

AN INVESTIGATION INTO THE EFFECTS OF GENDER, PRIOR ACADEMIC ACHIEVEMENT, PLACE OF RESIDENCE, AGE AND ATTENDANCE ON FIRST-YEAR UNDERGRADUATE ATTAINMENT

Loretta Newman-Ford, Steve Lloyd and Stephen Thomas
University of Glamorgan

LORETTA NEWMAN-FORD has worked as a Research Assistant at the University of Glamorgan since March 2006. Loretta's research interests include attendance monitoring to improve student performance and retention, student motivation, employability skills and work-based learning.

STEVE LLOYD is Head of Environmental Technology, Construction and Management in the Faculty of Advanced Technology. A mechanical engineer with a background in the area of thermo/fluids and heat transfer, Steve lectures on energy and environmental technology and management. In recent years he has been involved in the recruitment and retention of engineering students and has attracted considerable EU funding to support these initiatives.

STEPHEN THOMAS is a chartered mechanical engineer with an industrial background in heavy engineering and management. He is currently a Principal Lecturer in Mechanical Engineering but is mainly involved with externally funded projects. The projects under his control over the past five years have a value of over £3m, and underpin his areas of research.

Correspondence to:
Loretta Newman-Ford
Faculty of Advanced Technology
University of Glamorgan
Pontypridd, CF37 1DL
lnewman@glam.ac.uk

Journal of Applied Research in Higher Education
Volume 1 • Number 1 • pp13–28
JANUARY 2009

© University of Glamorgan 2009
ISSN: 1758-1184

Journal website: <http://jarhe.research.glam.ac.uk>
Journal correspondence to: jarhe@glam.ac.uk

University of Glamorgan

Cardiff • Pontypridd • Caerdydd



AN INVESTIGATION INTO THE EFFECTS OF GENDER, PRIOR ACADEMIC ACHIEVEMENT, PLACE OF RESIDENCE, AGE AND ATTENDANCE ON FIRST-YEAR UNDERGRADUATE ATTAINMENT

Loretta Newman-Ford, Steve Lloyd and Stephen Thomas
University of Glamorgan

Abstract

THE NUMBER of people engaging in higher education (HE) has increased considerably over the past decade. However, there is a need to achieve a balance between increasing access and bearing down on rates of non-completion. It has been argued that poor attainment and failure within the first year are significant contributors to the overall statistics for non-progression and that, although research has concentrated on factors causative of student withdrawal, less attention has focused on students who fail academically. This study investigated the effects of a number of factors on the academic attainment of first-year undergraduates within the Faculty of Humanities and Social Sciences at the University of Glamorgan. Results showed that gender and age had only minor impacts upon educational achievement, while place of residence, prior educational attainment and attendance emerged as significant predictors of attainment. Further analysis showed these three factors to be interrelated, with attendance correlating strongly with both entry points and place of residence. In turn, prior attainment was strongly linked to place of residence. Findings may be used to identify and proactively target students at risk of poor academic performance and dropout in order to improve rates of performance and progression.

Key words: Undergraduate performance, academic attainment, attendance monitoring.

Introduction

ACCORDING to the National Audit Office (NAO), 2007, higher education participation has increased and widened from 39% of 18- to 30-year-olds in 1999-2000 to 43% in 2005-06. However, they also stated that there is a need to achieve a balance between increasing participation and bearing down on rates of non-completion. Performance indicators reveal that one in six students drop out of higher education, at a cost to the taxpayer of at least £450m per year in wasted fees and subsidised loans (Baty, 2006). NAO (2007) figures show that more than 100,000 students who dropped out of their courses did so during their first year of study. Failure and poor attainment during the first year significantly contribute to the overall statistics for non-progression (Scott and Graal, 2007). Nevertheless, whilst considerable attention has been directed

towards researching factors associated with first-year dropout (eg Christie *et al*, 2004), less attention has been dedicated to students who fail academically.

At the University of Glamorgan, both retention and attainment are of particular concern. The University's attrition figures have compared unfavourably with other UK institutions. The average dropout rate for all first-degree students over all courses and all levels is 22.4%. The average dropout rate between year 1 and year 2 is 30%. The Higher Education Statistics Agency (HESA, 2007) figures, based on the 2005-06 academic year, highlight attainment issues specific to the University: 29.4% of Glamorgan undergraduates are from low participation neighbourhoods (against a benchmark of

17.6%) and 41.4% are from lower socio-economic backgrounds (against a bench mark of 35.5%). The educational attainment of catchment area students is also low, with a large proportion being 'first generation' students.

Widening participation policies and increasing enrolments have resulted in changes to the student population. Females now constitute around 59% of the student population, outnumbering their male contemporaries in both full and part-time study (HESA, 2007). A 2007 NatWest Student Money Matters survey found that currently 20% of university students reside at home during their studies rather than move away into university accommodation; and this trend continues to rise. Recently, the acceptance of older students into HE has increased. Latest figures show that of all full-time first-degree entrants, over 20% were 'mature' (HESA, 2007). Therefore, this paper aimed to explore the effects of gender, place of residence and age on the academic performance of first-year undergraduates at Glamorgan.

As A-Level grades are a predominant part of the selection procedure for entry to university, the relationship between prior academic achievement and Year 1 attainment was also investigated. Finally, it would make sense to suggest that the more a student attends classes the more information they acquire and thus the better they perform in educational assessments (though this is based on the assumption that those in attendance are also engaged in learning). However, there have been surprisingly few empirical studies investigating the relationship between student attendance and course performance (St Clair, 1999). Therefore, this study considers the link between first-year class attendance and academic results. Results may be used to identify and proactively target students who could be predisposed to low attainment. Offering help and support to these individuals could improve progression rates and help all students achieve optimal success.

Literature review

Gender

Investigation into attainment differences between males and females are necessary to promote gender equality and to develop supportive mechanisms that concentrate time, resources, and attention on those students in greatest danger of being left behind in the educational pipeline.

Though Borde (1998) found no evidence that gender impacts upon academic achievement, there is some empirical data to suggest that student performance is persistently characterised by marked gender differences. Not only is there a widely recognised national trend for girls to outperform boys at all

levels of compulsory schooling (Woodfield and Earl-Novell, 2006), but Lawrence *et al* (2006) found that female undergraduates performed significantly better in academic assessments than males.

Based upon analysis of 1,707,408 students graduating between 1995 and 2002, Woodfield and Earl-Novell (2006) found that male graduates are proportionately over-represented at the First Class level. They concluded that much of the 'gender gap' can be explained with reference to the male propensity to take degrees in disciplines inclined to award a significant number at First Class level. However, Smith (2004) tracked 200 students at Brunel University over four years and found that women consistently outperformed men despite enrolling with almost identical A-level results. Findings showed that 65 per cent of female graduates were awarded a 2:1 or First, compared to only 35 per cent of males. Disparities in achievement were attributed to the fact that males and females perform the role of student in different ways. Female students were more conscientious, less likely to miss lectures and more likely to believe their marks reflected their ability than their male peers. Females were also more likely to seek and receive support from staff. By contrast, men had a greater tendency to be absent from classes due to 'other commitments' and 'laziness' and to believe that playing sport was an important part of university life.

Place of residence

Patiniotis and Holdsworth (2005) identified the role of finance as a key motivator for remaining at home, with students from low-income backgrounds being least likely to move away in order to reduce the financial burden of being a student.

Blimling (1999) conducted a literature review and found little difference in the attainment of students living in university residence and those residing at home. However, some research suggests that remaining within the family home can be advantageous. Although support from friends and peers is significantly associated with achievement (Wall *et al* 1999), parental support has a more positive impact on academic attainment (Cutrona *et al*, 1994).

In contrast, Schragger (1986) showed that students living in university halls tended to perform better academically than those living off-campus. Arya and Smith (2005) found that students who live at home throughout their studies do not have the same relationship with, nor access to, the university as those who move away. Holdsworth (2006) reported that students who remain in the family home have less freedom to socialise. They also experience additional problems such as travel time, adjusting to university life and overcoming other students' opinions and assumptions of those living at home.

Strom and Strom (2005) extend this list to include frustration felt by students caused by dependency on financial support and parents establishing house rules with little, if any, discussion. King (1998) showed that for pre-college-age students, conflict within the family is negatively related to academic performance.

When there is a lack of consensus in the literature on an issue such as this one, further empirical work is usually necessary, particularly as the results yielded could help students make more informed decisions regarding where to live during their studies.

Prior educational attainment

A number of studies have examined the relationship between students' A-level points on entry and their final degree classification to determine how previous educational attainment can be used to predict undergraduate performance and progression. Results have implications not only for admissions policies, but also for the costs of widening participation in HE.

McCarey *et al* (2006) demonstrated that students with high entry qualifications attained consistently better grades than those with lower level qualifications. Indeed, evidence suggests that students who perform well in secondary education usually continue this high performance throughout their student life (Smith and Naylor 2001; McKenzie and Schweitzer 2001; Jansen 2004). Of course, students with strong prior attainment tend to enrol in particular sorts of universities where there may be cultural factors which impact upon their performance/behaviour.

Conversely, Chapman (1996) found a significant positive correlation between entry qualifications and degree results for eight disciplines over a 21-year period. However, the strength of the relationship varied between subjects and at an institutional and departmental level, with some displaying consistently counter-intuitive combinations of above-average entry qualifications and below-average attainment (and vice versa). Sear (1983) conducted a cross-section analysis of graduates of British universities and found a significant but weak positive relationship between A-level scores and subsequent degree result. Bourner and Hamed (1987) revealed that in polytechnic institutions the correlation was stronger for students near the top of the achievement range than for those at the bottom and also for subjects taught at school.

Age

A mature student is one who is above the age of 21 in England Wales and Northern Ireland, or above 20 in Scotland.

Mature students have traditionally played a marginal role in HE and in the past older applicants were less likely to be accepted for entry to first degree programmes than younger applicants (Woodley, 1984), perhaps because they often failed to satisfy traditional entry requirements. However, more recently the acceptance of older students into HE has increased. HESA (2007) data for 2005/06 show that of all full-time first-degree entrants, 21.6% were 'mature'.

Interest in the role of age as a predictor of academic attainment is often motivated by a stereotype of older people as being deficient in intellectual skills (Richardson and King, 1998). Research indicates that younger students generally perform better than older students (Jansen 2004; Van den Berg and Hofman 2005). Omigbodun and Omigbodun (2003) identified a direct correlation between increasing age and decreasing performance in students sitting a psychiatry examination. Nevertheless, this relationship often differs between men and women or various disciplines (Richardson and Woodley 2003; Smith and Naylor 2001).

Bourner and Hamed (1987) showed that mature students actually performed better than younger students in polytechnics, while Richardson and King (1998) concluded that older students tend to exhibit more desirable approaches to learning in terms of both their persistence and attainment. Woodley (1984) categorised students into nine groups according to their age on admission to university. Results revealed two peaks in attainment, one at 18–19 years and the other at 26–30 years. After 30 years, attainment declined with age. Similarly, Bourner and Hamed (1987) found an increase in achievement until 36–40 years of age and a decline thereafter, implying that the relationship between age and academic performance is not monotonic.

Student attendance

According to Morgan (2001) student non-attendance at lectures and seminars is an area for concern. The major reasons given by students for non-attendance are assessment pressures, poor lecturing, inconvenient timing of the lecture, poor quality of lecture content (Fleming, 1992; 1995) and work commitments (Longhurst, 1999). Cooper *et al* (2002) showed that attendance in a post-'92 university with a history of widening access and a high proportion of employment was almost half that of students in an old university in which fewer students held down part-time jobs.

An early study by McConnell and Lamphear (1969) revealed no noteworthy difference between the performance of students who never attended classes and those who attended regularly. However, other studies suggest that attendance is strongly correlated with attainment (Thomas and Higbee,

2000; Martinez, 2001; Colby, 2004) and that time spent attending lectures is positively associated with achievement. In fact, Street (1975) showed that absence explains 52% of the variation in assessment results. Interestingly, Moore (2004) found that ongoing, quantitative emphasis on the importance of class attendance led to significant improvements in both attendance and performance despite students receiving no credit for turning up.

It could be argued that attendance is simply a proxy for student motivation. However, Romer (1993) and Durden and Ellis (2003) found motivation to be an independent facet of achievement and that attendance significantly contributed to attainment even after controlling for motivation. Stanca (2004) took into account the effect of unobservable factors associated with attendance, such as ability, effort and motivation and found that attendance had a significant, positive impact on performance; suggesting that teaching had an important independent effect on learning.

Limitations of previous research

The research literature on the predictors of educational attainment is by no means complete and existing studies are often associated with limitations. Most focus on factors that determine final degree classification, ignoring the early years of degree programmes when students are at highest risk of underachievement and dropout. Largely, studies focus narrowly on one topic whilst bypassing related issues. For example, research on prior attainment tends to assume that A-level scores are unrelated to other determinants of achievement that may exist, thus limiting their usefulness. Other investigations are extremely broad (eg Blimling, 1999) and fail to produce results specific enough to be of practical use. The results from a number of leading investigations (eg Bourner and Hamed, 1987, Sear, 1983) are now likely to be redundant due to changes in the student profile over recent years. A further problem is caused by degrees awarded with undivided second-class honours; Sear (1983), for example, simply excluded students who had been awarded undivided second-class honours from his calculations. Studies investigating age as a predictor of academic achievement tend to treat mature students as a single homogeneous group.

There have been relatively few controlled studies on the association between attendance and academic performance (Moore, 2004). Those available appear to be restricted to elite 'highly competitive' schools (Romer, 1993) and upper-division students, and their conclusions based on small samples. Attendance studies commonly exclude first-year students and focus on single modules. In many instances conclusions have been based on questionable data gathered by means of

paper-based registers. Colby (2004) and Bowen *et al* (2004) point out that paper-based attendance monitoring and manual data entry are associated with inherent data collection limitations, including:

- Students not signing in: paper registers often fail to reach all of the students, particularly those at the back of the classroom, resulting in present students appearing to be absent.
- Students signing the wrong place on the registration document.
- Illegible signatures.
- Incomplete registration.
- Impersonation: students inclined to cheat the system can easily record absent peers as being in attendance, making the identification of persistent absentees difficult.

Therefore, the aim of this study was to explore the effects of gender, prior attainment, age, attendance and place of residence on the academic performance of first-year undergraduate students at the University of Glamorgan, whilst addressing the limitations of previous studies. The research will investigate whether indeed there is a trend for male students to underperform, and if so, which groups are falling behind and which ones are keeping up with their female peers. The interconnection between prior achievement and other determinants of academic performance will be assessed and the relationship between age and attainment will be explored, with 'mature' individuals regarded as a heterogeneous group. Finally, the study aimed to assess the link between student attendance and academic performance. However, rather than using traditional paper-based methods, this study utilised attendance data collected and stored electronically by the University's Uni-Nanny® system.

Uni-Nanny®

To MINIMISE the problems associated with paper-based attendance registers and manual data entry, an electronic attendance monitoring system was designed at the University of Glamorgan. At the start of the academic year, students are issued an individual key ring with built in micro-chip, or 'fob'. The fob is placed against a baton which flashes and vibrates when registration is successfully completed. The information gathered by the baton is then downloaded and sent to a database where it can be analysed. Students showing sporadic attendance or two consecutive absences are then contacted and offered support.

At Glamorgan, Uni-Nanny has increased data capture by 30% on average, and up to 90% in some cases (Bowen *et al.*, 2004). The system takes away the need for students to pass registers around the class, does not require administrators to manually enter figures into a database and makes falsifying attendance more difficult as students would have to entrust a fellow student with their individual fob. Lecturers are also spared the task of sending registers for analysis, thereby reducing time delays in identifying absenteeism.

The system was piloted in Glamorgan's School of Humanities and Social Sciences during 2005-06, monitoring the attendance of 748 first-year students over 22 modules within four degree programmes: BSc Psychology, BSc Criminology and Criminal Justice, BA Modern Europe and BA Creative and Professional Writing. One year after the system's introduction, research revealed positive results for retention rates (Fitzgibbon, 2006).

Over the year, 391 students were contacted and 98% responded; 60% returned to class immediately and 38% visited an Advice Shop (a support and advice service within the University). Students were also found to be appreciative of the concern shown by the University, with several confirming that—had they not been contacted—their withdrawal would have been imminent.

Methodology

STUDENT assessment results were collected for both coursework and examinations using QuercusPlus, the student administration system at the University of Glamorgan. Individuals' final module assessment outcomes were then calculated into percentages. QuercusPlus was then used to collect further information on the 748 students who were monitored using the electronic attendance system in the 2005-06 academic year, including their gender, A-Level points on entry, age and where they resided during term time (ie their home address, or whether they had moved away to attend university).

Attendance data were gathered using the Uni-Nanny system for every teaching session attached to the 22 compulsory modules. Percentages of attendance were calculated for each student per module. All data were then entered into SPSS, a statistical analysis computer package. Pearson product-moment correlation coefficients were employed to ascertain any statistically significant correlations between the factors above and academic attainment. Mann

Whitney U-tests were employed to examine differences in attainment between males and females and those living at home and away.

Results

OF THE 22 modules analysed, 16 comprised both lectures and seminars/tutorials and six involved taught lectures only. The academic year comprised one 11-week term and one 12-week term, with an average of three 'reading weeks' per module. The highest proportion of students in the cohort was enrolled on Psychology (263), followed by Criminology and Criminal Justice (254) and Creative and Professional Writing (133). A minority of students (98) were studying Modern Europe.

On average, each student was monitored over three modules, resulting in 2,099 assessment marks. There were 131 non-submissions over the year, where students failed to sit exams or hand in coursework. The vast majority of individuals who failed to submit work in one module also did not complete assessments in other/all modules. Non-submissions were omitted from data analysis as the aim of this study was to investigate which factors are related to subsequent module attainment.

For the purpose of this study, students' module assessment marks were divided into traditional degree classifications and used as a differentiator (though these categorisations are not indicative of final result). Assessment marks were categorised as follows:

- Marks of 70% and above = First Class
- Marks between 60 and 69% = Upper Second
- Marks between 50 and 59% = Lower Second

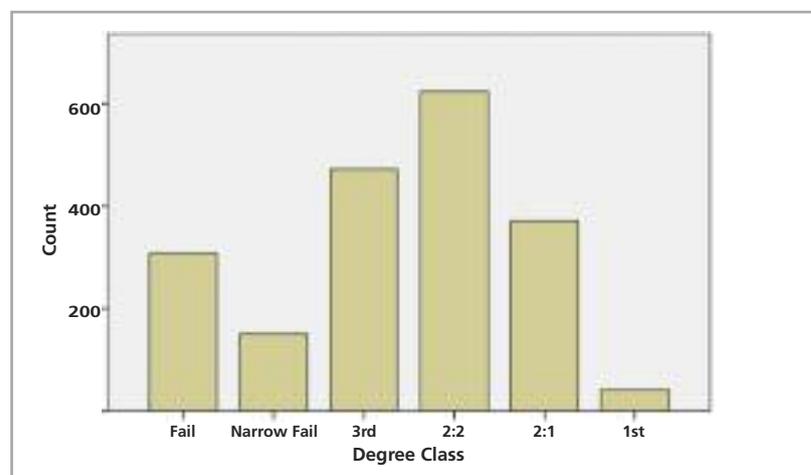


Figure 1: Distribution of performance classifications

Breakdown of male and female undergraduates within each discipline								
	Criminology		English		History		Psychology	
	Number	Mean	Number	Mean	Number	Mean	Number	Mean
Male	67	47	52	51.4	46	44.8	66	46.4
Female	187	49.9	81	47.4	52	46	197	46.4
Total	254	49.2	133	48.2	98	45.3	263	46.4
p =	0.034		0.129		0.790		0.427	

Table 1: Breakdown, mean assessment result and probability levels for males and females

- Marks between 40 and 49% = Third
- Marks between 30 and 39% = Bare Fail
- Marks Below 30% = Fail

Performance classifications were fairly normally distributed (Figure 1). The largest number of students (32.3%) received Lower Second Class marks, while just 2.1% achieved First Class results.

The average module assessment mark was 47.3%. Highest marks were achieved by Creative and Professional Writing students. Modern Europe modules were associated not only with the lowest attainment rates but also the highest proportion of fails. At the end of the academic year,

85.7% of the cohort continued, 9.2% had withdrawn, 4.4% transferred to another course and 0.7% suspended their studies.

Gender

Of the 748 students, 506 were female and 242 were male. Each of the four degree awards examined comprised a higher number of female students. In some cases this difference was discernible: 75% of the Psychology and 73% of the Criminology cohort were female. Males achieved a mean of 48% in academic assessments compared to 47% by females. However, neither gender showed more variability in their assessment results than the other. The minimum result received by males was 7, compared to 6 for females, while the maximum mark awarded was 78 for both.

Table 1 shows the breakdown of male and female undergraduates within each discipline, the mean assessment result for both groups and the probability levels between gender and attainment.

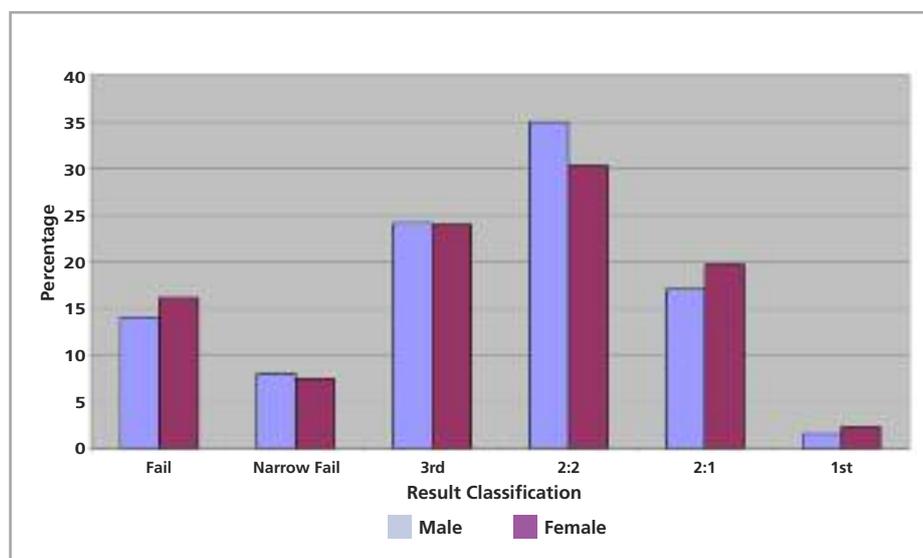


Figure 2: Comparison of male and female attainment by result classification

Figure 2 illustrates male and female attainment by class of result. Although a greater proportion of females achieved 'good' results (over 60%), the highest percentage of those receiving Fails were also female. A considerably higher number of males received Lower Second class marks

	First	Upper Second	Lower Second	Third	Bare Fail	Fail	Total
Home	25	168	317	272	89	216	1087
Away	17	193	319	207	57	88	881
Total	42	361	636	479	146	304	1968

Table 2: Students living at home and away against class of result

Gender-related differences in attainment were only statistically significant within Criminology and Criminal Justice. Overall, results showed that gender had no significant impact upon attainment ($U=393957.5$, $p>0.05$).

Place of residence

Of the group, 413 students (55%) resided within their family home, while 335 (45%) moved away during term-time. The number of assessment outcomes achieved by the 'home' group was 1,087 and for those living away it was 881. The family homes of the majority of students (both those living with their families and those residing in alternative accommodation) were in close geographic proximity to the university campus, usually within 10 miles.

Students living in student/private houses or halls of residence performed better on average than those residing at their home address. 'Home' students attained a mean of 44.3% in assessments, compared with 49.7% by the 'away' group. Differences in attainment between the groups were statistically significant ($U= 238252.5$, $p<0.001$). Table 2 provides figures for class of result by students living at home and away.

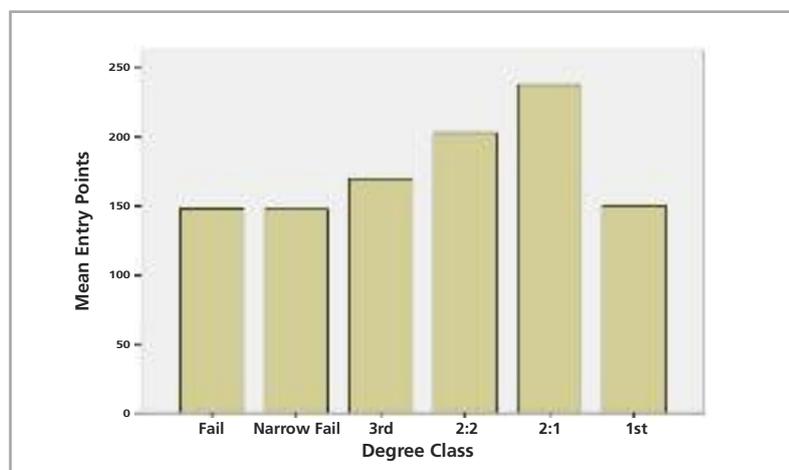


Figure 3: Correlation between student entry point and subsequent Level 4 attainment by degree classification (number = 1986)

Of the students who received Fails and Bare Fails, the majority (70% and 61.7%) lived within the family home. Surprisingly then, almost 60% of First Class results were attained by 'home' students.

Prior educational attainment

UCAS entry points were normally distributed across the cohort. The average number of points with which students entered HE was 187.6. The minimum was 0, the maximum was 740. There was little difference in the prior attainment of males and females. Females entered with an average of 189 points, while males entered with a mean of 184 points. A marked difference was noted in the UCAS points of students residing at home and those living away (166 and 208.9 points, respectively). Analysis showed this difference to be significant to the $p<0.0001$ level. There was a wide variation in UCAS points over the four separate degree awards, with Creative and Professional Writing students entering with the highest points (230.4), followed by Modern Europe (190.6), Criminology and Criminal Justice (183.4) and finally Psychology (178.1).

Results revealed a strong, statistically significant relationship between prior attainment and subsequent Year 1 results ($r=0.232$, $p<0.0001$), as illustrated in Figure 3.

Students who received Fails or Bare Fails had a mean of 150 UCAS points. In fact, 62% of students who entered with 150 points or less either failed module assessments or received Third Class marks, while only 2.8% achieved First Class marks. In comparison, those with 200 points or more tended to achieve Second Class results (upper and lower) and 35% of students who entered with 300 points or more attained First or Upper Second Class results. However, as Figure 3 illustrates, the average UCAS points for those receiving First Class marks was rather low, at 154.

Age

Of the cohort, 547 (73.12%) were between 18 and 20 years of age and therefore classified as 'young' entrants. The remaining 201 (26.88%) were 'mature' students. The average age was 20.7, while the oldest individual was 54 years of age. Students were then categorised into nine groups according to their

age on enrolment. Table 3 details the breakdown of students over age bands

Young degree entrants entered HE with an average 203 UCAS points in comparison with 130 points for mature entrants. Young students achieved a mean of 47% in their Year 1

Subjects of the meetings and discussions		
Age	Number of students	%
18-20 years	547	73.12
21-25 years	114	15.24
26-30 years	37	4.95
31-35 years	29	3.88
36-40 years	13	1.74
41-45 years	5	0.67
46-50 years	0	0
51-55 years	3	0.4
56-60 years	0	0
Total	748	100

Table 3: Distribution of students over age groupings

assessments, while older undergraduates attained an average of 45.7%. Correlation levels between age and assessment marks were variable across the four award programmes, with significant relationships emerging within Criminology and Criminal Justice and Creative and Professional Writing. No significant link was found for Modern Europe or Psychology.

Overall, the relationship between age and attainment was not statistically significant ($r=-0.10$, $p>0.05$) and did not vary by gender. Despite attaining lower results overall, older students achieved a higher proportion of 'good' marks (Figure 4). Results revealed that attainment begins to peak between 36 and 40 years of age, with students between the ages of 41 and 45 achieving the highest marks, as illustrated in Figure 5. However, the trend did not continue and performance declined past 50 years of age. Those between the ages of 51 and 55 received the lowest marks of all the age ranges.

Attendance

Average attendance for combined learning events was 45.8%, whilst for lectures alone this figure was 55.6%. The highest attendees were the Creative and Professional Writing group (49.4%), followed by Psychology (49.1%) and Criminology (40.8%) students. The poorest attendance rates (40.3%) were found to be within Modern Europe modules. Generally, male rates of attendance were slightly more than female.

A strong, statistically significant correlation emerged between students' module attendance and assessment marks. This

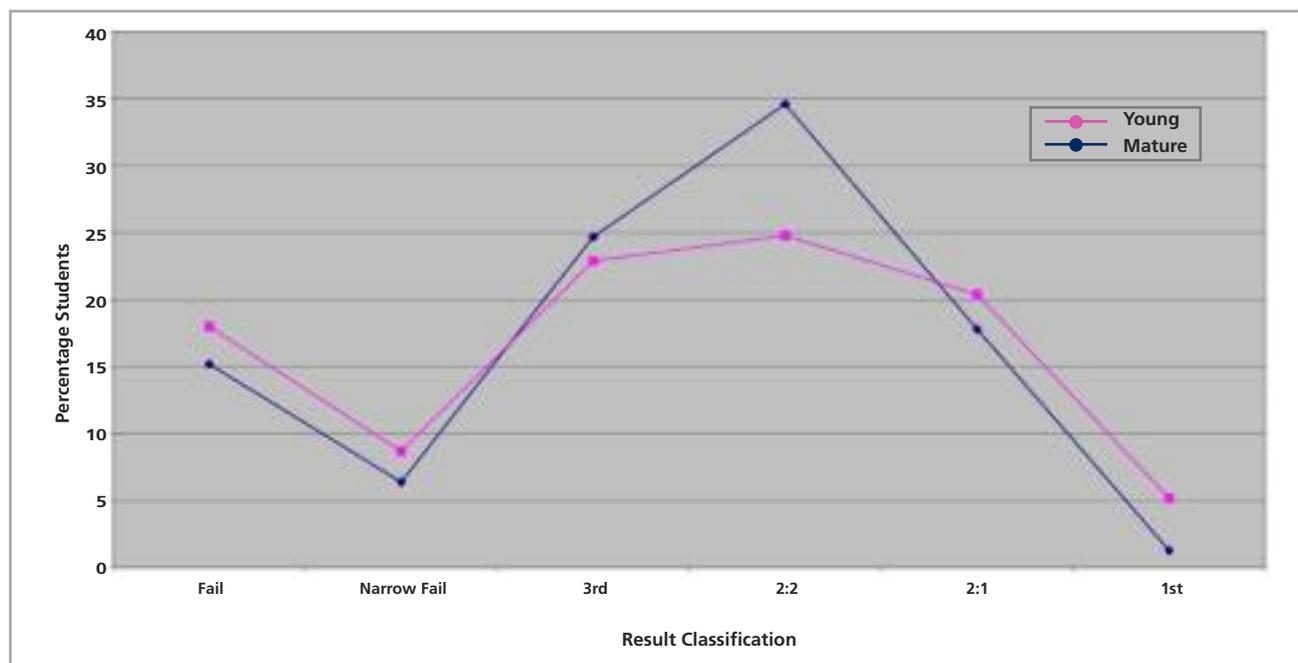


Figure 4: Young and mature students against class of result

relationship was strong in all but one of the 22 modules examined. Correlations were significant to the $p < 0.05$ confidence level and are therefore unlikely to be due to chance. Students who received First Class grades also achieved the highest attendance rates, followed consecutively by 2:1, 2:2, 3rd, Narrow Fail and Fail, as shown in Figure 6. The bar chart shows that students who attained First Class grades attended, on average, 70% of learning events, while those receiving Fails attended less than 30%.

Findings revealed a dramatic decline in attendance throughout the academic year. Four weeks into term one, 75% of students were in attendance, compared with just 35% in the last week of term two. Figure 7 shows the pattern of attendance over terms one and two by assessment result.

No lectures or seminars were held during week 6 of either semester. Subsequently, during weeks 7 and 8, there was a

sharp fall in the number of students in attendance. Decreases were also apparent at the end of each semester when assessment deadlines were imminent. Attendance rates rose during week five of term one, when the majority of coursework requirements were set. Presence at learning events also increased during weeks 8-9 of Term 1 and 9-10 of Term 2 when revision lectures were held. Data indicated that there is a strong tendency for students who miss one learning event to show several consecutive absences thereafter.

A significant relationship emerged between students' prior attainment and subsequent attendance rates ($r = 0.541$, $p < 0.0001$). This relationship is demonstrated in Figure 8.

Attendance also correlated strongly with place of residence. The attendance rates of students living in alternative accommodation were significantly higher than those residing at home ($U = 244801.0$, $p < 0.0001$).

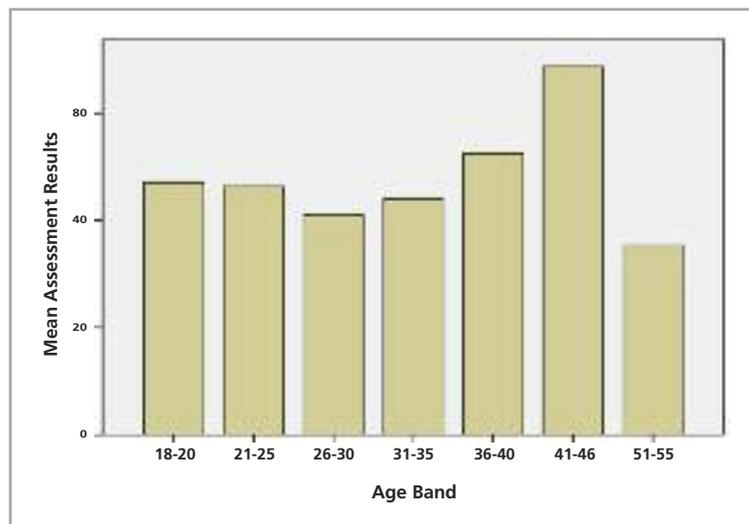


Figure 5: Assessment result by age category

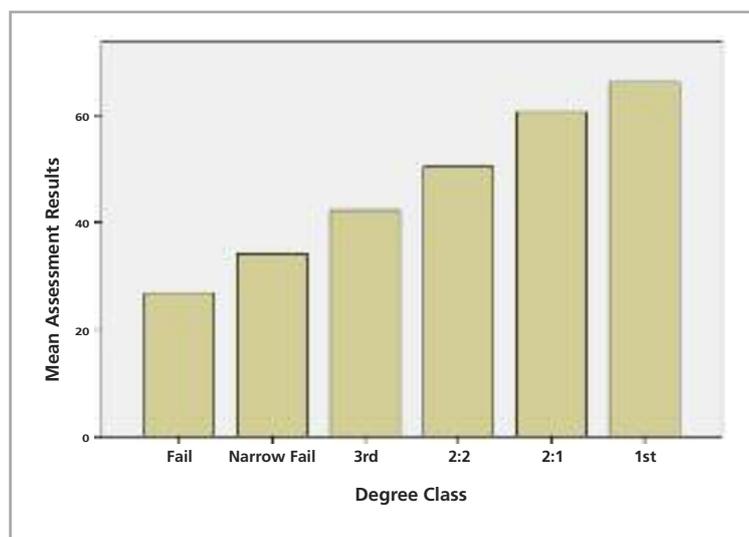


Figure 6: Attendance by performance classification

Discussion

Gender

Participation of males and females were highly disproportionate within two of the degree awards examined, indicating that particular disciplines appeal to females more than males or, perhaps, certain subjects focus on one gender more than the other during the recruitment/selection process.

Male students attained superior assessment marks overall, therefore contradicting Lawrence *et al* (2006). In support of Smith (2004) a greater percentage of females achieved Upper Second and First Class marks. However, results may not be generalisable as the study used a small selection of degrees dominated by females.

No significant difference between the academic performances of men and women were identified, implying that gender has little impact upon academic performance; thus supporting Borde (1998).

Place of residence

More than half the student sample resided within the family home. Figures show that 41.4% of Glamorgan students are from lower socio-economic backgrounds, which Patiniotis and Holdsworth (2005) cite as the key motivator for remaining at home.

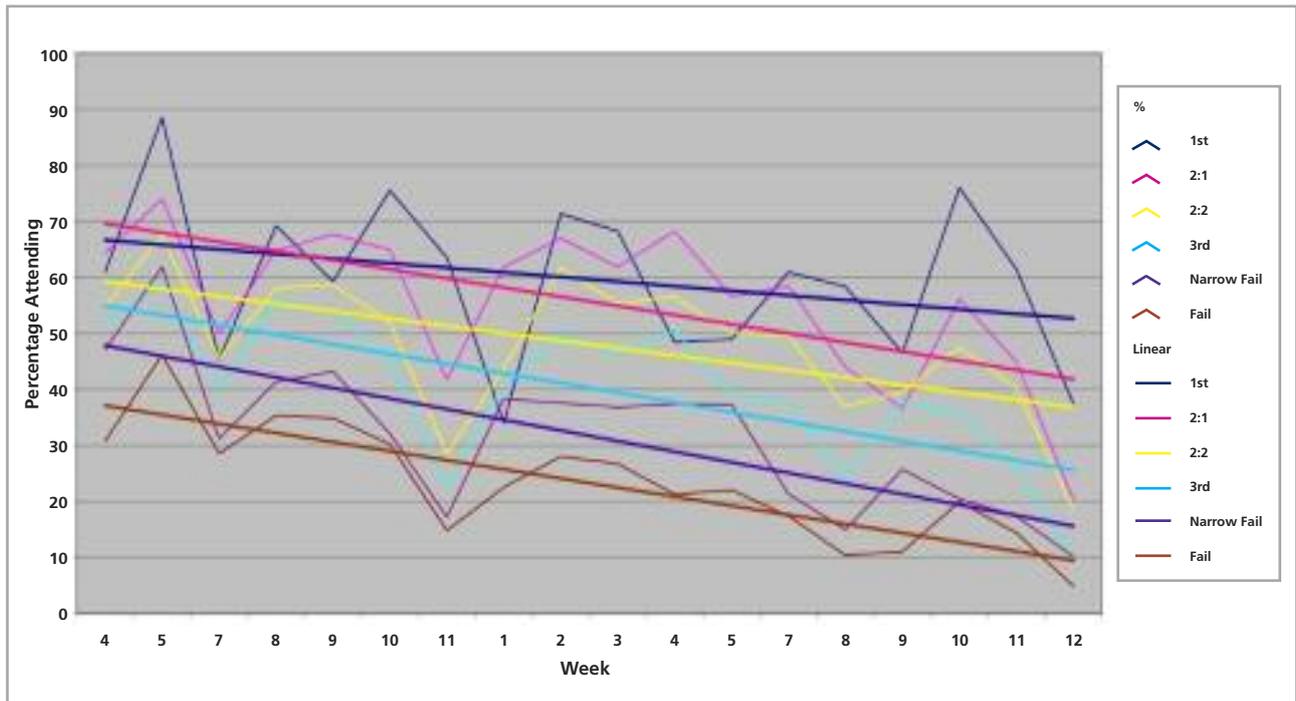


Figure 7: Attendance over terms 1 and 2 by assessment result

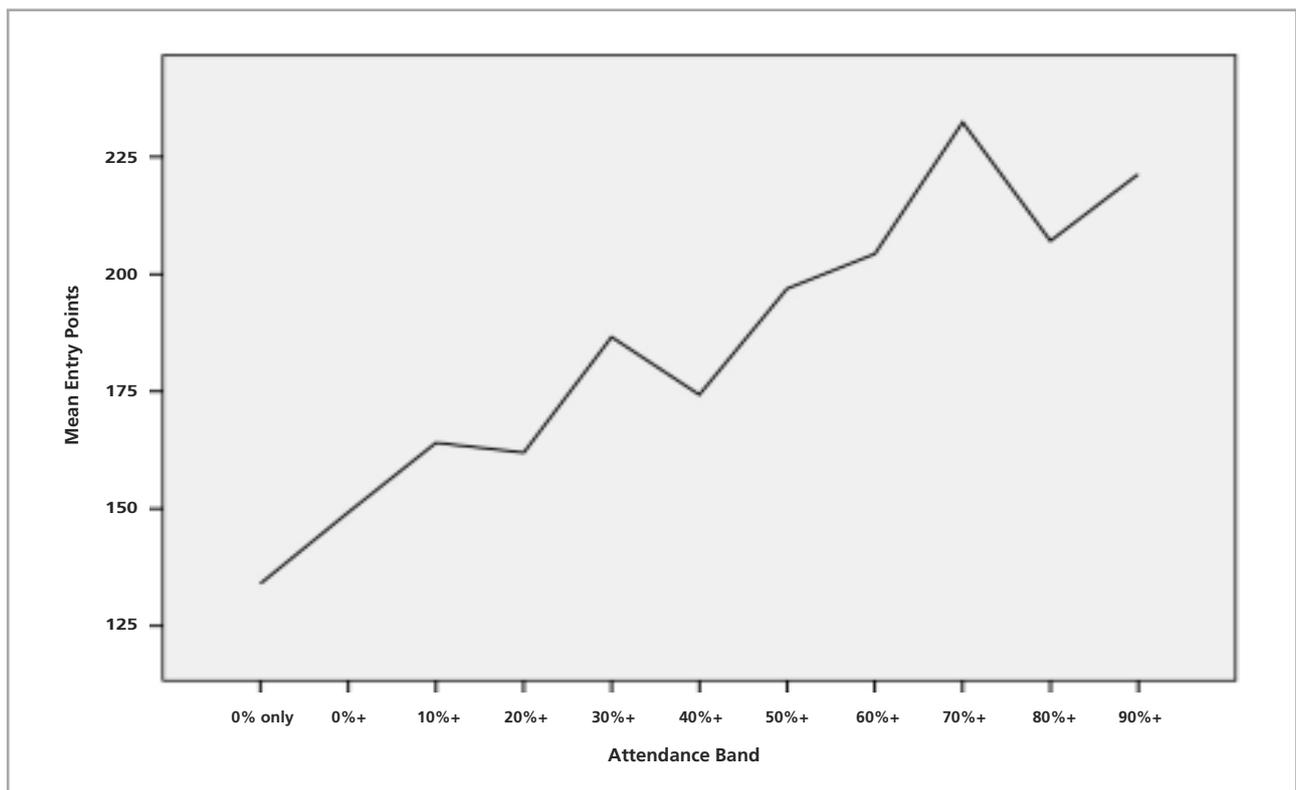


Figure 8: The relationship between student attendance (by band) and prior attainment (Ucas points)

Students living in alternative accommodation performed better in assessments than those remaining at home, indicating that the interpersonal environments which arise within different living groups impact upon students' academic achievement. Findings may reflect the disadvantages

associated with living at home such as travel time, problems adjusting to university life (Holdsworth, 2006), frustration caused by dependency upon parents (Strom and Strom, 2005) and stress of family conflict (King, 1998). Also, 'home' students sometimes do not have the same relation-

ship with, nor access to, the university as students who move away (Arya and Smith, 2005). Another possible explanation is that the family homes of the many students living in alternative accommodation were situated within close geographical proximity to the university. Thus, the 'away' students in this study are likely to have experienced the benefits of both familial and peer support (Cutrona *et al*, 1994), without the unfavourable implication associated with living at home.

However, there was a minority of strong achievers in the 'home' group. Therefore, it would be interesting to conduct further study examining additional factors which cause this minority to excel. A future study could also investigate the multifarious reasons why some students might remain at home during term time, such as having young children, and would assess whether these factors also impact upon academic engagement/attainment.

Prior educational attainment

Contrary to Sear's (1983) findings, students with higher entry qualifications performed consistently better during their first year than those with lower qualifications. The correlation between the UCAS points and Year 1 attainment was very strong, thereby corroborating the work of Jansen (2004), McKenzie and Schweitzer (2001), Smith and Naylor (2001) and McCarey *et al* (2006).

In support of Chapman (1996), the strength of the relationship between student entry points and subsequent performance varied between degree subjects. Although significant, the relationship was weak for Modern Europe. Despite History students entering with the second highest qualifications on average, this group achieved the lowest marks in academic assessments. This is surprising as Bourner and Hamed (1987) showed that the correlation is stronger for subjects taught at school.

Students entering HE with 150 UCAS points or less have a much greater chance of failing module assessments than who enter with 200 points or more. However, the mean entry points for students attaining First Class results were unexpectedly low. This may be due to the fact that a high proportion of these marks were achieved by mature students who commonly lack necessary qualifications, particularly in the form of UCAS tariff points.

Age

Mature students entered their courses with distinctly lower prior attainment than their younger counterparts, supporting Woodley's (1981) speculation that older students often

fail to satisfy traditional entry requirements. Overall, younger undergraduates performed better in academic assessments (Jansen 2004; Murtaugh *et al*, 1999; Van den Berg and Hofman, 2005). However, as in Richardson and Woodley (2003) and Smith and Naylor's (2001) studies, the strength of the relationship between age and attainment varied over the four disciplines.

Results revoke the stereotype of older people being deficient in intellectual skills as the highest proportion of Upper Second and First Class marks were achieved by mature students. This may echo Richardson and King's (1998) conclusion that older students exhibit more desirable approaches to learning. Nevertheless, mature students also received a higher proportion of Fails, perhaps because this group commonly has additional priorities and responsibilities, including social lives, families and full-time jobs, which make studying more difficult.

The relationship between age and attainment was not simple or monotonic, supporting Bourner and Hamed (1987). Student performance declined between the ages of 26 and 30—perhaps when personal commitments (eg children) prove to be most demanding—though increased between 31-35 years of age and peaked at 41-45 years. This could reflect the strong incentive by those in employment to seek a qualification as a means of progressing in their existing careers or as a way out of 'dead-end' jobs. However, attainment fell dramatically by 51-55 years of age.

Attendance

Attendance for both lectures and practicals were low. Cooper *et al* (2002) showed that employment is a key reason for non-attendance and, for a large proportion of Glamorgan students, part-time work is a necessity. It is recommended that lecturers continually emphasise to students the importance of class attendance as Moore (2004) found that this can lead to improvements in both the attendance and educational performance of undergraduates.

A strong, statistically significant correlation emerged between attendance and attainment, thereby substantiating the findings of Thomas and Higbee (2000), Martinez (2001) and Colby (2004). It appears that the more a student attends classes the less chance of failing assessments and more chance of achieving high grades. However, correlation is not causality and attendance alone does not ensure that a student is learning. Some, albeit few, students received poor assessment results having consistently attended. It would be interesting to conduct a further study identifying the usage rates of Glamorgan's virtual learning environment, Blackboard®, by students with poor attendance to establish

whether lack of physical attendance is substituted by engagement with other learning materials.

Attendance increased throughout revision weeks and in learning events during which assessment requirements were outlined. This indicates that many students are strategic learners who are inclined to attend classes when they believe there will be an instant benefit. There was also a strong tendency for students missing one class to then be absent from subsequent learning events. Immediate intervention following one absence may help to combat this trend and ultimately lead to improvements in attainment. In addition, it may be necessary to implement strategies to aid those who fail to attend for genuine, unavoidable reasons, such as video recording of learning events or audio taping an explanation of lecture notes which can then be made accessible to students.

Results revealed a positive correlation between attendance and prior attainment. This would suggest that a number of undergraduates had already established good patterns of attendance which contributed to their previous success. Substantiating this supposition, 'away' students, who achieved significantly better grades than those living at home, not only entered HE with higher average UCAS points but also attended significantly more classes than their peers living at home. Unfortunately, many students from low-income backgrounds simply cannot afford to move away; however, it is these students who are also most likely to engage in employ-

ment which is a key factor in non-attendance (Cooper *et al*, 2002).

Conclusions

GENDER AND age appear to have little impact upon educational achievement during Year 1. In contrast, place of residence, prior attainment and attendance had more significant effects on academic achievement.

Interestingly, attendance, entry points and place of residence appeared to be interrelated. In terms of which students are most likely to achieve Upper Second or First Class grades, those who move away from home during term-time have a 24% chance and students who enter HE with 200 UCAS points or more have a 26% chance, though this probability increases most when students attend 60% or more learning events. When these factors are combined, the likelihood of attaining good grades increases considerably (Figure 9).

A combination of the three factors raises an individual's chance of achieving Upper Second and First Class marks to 84%. Poor attendance appears to be a particularly good indicator of educational disengagement, reinforcing the importance of reliable attendance monitoring systems for the quick identification of persistent absentees and indicates that action to increase attendance will help to retain students and improve success rates.

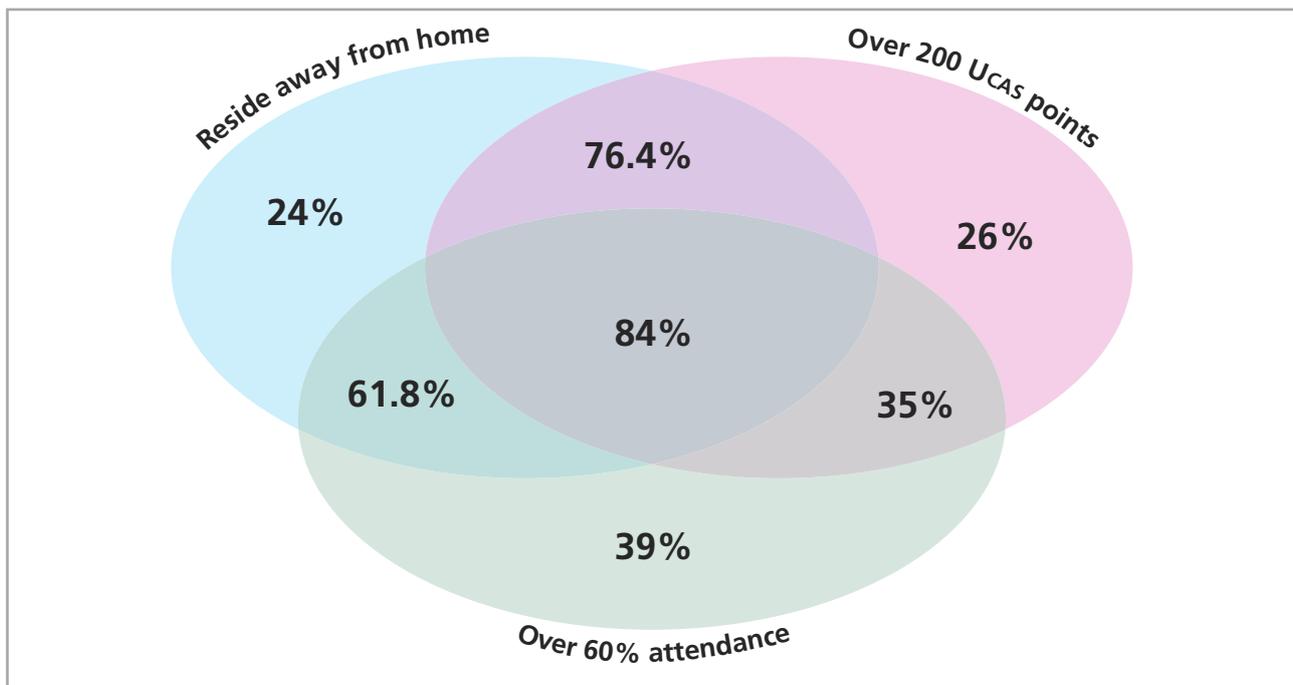


Figure 9: Chance of attaining Upper Second or First Class marks by place of residence, attendance and prior attainment

References

- Arya R & Smith R (2005) *Living at home—An investigation into the degree to which University facilities and access/utilisation policies are appropriate for the range of students' living arrangements currently experienced at Aston University*. Available online at: <http://www.aston.ac.uk/prospective-students/wp/research.jsp> (accessed 25 November 2008).
- Baty P (2006) *Uni-Nanny is watching*. Times Higher Education Supplement, 4 August 2006. Available online at: <http://www.timeshighereducation.co.uk/story.asp?sectioncode=26&storycode=204636> (accessed 6 November 2008).
- Blimling GS (1999) A meta-analysis of the influence of college residence halls on academic performance. *Journal of College Student Development* **40**, 551-561.
- Borde SF (1998) Predictors of student academic performance in the introductory marketing course. *Journal of Education for Business* **73**(5), 302-307.
- Bourner T & Hamed M (1987) *Entry qualifications and degree performance*. CNAA, London.
- Bowen E, Price T, Lloyd S & Thomas S (2004) Improving the quantity and quality of attendance data to enhance student retention. *Journal of Further and Higher Education* **29**(4), 375-385.
- Chapman K (1996) Entry qualifications, degree results and value-added in UK Universities. *Oxford Review of Education* **22**(3), 251-264.
- Christie H, Munro M & Fisher T (2004) Leaving university early: exploring differences between continuing and non-continuing students. *Studies in Higher Education* **29**, 617-636.
- Colby J (2004) Attendance and attainment. *Fifth Annual Conference of the Information and Computer Sciences—Learning and Teaching Support Network (ICS-LTSN)*, 31 August - 2 September, University of Ulster. Available online at: <http://www.ics.heacademy.ac.uk/italics/Vol4-2/ITALIX.pdf>
- Cooper C, Taylor P, Smith N & Catchpole L (2002) *The social creation of the disciplined graduate—social accounting with a twist*. Glasgow Caledonian University Research Seminar Series.
- Cutrona CE, Cole V, Colangelo N, Assouline SG & Russell D (1994). Perceived parental social support and academic achievement: an attachment theory perspective. *Journal of Personality and Social Psychology* **66**, 369-378.
- Durden GC & Ellis LV (2003) Is class attendance a proxy variable for student motivation in economics classes? An empirical analysis. *International Social Science Review* **78**, 22-34.
- Fitzgibbon KM (2006) Electronic attendance monitoring project. University of Glamorgan, unpublished manuscript.
- Fleming N (1992) Why don't they attend? *Occasional paper*, Lincoln University Education Unit.
- Fleming N (1995) Attendance: why don't they attend? Part 2, *Discussion paper*, Lincoln University Education Unit.
- Higher Education Statistics Agency (2007) Performance Indicators. Cheltenham, HESA. Available online at: <http://www.hesa.ac.uk/index.php/content/category/2/32/141/> (accessed 6 November 2008).
- Holdsworth C (2006) 'Don't you think you're missing out, living at home?' Student experiences and residential transitions. *The Sociological Review* **54**, 495-519.
- Jansen EPWA (2004) *The influence of the curriculum organization on study progress in higher education*. Higher Education **47**, 411-435.
- King A (1998) Family environment scale predictors of academic performance. *Psychological Reports* **83**, 1319-1327.
- Lawrence JC, Ashford KJ & Dent P (2006) Gender differences in coping strategies of undergraduate students and their impact on self-esteem and attainment. *Active Learning in Higher Education* **7**(3), 273-281.
- Longhurst RJ (1999) Why aren't they here? Student absenteeism in a further education college. *Journal of Further and Higher Education* **23**, 61-80.
- Martinez P (2001) *Improving student retention and achievement. What do we know and what do we need to find out?* London, Learning and Skills Development Agency. Available online at: http://www.ulster.ac.uk/star/resources/llda_report.pdf (accessed 26 November 2008).

- McCarey M, Barr T & Rattray J (2006) Predictors of academic performance in a cohort of pre-registration nursing students. *Nurse Education Today* **27**(4), 357–364.
- McConnell CR & Lamphear C (1969) Teaching principles of economics without lectures. *Journal of Economic Education* **1**(4), 20-32.
- McKenzie K & Schweitzer R (2001) Who Succeeds at University? Factors Predicting Academic Performance in First Year Australian University Students. *Higher Education Research and Development* **20**(1), 21–33.
- Moore R (2004) Does improving developmental education students' understanding of the importance of class attendance improve students' attendance and academic performance? *Research and Teaching in Developmental Education* **20**(2), 24-39.
- Morgan PG (2001) Why aren't they always there? An analysis of student non-attendance at lectures. *Business Education Support Team (BEST) conference*, 3-5 April, Windermere, UK.
- National Audit Office (2007) *Staying the course: the retention of students in higher education*. Report by the Comptroller and Auditor General HC-616, 26 July 2007, London, NAO. Available online at: http://www.nao.org.uk/publications/nao_reports/06-07/0607616.pdf (accessed 6 November 2008).
- NatWest (2007) *Student Money Matters*. Available online at: http://www.natwest.com/global_options.asp?id=GLOBAL/MEDIA/151 (accessed 6 November 2008).
- Omigbodun OO & Omigbodun AO (2003) Influence of gender on undergraduate performance in psychiatry at Ibadan, Nigeria. *Medical Education* **37**, 1-3.
- Patiniotis J & Holdsworth C (2005) Seize that chance! Leaving home and transitions to higher education. *Journal of Youth Studies* **8**(1), 81-95.
- Richardson JTE & King E (1998) Adult students in higher education: burden or boon? *Journal of Higher Education* **69**, 65-88.
- Richardson J & Woodley A (2003) Another look at the role of age, gender and subject as predictors of academic attainment in higher education. *Studies in Higher Education* **28**(4), 475-491.
- Romer D (1993) Do students go to class? Should they? *Journal of Economic Perspectives* **7**, 167-74.
- Scott J & Graal M (2007) Student failure in first year modules in the biosciences: an interview based investigation. *Bioscience Education eJournal* **10**. Available online at: <http://www.bioscience.heacademy.ac.uk/journal/vol10/beej-10-c2.aspx> (accessed 25 November 2008).
- Schrager RH (1986) The impact of living group social climate on student academic performance. *Research in Higher Education* **25**, 265-276.
- Sear K (1983) The correlation between A-level grades and degree results in England and Wales. *Higher Education* **12**(5), 609-19.
- Smith F (2004) It's not all about grades: accounting for gendered degree results in geography at Brunel University. *Journal of Geography in Higher Education* **28**(2), 167 – 178.
- St Clair KL (1999) A case against compulsory class attendance policies in higher education. *Innovative Higher Education* **23**(3), 171-180.
- Stanca L (2004) *The effect of attendance on academic performance: panel data evidence for introductory microeconomics*. Available online at: <http://ssrn.com/abstract=625442>. (accessed 3December 2008).
- Street DR (1975) Non-compulsory attendance: can state supported universities afford this luxury? *Journal of College Student Personnel* **16**, 124-127.
- Strom P & Strom R (2005) Parent-child relationships in early adulthood: college students living at home. *Community College Journal of Research and Practice* **29**, 517-529.
- Thomas PV & Higbee JL (2000) The relationship between involvement and success in developmental algebra. *Journal of College Reading and Learning* **30**(2), 222-232.
- Van den Berg MN & Hofman WHA (2005) Student success in university education: a multi-measurement study of the impact of student and faculty factors on study progress. *Higher Education* **50**, 413–446.

Wall J, Covell K & MacIntyre PD (1999) Implications of social supports for adolescents' education and career aspirations. *Canadian Journal of Behavioral Science* **31**, 63-71.

Woodfield R & Earl-Novell S (2006) An assessment of the extent to which subject variation in relation to the award of first class degree between the arts and sciences can explain the 'gender gap'. *British Journal of Sociology of Education* **27**(3), 355-372.

Woodley A (1984) The older the better: a study of mature students' performance in British universities. *Research in Education* **32**, 35-50.