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The academic attainment of students with disabilities in UK higher education

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This study investigated the role of disablement as a predictor of academic attainment among students awarded first degrees by UK institutions of higher education in 2004–05. Disability explained only 0.1% of the variation in attainment, as measured by whether the graduates had obtained good degrees (i.e. with first-class or upper second-class honours). Graduates with dyslexia and graduates with multiple disabilities were less likely to obtain good degrees than graduates with no known disability, but this was mainly due to the confounded effects of demographic and institutional variables. Graduates with an unseen disability were the only group to show significantly poorer attainment when the latter variables had been controlled. In overall terms, disablement per se does not play a significant role in predicting attainment.

Introduction

Partly as a result of changes in national legislation intended to promote equal opportunities for people with disabilities, there has been increased interest in the experiences of students with disabilities in higher education (see Konur 2006). However, little is known about the eventual academic attainment of such students. At a local level, the numbers of students with disabilities within a single mainstream institution may be relatively small; as a consequence, comparisons with the attainment of students without disabilities may not be reliable or can only be undertaken by adopting the dubious strategy of treating students with disabilities as a single group (see, e.g., Foreman et al. 2001). At a national level, information may simply not be available about students' achievement. In the USA, for instance, the criteria for graduation *cum laude*, *magna cum laude* and *summa cum laude* vary widely across different universities, and national data on the award of these honours to different student groups are not collected.

In the UK, in contrast, the same broad framework for classifying first degrees is used by all universities, a system of external examiners seeks to ensure comparability in standards between different institutions, and national statistics on the qualifications that they award are compiled by the Higher Education Statistics Agency (HESA). HESA publishes summary data on an annual basis (e.g. HESA 2006). It also provides more extensive data sets as a resource for researchers, subject to the requirements of the UK data protection legislation concerning the maintenance and transmission of personal information in an electronic form. Previous work has tended to focus on differences among institutions and academic subjects and on the role of

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demographic variables such as age and gender (e.g. Richardson and Woodley 2003). In the present article, I examine the role of disablement as a predictor of academic attainment.

By way of background, first degrees in the UK are usually designated by the title of 'bachelor', although enhanced degrees (taken by students intending to become professional scientists or engineers) are normally designated by the title of 'master', as are degrees in the humanities and social sciences awarded by the ancient Scottish universities. Most degrees are awarded with honours, in which case they are usually classified as first, second or third class, and the second class is normally categorised into an upper 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. There has been debate about the robustness of this classification (Yorke et al. 2004), and some have argued that it should be replaced or, at least, complemented by a system based on credits or profiles (Burgess 2004, 2007; Elton 2004). Even so, it provides an indication of attainment in graduates from different programmes at different institutions.

Institutions of higher education in the UK ask their students to declare disabilities that might necessitate additional support in their studies, their accommodation or their daily living. Most commonly, this declaration is made by potential students on prepared application forms and confirmed by them on their subsequent admission. Richardson (2001) noted that this way of approaching disablement embodies a medical perspective that ascribes its consequences to deficiencies of the students. On this view, the appropriate response of institutions is to enable students with disabilities to adapt to the demands of higher education. In contrast, a social perspective would ascribe the consequences of disablement to the students' context. Potential students would be asked whether they might encounter difficulties in higher education, either as a result of the environment in which they would have to live and study or as a result of the negative attitudes of other people whom they might encounter. On this view, the appropriate response of institutions is to adapt their own expectations and practices, so that students with disabilities have equal chances of academic success (see Abberley 1996; Finkelstein 1991).

Institutions are required to submit to HESA information about the disabilities declared by their students, for which they use the following classification:

- no known disability
- dyslexia
- blind/are partially sighted
- deaf/have a hearing impairment
- wheelchair user/have mobility difficulties
- personal care support
- mental health difficulties
- an unseen disability, e.g. diabetes, epilepsy, asthma
- multiple disabilities
- a disability not listed above
- autistic spectrum disorder
- not known

Similar schemes have been employed in the USA (e.g. Lewis and Farris 1999). Nevertheless, the classification used by HESA is rather limited in that it contains no information about the severity of any disability (e.g. blind versus partially sighted;

deaf versus hearing impaired), and students who have more than one disability are consigned to a single catch-all category.

Ultimately the identification of students with disabilities relies on their self-reports. It might be assumed that national legislation (such as the Americans with Disabilities Act in the USA or the Special Educational Needs and Disability Act in the UK) ensures that students should be willing to disclose any disabilities to their institutions. There is, however, evidence to the contrary. Horn and Berktold (1999, 8) reported findings from a national survey of undergraduate students in the USA indicating that 5.5% had a disability of some kind. In contrast, Lewis and Farris (1999, 5) reported findings from a survey of US postsecondary institutions indicating that 2.9% of students had identified themselves to their institutions as having a disability. The implication is that (5.5% – 2.9%) or 2.6% of all students in the USA have a disability that they have not disclosed to their institutions.

As Richardson, Woodley, and Long (2004) pointed out with reference to students with a hearing loss, this finding could be explained in a number of different ways. First, some students might feel that identifying themselves as disabled would lead to discrimination and social stigmatisation (Tinklin and Hall 1999). Second, some students with disabilities might want to be treated like other students, without special adjustments or accommodations (Jarrow 1997, 20). Finally, some students might feel that their disabilities were fairly mild and did not warrant additional support in their studies. Richardson, Woodley, and Long concluded that the last explanation applied to most students with an undisclosed hearing loss, and it is plausible that the same is true of students with other kinds of undisclosed disability. There is no evidence that there exist large numbers of students with undisclosed disabilities who might require additional support in their studies.

Several analyses have been carried out using a data set containing information from all students who received first degrees from UK institutions of higher education in 1995–96:

- Richardson (2001) found that the students who had declared that they were deaf or had a hearing impairment tended to obtain poorer degrees than did the students who had not declared any disability. However, the magnitude of the difference was relatively slight, and it was not statistically significant when account was taken (a) of the fact that students who were deaf or had a hearing impairment were less likely to take subjects where good degrees were more likely to be awarded and (b) of the fact that they were more likely to study on a part-time rather than a full-time basis.
- Richardson and Roy (2002) similarly found that the students who had declared that they were blind or partially sighted tended to obtain poorer degrees than did the students who had not declared any disability. Once again, however, the magnitude of the difference was relatively slight, and it was no longer statistically significant when the confounded effects of other demographic variables (age, gender and entry qualifications) had been taken into account.
- In the USA and many other countries, dyslexia is subsumed within a broader category of ‘learning difficulties’ or ‘learning disabilities’. In the UK, however, it is recognised in the law, in government policy and in diagnostic practice as an important kind of learning difficulty that can give rise to specific educational needs, hence its inclusion in HESA’s classification of disabilities. Richardson and Wydell (2003) found that students who had declared that they were dyslexic

> were less likely to obtain good degrees than were students who had not declared any disability. This pattern could not be attributed to the confounded effects of background variables. Nevertheless, the situation may well have changed: Richardson and Wydell noted that the proportion of students with dyslexia was only 0.46% in 1995–96, but that this figure had already increased to 1.51% by 2000–01, reflecting earlier identification of dyslexia in children, increased support for students with disabilities in higher education and more flexible admissions policies on the part of their institutions (see National Working Party on Dyslexia in Higher Education 1999, 15).

Two of these studies raise the possibility that the apparently poor attainment of students with disabilities is due to the confounded effects of demographic variables or characteristics of the programmes that they have taken and not to their disabilities per se. However, the data set on which these studies were based was incomplete, in so far as information about disabilities was not available for 18.9% of the students because it had not been recorded by their institutions. Nowadays, there is a much greater onus on UK universities to record information about the disabilities of their students. It would, in any case, also be interesting to consider the academic attainment of students with disabilities of all kinds using more up-to-date data.

A new data set was obtained from HESA containing all UK-domiciled students who were awarded first degrees by UK institutions of higher education during the academic year 2004–05. This data set was used both to confirm the distributions of degree classes awarded to students with different kinds of disability and to investigate the role of demographic and programme-related variables in moderating the possible association between disability and attainment. In accordance with HESA's requirements, all absolute frequencies reported are rounded to the nearest multiple of 5 in order to avoid the identification of individual students, and any relative frequencies based on 52 students or fewer are suppressed on the grounds that they are potentially unreliable. All relative frequencies have been calculated from the original data, but they may not sum to exactly 100% in some cases because of rounding error.

The academic attainment of students with disabilities

In total, 270,180 students who were domiciled in the UK were awarded first degrees by UK institutions of higher education during 2004–05 (HESA 2006, 20). Of this total, 241,300 students were awarded classified honours degrees, of whom 28,665 (or 11.9%) obtained first-class honours, 120,110 (or 49.8%) obtained upper second-class honours, 80,105 (or 33.2%) obtained lower second-class honours, and 12,420 (or 5.1%) obtained third-class honours.

One particular institution of higher education was problematic. The Open University was created in 1969 to provide degree programmes by distance education across the UK. The impact of disablement may be different for distance-learning students than for those studying at face-to-face institutions. Indeed, for many people with severe disabilities or chronic illness, distance learning may be the only practical means of access to higher education (see Newell and Debenham 2005). Nevertheless, the Open University records the disability status of all of its students as 'not known' unless they have explicitly requested additional support in their studies. In contrast, other institutions record their students without disabilities as having 'no known disability', and this renders it impossible to make sensible comparisons

between the attainment of Open University students and the attainment of students at other institutions.

Accordingly, the 4900 students who had been awarded classified honours degrees by the Open University in 2004–05 were excluded from any further analysis. Information about disabilities was available for all but 5870 (or 2.5%) of the 236,400 students who had been awarded classified honours degrees by other institutions. Table 1 shows the degree classes obtained by the students in the different categories of disability used by HESA. Fewer than 52 students had been recorded in each of the categories of personal care support and autistic spectrum disorder, and thus, in accordance with HESA's requirements, these students have been excluded both from the table and from any further analysis. As is conventional, the degree classes are labelled in the table using Roman numerals: I, II(i), II(ii) and III. For each category of disability, the proportion of good degrees is also shown.

To compare trends obtained with different levels of performance or different selection criteria, one can compute odds ratios. If the probability of the members of Group 1 exhibiting a particular outcome is p (e.g. .60), then the odds of this are $p/(1 - p)$ (i.e. .60/.40 or 1.50). If the probability of the members of Group 2 exhibiting that outcome is q (e.g. .70), then the odds of this are $q/(1 - q)$ (i.e. .70/.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' members exhibiting the outcome (when $p = q$).

Table 1 shows the odds ratios comparing the likelihood of obtaining a good degree in the students with each kind of disability and in the students with no known disability. Just two of the categories of students with disabilities yielded odds ratios that were significantly less than 1: the odds of a student with dyslexia obtaining a good degree were only 78% of the odds of a student with no known disability obtaining a good

Table 1. Percentage frequency distributions of classified honours degrees awarded by UK institutions of higher education in 2004–05 to UK-domiciled students.

		Degree classes					
	n	I	II(i)	II(ii)	III	% good degrees	Odds ratio
No known disability	212,960	11.9	50.5	32.8	4.7	62.4	
Dyslexia	9,570	9.3	47.2	37.5	6.0	56.5	0.78*
Blind/partially sighted	385	11.2	47.5	34.8	6.5	58.7	0.86
Deaf/hearing impairment	640	11.6	48.8	34.2	5.5	60.3	0.91
Wheelchair user/mobility difficulties	480	10.8	48.1	36.1	5.0	58.9	0.86
Mental health difficulties	530	14.1	51.7	29.3	4.9	65.8	1.16
Unseen disability	3,240	11.5	49.5	33.7	5.2	61.0	0.94
Multiple disabilities	830	9.5	43.2	40.4	6.9	52.7	0.67*
Other disability	1,885	12.8	48.6	32.9	5.7	61.4	0.96

Note: I, first-class honours; II(i), upper second-class honours; II(ii), lower second-class honours; III, third-class honours. Good degrees are those awarded with first-class or upper second-class honours. The final column shows the odds ratio of obtaining a good degree in each group of students with disabilities compared with students with no known disability. Odds ratios that are significantly different from 1 ($p < .05$) are shown by asterisks. These figures exclude honours degrees awarded by the Open University.

degree; and the odds of a student with multiple disabilities obtaining a good degree were only 67% of the odds of a student with no known disability obtaining a good degree. The other six odds ratios were not significantly different from 1 ($p > .10$ in each case). Indeed, in one case, the odds ratio was marginally greater than 1, indicating that a student with mental health difficulties was at least as likely to obtain a good degree as was a student with no known disability.

To obtain a more holistic view of the impact of disability upon academic attainment, a logistic regression analysis was carried out. This used the classification shown in Table 1 as the predictor variable and obtaining a good degree as the dependent variable. Not surprisingly (given the extremely large size of the sample), the effect of the predictor variable was highly significant ($\chi^2 = 177.32$; df = 8; $p < .001$). Even so, Nagelkerke's (1991) generalisation of the coefficient of determination, R^2, yielded a value of only .0010. This implies that category of disability explained only one-tenth of one per cent of the variation in attainment, as measured by whether or not each student obtained a good degree. Cohen (1988, 413–4) suggested criteria for judging that effects were 'small', 'medium' or 'large' in practical and theoretical terms, and this would be regarded as only a small effect on Cohen's criteria.

Differences on background variables

Age

Information about age was available for all but 115 of the graduates. Their ages on 31 July 2005 varied from 17 to 74, with a mean of 24.2 years and a median of 22 years. The students in the nine disability categories were classified further into the six age bands shown in Table 2, and the mean age of the students in each category is shown in Table 3. It is clear that there was a good deal of overlap in the ages of students in different categories, and the modal age in each case was 21–24 years. Nevertheless, the variation in their mean ages was also highly significant ($F = 188.52$; df = 8, 230403; $p < .001$). The graduates with no known disability and the graduates with dyslexia had the lowest mean age; the other graduates with disabilities tended to be older; and the graduates who were wheelchair users or had mobility difficulties had the oldest mean age.

In general, this pattern of results is not surprising. On the one hand, students with congenital disabilities or disabilities acquired during childhood may have taken longer to obtain the educational qualifications needed for admission to higher education, in

Table 2. Percentage age distributions of students in nine disability categories.

	Age (years)					
	Under 21	21–24	25–29	30–39	40–49	50+
No known disability	2.9	78.7	7.2	6.3	3.8	1.1
Dyslexia	1.8	78.2	9.8	6.5	2.9	0.8
Blind/partially sighted	3.9	71.4	8.3	8.6	4.4	3.4
Deaf/hearing impairment	1.9	68.3	7.1	7.8	8.8	6.1
Wheelchair user/mobility difficulties	1.3	52.4	10.0	11.9	13.8	10.6
Mental health difficulties	1.9	50.2	19.0	16.7	10.9	1.3
Unseen disability	2.1	76.1	8.3	6.7	4.4	2.4
Multiple disabilities	1.1	58.4	11.0	13.4	9.5	6.7
Other disability	2.5	70.9	9.1	8.3	5.7	3.5

Table 3. Demographic characteristics of students in nine disability categories.

	Mean age (years)	Percentage male	Mean tariff points	Percentage part-time
No known disability	24.1	42.6	314.6	7.2
Dyslexia	24.1	49.9	272.8	3.8
Blind/partially sighted	25.4	48.1	288.9	7.3
Deaf/hearing impairment	27.3	42.0	306.4	10.6
Wheelchair user/mobility difficulties	30.8	38.2	286.9	13.9
Mental health difficulties	27.9	35.9	294.0	10.5
Unseen disability	24.9	39.6	313.3	7.5
Multiple disabilities	28.7	43.2	258.9	10.5
Other disability	25.8	41.3	298.4	7.5

which case they will tend to be older than students without disabilities. On the other hand, disabilities that result from adult illnesses or the degenerative processes associated with ageing will be more common in older people, including those who study in higher education later in life.

Gender

Information about gender was available for all of the graduates. Of the 236,400 students, 100,955 (or 42.7%) were men, and 135,445 (or 57.3%) were women. Table 3 shows the percentage of men in each of the nine categories of disability. This was lowest (35.9%) in the students with mental health difficulties and highest (49.9%) in the students with dyslexia. Once again, this pattern of results is unsurprising, because there are often gender differences in the prevalence of particular disabilities (e.g. Benson and Marano 1994, 84, 96). Equally, however, this pattern of results might reflect biases in the identification of those disabilities by educational institutions, rather than true differences in their prevalence when assessed by formal diagnostic procedures. For example, Richardson and Wydell (2003) suggested that the apparent gender difference in the prevalence of dyslexia was mainly due to a tendency for boys to be identified as dyslexic by their teachers on the basis of overactivity or other behavioural difficulties and for girls to use their social skills to disguise their difficulties in learning (see Shaywitz et al. 1990). Finally, apparent gender differences in the prevalence of particular disabilities might also result from variations in the willingness of male and female students to disclose their disabilities.

Entry qualifications

Students are admitted to higher education institutions in the UK with a wide variety of prior qualifications. In 2002, the Universities and Colleges Admissions Service introduced a tariff system to assign a numerical score to each applicant based on their level of achievement in different types of qualifications. Although not ideal, it is generally seen as an improvement on the previous arrangement (which coded different qualifications separately), and more than 90% of entrants to higher education are assigned tariff scores. However, tariff scores were not available for graduates who began their studies before 2002, and thus the database used in this study lacked

Table 4. Percentage tariff score distributions of students in nine disability categories.

	200 points or less	201–280 points	281–340 points	341–420 points	More than 420 points
No known disability	19.3	22.9	19.4	20.9	17.4
Dyslexia	29.4	27.1	18.9	15.9	8.7
Blind/partially sighted	24.3	27.2	16.6	17.8	14.2
Deaf/hearing impairment	22.7	19.0	22.7	22.3	13.2
Wheelchair user/mobility difficulties	24.8	24.2	22.9	16.6	11.5
Mental health difficulties	23.1	28.0	18.1	17.6	13.2
Unseen disability	21.9	21.0	16.8	21.5	18.8
Multiple disabilities	34.2	26.6	17.1	13.1	9.0
Other disability	23.3	22.8	19.3	19.1	15.4

information about entry qualifications for graduates whose programmes had lasted longer than three years (including all those who had studied on a part-time basis).

The total tariff scores for the remaining 104,230 students varied from 10 to 960, with a mean of 312.6 points and a median of 310 points. These graduates were classified into the five tariff bands shown in Table 4, corresponding approximately to quintiles in the overall distribution of scores, and the mean tariff score of the students in each category of disability is shown in Table 3. There was considerable overlap in the tariff scores obtained by students in the different categories, indicating that the presence of a disability is not incompatible with high levels of attainment in secondary education. However, the variation in their mean tariff scores was very highly significant ($F = 63.95$; df = 8, 103952; $p < .001$). The graduates with no known disability had the highest mean score; the graduates with disabilities tended to have lower scores; and the graduates with multiple disabilities had the lowest mean score.

This suggests that, regardless of the findings of the present study, the attainment of students with disabilities in *secondary* education is poorer than the attainment of students with no disabilities. From a medical perspective, this might reflect the impact of disabilities upon attainment in secondary education. From a social perspective, however, it might reflect inadequate accommodation and support for secondary students with disabilities. The latter might in turn be a consequence of a progressive reduction in funding for special education and the New Labour Government's policy of mainstreaming children with disabilities.

Mode of study

Information about mode of study (full-time vs. part-time) was available for all the graduates. Of the 236,400 students, 218,685 (or 92.5%) had studied on a full-time basis, and 17,715 (or 7.5%) had studied on a part-time basis. Table 3 shows the percentage of students who had studied on a part-time basis in each of the nine categories of disability. This was lowest (3.8%) for students with dyslexia and highest (13.9%) for students who were wheelchair users or had mobility difficulties.

Subject of study

The programmes that had been taken by these graduates were classified into the 19 major subject areas used by HESA. These are listed in Table 6. Students taking

programmes in two different subjects in a balanced or major/minor split or three different subjects in a balanced split were apportioned to the relevant subjects. Other students taking programmes across two or more subjects that did not fall within one of the other 18 subject areas were assigned to a 'combined' category. The proportion of students with a disability of any kind varied from 13.9% in creative arts and design and 10.2% in agriculture to 4.5% in veterinary science and 3.6% in medicine.

Institution

It is difficult to make comparisons in the performance of students with disabilities across the 163 institutions of higher education in the UK, because some of the institutions recorded no graduates as having a disability. The institutions were therefore classified into five categories: the 'Russell Group' (i.e. the group of research-intensive universities established before 1992), other pre-1992 universities, post-1992 universities (mainly former polytechnics that acquired degree-awarding powers after 1992), specialist institutions (e.g. colleges of agriculture, art, medicine or music) and colleges of higher education. Table 5 shows the distribution of the students across the various disability categories in the five types of institution. The proportion of students with a disability of any kind varied from 15.1% at specialist institutions to 6.1% at institutions that were members of the Russell Group.

Controlling for the effects of background variables

The analyses that have been described thus far have shown that students who are recorded as falling into the different disability categories vary with regard to the likelihood of their being awarded a good honours degree. In other words, simply at a descriptive level, disablement plays a statistically significant (although fairly minor) role in predicting academic attainment. Nevertheless, students who fall into these different categories also vary with regard to their age, gender, entry qualifications, mode of study, subject of study and institution. Hence, the apparent variation in the attainment of students with disabilities will be confounded with any variations in their academic performance related to the latter background variables. A further logistic regression analysis was carried out to control for the effects of the latter variables.

Table 5. Percentage distribution of students across nine disability categories in different kinds of institution.

	Russell Group	Pre-1992 universities	Post-1992 universities	Specialist institutions	Colleges of higher education
No known disability	93.9	92.6	92.5	84.9	90.3
Dyslexia	3.2	3.5	4.1	10.2	5.6
Blind/partially sighted	0.1	0.2	0.1	0.2	0.2
Deaf/hearing impairment	0.2	0.3	0.3	0.3	0.3
Wheelchair user/mobility difficulties	0.1	0.2	0.2	0.1	0.3
Mental health difficulties	0.2	0.3	0.2	0.2	0.2
Unseen disability	1.3	1.6	1.2	2.7	1.6
Multiple disabilities	0.1	0.3	0.6	0.4	0.3
Other disability	0.7	0.9	0.7	1.0	1.1

As before, whether a student obtained a good degree was the dependent variable. The analysis used a sequential approach in which the variables of age, gender, entry qualifications, subject of study and type of institution were initially entered as predictor variables. Mode of study was also controlled in so far as information about entry qualifications was only available for graduates who had studied on a full-time basis. The second stage established whether the HESA classification of disabilities made a significant additional contribution to predicting the dependent variable when the effects of the background variables were statistically controlled. Complete data on all of the relevant variables were available for only 103,950 graduates. As explained above, this was mainly due to the exclusion of graduates whose programmes lasted for longer than three years. This means that, in principle, the findings may not generalise to graduates from part-time programmes. Even so, the resulting data set is entirely appropriate for assessing whether variations in entry qualifications and other variables are responsible, in whole or in part, for variations in the attainment of students with different kinds of disability.

The first stage of the logistic regression analysis showed that the combined effect of the background variables was very highly significant ($\chi^2 = 12439.30$; df = 32; $p < .001$). Nagelkerke's (1991) generalisation of the coefficient of determination, R^2, yielded a value of .1546. This means that the background variables explained 15.46% of the variation in attainment, as measured by whether or not a student obtained a good degree. This would be regarded as a medium effect in practical and theoretical terms (see Cohen 1988, 413). The second stage of the analysis found that the additional effect of category of disability was not statistically significant ($\chi^2 = 15.37$; df = 8; $p = .052$), and it yielded a value of R^2 of .1548. In other words, the background variables plus the category of disability explained 15.48% of the variation in attainment. Nevertheless, this implies that in itself the category of disability explained only an additional (15.48% – 15.46%) or 0.02% of the variation in attainment, a negligible effect.

Table 6 summarises the detailed results from the latter analysis. For each predictor variable, the first value was defined as a reference category, and the table shows the odds ratios comparing each of the remaining values with the reference category. For example, the odds of a graduate aged 21–24 obtaining a good degree were 1.21 times those of a graduate aged under 21 obtaining a good degree when the effects of the other predictor variables were statistically controlled. Similarly, the odds of a male graduate obtaining a good degree were 0.72 times those of a female graduate obtaining a good degree; and the odds of obtaining a good degree in subjects allied to medicine were 0.54 of those of obtaining a good degree in medicine and dentistry.

With regard to the background variables, the results show

- that older students were more likely to obtain good degrees than younger students;
- that women were more likely to obtain good degrees than men;
- that students with higher entry qualifications were more likely to obtain good degrees than students with lower entry qualifications; and
- that some subjects of study were more likely to lead to good degrees than others.

These trends merely confirm the findings of earlier investigations (see, e.g., Johnes and Taylor 1990, 103–20; Richardson and Woodley 2003).

Moreover, variation in the proportion of good degrees awarded across different UK institutions of higher education has been clearly documented, and it seems to be

Table 6. Results of multiple logistic regression analysis.

Predictor variable	Odds ratio	Predictor variable	Odds ratio
Disability category		Subject of study	
No known disability		Medicine and dentistry	
Dyslexia	0.98	Allied to medicine	0.54*
Blind/partially sighted	0.79	Biological sciences	0.62*
Deaf/hearing impairment	0.96	Veterinary science	0.40*
Wheelchair user/mobility difficulties	0.97	Agriculture	0.59*
		Physical sciences	0.46*
Mental health difficulties	1.09	Mathematical sciences	0.34*
Unseen disability	0.83*	Computer science	0.63*
Multiple disabilities	0.83	Engineering and technology	0.56*
Other disability	1.11	Architecture	0.48*
		Social studies	0.59*
Age (years)		Law	0.45*
Under 21		Business studies	0.57*
21–24	1.21*	Mass communications	0.81
25–29	3.05*	Languages	0.80
30–39	6.39*	Historical and philosophical studies	0.82
40–49	8.32*	Creative arts and design	0.89
50 and over	6.57*	Education	0.50*
		Combined	0.63*
Gender			
Female		Institution type	
Male	0.72*	Russell Group	
		Other pre-1992 universities	0.84*
Entry qualifications		Post-1992 universities	0.80*
200 points or less		Specialist institutions	0.73*
201–280 points	1.62*	Colleges of higher education	0.65*
281–340 points	2.64*		
341–420 points	4.17*		
More than 420 points	7.12*		

Note: Odds ratios that are significantly different from 1 ($p < .05$) are shown by asterisks.

independent of the 'mix' of subjects taught at any particular institution (Johnes and Taylor 1990, 103–8). The present findings show that significant variation remains even when variations in the students' age, gender and entry qualifications have been taken into account. In particular, graduates of Russell Group institutions are more likely to obtain good degrees than those of other institutions. This might indicate that the proportion of good degrees awarded by a particular institution is linked to its overall level of resourcing or more specifically to its commitment to research; equally, however, it might indicate that Russell Group institutions are simply more generous than other institutions in awarding first-class or upper second-class honours.

Even so, the main result to emerge from this analysis was that, when the background variables of age, gender, entry qualifications, subject of study and institution had been taken into account, the only category of students with disabilities that

yielded an odds ratio that was significantly less than 1 was that of those with an unseen disability. For each of the remaining categories, the odds of the students with disabilities obtaining a good degree proved not to be significantly different from those of the students with no known disability ($p > .10$ in each case). Indeed, in two cases, the odds ratios were marginally greater than 1, indicating that the students with mental health difficulties and the students with other disabilities were both at least as likely to obtain good degrees as were the students with no known disability.

Discussion

The logistic regression analysis that was reported earlier in this article showed that the HESA classification of disabilities explained merely 0.10% of the variation in students' academic attainment, as measured by whether or not they obtained good degrees. The final analysis has shown that most of this explained variation was due to confounded differences with regard to the students' age, gender, prior qualifications, subject of study and institution. When the effects of the latter variables were taken into account, the HESA classification of disabilities explained only 0.02% of the variation in students' academic attainment, and this was not statistically significant. In overall terms, then, disablement per se does not play a significant role in predicting whether an individual student obtains a good degree: provided that they receive appropriate support, students with disabilities are as likely to obtain good degrees as are students with no known disability. (Further research is needed to address the different question whether students with disabilities are as likely to complete their degrees.)

An anonymous reviewer suggested that the accommodations made for the assessment of students with disabilities (such as allowing extra time in examinations) might counteract any effects that those disabilities might have on their performance. Indeed, Williams and Ceci (1999) claimed that such accommodations often lacked scientific justification and as a result sometimes bestowed unfair advantages on students with disabilities. Nevertheless, reasonable accommodations do nothing more than to enable students with disabilities to be assessed in a fair manner on the same basis as nondisabled students. They are not intended to compensate for the impact of disabilities on students' learning and studying. 'Levelling the playing field' enables different teams to compete fairly, but it has no effect on the abilities of the players.

In the initial analysis, the odds of students with dyslexia obtaining good degrees were only 78% of those of students with no known disability obtaining good degrees. However, in the final analysis, this figure was raised to the non-significant value of 98% (see Table 6). The students with dyslexia were similar to the students with no known disability in terms of age and subject of study, but they were more likely to be male (49.9% vs. 42.6%), and they had a lower mean tariff score (272.8 vs. 314.6). Moreover, further analysis of the data that yielded Table 5 showed that students with dyslexia were also less likely to be studying at Russell Group institutions (18.7% vs. 24.4%). In other words, graduates with dyslexia are less likely to obtain good degrees than are graduates with no known disability, but this is because they are more likely to be men, have poorer entry qualifications and are less likely to have studied at research-intensive universities and not because they are dyslexic. (As I mentioned earlier, their poorer entry qualifications might be due to the impact of dyslexia upon their attainment in secondary education or to inadequate accommodation and support in secondary education.)

Again, in the initial analysis, the odds of students with multiple disabilities obtaining good degrees were only 67% of those of students with no known disability obtaining good degrees. However, in the final analysis, this figure was raised to the value of 83%, and this was not statistically significant. These students were similar to the students with no known disability in terms of age, gender and subject of study, but they had a much lower mean tariff score (258.9 vs. 314.6), and they were also much less likely to be studying at Russell Group institutions (7.1% vs. 24.4%). In other words, graduates with multiple disabilities are also less likely to obtain good degrees than are graduates with no known disability, but this is mainly because they have poorer entry qualifications and are less likely to have studied at research-intensive institutions. Nevertheless, the odds ratio of 0.83 was not significant partly because the final analysis included only 245 students with multiple disabilities. A residual effect in graduates with multiple disabilities might become apparent in a larger sample (which could be achieved, for instance, by combining data from several academic years).

Students with an unseen disability showed a different pattern. In the initial analysis, the odds of these students obtaining good degrees were 94% of those of students with no known disability obtaining good degrees. In the final analysis, this figure was reduced to the value of 83%. Although the students with multiple disabilities produced a similar odds ratio, the final analysis included far more (1525) students with unseen disabilities, and in this case it was statistically significant ($p = .002$). Even so, the graduates with unseen disabilities and the graduates with no known disability had broadly similar mean ages (24.9 years vs. 24.1 years), comparable gender distributions (39.6% male vs. 42.6% male) and similar mean tariff scores (313.3 vs. 314.6). The graduates with unseen disabilities were also almost as likely to have studied at Russell Group institutions (22.5% vs. 24.4%).

The main difference between the graduates with unseen disabilities and the graduates with no known disability was that the former were more likely to have studied creative arts and design, education, or historical and philosophical studies, and that they were less likely to have studied business and administrative studies, subjects allied to medicine, engineering and technology, or social studies. Table 6 shows that, with the exception of education, the former are subjects where relatively more good degrees are awarded, whereas the latter are subjects where relatively fewer good degrees are awarded. In other words, relative to other graduates who have taken the *same* subjects, graduates with unseen disabilities are less likely to obtain good degrees, even when other background variables have been controlled, but this tendency is masked in the national population of students by variations in their choice of subject.

The examples of unseen disabilities cited by HESA are diabetes, epilepsy and asthma. Each of these conditions may affect higher mental function (and hence academic attainment), although the evidence is clearer for type 1 (insulin-dependent) diabetes (Brands et al. 2005), which is the more common form in children and young adults, than for type 2 (non-insulin-dependent) diabetes (Ryan and Geckle 2000), and it is clearer for epilepsy (Elger, Helmstaedter, and Kurthen 2004) than for asthma (Annett et al. 2005). As Richardson (1990) noted in the case of diabetes, the nature of any intellectual impairment in these conditions could in principle be organic (due to the disruption of cerebral functioning), iatrogenic (due to the medication used to control these conditions) or psychogenic (due to changes in personality or cognitive style as a consequence of living with a chronic, life-threatening disease).

The data that are collected at an institutional level and a national level in the UK do not enable one to explore these different possibilities. Perhaps a more important point

is that the category of unseen disabilities encompasses a great many medical conditions other than the few examples cited by HESA, including diseases such as arthritis, lupus (an autoimmune disease), chronic fatigue syndrome (myalgic encephalomyelitis) and multiple sclerosis that may be unseen when the student is in remission but which may become 'seen' in their more acute phases. Much more work is clearly needed on the experience and attainment of students with unseen disabilities. One possibility is that it is precisely their unseen nature that makes it harder for students with these disabilities to obtain appropriate resources and support from their institutions.

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Source: HESA Student Record 2004–05, reference December 2005
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