### 4.2.2 Comparison with known destinations

The career intentions of doctoral researchers were compared with information about doctoral graduate employment destinations. Based on a HESA 2008/09 survey and analysed by discipline[14], destinations of doctoral graduates three and a half years after graduation were used for comparison (Table 4.4).

Some similarities in trends by discipline were evident. Both intentions and destinations for careers in higher education were highest for social sciences and arts and humanities researchers. Research outside higher education was highest for both intentions and destinations for those studying biological sciences and physical sciences[15], and other occupations was highest for both intentions and destinations for those in engineering/technology and biomedical sciences. The balance for other common doctoral occupations and those within the other occupations is also notably similar for intentions and destinations (i.e. arts and humanities vs. biomedical sciences). These similarities appeared to demonstrate that there was some match between the aspirations of researchers and the career paths that they were managing to take, while some individual differences could reflect differing short-term pathways towards long-term career goals.

Table 4.4 Known occupational data for doctoral researchers in UK employment, by discipline (%)[14]

| | Arts and humanities | Biological sciences | Biomedical sciences | Physical sciences and engineering | Social sciences | All respondents |
|---|---|---|---|---|---|---|
| HE research | 8 | 27 | 23 | 19 | 14 | 19 |
| Teaching and lecturing in HE | 50 | 7 | 15 | 14 | 47 | 22 |
| Research (not in HE sector) | 3 | 23 | 10 | 18 | 8 | 13 |
| Other common doctoral occupations | 6 | 18 | 40 | 31 | 13 | 27 |
| Other occupations | 22 | 18 | 9 | 14 | 15 | 14 |
| Other teaching | 11 | 8 | 3 | 5 | 4 | 6 |
| (N) | 180 | 220 | 405 | 555 | 180 | 1625 |

Data source: Destinations of Leavers from Higher Education Longitudinal Survey 2004/05, 2009 (IES analysis)

## 4.3 How career intentions related to field of research study

To understand career intentions more fully, respondents were asked how their intentions related to the discipline of their research. It was hoped this might shed particular light on ideas about careers outside higher education as it seemed reasonable to assume that most entering higher education careers would do so in connection with their research discipline or broader discipline.

Most final-year respondents (91%) indicated that they wanted to pursue a career in an occupation directly related to the broad discipline area of their research, with nearly two thirds (63%) reporting that they definitely wanted to do so and just over a quarter (28%) that they might. Only 2% reported that they definitely did not intend to pursue a career relating to their research discipline and a further 5% that they might not do so, while 2% did not know.

More of those considering a career in higher education (research or teaching) and in research outside higher education expected to pursue an occupation directly related to their research discipline than those considering other destinations. However, even amongst those considering other occupations, a majority with definite career ideas (62%) intended to pursue an occupation related to their research discipline, as did over half of those with several career alternatives in mind.

These indicators of career intention were almost identical for male and female respondents in their final year. There were, nevertheless, some differences in the strength to which they held the career intention by discipline of study, as Figure 4.3 indicates. Final-year respondents in education (80%), arts and humanities (73%) and social sciences (70%) were more likely than others, especially those in engineering/technology (55%), physical (58%) or biological sciences (58%), to say they definitely wanted to pursue a career related to their research discipline. There were also some differences by nationality with RoW respondents (74%) and those from the EU/EEA (65%) being more likely than UK respondents (62%) to say that they definitely wanted to pursue a career directly related to the discipline of their research.

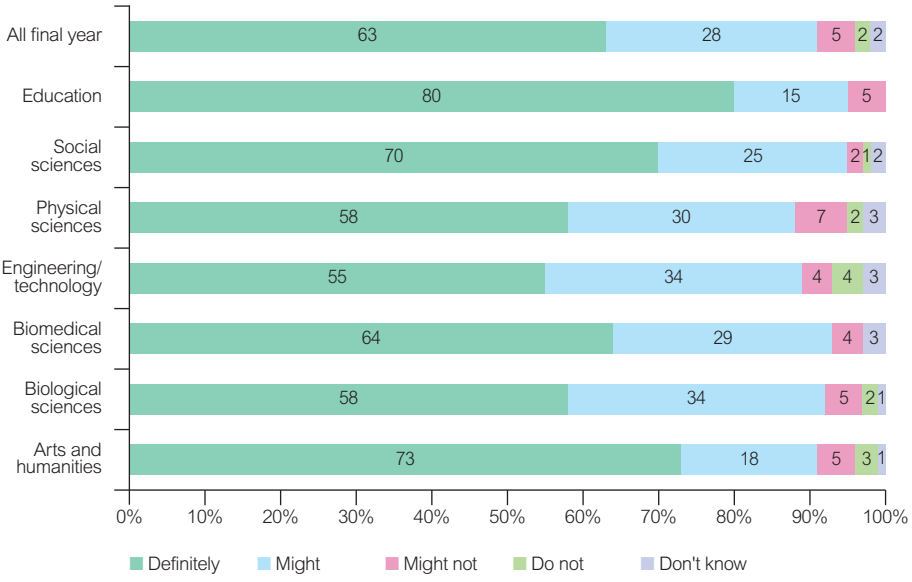


Figure 4.3 Intention to pursue a career in an occupation directly related to the broad discipline of your research: final-year respondents

[14] Vitae (2010) What do researchers do? Doctoral graduate destinations and impact three years on. Vitae www.vitae.ac.uk/wdrd

[15] 'What do researchers do?' combines physical science and engineering/technology as a single category, so some disaggregation of its data was required for comparison purposes.

[16] Reproduced from Vitae (2010) What do researchers do? Doctoral graduate destinations and impact three years on. Vitae www.vitae.ac.uk/wdrd

Further analysis shows that for UK respondents there were additional differences by year of study (Figure 4.4). First- and second-year respondents were more likely to intend to pursue an occupation relating to their research discipline (65%). Respondents in their third year of four (51%) were less likely than those in either their first two years (65%) or their final year (61%) to say that they definitely wanted to pursue a career directly related to the discipline of their research. This trend was consistent across all discipline areas and may indicate that in their penultimate year some researchers were having doubts about their ability either to complete their research or to find work related to it. It also appeared that the small minority who were unsure, who might not or do not want to work in the discipline of their research, increased over time. Interestingly, these trends with year of study were not observed in the data from respondents from outside the UK.

A higher proportion of those who had been employed prior to starting their doctorate had definite career plans to pursue an occupation related to their subject of research (73%) than those who had been undergraduates immediately prior to their doctorate (51%), although the total numbers considering these occupations were similar.

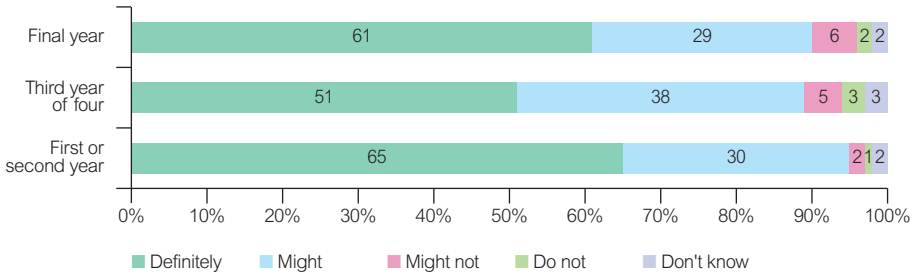


Figure 4.4 Intention to pursue a career in an occupation directly related to the broad discipline of research: UK respondents by year of study

Therefore, overwhelmingly it seems that researchers would like to pursue an occupation which is related to the discipline of their research; this was the case for around 90% of respondents and was relatively uniform across all discipline groups. Within this, the proportion that were definite about their intention varied somewhat more by discipline, being highest for those studying education whilst rather lower (but still around 60%) in engineering/technology, physical and biological sciences.

The conviction to which doctoral researchers held this view seemed to be somewhat weaker in later stages of their doctoral study than in early years. This paralleled findings in a study of undergraduates in engineering[17], which found a decline in commitment to a career within the discipline with stage of study, especially for women. However, this should not detract from the overall picture that a large majority of doctoral researchers want to pursue a career related to their research discipline; this persisted across different occupational intentions, although it was, unsurprisingly, highest for those aspiring to careers in higher education and research.

## 4.4 Reasons for a career intention related to research discipline

Respondents who definitely wanted to work in the broad area of their research gave four main reasons (see Table 4.5):

- To put their knowledge/discipline expertise into practice (83%)
- They would find the work interesting and exciting (80%)
- They enjoy their research so it seems logical to work in this field (66%)
- To use their high-level skills (developed during research) (63%)

Those who might want to work in the broad field of their research gave similar reasons, although somewhat fewer (49%) mentioned that they enjoyed their research so it seemed logical to work in that field and far fewer said that they had always wanted to work in that field (17% compared to 43%). However, rather more of them reasoned that they would find it easier to get a job (16% compared to 9%).

On the other hand, the small number of respondents who said they might not work in the broad field of their research were generally less likely to mention any of these reasons. A far lower proportion mentioned that they would find the work interesting and exciting (32%) or that they enjoyed their research so it seemed logical to work in that field (11%). More of this group also mentioned that they would find it easier to get a job (21%) and that they would be letting people down if they didn't (16%) as reasons to work in an occupation related to their research discipline. Very few of them (6%) reported that they had always wanted to work in that field, perhaps indicating that those who have the longest-held interest in research were those with the most definite intention to pursue it. Overall, this group appeared somewhat more utilitarian in their thinking; their main reasons for considering working in occupations related to their research were to put their knowledge/discipline expertise into practice (57%) and to use their high-level skills (developed during research) (44%), rather than overt expressions of interest or enjoyment.

Table 4.5 Reasons for a career intention to pursue an occupation directly related to the broad discipline of research: all respondents

| | Definite % | Might % | Might not % |
|---|---|---|---|
| To put my knowledge/discipline expertise into practice | 83 | 79 | 57 |
| I will find the work interesting and exciting | 80 | 72 | 32 |
| I enjoy my research so it seems logical to work in this field | 66 | 49 | 11 |
| To use my high-level skills (developed during research) | 63 | 63 | 44 |
| I have always wanted to work in this field | 43 | 17 | 6 |
| I have enjoyed related work experience | 27 | 20 | 4 |
| I will have better long-term career prospects | 24 | 20 | 8 |
| I will be better paid (than in other types of work) | 13 | 15 | 8 |
| It will enable me to work in my preferred location | 10 | 10 | 4 |
| I will find it easier to get a job | 9 | 16 | 21 |
| I know other people who do this kind of work | 9 | 9 | 11 |
| I will be letting people down if I don't | 3 | 5 | 16 |
| Other reason | 3 | 2 | 6 |
| Not answered | 0 | 0 | 4 |
| (N) | 2760 | 1245 | 127 |

[17] CRAC (2007) The career thinking of UK engineering undergraduates. Cambridge: Careers Research & Advisory Centre www.crac.org.uk/148682/Current-and-recent-research-portfolio-.html

### 4.4.1 Differences by discipline group

In general, there were only slight differences in reasons for career intentions by discipline group. The same top two reasons (putting knowledge/expertise into practice and interest in the work) were mentioned by respondents regardless of discipline; this was the case both for those with definite career intentions and those who might consider work related to their research (see Figure 4.5). Finding the work interesting and exciting was the most frequently mentioned reason by those with definite intentions for a career in biological and physical sciences.

### 4.4.2 Gender differences

There were few gender differences in replies to this question. Male respondents who definitely intended to pursue work related to their research discipline or might consider doing so were slightly more likely than females to mention being better paid (males 16-18%, females 11-12%, respectively). This reflected other research[18,19] which indicates that rather more males are motivated by remuneration than females, but the proportion of both genders in this study was relatively low, so potential remuneration was not a major driver for doctoral researchers to work in their field of research.

### 4.4.3 The main drivers for discipline-related career intentions

To summarise, most doctoral researchers want to work in an occupation which relates to the discipline of their research, in order to put their high-level knowledge and expertise into practice and to maintain their high interest in the field. Only a minority expressed more pragmatic or career-related reasoning, such as better prospects or employment opportunities, and fewer still better pay. This differentiation was strongest for those definite about an intention to stay in their field. Amongst those who were less definite, there was a wider range of reasons, with interest less dominant as a driver and some pragmatic reasons more widely held, although directly career-related reasoning was cited by less than one in five.

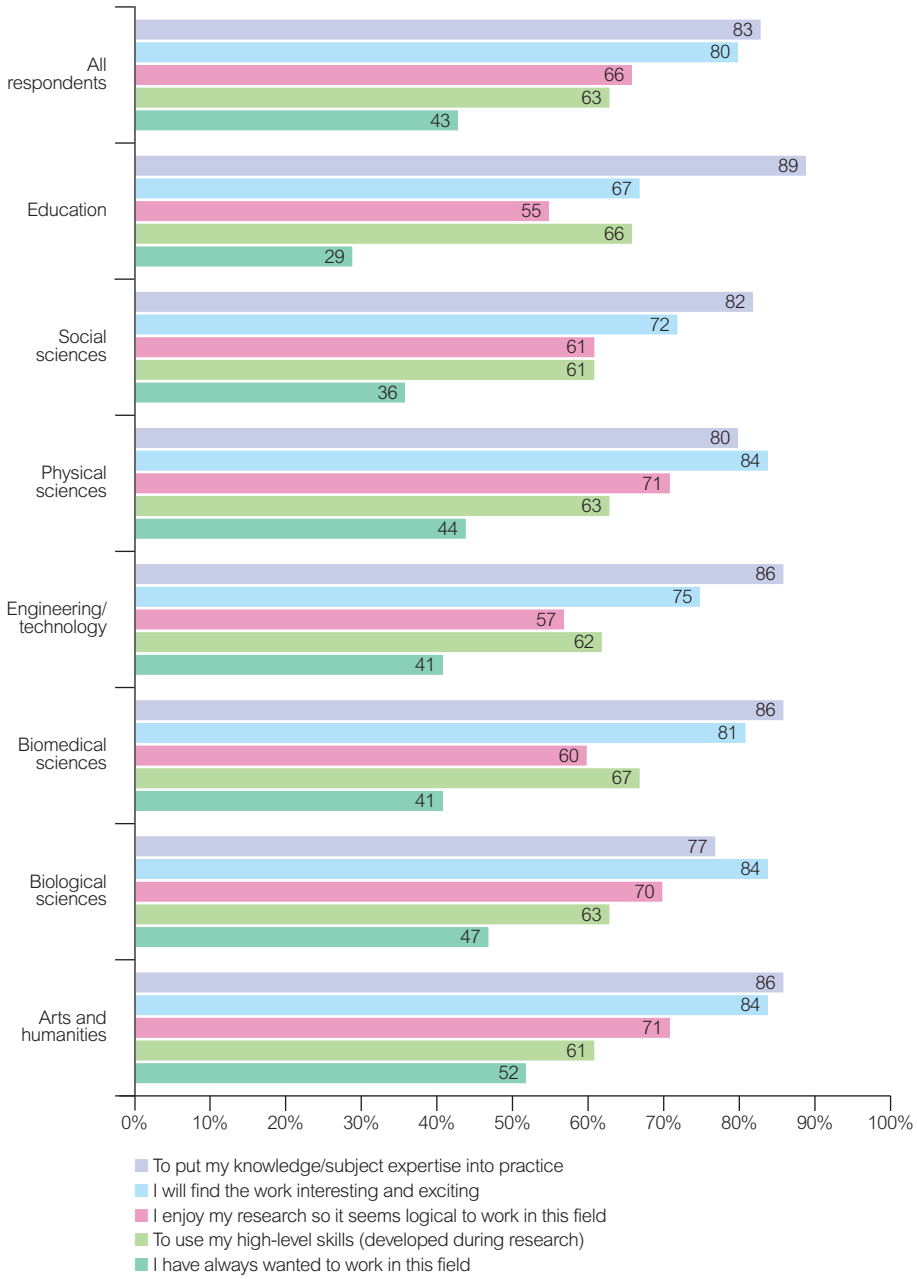


Figure 4.5 Most popular reasons to pursue an occupation directly related to research discipline, by discipline of study: all respondents with definite career intention to do so

In other studies, the top motivations of doctoral graduates for taking their current employment (i.e. after completion) have been reported as "fitting my career plans" and "the type of work I wanted"[20], which to an extent parallels this dominance of personal choice over more pragmatic reasoning. Similar findings have been reported for undergraduates in STEM disciplines[19], i.e. that they were largely aspirational in their thinking, at least while they remain within higher education.

In the next section, we analyse the reasoning in the minds of researchers considering occupations which are not related to the discipline of their research.

[18] CRAC (2007) The career thinking of UK engineering undergraduates. Cambridge: Careers Research & Advisory Centre www.crac.org.uk/148682/Current-and-recent-research-portfolio-.html

[19] CRAC (2011) STEM graduates in non-STEM jobs. London: Department for Business, Innovation & Skills www.bis.gov.uk/assets/biscore/further-education-skills/docs/s/11-771-stem-graduates-in-non-stem-jobs.pdf

[20] Vitae (2009) What do researchers do? First destinations of doctoral graduates by subject. Vitae www.vitae.ac.uk/wdrd

# 4.5 Reasons for career intentions not related to discipline of research

As we have seen, very few respondents (fewer than 10% in most disciplines) either definitely did not or might not want to work in a field related to their research discipline. They gave three main reasons for their intention not to do so:

- They have become more interested in another field
- They want to use their high-level skills but not in this field
- They have not enjoyed their research

The range of reasons given is shown in Table 4.6. On closer analysis, nearly a quarter of those definitely not intending to work in the broad discipline of their research reported that they were now either retired or too old to work; these comprised a very distinct subset of respondents.

Notably, approaching 10% of those not intending to pursue their research direction were expecting to enter teacher training.

In order to provide a bigger sample for analysis, the much larger group of respondents who reported that they might work in an occupation related to their discipline were also asked why they might not do so (shown in the right-hand column of Table 4.6). Many of these respondents gave rather different replies. In particular, more of them mentioned a lack of career opportunities either in their field or in their preferred location as reasons to consider unrelated occupations instead.

Just over a third of both those who might and those who might not work in the discipline field of their research mentioned being better paid doing other work as a reason for considering work unrelated to their research field. Comparing this with findings in the previous section, remuneration would therefore seem to be a bigger driver to work in other fields than to remain in occupations relating to research discipline.

Table 4.6 Reasons for not pursuing a career related to the discipline of research: Respondents who might, might not and definitely do not want to do so

| | Definitely not % | Might not % | Might % |
|---|---|---|---|
| There are too few career opportunities in my field | 22 | 30 | 43 |
| I will be better paid doing other work | 22 | 36 | 35 |
| Too few relevant jobs in my preferred work location | 19 | 16 | 35 |
| Better long-term career prospects doing something else | 24 | 30 | 26 |
| I will find it easier to get different kind of job | 17 | 14 | 22 |
| I have become more interested in another field | 33 | 43 | 18 |
| I want to use my high-level skills but not in this field | 31 | 51 | 16 |
| Knowledge of others doing this kind of work has put me off | 20 | 23 | 13 |
| I have not enjoyed my postgraduate research | 31 | 40 | 12 |
| Insufficient ability/experience to get a job related to my research | 11 | 10 | 10 |
| I have been put off by my work experience | 13 | 20 | 5 |
| I never intended to work in this field | 15 | 11 | 5 |
| I have tried and failed to get jobs related to my research | 6 | 1 | 3 |
| Other reason | 28 | 10 | 8 |
| Not answered | 2 | 2 | 2 |
| (N) | 54 | 127 | 1245 |

## 4.5.1 Gender differences

There appeared to be some differences by gender in the reasons given by respondents for not working in an occupation related to their research discipline. In particular, again among respondents who might consider working in their field of research, more males mentioned that they would be better paid doing other work (39% compared to 32%), while more female respondents mentioned that there were too few career opportunities in their field (47% compared to 41%) and too few relevant jobs in their preferred location (39% compared to 32%).

These reasons appeared to reflect findings for undergraduates where some females seem to be less confident about their employment prospects and some males are more concerned about remuneration[21,22]. There could of course also be indirect underlying issues for both genders in relation to partners' careers and locations.

The small number of respondents who definitely do not or might not want to work in an occupation related to the discipline of their research limits the analysis that is possible within these groups, but there were two apparent main differences by gender:

- More females than males reported that they had not enjoyed their research
- More females wanted to use their high level skills but not in their research field

## 4.5.2 Pragmatic reasons for intentions not to pursue research-related careers

The predominance in the sample of those wanting to pursue careers related to their research discipline limits the degree to which we can quantitatively assess why some respondents had different career intentions. However, by including those who might (or might not) want to pursue a discipline-related occupation or career, as well as those who definitely or probably do not, some reasons emerged. A small number had not enjoyed their research, and/or had become more interested in another field, but the majority reasoned that alternative career directions could be more attractive on the grounds of better career prospects, job opportunities or remuneration. Certainly those issues appeared to be more significant as motivations for leaving discipline-related careers than for pursuing them.

[21] CRAC (2007) The career thinking of UK engineering undergraduates. Cambridge: Careers Research & Advisory Centre www.crac.org.uk/148682/Current-and-recent-research-portfolio-.html

[22] CRAC (2011) STEM graduates in non-STEM jobs. London: Department for Business, Innovation & Skills www.bis.gov.uk/assets/biscore/further-education-skills/docs/s/11-771-stem-graduates-in-non-stem-jobs.pdf

### 4.5.3 Differences by discipline

As few respondents definitely did not or might not want to work in the field of their research, it was not possible to analyse their replies by discipline of study. The analysis of reasons for not working in an occupation related to research discipline was therefore conducted using the responses of those who might want to do so: this did show some differences (Figure 4.6).

Two-thirds (67%) of arts and humanities respondents who might consider working in the broad field of their research mentioned that there were too few career opportunities in their field, as a reason not to do so. This was also the case for nearly half (48%) of those in biological and 45% in physical sciences. Almost as many (46%) biological sciences respondents in this group also thought that they would be better paid doing other work and 42% that they would have better long-term career prospects doing something else. Along with arts and humanities respondents (42%), many biological sciences respondents (42%) also mentioned that there were too few relevant jobs in their preferred location.

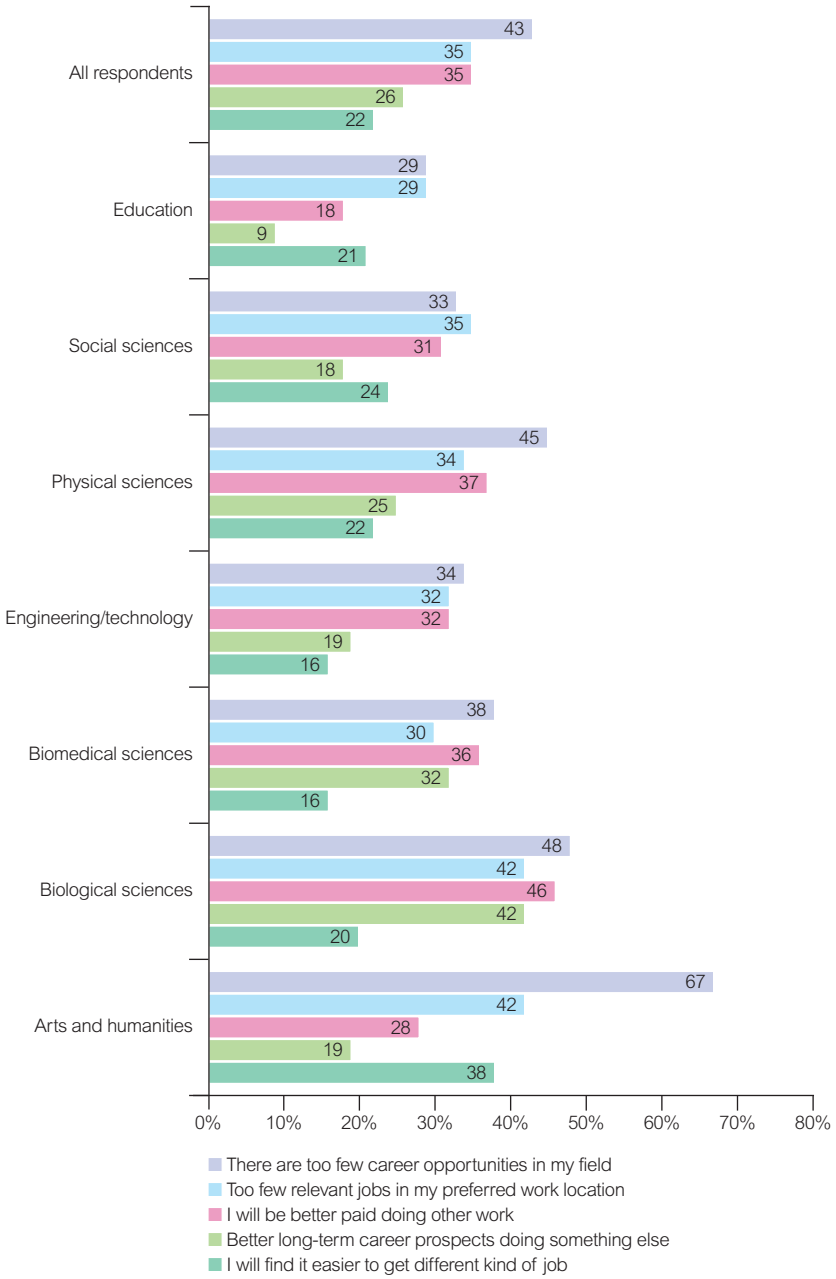


Figure 4.6 Most popular reasons not to pursue an occupation related to research, by discipline group: percentages of all respondents who might intend to pursue such a career

# 4.6 How essential is a doctorate to achieve the career goal?

The preceding sections have focused on the reasons behind different career intentions of doctoral researchers. But how useful did they think their doctorate was in helping them to fulfil such career aspirations?

The majority (54%) of final-year respondents with a career in mind thought that a doctorate was essential to achieve their career goal, i.e. they could not do their intended job without a doctorate in their discipline; while a further 33% thought a doctorate in their discipline would make a difference. This is shown in the column headed "All" in Table 4.7. Only 7% thought that the discipline of their doctorate would not be relevant and 3% that they would not need a higher degree to achieve their career goal. This seems somewhat unexpected given the occupational intentions reported, where a third appeared to have broadly non-doctoral occupations in mind, including non-higher education teaching). It may be that they believe the doctorate may speed their advancement in such occupations, or be helpful in other ways for them to pursue the occupation to their satisfaction.

There was a strong correlation in reasoning when broken down to whether respondents intended to pursue an occupation related to their research discipline or not, (see Table 4.8). Almost all those with a definite intention for a career related to their research discipline thought that the doctorate was either essential or preferred for that job. On the other hand, of those who definitely do not or might not want a career in that direction, a higher proportion thought their specific doctorate was not needed, although only around a third of them considered that a higher degree was not needed at all for that occupation.

Considerable variations in this expectation were seen by discipline group, also shown in Table 4.7. Only a minority of respondents in engineering/technology (30%) and in education (38%) thought that a doctorate was essential to achieve their career goal, although more of them (52% in engineering/technology, 43% in education) thought that it would be preferred. In contrast, more than two-thirds (69%) in arts and humanities and 62% in biological sciences thought their doctorate would be essential to achieve their career goal. The proportion believing their higher degree, or any higher degree, was unnecessary for their career goal was highest for education and engineering/technology respondents (19%) and lowest for those in biological sciences (6%). These trends presumably reflect the proportions of different career intentions held by researchers in different discipline groups, i.e. greater proportions may think a higher degree is essential in disciplines where more were aspiring either to a career in higher education or in non-higher education research.

When analysed by career intention, overall, over 90% of respondents considering a career in higher education or research thought their PhD was either essential or preferred in achieving such careers. Respondents contemplating an HE research occupation (72%) or teaching and lecturing in HE (70%) were those most likely to consider their PhD would be essential to achieve their career goal. However, a majority (55%) considering research outside higher education also thought a doctorate in their discipline would be essential, and almost 40% thought preferable, to achieve that career.

Table 4.7 How essential is doctorate for intended career, by discipline group: respondents with a definite career plan or considering several alternatives (%)

| | Arts and humanities | Biological sciences | Biomedical sciences | Engineering/ technology | Physical sciences | Social sciences | Education | All |
|---|---|---|---|---|---|---|---|---|
| Essential (could not do job without a doctorate in my discipline) | 69 | 61 | 52 | 30 | 52 | 52 | 38 | 54 |
| Preferred (doctorate in my discipline makes a difference) | 20 | 32 | 39 | 52 | 37 | 37 | 43 | 33 |
| Not essential (discipline of doctorate not relevant) | 6 | 4 | 5 | 14 | 7 | 7 | 12 | 7 |
| Do not need higher degree to do this job | 3 | 2 | 3 | 4 | 4 | 3 | 7 | 3 |
| Do not need a degree to do this job | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| Don't know | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| (N) | 616 | 482 | 554 | 413 | 732 | 474 | 152 | 3423 |

Table 4.8 How essential is doctorate for intended career, by strength of intention to pursue an occupation related to discipline of research: final year respondents (%)

| | Definitely want | Might want | Might not want | Do not want | Don't know | All final year |
|---|---|---|---|---|---|---|
| Essential (could not do job without a doctorate in my discipline) | 64 | 36 | 10 | 0 | 36 | 54 |
| Preferred (doctorate in my discipline makes a difference) | 31 | 43 | 29 | 18 | 45 | 33 |
| Not essential (discipline of doctorate not relevant) | 3 | 13 | 31 | 47 | 18 | 7 |
| Do not need higher degree to do this job | 2 | 5 | 22 | 24 | 0 | 4 |
| Do not need a degree to do this job | 0 | 2 | 6 | 12 | 0 | 1 |
| Don't know | 0 | 1 | 2 | 0 | 0 | 1 |
| (N) | 813 | 277 | 49 | 17 | 11 | 1167 |

For those intending to pursue other occupations, a doctorate within the researcher's discipline was still considered to be essential or preferred by roughly four out of five respondents (see Figure 4.7). Perhaps surprisingly, this was similar for all occupations outside of higher education and teaching. This appeared to indicate that most researchers were convinced of the value of their PhD almost irrespective of their expected sector of employment.

This could also indicate that they were considering very specialist roles within these other occupational settings, or simply had confidence in the perceived value of a doctorate in the broader job market. For comparison, around 70% of doctoral graduates working in other common doctoral occupations believed that their doctoral qualification had either been required or important in gaining their current job, as opposed to 60% of those in other occupations[23].

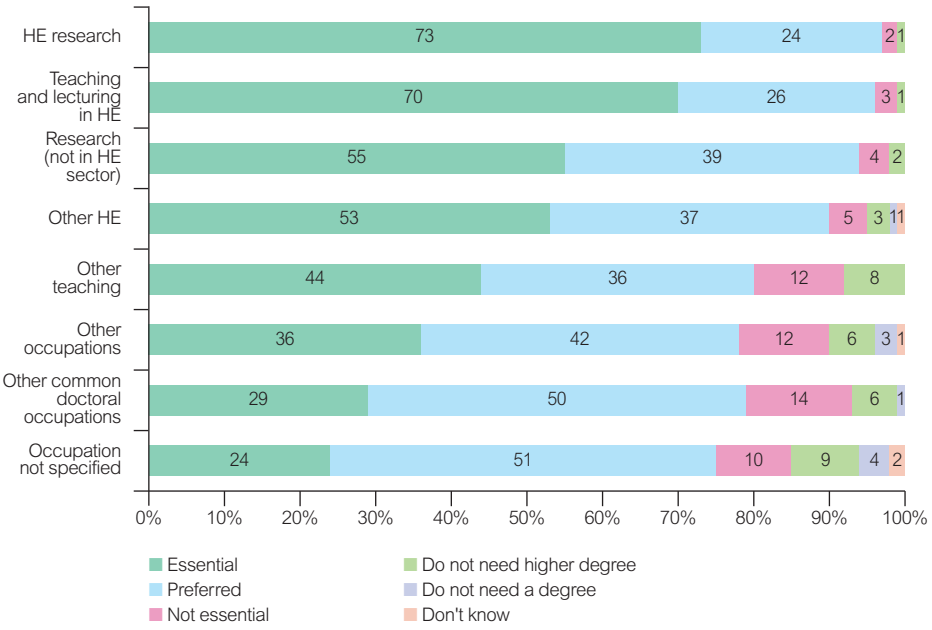


Figure 4.7 How essential is doctorate to achieve career goal, by intended occupation: Respondents with a definite career in mind or considering several alternatives

# 4.7 Achieving next career steps

## 4.7.1 Plans after completion

To ascertain how doctoral researchers were trying to turn their career ideas into reality, respondents were asked about their next stage plans and the actions they were taking to implement them. This analysis focused on those in their final year of doctoral study.

More than three quarters of final-year respondents expected to obtain employment related to their long term (52%) or short term (27%) career plans, once they had completed their doctoral programme. Rather more of the engineering/technology respondents (62%) expected to obtain long term employment related to their career plans than overall, and fewer in education (40%), (Table 4.9). Although about half of those in physical and biological sciences anticipated gaining long-term employment related to their career plans, somewhat higher proportions (32%-33%) expected to obtain short-term employment compared with other disciplines: for many this would presumably take the form of a postdoctoral research contract.

Table 4.9 Main aim for year after completion of research, by discipline of study: final year respondents (%)

| | Arts and humanities | Biological sciences | Biomedical sciences | Engineering/ technology | Physical sciences | Social sciences | Education | All respondents |
|---|---|---|---|---|---|---|---|---|
| Obtain long-term employment related to career plan | 50 | 48 | 49 | 62 | 50 | 58 | 40 | 52 |
| Obtain short-term employment related to career plan | 26 | 32 | 23 | 22 | 33 | 21 | 20 | 27 |
| Obtain other employment (not related to career plans) | 3 | 2 | 2 | 2 | 2 | 1 | 0 | 2 |
| Become self-employed | 3 | 1 | 1 | 3 | 2 | 3 | 8 | 2 |
| Undertake teacher training | 1 | 3 | 1 | 1 | 2 | 1 | 0 | 2 |
| Undertake more postgraduate training/study | 1 | 2 | 2 | 2 | 1 | 2 | 0 | 2 |
| Undertake further specialist/vocational training | 0 | 1 | 3 | 1 | 2 | 3 | 3 | 2 |
| Travel or take time out | 3 | 6 | 6 | 2 | 3 | 3 | 3 | 4 |
| Don't know | 4 | 1 | 5 | 3 | 2 | 0 | 3 | 3 |
| Continue in current employment | 1 | 2 | 3 | 1 | 1 | 1 | 10 | 2 |
| Other reason | 6 | 2 | 2 | 1 | 1 | 3 | 13 | 2 |
| (N) | 235 | 198 | 230 | 175 | 374 | 154 | 40 | 1406 |

[23] Vitae (2010) What do researchers do? Doctoral graduate destinations and impact three years on. Vitae www.vitae.ac.uk/wdrd

Table 4.10 Most popular aims after completion of research, by career intention: final year respondents with a definite career in mind or considering several alternatives (%)

| | HE research | Teaching and lecturing in HE | Unspecified HE | Research (not in HE sector) | Other common doctoral occupations | Other occupations | Other teaching | Occupation not specified | All final year |
|---|---|---|---|---|---|---|---|---|---|
| Obtain long-term employment related to career plan | 58 | 56 | 55 | 56 | 57 | 48 | 46 | 42 | 55 |
| Obtain short-term employment related to career plan | 32 | 29 | 24 | 33 | 25 | 29 | 23 | 19 | 28 |
| Obtain other employment (not related to career plans) | 0 | 1 | 5 | 2 | 1 | 2 | 1 | 3 | 1 |
| Become self-employed | 0 | 1 | 5 | 1 | 4 | 3 | 5 | 3 | 2 |
| Undertake teacher training | 0 | 2 | 0 | 1 | 1 | 1 | 12 | 0 | 2 |
| (N) | 212 | 263 | 62 | 526 | 401 | 190 | 111 | 31 | 1171 |

Column percentages may not sum to 100% as respondents can be entered in two columns if they were considering more than one alternative.

Table 4.10 presents this next step information in relation to respondents' career intentions. Although the differences were not substantial, it showed that slightly more of those intending to enter research careers expected to obtain short-term employment, than those seeking other careers. On the other hand, it also seemed to suggest that a high proportion of respondents seeking a higher education career expected to gain long-term employment, in fact higher than of those seeking other careers. Based on the prevalence of fixed-term postdoctoral research contracts, as opposed to open-ended contracts[24], this may not be a wholly realistic expectation.

There was a minor but consistent trend across almost all disciplines, and overall, for higher proportions of male respondents to expect to obtain long-term employment on completion than females in the same disciplines; only in biological sciences was the opposite observed with significance. In many, but not all, disciplines, a higher proportion of female respondents expected to obtain short-term employment than males, although the proportion by gender overall was equal.

The one in six final-year respondents with only a vague idea of possible careers or no idea at all were less likely to expect to obtain long-term employment (37%) after completion, unsurprisingly. More of them expected to travel or take time out (9%), to obtain employment not related to their career plans (6%), or not to know at all (12%), than other final-years.

Overall, around 6% of final-year respondents were expecting to enter further training after completion, whether to enter teaching or another vocational career pathway or to gain additional high-level skills through a taught postgraduate course.

### 4.7.2 Actions to seek employment

At the time of the survey, the majority (60%) of final-year respondents had started looking for employment but only a minority (37%) had actually applied for jobs related to their long-term career plans (Figure 4.8). Around a fifth (19%) had been offered a job related to their career plan, although some of these had not indicated that they had applied for jobs. The majority of those job offers were for postdoctoral research positions within higher education. For those who were undertaking research part-time, while employed, the question may not have applied in the same way.

The proportion with job offers ranged from 25% in engineering/technology and 24% in social sciences to 14% in arts and humanities The low figure for education (10%) may be something of a special case as so many of them were studying part-time while also working.

Predictably, fewer of the final-year respondents with only a vague idea or no idea of possible careers had started looking for employment than those with a definite career or several alternatives in mind. However, that figure was still relatively high at 45%, so presumably these researchers were considering multiple options. Fewer of them (20%) had actually applied for jobs, or had been offered one, than those with firmer plans. For example, 30% of respondents with a definite career in mind had been offered a job when surveyed, compared to 7% of those with only a vague or no idea of possible careers (Figure 4.8).

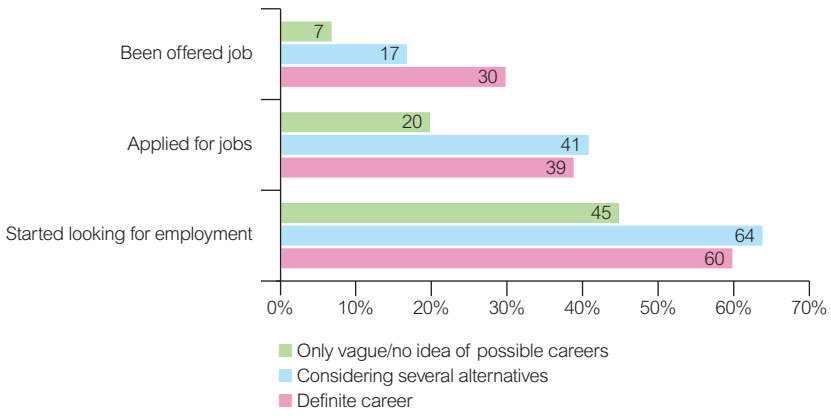


Figure 4.8 Steps taken to secure employment, by strength of career ideas: Percentages of final year respondents

[24] Vitae (2011) Careers in Research Online Survey (CROS) 2011. Analysis of UK aggregate results. Vitae www.vitae.ac.uk/cros

## 4.8 Influences on doctoral researchers' career intentions

Just under half (46%) of respondents indicated that they had changed their career plans to some extent while they had been a postgraduate, and a further 8% that they had changed their career plans completely. The career ideas that they had held at earlier stages, i.e. before their postgraduate research, and how these compare with current plans, are considered in a later section.

Respondents who had changed their career plans during their doctoral studies were asked what had influenced the development of their career ideas. The top three influences during postgraduate research (each mentioned by over half the relevant respondents) were:

- My research experience (71%)
- My personal interests/values (64%)
- My supervisor/faculty staff (56%).

Other significant influences on these researchers' career ideas included:

- People I know working in a particular career (44%)
- Conferences/meetings/seminars I have attended (40%)
- My friends/fellow postgraduate researchers/peer group (37%)
- My work experience employer (25% of those who had undertaken work experience as a postgraduate).

Somewhat more researchers in their third or final year (44%) mentioned conferences/meetings/seminars they had attended as an influence than researchers in their first or second year (36%). A more detailed consideration of work experience and its impact is provided in section 6.

The findings thus far have focused on the career intentions and attitudes held by doctoral researchers, and the related activities they have undertaken. In the next sections we turn to how their career thinking has developed over time, particularly in relation to their progression through higher education.

# 5 Career development in progression to research

A major aim of the survey was to understand how the career ideas of doctoral researchers have developed. We sought information on the prior educational and career pathways of the respondents, and tried to see how this related to the development of their career thinking and decision making. It was hoped this might illuminate the development of their career thinking; understanding how respondents made past decisions may also be helpful in understanding their current decisions and intentions. For example we hoped to ascertain whether research had been a long-standing career aim or whether this interest had only developed more recently. Understanding this may have implications for any future policy to underpin or increase the supply of graduates into doctoral research programmes.

These data were also of some intrinsic interest in terms of revealing doctoral graduates' backgrounds and progression routes. Before providing information about their higher education pathways, it was important to understand the position of their current research study within their broader career context. For many their career path has not been a direct succession of phases of higher education but has included periods of employment. These researchers may well have had different motivations for research and may now have different future career expectations.

## 5.1 Trajectories leading to doctoral research

Respondents were asked what they had been doing immediately before they started their doctoral programme. The results show significant differences between those studying full-time and part-time, by age (unsurprisingly) and also between different disciplinary areas, see Figures 5.1 and 5.2.

Significantly, in all disciplines, less than half (and in some disciplines far fewer) entered doctoral research directly from an undergraduate degree. This was the case for more UK respondents than for their non-UK equivalents, but for UK respondents it was still less than half in all disciplines other than physical sciences (52%). Only amongst those aged 21 to 25 had a majority entered doctoral research direct from their undergraduate degree. The majority had therefore either been employed and/or undertaken a Masters degree prior to doctoral study.

In addition, however, 12% of UK respondents had been employed full-time in a job that they intended to be permanent before they went to university for their first degree, and this was markedly higher in certain disciplines.

As Figure 5.1 shows, most full-time respondents in the arts and humanities, social sciences and education entered postgraduate research from either employment or having completed a Masters, and very few direct from undergraduate education. Over half in arts and humanities had been studying for a Masters (50%) or research-only Masters qualification (6%), while in the social sciences and education half or more had been working, although with a substantial proportion studying for a Masters qualification. This presumably reflects the requirement for a Masters within doctoral programme funding in these disciplines.

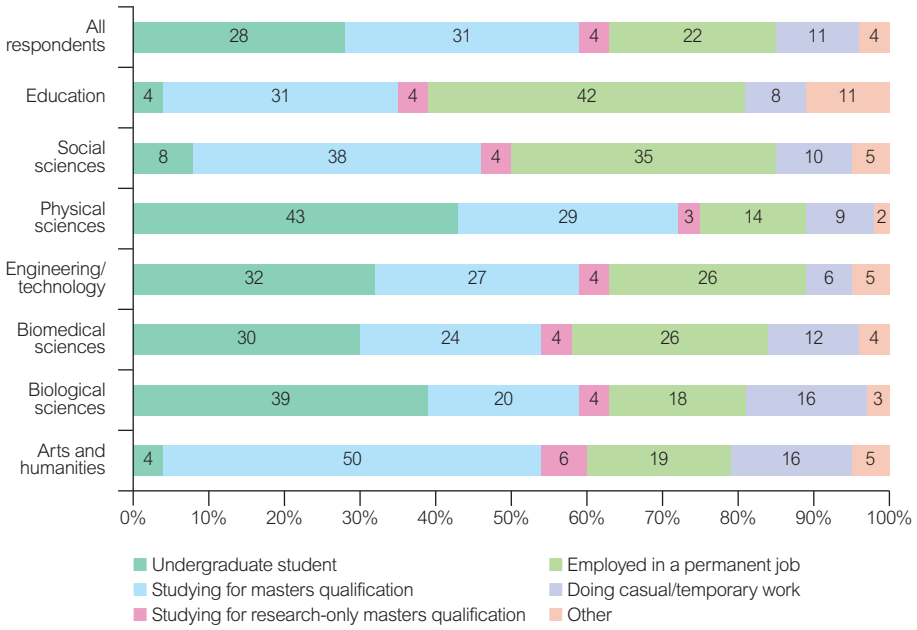


Figure 5.1 Previous activity, by discipline group: all full-time respondents