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Degree attainment, ethnicity and gender: a literature review

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Introduction

The aim of this literature review is to inform the project on degree attainment, ethnicity and gender undertaken by the Higher Education Academy and the Equality Challenge Unit. For the purposes of the review, attainment is defined with regard to the class of honours awarded to students on their completion of first degrees at UK higher education institutions. The first part of the review therefore provides a discussion of this index of attainment as a point of reference for the rest of the discussion. The role of gender as a predictor of attainment has been considered for nearly 50 years, and so this topic is dealt with in the second part. The role of ethnicity has only been considered more recently, and this will be dealt with in the third part of the review. The final part offers conclusions regarding the role of gender and ethnicity as predictors of academic attainment.

The classification of UK first degrees

In the UK, first degrees are usually designated by the title of “Bachelor”, although enhanced degrees (taken by students intending to be professional scientists and engineers) are usually designated by the title of “Master”, as are degrees in the humanities and social sciences awarded by the ancient Scottish universities. Most programmes lead to first degrees that are awarded with honours; these are usually classified as first, second or third class, with the second class normally categorised into an upper division and a lower division. A degree that is awarded with either first-class or upper second-class honours is often described as a “good” degree. Students who fail to achieve the standard needed for the award of honours may be awarded a pass degree or simply failed outright.

National statistics on the classes of degrees awarded by UK higher education institutions are collected by the Higher Education Statistics Agency (HESA), which publishes summary information on an annual basis and provides more extensive datasets as a resource for researchers. A small number of students are awarded degrees with undivided second-class honours, and in HESA’s published statistics these are included with those awarded with lower second-class honours. A small number of students are awarded degrees with fourth-class honours, and in HESA’s statistics these are included with degrees awarded with third-class honours.

In Medicine, Dentistry and Veterinary Science, degrees qualifying students to practise are not classified. These qualifications are awarded to rigorously selected students, often on the basis of a high level of prior attainment. Graduates who receive these awards should therefore not be regarded as having failed to obtain any specific class of honours, and they should not be taken into account in calculating the likelihood of students being awarded first-class honours or good degrees.

However, around a third of these students take intercalated programmes after their second or third year of study. These may be taken in a variety of subjects and lead to the award of an honours degree after just one year, when the students resume their professional training. Such programmes are intended to broaden students’ understanding of the medical curriculum, to enhance their awareness of clinical

research and to benefit those aiming for academic careers (McManus *et al.* 1999).

At some institutions, all medical students are required to take intercalated degrees, but at others they are only permitted to do so in the light of good performance in the previous years of training. At yet others, an intermediate degree in Medical Science is a compulsory part of the programme. Intercalated and intermediate degrees are classified in the usual manner; indeed, Richardson and Woodley (2003) found that students who had taken intercalated or intermediate degrees in Medicine, Dentistry or Veterinary Science were more likely to obtain first-class honours and were more likely to obtain good degrees than were students in any other subjects.

Pass degrees and degrees *with aegrotat* reflect an inadequate level of attainment in an honours programme. They are not awarded with honours and are therefore not classified. In contrast, *general* (or *ordinary*) degrees are awarded in recognition of a satisfactory level of attainment in a non-honours programme; the most familiar examples are the general degrees awarded by the ancient Scottish universities and the Open University. These represent a lower level of qualification than honours degrees, but it will not be apparent whether or not any graduate's attainment would have merited the award of an honours degree, let alone a specific class of honours.

Taking these awards into account in calculating the likelihood of students obtaining first-class honours or good degrees would confuse the level of *qualification* with the level of *attainment*. In HESA's published statistics, pass degrees are combined with third-class honours degrees and differentiated from unclassified degrees. However, there is anecdotal evidence that some institutions do not differentiate between pass degrees and general degrees in their returns to HESA (Yorke 2002). Probably the safest strategy is to exclude *all* students with unclassified degrees in calculating the proportion of first-class honours or good degrees (Richardson and Woodley 2003).

The classification of first degrees is a complex social process and not a thoroughly validated measurement procedure. There has been debate about the robustness of the classification system (e.g. Yorke *et al.* 2004), and some have argued that it be dropped in favour of systems based on credits (Burgess 2004) or profiles (Elton 2004). For present purposes it does provide a broad indication of attainment across different groups of graduates. It also shows an association with their subsequent earnings and career prospects (e.g. Blasko 2002, p.26; Smetherham 2006).

Gender and academic attainment

Table 1 summarises the findings of five studies reporting the academic attainment of men and women based on national statistics since 1958. The studies are as follows:

- The report of the Robbins Committee (Great Britain 1964, p. 155) described the findings of a follow-up survey of roughly 6,000 students admitted to universities in the UK in 1955 who graduated in 1958. The sample numbers were re-weighted to provide estimates relating to the total population. Graduates in Medicine and Dentistry were excluded from the reported results, but the entries in Table 1 for third-class honours include students who obtained other unclassified degrees.

Students who were awarded undivided second-class degrees by the University of Oxford were combined with students who obtained upper second-class degrees.

Table 1: Percentage frequency distributions of classes of first degrees awarded to seven cohorts of UK graduates

| Study | Graduation year | Gender | <i>n</i> | Degree class | | | | Odds ratios | |
|-------|-----------------|--------|----------|--------------|--------------|--------------|--------------------|--------------|---------------------|
| | | | | First | Upper second | Lower second | Third ^a | Good degrees | First-class honours |
| A | 1958 | Men | 7,700 | 10 | 26 | 23 | 41 | 0.73 | 0.38 |
| | | Women | 3,360 | 4 | 25 | 28 | 43 | | |
| B | 1967 | Men | 19,785 | 10.6 | 26.8 | 43.7 | 18.9 | 0.87 | 0.48 |
| | | Women | 7,957 | 5.4 | 28.7 | 51.8 | 14.1 | | |
| B | 1978 | Men | 32,419 | 9.1 | 29.6 | 46.2 | 15.1 | 1.06 | 0.51 |
| | | Women | 18,578 | 4.9 | 35.3 | 50.7 | 9.1 | | |
| B | 1979 | Men | 33,446 | 8.8 | 29.8 | 46.6 | 14.8 | 1.04 | 0.52 |
| | | Women | 19,733 | 4.8 | 34.7 | 51.6 | 8.9 | | |
| C | 1993 | Men | 41,604 | 12.1 | 44.4 | 35.0 | 8.5 | 1.32 | 0.64 |
| | | Women | 35,661 | 8.1 | 55.0 | 33.2 | 3.7 | | |
| D | 1995-96 | Men | 96,445 | 8.5 | 42.7 | 41.2 | 7.6 | 1.30 | 0.79 |
| | | Women | 106,659 | 6.8 | 50.9 | 38.4 | 3.9 | | |
| E | 2005-06 | Men | 107,505 | 12.6 | 44.7 | 33.8 | 9.0 | 1.31 | 0.93 |
| | | Women | 144,755 | 11.8 | 51.9 | 30.5 | 5.8 | | |

Note. The data presented in this table have been calculated from the following published sources: Study A, Great Britain (1964); Study B, Rudd (1984); Study C, Smith and Naylor (2001); Study D, Richardson and Woodley (2003); Study E, HESA (2007). The odds ratios compare the likelihood of women and men obtaining good degrees and first-class honours.

^a May include unclassified degrees; see text for details.

- Rudd (1984) presented an analysis of all students who obtained honours degrees from UK universities in 1967, 1978 and 1979. Rudd presented separately those students who were awarded degrees with undivided second-class honours, but in Table 1 they have been combined with students who obtained lower second-class honours. The entries for third-class honours include students who obtained unclassified honours degrees.
- Smith and Naylor (2001) presented an analysis of all students on first degree programmes who left pre-1992 universities in the UK in 1993. Students who were awarded degrees with undivided second-class honours were combined with those who obtained lower second-class honours. Students of Medicine and Dentistry were excluded from their analysis. Students who obtained unclassified degrees or who failed were included in their analysis, but have been omitted from Table 1. McNabb *et al.* (2002) presented a different analysis of the same dataset.
- Richardson and Woodley (2003) presented an analysis of all students awarded first degrees by UK institutions of higher education in 1995–96. Students who were awarded degrees with undivided second-class honours were combined with those who obtained lower second-class honours, but students who obtained unclassified degrees were excluded from their analysis.
- HESA publishes statistics of this nature on an annual basis. Table 1 shows the relevant information from the most recent HESA statistics relating to students who obtained first degrees in 2005-06 (HESA 2007). Students who were awarded pass degrees are combined with those who obtained third-class honours, but those who obtained other unclassified degrees have been omitted from Table 1.

The most obvious feature of Table 1 is the substantial increase in the number of graduates from about 11,000 in 1958 to more than 250,000 in 2005-06. Between 1964 and 1992, degrees were also awarded by the Council for National Academic Awards to students who had completed accredited programmes in polytechnics or colleges. However, these graduates were not included in the figures reported by Rudd (1984) or Smith and Naylor (2001). Amis (1960) objected to plans for the expansion of higher education by arguing that “more will mean worse” (p.8), but this prediction was not borne out by subsequent data. The proportion of students who obtained good degrees rose from 32% in 1958 to 55% in 1995-96, and then to 62% in 2005-06. The proportion of students who obtained first-class honours remained at around 7 to 8% between 1958 and 1995-96, but it increased to 12% in 2005-06.

A useful index for comparing trends obtained with different levels of attainment or different inclusion criteria is the odds ratio (Fienberg 1985, p.17). If the probability of the members of Group 1 exhibiting a particular outcome is p (e.g. 0.60), the odds of this are $p/(1 - p)$ (i.e. 0.60/0.40 or 1.50). If the probability of the members of Group 2 exhibiting the same outcome is q (e.g. 0.70), the odds of this are $q/(1 - q)$ (i.e. 0.70/0.30 = 2.33). The ratio between these odds is $1.50/2.33 = 0.64$. In other words, the odds of the members of Group 1 exhibiting the relevant outcome are 64% of the odds of the members of Group 2 exhibiting that outcome. Odds ratios vary from 0 (when $p = 0$ or $q = 1$) to infinity (when $p = 1$ or $q = 0$), and an odds ratio of 1 means

that there is no difference in the odds of the two groups exhibiting the outcome in question (when $p = q$).

Table 1 shows the odds ratios comparing the likelihood of women and men obtaining good degrees and first-class honours in each of the seven sets of data. In both cases, odds ratios less than one reflect better attainment in men, and odds ratios greater than one reflect better attainment in women. One immediate observation from Table 1 is that it reveals a marked shift in the proportion of female graduates. Women constituted only 30% of graduates in 1958, but they constituted 57% of graduates in 2005-06. On the basis of the “more will mean worse” argument, this should have been accompanied by a decline in the academic attainment of women compared with that of men. In fact, exactly the reverse has happened:

- In the 1950s and 1960s, women were much less likely to obtain good degrees than men, reflected in odds ratios substantially less than 1. The Robbins Committee implied that this was mainly because women were more likely than men to study arts subjects, “where the proportion of students obtaining firsts and upper seconds is below average” (Great Britain 1964, p.155).
- By the 1970s, women had achieved parity with men with regard to the proportion of good degrees, reflected in odds ratios around 1. This pattern was also obtained in other datasets from the 1970s and 1980s (Bourner 1987; Woodley 1984). Rudd (1984) commented: “Women perform, in general, as well as men at the very demanding level needed to gain at least an upper second” (p.54).
- By the 1990s, women were more likely to obtain good degrees than men, reflected in odds ratios greater than 1. This has remained a consistent finding in the national statistics published by HESA up to the present time.

In short, the direction of the gender difference in the proportion of good degrees has reversed over the last 50 years. The change in the odds ratios reported in Table 1 has been relatively monotonic, but they seem to have reached a plateau since 1993.

In principle, men and women might differ in other demographic characteristics, and (as the Robbins Committee noted) they might also differ in the academic subjects that they have studied. Researchers using logistic regression or other econometric techniques have found that women are still more likely to obtain good degrees than men, even when the effects of other demographic and institutional variables have been statistically controlled (McNabb *et al.* 2002; Powdthavee and Vignoles 2007; Richardson 2008; Smith and Naylor 2001). Nevertheless, these analyses have typically been based on additive models that have not explored the possibility of interactions between the effect of gender and the effects of other relevant variables.

Richardson and Woodley (2003) investigated the interrelationships among the effects of gender, age and subject of study. First, they found that the tendency for women to be more likely to obtain good degrees than men was not apparent in the very youngest (under 21 years) or the very oldest (over 60 years) graduates. Second, the tendency for women to be more likely to obtain good degrees than men was also

not apparent in all academic subjects. In particular age bands or subjects, whenever there was a significant difference in the likelihood of obtaining of good degrees, it always favoured women. The contrast between the subjects where a difference did and did not occur did not constitute a simple split between arts and science subjects. Richardson and Woodley argued that the contingent nature of this phenomenon meant that it was attributable to variations in the students' academic context rather than to inherent or constitutional characteristics in the students themselves.

Investigations of "situated cognition" have shown that intellectual abilities are shaped by the immediate situations in which they are used (e.g. Lave 1988). In particular, the existence and the magnitude of gender differences in intellectual abilities depend on the specific contexts in which they are acquired and tested (Hyde and McKinley 1997), and more especially on particular patterns of social interaction (Crawford and Chaffin 1997). Richardson and Woodley (2003) concluded that gender differences in the proportion of good degrees resulted from the teaching and assessment practices within particular disciplines. Murphy and Elwood (1998) had previously adopted a similar approach to explain analogous gender differences in attainment in secondary education. A socio-cultural explanation is also supported by the fact that the direction of the gender difference has reversed within two generations; clearly, this is far too brief a time for any biological mechanisms to be responsible.

Some researchers have turned their attention to gender differences in the proportion of first-class honours degrees. Rudd (1984) noted that, across his three datasets, women were consistently less likely to obtain first-class honours than men. He considered, but rejected, three explanations for this phenomenon: that academic staff were prejudiced against female students; that social pressures discouraged women from producing the highest level of attainment; and that biological factors, such as menstruation, affected women's attainment. Instead, Rudd noted that women also seemed to be less likely to obtain third-class honours degrees than men (see Table 1), and he concluded that women showed less variability in their intellectual abilities. There is indeed evidence for greater male variability on certain intellectual tasks, but this is not a universal phenomenon, and differences in variability have been disappearing over the last 70 years (Feingold 1992). Moreover, even students who have obtained third-class honours degrees have been selected for admission to higher education on the basis of their previous attainment, and so they could not be said to constitute the lower extreme of some distribution of ability.

Any tendency for men to be more likely to obtain first-class honours degrees than women appears to vary across different subjects and, within individual subjects, to arise in some institutions but not others (Chapman 1996; Leman 2004). Again, this seems to be a contingent phenomenon that varies from one context to another. Indeed, Woodfield and Earl-Novell (2006) claimed that it could be largely attributed to a tendency for men to be more likely than women to take subjects where more first-class honours degrees were awarded.

Table 1 shows that the magnitude of the phenomenon has in fact declined over the last 50 years. In 1958, the odds of women obtaining first-class honours were only 38% of the odds of men obtaining first-class honours. In 2005-06, in contrast, the

odds of women obtaining first-class honours were 93% of the odds of men obtaining first-class honours. (Woodfield and Earl-Novell showed a similar trend in the ratio between the percentage of first-class honours awarded to men and the percentage of first-class honours awarded to women between 1994-95 and 2001-02.) The pattern in Table 1 is remarkably monotonic and suggests that women will achieve parity with men with regard to the odds of achieving first-class honours by 2010. Indeed, Powdthavee and Vignoles (2007) carried out a probit analysis of the attainment of graduates from English universities in 2003-04, and they found that women were already *more* likely than men to achieve first-class honours when the effects of other demographic and institutional variables were statistically controlled.

Ethnicity and academic attainment

Table 2 shows the ethnic classification used for UK Government statistics since the 2001 Census. The Level 2 category “Chinese” is not included within “Asian or Asian British” because many Chinese people in the UK would not describe themselves as “Asian”. (This term is normally used to refer to people who came, or whose families came, from the Indian subcontinent.) Nevertheless, HESA’s publications and datasets list Chinese students as if they were a subcategory of Asian or Asian British students, and this practice has often been followed by researchers who have analysed datasets provided by HESA. In addition, many of the Level 2 categories themselves subsume a number of distinct subgroups. Nevertheless, the categories in Table 2 are valid to the extent that people (and, in particular, students) from different ethnic groups in the UK are prepared to use them to describe themselves.

The Level 2 categories under “White” and “Mixed” are not applied consistently across the different countries of the UK, and so are not used in HESA’s published statistics. As a consequence, research studies using HESA datasets may give the impression that the category of “White students” is both homogeneous and unproblematic, when neither is the case (see Bird 1996, pp.96-97; Fenton 1996). Moreover, the authors often refer to comparisons between White and “ethnic minority” (or “minority ethnic”) students; in fact, certain minority groups (such as Travellers or students with an Irish background) are subsumed within the category of “White students”, and so, strictly speaking, these researchers have compared White students and non-White students. Broecke and Nicholls (2007) recently obtained a dataset that included “Other White” as an ethnic category, but even so they were unable to differentiate between White British students and White Irish students.

Connor *et al.* (1996, pp.66, 71-72) carried out a survey of students who had graduated from four UK institutions of higher education in 1993. This yielded responses from 136 students from non-White ethnic minorities, and they were matched with 136 White respondents on the basis of gender, age, type of university and degree subject. The two groups had originally entered university with similar academic qualifications, and yet they differed in the classes of degree that they had been awarded. In particular, 65% of the White students had been awarded good degrees, while the corresponding figure for the non-White students was only 39%. In other words, the odds of the non-White students obtaining good degrees was only 34% of the odds of the White students obtaining good degrees. This was a small-

Table 2: UK National Statistics classification of ethnic groups

| Level 1 | Level 2 |
|-------------------------------|---------------------------|
| White | British |
| | Irish |
| | Other White background |
| Mixed | White and Black Caribbean |
| | White and Black African |
| | White and Asian |
| | Other Mixed background |
| Asian or Asian British | Indian |
| | Pakistani |
| | Bangladeshi |
| | Other Asian background |
| Black or Black British | Caribbean |
| | African |
| | Other Black background |
| Chinese or Other ethnic group | Chinese |
| | Other ethnic group |
| Not stated | Not stated |

Note. This table has been adapted from the following source:
http://www.statistics.gov.uk/about/Classifications/ns_ethnic_classification.asp

scale study that included students who obtained unclassified degrees, but it seems to be the first investigation in the UK to demonstrate a clear difference in attainment between White students and students from other ethnic groups. Subsequently, a number of studies have used HESA data to compare a wider range of ethnic groups.

Owen *et al.* (2000, p.67) used HESA datasets to identify the classes of degree that had been awarded to UK-domiciled students by UK institutions of higher education both in 1997-98 and in 1998-99. Naylor and Smith (2004) carried out analyses of the classes of degree awarded to men and women in 1997-98, but they classified the graduates' ethnicity simply as White, Black Caribbean, Indian, Chinese or Other. Leslie (2005) analysed the proportions of good degrees awarded between 1998 and 2000, and Elias *et al.* (2005) reported the proportions of first-class and upper second-class degrees awarded between 1996-97 and 2001-02; however, their datasets overlapped with those used by Owen *et al.* (2000), and their published reports contain less information. Connor *et al.* (2004, p.75) reported the classes of degree awarded to UK-domiciled students by UK institutions of higher education in 2001-02, and Richardson (2008) reported the corresponding information for students who were awarded degrees in 2004-05. A portion of the latter dataset was analysed by Broecke and Nicholls (2007).

These studies have consistently shown that White students are more likely to obtain good degrees than students from other ethnic groups, and that White students are more likely to obtain first-class honours than students from other ethnic groups. Of course, Table 1 shows that there has been an increase in the proportion of good degrees and in the proportion of first-class honours over the last 10 years. To examine whether there has been any change in this time in the relative attainment of students from different ethnic groups, Table 3 presents the odds ratios comparing students from non-White ethnic groups with White students on both these measures.

Relative to White students, those from every non-White ethnic group are less likely to obtain good degrees and less likely to obtain first-class honours, although there are consistent variations across the different non-White ethnic groups. In particular, Richardson (2008) noted that the odds of an Asian student being awarded a good degree were half of those of a White student being awarded a good degree, whereas the odds of a Black student being awarded a good degree were a third of those of a White student being awarded a good degree. There are also some apparent changes over time: an increase in the odds ratios for Black African students, and decreases in the odds ratios for students of Chinese, Other or unknown ethnicity. Otherwise, the underlying pattern is broadly consistent from one year to another.

In general the odds ratios relating to attainment of first-class honours are similar to the odds ratios relating to attainment of good degrees. This is particularly clear in the last line of Table 3, which relates to all non-White students. Statistically speaking, the results satisfy the proportional odds assumption, which means that the factors responsible for variations in attainment across ethnic groups with regard to first-class honours are likely to be the same as the factors responsible for variations in attainment across ethnic groups with regard to good degrees. This is not the case for the gender differences in attainment that are shown in Table 1.

Table 3: Odds ratios comparing academic attainment in different ethnic groups

| | Good degrees | | | | First-class honours | | | |
|-----------------|--------------|---------|---------|---------|---------------------|---------|---------|---------|
| | 1997-98 | 1998-99 | 2001-02 | 2004-05 | 1997-98 | 1998-99 | 2001-02 | 2004-05 |
| Black Caribbean | 0.35 | 0.34 | 0.36 | 0.36 | 0.25 | 0.15 | 0.25 | 0.23 |
| Black African | 0.25 | 0.27 | 0.30 | 0.31 | 0.18 | 0.26 | 0.29 | 0.27 |
| Black Other | 0.43 | 0.38 | 0.43 | 0.33 | 0.41 | 0.32 | 0.41 | 0.29 |
| Indian | 0.52 | 0.52 | 0.56 | 0.54 | 0.53 | 0.53 | 0.59 | 0.59 |
| Pakistani | 0.43 | 0.40 | 0.43 | 0.39 | 0.39 | 0.47 | 0.39 | 0.39 |
| Bangladeshi | 0.40 | 0.45 | 0.44 | 0.41 | 0.36 | 0.52 | 0.32 | 0.36 |
| Asian Other | 0.58 | 0.60 | 0.53 | 0.59 | 0.66 | 0.67 | 0.65 | 0.60 |
| Chinese | 0.67 | 0.60 | 0.59 | 0.55 | 0.87 | 0.74 | 0.81 | 0.63 |
| Mixed | — | — | 0.88 | 0.86 | — | — | 0.87 | 0.82 |
| Other | 0.75 | 0.72 | 0.68 | 0.57 | 0.82 | 0.84 | 0.78 | 0.69 |
| Not known | 0.91 | 0.89 | — | 0.54 | 1.06 | 0.88 | — | 0.67 |
| All non-White | 0.48 | 0.47 | 0.49 | 0.49 | 0.51 | 0.51 | 0.53 | 0.51 |

Note. The data presented in this table have been calculated from the following published sources: 1997-98 and 1998-99, Owen *et al.* (2000); 2001-02, Connor *et al.* (2004); 2004-05, Richardson (2008). The odds ratios compare the likelihood of obtaining good degrees and first-class honours in different groups of non-White students using White students as a reference group. “—” means that the relevant category was not employed.

It is often argued that structural inequalities in society reduce the achievement and aspirations of children from ethnic minorities; as a consequence, people from ethnic minorities will be under-represented in higher education, and those who do manage to gain access to higher education will exhibit poorer attainment (e.g. Ogbu 1978). A recent review of widening participation research in the UK asserted that: “Inequalities in H[igher] E[ducation] participation are evident throughout the lifecourse and include differences in terms of . . . ethnicity” (Gorard *et al.* 2006, p.22; see also p.26). In fact, Connor *et al.* (2004, pp.42-43) observed that the participation rates for Asian and Asian British people (60%) and for Black and Black British people (61%) were markedly *higher* than the participation rate for White people (38%). So the model of ethnicity and education, which might apply in other countries and might have applied in the UK in the past, does not seem to fit the current situation.

In a version of Amis’ (1960) argument that “more will mean worse”, Leslie (2005) argued that the higher participation rates in Asian and Black students would lead to “a diminution in average quality of applicant” (p.631). Asian and Black applicants do tend to have lower entry qualifications than do White applicants (Shiner and Modood 2002), and it will be seen below that this explains some of the disparity in attainment among different ethnic groups. Nevertheless, Leslie found that White students were still more likely to obtain good degrees than students from other ethnic groups, even when differences in their entry qualifications and their subject choices had been taken into account. In addition, the “more will mean worse” argument does not account for the difference in attainment between Asian students and Black students, since Asian people and Black people have similar participation rates.

In principle, students from different ethnic groups might differ in other demographic characteristics or vary in their representation across different subjects or institutions. Researchers using econometric techniques have confirmed that White students are still more likely to obtain good degrees than are students from other ethnic groups when the effects of other demographic and institutional variables have been taken into account (Broecke and Nicholls 2007; Naylor and Smith 2004; Powdthavee and Vignoles 2007). Even so, when the effect of entry qualifications was statistically controlled, Richardson (2008) found that the odds ratio comparing the likelihood of Asian and White students being awarded a good degree increased from 0.50 to 0.71, while the odds ratio comparing the likelihood of Black and White students being awarded a good degree increased from 0.33 to 0.60. Thus, about half of the disparity in attainment between White and non-White students seems to be attributable to differences in their entry qualifications. As Richardson concluded: “One might indeed argue that the under-achievement of adults from ethnic minorities in higher education is a legacy of their under-achievement as children in secondary education” (p.44).

As noted earlier, these econometric analyses were based on additive models, and so they did not explore the possibility of interactions between the effects of ethnicity and those of other variables. However, Richardson (2008) did investigate the interrelationships among the effects of ethnicity, age, gender, entry qualifications, mode of study (i.e. full-time vs. part-time), subject of study and institution, but, because of the small numbers of graduates from some ethnic groups, he confined his analysis to comparisons among White students, Asian students, Black students

and those from all other ethnic groups. Richardson found that the effects of age, gender, mode of study and subject of study all interacted with the effect of ethnicity:

- The trend for White students to be more likely to obtain good degrees than students from other ethnic groups was greater in older students than in younger students. In particular, the odds ratio comparing the likelihood of Asian and White students obtaining good degrees was 0.75 in those aged under 21, but only 0.17 in those aged 50 years and over; the odds ratio comparing the likelihood of Black and White students obtaining good degrees was 0.62 in those aged under 21, but only 0.11 in those aged 50 years and over. This might reflect a decline in discriminatory attitudes in primary and secondary education over the last 30 years: these might well have a legacy in the attainment of older students, but their effects would be less apparent in younger students. Alternatively, it could imply that the deleterious effects of discriminatory attitudes are cumulative through the lifespan.
- The trend for White students to be more likely to obtain good degrees than students from other ethnic groups was greater in women than in men. The odds ratio comparing the likelihood of Asian and White students obtaining good degrees was 0.47 in women but 0.54 in men; the odds ratio comparing the likelihood of Black and White students obtaining good degrees was 0.31 in women but 0.35 in men. Nevertheless, women were more likely to obtain good degrees than men in every ethnic group.
- The trend for White students to be more likely to obtain good degrees than students from other ethnic groups was greater in part-time students than in full-time students. In particular, the odds ratio comparing the likelihood of Asian and White students obtaining good degrees was 0.54 following full-time study, but only 0.24 following part-time study; the odds ratio comparing the likelihood of Black and White students obtaining good degrees was 0.36 following full-time study, but only 0.21 following part-time study.
- The trend for White students to be more likely to obtain good degrees than students from other ethnic groups was greater in some subjects than in others. In particular, the odds ratio comparing the likelihood of Asian and White students obtaining good degrees was 0.25 for students who had taken combined degrees and 0.82 for those who had studied Medicine and Dentistry. The odds ratio comparing the likelihood of Black and White students obtaining a good degree varied between 0.25 for students who had taken combined degrees and 0.88 for those who had studied Agriculture.
- Finally, the trend for White students to be more likely to obtain good degrees than students from other ethnic groups was greater at some kinds of institution than at others. In particular, the odds ratio comparing the likelihood of Asian and White students obtaining good degrees was lowest (0.42) at post-1992 universities and highest (0.59) at Russell Group universities; similarly, the odds ratio comparing the likelihood of Black and White students obtaining good degrees was lowest (0.35) at post-1992 universities and highest (0.44) at Russell Group universities.

As Richardson commented, the post-1992 universities are commonly thought to have a greater commitment to providing opportunities for students from ethnic minority students, but these results suggest that they are less successful in enabling such students to obtain good degrees.

As with gender differences, the contingent nature of this phenomenon suggests that it is at least partly attributable to variations in the students' academic context rather than to inherent or constitutional characteristics within the students themselves.

Even so, Richardson found that White students were more likely to be awarded good degrees than students from other ethnic groups, regardless of age, gender, entry qualifications, mode of study, subject of study or institution. He considered whether ethnic minority students were more likely to encounter discriminatory teaching and assessment practices, or more subtle exclusionary attitudes and behaviour on the part of their teachers or other students (cf. Osler 1999). Connor *et al.* (2004) had interviewed full-time students at 29 institutions and concluded that "there was no consistent message from our student survey that any group of minority students felt more disadvantaged than White students" (p.80). Pilot studies for the National Student Survey found that White students tended to produce more favourable ratings of their programmes than did Asian or Black students (Richardson 2004). However, the magnitude of these differences was relatively slight, and they only achieved statistical significance because of the very large sample size. The same is probably true for similar effects obtained in the first full National Student Survey, which was carried out across England, Wales and Northern Ireland in 2005 (see SurrIDGE 2007).

Another possibility is that variations in the attainment of students from different ethnic groups arise from variations in the quality of their learning itself. Researchers have identified three predominant approaches to studying among students in higher education: a "deep" approach is aimed at understanding the meaning of the course materials; a "strategic" approach is aimed at achieving the highest possible marks or grades; and a "surface" approach is aimed at memorising the course materials for the purposes of academic assessment. Ridley (2007) gave a questionnaire on approaches to studying to two cohorts of first-year psychology students at a single institution. They were classified as White British (32 students), Other White (13 students), Black Caribbean (15 students) and Black African (17 students).

The four groups did not differ in their use of a deep approach or a strategic approach, but the two groups of Black students were more likely to adopt a surface approach than the two groups of White students. Across all of the students, the adoption of a surface approach was negatively correlated with their marks in both coursework and examinations, and Ridley argued that the variation in surface approach scores among the different ethnic groups was a cause for concern. The four groups differed in their examination marks, with the White British students obtaining better marks than the other three groups. Nevertheless, the White British students still tended to obtain significantly better marks even when the effects of variations in the students' approaches to studying had been statistically controlled.

Conclusions

The collection of national statistics concerning final degrees awarded by institutions of higher education in the UK provides a distinctive (and possibly unique) source of data for researchers. The Quality Assurance Agency (2007) has recently lent support to the notion of reforming how universities certify their graduates' achievements, but it is to be hoped that the kind of resource that is currently available will not be lost if the honours classification is abandoned in favour of one based on credits or profiles. Without a classification system of the present kind, it would have been far harder to discern the variations in attainment described in this review.

The role of gender is interesting because the direction of the difference in attainment between men and women has reversed. Fifty years ago, men were much more likely to obtain good degrees than women. However, this trend was no longer apparent in the 1970s and 1980s, and since 1990 women have been much more likely to obtain good degrees than men. A later but parallel pattern can be seen in the proportion of first-class honours, implying that women will achieve parity with men on this measure by the year 2010. These gender differences do not appear to result from confounded demographic or institutional characteristics. However, different patterns are evident in different academic subjects, which suggests that they result from the teaching and assessment practices within particular disciplines. Future research needs to identify the practices that enable both men and women to maximise their academic potential.

The picture is quite different in the case of ethnicity in that the pattern of results has changed very little over the period for which data are available. White students are both more likely to obtain good degrees and more likely to obtain first-class honours than are students from other ethnic groups. There are also consistent differences among the non-White ethnic groups. These trends are attributable in part to variations in entrance qualifications, but otherwise they do not appear to result from confounded demographic or institutional characteristics or from major differences in the experience of higher education. At present, little is known about the attainment of students from White ethnic minorities, but the general issue of the underattainment of ethnic minority students urgently needs further investigation. One possibility is that secondary education has left ethnic minority students not only with poorer entry qualifications, but also with less effective forms of study behaviour.

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