were also explored. It was apparent that these combinations of fail grades at times could swell the proportion of students failing in courses to serious levels (20%-25%). The wealth of data made available to the researchers also meant that factors related to academic success could be explored and we report briefly on those findings in the paper. Nevertheless, academic failure has remained the focus of the project.

Actually, it is difficult to identify a body of extant research that deals principally with student failure in university settings. It is as if the topic is something of an embarrassment for institutions – and so a mainstream focus of scholarly attention has not developed. This despite the ubiquity of failure, as Peelo (2002, p.7) has noted;

While ‘failing’ or ‘failure’ is part of everyday experience in universities, it hardly seems to matter in the education literature. There have been few attempts to understand ‘failing’ as an ever-present phenomenon in higher education.

In fact, as she also goes on to note, the extensive literature on student retention, either implicitly or explicitly, does place academic success/failure at the centre of research and theorising about the problem of attrition. In the attrition literature, the focus has been either on the failure of students to successfully integrate themselves into the institution (Tinto, 1987) or, on the other hand, on the failure of the institution to integrate diverse student populations, their lifestyles and subcultures (Braxton, 2000; Peelo & Wareham,
2002; Yorke, 1999). In the recent literature there also has been a tendency to collapse so-called "involuntary attrition" (institutional exclusion arising from academic failure) into the same category as "voluntary attrition" (student-initiated withdrawal from their programs).

At the same time, a parallel area of research and theorising has drawn attention to the multiple transitions that, it is said, young people increasingly must negotiate. The argument is that the majority of young people, more than at any other time in modernity, now feel compelled to balance commitments to employment, higher education, and other personal and relationship matters. At times, the stresses and strains of coping with multiple transitions and their crosscurrents impact adversely upon students, resulting in academic failure. For broad discussions of this apparent sea change in the outlook of young people, see the youth studies of Dwyer & Wyn (2001); Ball, Maguire and Macrae (2000); and for higher education, McInnis, James and Hartley (2000).

Even so, it is not clear how helpful such conflations of perhaps very different processes and experiences might be in the long run in unravelling the problem of academic failure.

In this paper, because of limited space, we concentrate on student factors and plan to disseminate elsewhere the findings which relate to institutional factors. Nevertheless, in the meantime, it should be noted that our findings confirm the need to explore both student and institutional factors. As Yorke’s (1999) work in the UK has shown, student attrition – whether voluntary or involuntary - is rarely the result of one single factor, but rather failure (broadly defined) tends to result from a combination of factors. The research reported below identified demographic and biographical factors that were significantly related to academic success and failure; however, there was also evidence of pronounced differences in grading practices between different components within the same Faculty (programs, courses and schools).

Method

Data covering all students who were enrolled in Faculty of Arts courses (subjects) offered by any of the five Schools for the three years 1998-2000 (inclusive) were entered into files for statistical analysis. The five Schools offering courses were: Arts (ART), Criminology and Criminal Justice (CCJ), Film, Media and Culture (FMC), Humanities (HUM) and Languages and Linguistics (LAL). The data files covered biographical details, academic results, program information and course data for each student. Initially, this translated into a data set of 54,590 cases – where one case represented one student grade for a course. After data cleaning, this resulted in a data set of 11,264 students enrolled in 221 undergraduate courses that formed the basis of the analysis.

The statistical procedure used was a multivariate analysis of variance (MANOVA). The dependent variables for the analyses of both the student and course data were the proportion of grades FNS, F, WF, PC, P, C, D, and HD. The independent variables consisted of a range of student and course related characteristics available from the standard university records. The usefulness of the MANOVA procedure is that, in the analyses, all effects are adjusted for one another. That is, the results reflect the unique variance of each predictor or variable. If a number of student characteristics emerge as significant in terms of predicting student grades (as discussed below), then each is significant in itself, independent of any compounding interactions between the variables. In addition, we sought feedback from course convenors on the findings of the statistical analyses. While the staff survey was a relatively structured instrument, there was the opportunity for them to provide more open and reflective comments. Twenty-four convenors replied which constituted a 46.0% response rate from those who were contacted.
Table 1 shows that the majority of students in the study were relatively young females (62.9%), and that two-thirds came from homes where English is the main language. Three quarters of the students lived at home – as suggested by the fact that their semester postcode addresses were the same as their home addresses. A third of the students had entered their programs with some history of “incomplete” education (an indication of volatility as students transfer between programs and institutions). The majority (81.8%) were full-time students, part-time students comprised 15.2% and 3.1% were enrolled externally.

**Table 1: Student demographics: Faculty of Arts, 1998-2000**

<table>
<thead>
<tr>
<th></th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>62.9%</td>
</tr>
<tr>
<td>Mean age on commencement at university</td>
<td>22.6 years</td>
</tr>
<tr>
<td>Identifies as ATSI</td>
<td>1.4%</td>
</tr>
<tr>
<td>English as the primary language in the home</td>
<td>66.3%</td>
</tr>
<tr>
<td>Identifies as disabled</td>
<td>6.2%</td>
</tr>
<tr>
<td>Mean university entry score</td>
<td>10</td>
</tr>
<tr>
<td>Prior incomplete education</td>
<td>32.3%</td>
</tr>
<tr>
<td>HECS - deferred</td>
<td></td>
</tr>
<tr>
<td>- exempt</td>
<td>21.7%</td>
</tr>
<tr>
<td>- up front</td>
<td>12.6%</td>
</tr>
<tr>
<td>Full-time</td>
<td>81.8%</td>
</tr>
<tr>
<td>Part-time</td>
<td>12.9%</td>
</tr>
<tr>
<td>Night</td>
<td>2.3%</td>
</tr>
<tr>
<td>External</td>
<td>3.1%</td>
</tr>
<tr>
<td>Lives at home (home address same as semester address)</td>
<td>76.1%</td>
</tr>
</tbody>
</table>

**Findings: Characteristics of student failure and success**

For summary purposes, the analysis reported below has grades aggregated into two categories: failure grades (F, FNS, WF) and very good grades (D and HD). Nine out of the 13 independent student variables investigated (as shown in Table 2), displayed a significant relationship with grades. Most of the explained variance (41.9%) in the range of student grades was accounted for by two variables, which were: type of course enrolment (16.6% of variance) and the university entrance score (13.4%).

Other significant relationships were found as follows:  
**Gender:** Women (M=0.31) were more likely to get a higher proportion of very good grades than males (M=0.27). On the other hand, males (M=0.19) were more likely to get a higher proportion of failure grades than female students (M=0.15).

**Indigenous status:** Aboriginal and Torres Strait Islander students (M=0.35) were more likely to get a higher proportion of poor grades than non-ATSI students (M=0.16). It is noteworthy that these poor grades were significantly associated with only one particular type of failure grade, FNS (failure because of non-submission of assessment items).
Prior incomplete education: The relationship between previously incomplete education and grades was found to be bimodal. Students with some history of incomplete education were more likely to have either a higher proportion of very good grades or a higher proportion of failure grades.

HECS status: Students who paid their HECS fees upfront (M=0.34) were more likely to have a higher proportion of very good grades than students who deferred HECS payments (M=0.28). Conversely, students whose HECS status was deferred (M=0.19) were more likely to have a higher proportion of failure grades than those whose HECS fees were paid upfront (M=0.11).

Type of enrolment: Very good grades tended to be awarded to part-time students (M=0.34) rather than to full-time (M=0.30) or external students (M=0.19). Failure grades were more likely to be awarded to external students (M=0.34) than to part-time (M=0.19) and full-time internal students (M=0.14).

Age on commencing university: Age on commencing university was positively related to the proportion of very good grades (r=0.14, p<.001), indicating that people who were older when they commenced university seemed to get a higher proportion of very good grades. Similarly, age was negatively related to the proportion of failure grades (r=-0.35, p<.001), indicating that people who were older when they started university also seemed to get a lower proportion of poor grades. That is, in all categories, older people tended to get better results.

University entrance score: University entrance scores in this state are based on a scale 1-25, with 1 being the best score. The entry score in the analysis was negatively related to the proportion of very good grades (r=-0.35, p<.001), indicating that students with worse entry scores tended to get a lower proportion of these very good grades. On the other hand, entry score was positively related to the proportion of fail grades (r=0.19, p<.001), indicating that people with worse entry scores also tended to get a higher proportion of poor grades. That is, students with better entry scores got better results in their courses.

Number of years at university and number of courses completed: Both of these variables indicated that the further students moved into their programs, the more likely that the proportion of poor grades would decrease. This is a readily understandable finding, given that it is expected that students will improve as they gain academic experience and since students who consistently get poor grades from the start of their program are also those most likely to leave university voluntarily, or involuntarily through academic exclusion.
Table 2: Multivariate tests of student variables: Faculty of Arts, 1998-2000

<table>
<thead>
<tr>
<th>Student Variable</th>
<th>Df</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>(7, 1957)</td>
<td>4.686</td>
<td>.000</td>
</tr>
<tr>
<td>Indigenous Status</td>
<td>(7, 1957)</td>
<td>3.152</td>
<td>.003</td>
</tr>
<tr>
<td>Living at Home</td>
<td>(7, 1957)</td>
<td>.791</td>
<td>.595</td>
</tr>
<tr>
<td>English/Other Language Spoken at Home</td>
<td>(7, 1957)</td>
<td>1.243</td>
<td>.275</td>
</tr>
<tr>
<td>Disability</td>
<td>(7, 1957)</td>
<td>1.398</td>
<td>.202</td>
</tr>
<tr>
<td>Completed Prior Education</td>
<td>(7, 1957)</td>
<td>3.349</td>
<td>.001</td>
</tr>
<tr>
<td>HECS Status</td>
<td>(14, 3916)</td>
<td>2.716</td>
<td>.001</td>
</tr>
<tr>
<td>Program Type (Non-Award or Undergraduate)</td>
<td>(7, 1957)</td>
<td>.149</td>
<td>.994</td>
</tr>
<tr>
<td>Type of Enrolment</td>
<td>(21, 5877)</td>
<td>55.875</td>
<td>.000</td>
</tr>
<tr>
<td>Age on Commencing University</td>
<td>(7, 1957)</td>
<td>6.227</td>
<td>.000</td>
</tr>
<tr>
<td>University entry score</td>
<td>(7, 1957)</td>
<td>43.352</td>
<td>.000</td>
</tr>
<tr>
<td>Number of Years at University</td>
<td>(7, 1957)</td>
<td>3.024</td>
<td>.004</td>
</tr>
<tr>
<td>Number of Courses Completed</td>
<td>(7, 1957)</td>
<td>6.845</td>
<td>.000</td>
</tr>
</tbody>
</table>

Discussion

Early in our study we entertained the notion that different types of failure might also be associated with different types of student characteristics and, hence, reflect different types of student life and institutional experiences. In fact, there was little evidence to support this view because similar biographical characteristics were associated with both F and FNS, which were the most common types of failure. That is, maleness tended to be related to both F and FNS, external study status was also related to both F and FNS, and poorer entry scores were related to both. The one exception was in the case of Indigenous students who were at greater risk of receiving FNS. Significant relationships with other types of failure (including F) were not found. Such a result might indicate that the Indigenous students were most “at risk” in terms of non-compliance with organisational, institutional, or administrative factors, such as not meeting program deadlines rather than failing because of lack of ability.

Failure and success: Biographies meet institutional factors

We noted above that type of course enrolment and entry score were two variables that accounted for considerable variance. However, the statistical relationship(s) found between gender, entry score and mode of enrolment with academic results also suggested complex and intriguing interactions. This is because, on the face of it, some of the significant differences in academic outcomes that have been identified were not foreshadowed by student entry scores to the institution. According to the analysis, for example, males and external students were disadvantaged in terms of the grades awarded to them. At the Faculty level, there was no significant difference between male
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(M=9.96) and female (M=10.09) mean entry scores. In terms of mode of enrolment, external students (M=8.00) and part-time students (M=9.25) actually had significantly better (p<.001) mean entry scores than full-time day students (M=10.13). The proportion of external students was admittedly small across the Faculty, and an analysis of CCJ results (where 25% of students were external) found no difference in mean entry scores between internal and external students. In each case (male students and external students), personal and/or institutional factors must be impacting on these students to either create or exacerbate differences after they have entered the university, since their entry scores did not predict poorer academic results for either group.

For example, some of the recent research literature, particularly from overseas, has commented on the gender disparity apparent in higher education where it has been noted that women, at least at the undergraduate level, are relatively more successful than men both in terms of their GPA and have an increasing enrolment relative to men. Examples of studies of the so-called “gender gap” include Hoskins, Newstead & Dennis (1997) and McNabb, Pal and Sloane (2002). Nevertheless, it is not clear whether these findings indicate some type of “male disadvantage” in higher education, an interpretation flatly rejected by feminist commentators such as Macrae and Maguire (2000), or even why there might be signs of this type of disparity when, paradoxically, it was considered for so long that women were disadvantaged in many areas of higher education.

Ideological arguments aside, James (2002) found in a recent Australian study that senior secondary school girls tended to look forward to their university experiences more than boys and that young women anticipated that they would feel more comfortable in the university environment (at least in terms of social and peer support). We note below also some possible connections between women’s involvement in outside employment and their need to develop ways of coping with competing life demands along with their university study.

The fact that external students have poorer outcomes despite having similar, or even better, entry scores (as noted above) points to the ongoing disadvantages experienced by distance students. While a whole range of “outside” factors no doubt impinges on the condition of external students, Brown’s (1996) Australian study noted that discontinuing students tend to blame the university for what they identify as a lack of institutional support. Results of the current study agree, and it is suggested that despite new technologies which aim to enhance contact between staff and students, the reality is that external students tend to be overlooked – unless they draw attention to themselves. In response to our survey, one course convenor remarked:

The course might not be very user-friendly for external students. I answer their queries straight away – but do not go out of my way to contact them, or follow them up in any way. I don’t know whether if I was more supportive, more of them would stay in – the stuff we fail is pretty awful. On the few occasions I make use of the communications tools on the web, it is obvious that some students really appreciate it – however, I have no evidence that those who contact me and express appreciation are also those most at risk of failing.

Interestingly, factors such as foreign language mainly spoken in the home, or student disability, that might be seen as indicative of disadvantage did not display any relationship with academic failure - a finding which echoes recent overseas studies which suggest that diverse and non-traditional student populations are not as disadvantaged in terms of coming to grips with academic culture as previously thought (Grayson, 2003).

Failure and success: Coping with life demands and engagement with university

Our study certainly confirms the finding of other Australian studies (McKenzie & Schweitzer, 2001; Dickson, Fleet & Watt, 2000) which have found that university entry score remains the strongest predictor of student academic persistence and success. On a related point, it was noted in the introduction that one theme in the recent literature has
been the argument that commitments external to university study might explain poor academic performance and student “disengagement” from their studies (McInnis, James & Hartley, 2000). However, one would expect that such external commitments would impact across the range of students and not just upon those who come to university with relatively lower entry scores.

For the remainder of the paper we consider notions of student engagement and disengagement, and speculate on the possible meanings signified by a “good” entry score. In particular, we conceptualise the meaning of tertiary entry scores in terms of what they might say about the strategies students have developed over time (or not developed) in their attempts to cope with varied life demands. The first point to note is that the concept of disengagement, while seemingly important, remains problematic in terms of definition. In the literature the term, and its converse “engagement” with university life, seems to be used in two (often interchangeable) ways. Disengagement might mean either that:

- the attempt to juggle many competing aspects of life results in students not having enough time and energy available for study, and hence university achievement no longer receives top priority in their lives; or
- there has been a ground swell of indifference, a “turning away” from study and university experiences – resulting in lack of interest and, hence, minimum commitment.

Irrespective of which meaning is adopted (and as noted they often merge in the literature – and certainly in the minds of many commentators), disengagement tends to be attributed to pressures and factors external to the university – and particularly attributed to outside paid employment (McInnis et al., 2000, pp.38-46). Yet, interestingly, two of the same authors (McInnis & Hartley, 2002) were surprised somewhat in a related study that there were actually few differences between student workers and “non workers” in their views about their university experiences; views which were largely positive for both groups.

Paid employment (largely part-time) has become central to the lives of students – what Smith and Wilson (2002, p.134) refer to as a “majority experience”. Recent figures show that around 56.0% of full time students in the 20-24 years age group are also engaged in paid employment. Moreover, this situation is not greatly different for the 15-19 years group, where 45.0% of full time students also work (ABS, 2003, pp.23-24). The point to note is that many of these students have been in paid employment for years by the time they reach university – often since they were in Grades 9 or 10 at secondary school. Over time, these young people generally develop a range of coping strategies. Given the large numbers who are working, a respectable tertiary entrance score probably also signifies successful negotiation of the demands of both schooling and the world of part-time employment. Such coping skills might include adaptability, flexibility, effective time management, self management, and so forth – skills that will flow over to the tertiary environment. The available research findings on school students tends to confirm such a conclusion (Vickers, Lamb & Hinkley, 2003; Smith & Wilson, 2002). Academically successful students bring their coping strategies with them to the university; put another way, they are successful because they have learned to cope with competing life demands.

Several points should be clarified in relation to these speculations. No doubt some students do experience considerable difficulties with reconciling competing demands – but this might not be because of the external factors (especially paid employment) per se, rather that under-achieving students have not developed effective ways of coping, or their problems are so overwhelming that their coping mechanisms are to no avail. The question then might be posed: To what extent are the “disengaged” in higher education also those with the less developed ways of coping with competing demands and
expectations? We need to be clear here that we are not talking about excessive paid employment (but then most students do not work excessive hours in their outside employment – the average appears to be 10-15 hours). No doubt, poverty impacts adversely on the personal and academic welfare of some students (Newton & Turale, 2000). This point is reflected in this study, which noted that students who delay their HECS payments are more likely to be the least affluent and those who tend more to be at academic risk.

Nor is there any suggestion that only female students develop coping skills (since they tend to be more successful than males). Nevertheless, there is evidence that women tend to moderate/balance their hours of paid employment better than do male students – and hence perhaps have more opportunities to utilise their coping skills to advantage (Vickers et al., 2003, pp.12,19).

If the need for outside work did contribute to the poorer academic performance of undergraduates in this study, then one conclusion might be that those with lower entry scores were less adept from the beginning (for whatever reasons) at balancing competing demands upon their time. There is a suggestive example in Zimitat’s (2004) study of undergraduates where he notes that third year students cope through operating in a kind of “trading zone” (that is, having demonstrated/achieved academic success, they then trade high grades for stability and emotional health by reducing somewhat their commitment to study). Interestingly, the research on secondary school students indicates a similar (but reverse) coping strategy, where those in paid employment tend to cut back their outside activities in Grade 12 in order to gain the best university entry score possible. A corollary is that to take advantage of the trading zones, one needs to have something to trade, to be able to utilise the strategies and benefits that one brought to the university. Conversely, those with the marginal entry scores and limited survival strategies don’t have the elbow room to trade – and continue to flounder academically.

Some support for this view might be evidenced in our study by the fact that student characteristics that were associated with academic failure tended to “flip over” to characteristics of success at the C (Credit) level. The biographical characteristics of P (Pass) students in this study tended to be largely indistinguishable from those who had failed courses. If students with lower entry scores combined with external commitments also are those least able to balance competing demands, then this might help to explain similarities in the biographical characteristics between Fail and Pass level students in the study.

Conclusion: Re-orienting research on academic success, failure, and coping

The role of “outside” commitments remains conjectural as far as this study is concerned. Short of actually identifying and/or inviting comment from failing students, a way to incorporate the “student voice” (McKeown, MacDonell & Bowman, 1993) in the current study might be to conduct systematic and empathetic analysis of the university’s “show cause” documents, where students who are at risk have the opportunity to argue their case against exclusion in writing. Such an analysis might permit further insight into any interactions among personal and institutional factors.

McInnis (2001, p.112) suggests that officialdom tends to ask the wrong questions about students’ transition into the university environment, and he says that the institution needs to be more cognisant of external factors – especially, perhaps, the world of paid employment.

It is certainly time to undertake a substantial reassessment of research questions about where university fits with the personal lives of students. We researchers have not, for example, asked students enough questions about the relative importance of what we have assumed is important in the process of transition from school to university. It might be
asked if we are not in danger of becoming overly concerned, if not precious, about aspects of the first year experience that are of little consequence to the students themselves.

However, in passing, there is the intriguing question as to why universities have suddenly become aware of and concerned about the role of external factors such as paid employment. In fact, reports dating back at least into the 1980s have been calling attention to the proportion of university students who work part-time. For example, the Queensland Courier-Mail published an article, “Students work for their study” (10/5/89), which noted that about 50.0% of university students combined full-time study with part-time employment (see also Wimshurst, 1987).

We are probably well past the time for acknowledging the presence of such external factors in the lives of students – and should focus some research time and energy on how students cope with these competing demands. Some valuable work on survival strategies has started already (McInnis & Hartley, 2002). We are thinking more in terms of the broader type of sociological inquiry, represented in the work of Pocock (2003) which explores work/life tensions and the ways adults respond to these challenges. Much higher education research and its resulting pedagogical developments/innovations focuses on enhancing “classroom” teaching and learning, particularly with reference to student populations of increasing diversity. A core issue is that some students learn to cope well with diverse demands in their lives from early on – others do not learn to cope, or learn only to a limited extent. Interestingly, many university students seem to have adopted the lifestyle of their parents, in that they take on (sometimes heavy) commitments across a range of life domains – and then must cope or go under. Seen in this light, an important focus of higher education research might be to explore the impact such student coping has on the teaching/learning environment, and to explore the ways institutions and academic staff respond.

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