PhD Life:
The UK student experience

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About the author

Bethan Cornell is a PhD student in Physics at King's College London and is currently a Postgraduate Intern at HEPI. Her PhD focusses on fluorescent molecules and their use as sensors of biological systems. She is an Associate Fellow of the Higher Education Academy and a committee member of the Institute of Physics' Higher Education Group. During both her postgraduate degree and her undergraduate degree at the University of Exeter, Bethan has been involved in student academic representation, acting as the chief academic representative for her cohorts. Bethan is passionate about improving access to higher education and serves as a Social Mobility Foundation mentor and a STEM Ambassador.

Foreword

Dr Katie Wheat, Head of Engagement and Policy, Careers Research Advisory Centre (CRAC) / Vitae

This report makes an important contribution to current debates on research culture by presenting the views of doctoral researchers in the UK extracted from the recent Wellcome Trust and *Nature* reports. It highlights several areas of concern, including working conditions, wellbeing, supervision and incidents of bullying and harassment.

The findings chime with growing recognition of the need to improve research culture. In 2018, Vitae was commissioned by the Higher Education Funding Council for England to study the policies and provision related to the wellbeing and mental health of doctoral researchers. The findings shone a light on the risk factors for doctoral researchers and the challenges institutions face and the effectiveness of provision. Subsequently Research England and the Office for Students (OfS) awarded £1.5 million to 17 projects to support the wellbeing of postgraduate researchers through the Catalyst Fund.

The *Researcher Development Concordat*, while focused on research staff, advocates for the creation of environments where all researchers can flourish. It calls for institutions to promote good mental health and wellbeing through, for example, effective management of workloads and people and effective policies and practice for tackling discrimination, bullying and harassment.

Vitae believes all researchers should work in environments that enable them to realise their potential. As set out in the *Concordat*, healthy working environments attract and develop a more diverse workforce, and impact positively on individual

and institutional performance. All researchers should be provided with opportunities and time to develop their research identity and broader leadership skills, and researchers should seek out and engage with these opportunities.

This report highlights the particular impacts on doctoral researchers but is set against a complex research ecosystem that needs the whole sector to commit to addressing enduring issues. Otherwise, we risk failing our doctoral researchers, who are the pipeline of talent for research and development within higher education and beyond.

Contents

Key Terms

PhD students are postgraduate students studying for a doctoral research degree and PhD stands for Doctor of Philosophy. Some institutions have different conventions for their doctoral research students, for example, the University of Oxford uses the term DPhil rather than PhD.

For the purposes of this report, 'PhD students' refer to those doctoral research degree students studying in the UK at the time they were surveyed, whose responses we have newly extracted from the *Nature* and Wellcome data.

Undergraduate students are referred to specifically by name when mentioned and so any reference simply to 'students' refers to PhD students, as defined above.

Executive Summary

The *Nature PhD Students Survey 2019* is a worldwide study on the wellbeing of PhD students and their attitudes towards academia. The Wellcome Trust's report on research culture, *What Researchers Think About the Culture They Work In* (2020), examines the attitudes of academics at all stages of their careers, including PhD students, towards research culture. Here, we extract data from both surveys for 1,069 PhD students studying in the UK (526 students from the *Nature* survey and 543 students from the Wellcome survey). The overlapping themes of these two research projects allow us to paint a picture of the experiences of PhD students studying in the UK. This is important because PhD students in the UK, while being students, often sit within communities of employed research staff. We differentiate their experiences from students in other countries, who may often hold a different employment status, and from paid academic staff members.

Working hours and pay

- The average PhD student works 47 hours per week. This is over 50% more than the average undergraduate and three hours less per week than the average academic staff member.[1]

- For those who receive the basic UK Research Council stipend, this equates to earning less than the minimum wage.

- One-fifth have a job alongside their PhD. Mostly, this is to make ends meet.

Management and leadership

- 23% of PhD students would change their supervisor if they were starting their PhD again now.

- Nearly three-quarters (73%) think research culture promotes quantity over quality of output.

- One-third (37%) have sought help for anxiety or depression caused by PhD study.

- The majority (80%) of PhD students believe a career in research can be lonely and isolating.

- Over three-quarters (78%) are satisfied or highly satisfied with their degree of independence.

- 63% see their supervisor for less than one hour per week.

Bullying, harassment and discrimination

- Just over two-thirds (68%) of PhD students agree they feel safe at work.

- One-quarter (25%) have been bullied and 47% have witnessed bullying.

- One-fifth (20%) have been discriminated against and 34% have witnessed discrimination.

- One-sixth (18%) believe they can raise incidences of bullying and harassment without fear of negative personal consequences and one-quarter (26%) believe complaints regarding bullying would be acted on.

The report ends with some specific policy recommendations for institutions, supervisors and funders.

Methodology

The Wellcome Trust and *Nature* reports produced datasets of researchers from different backgrounds and locations. We extract from each the data of PhD students studying in the UK. This is the first time the information of the UK PhD cohort from these data has been analysed and published as a standalone set. Therefore, this report presents new, detailed information about the views of PhD students in the UK.

The Wellcome Trust surveyed 7,646 researchers over five weeks from September 2019. Recruitment of respondents included use of third-party data suppliers, blog posts and social media, although most were sourced via the Trust's website. There was a £350 prize draw entry for those who completed the survey. Participants were targeted from a mixture of research disciplines, institutions and demographic backgrounds but demographic information is not available in the published dataset, to protect anonymity.

One-quarter of respondents lived in the UK. Although the majority of participants were paid academic staff members, some were PhD students. The number of responses after data cleaning was 4,267. No weighting was applied and only complete cases were considered to avoid duplicates. The confidence interval was 99% with a margin of error of 2%. In this study, we extract the data of the 543 PhD students living in the UK.

Nature surveyed 6,320 current PhD students worldwide for six weeks between June and July 2019. The confidence interval was 95% with a 5% margin of error. Respondents providing incomplete or poor-quality answers were removed from the final sample. Here, we extract the information of the 526 students studying in the UK and 936 students studying in

other countries in Europe; for consistency with the Wellcome dataset we do not weight responses.

Both datasets are freely available and the authors of each have provided permission for their use in this report. For some questions, we combine responses of UK-based students from both surveys. In these instances, the total number of respondents is 1,069. We do so only where we believe the wording in each survey was comparable, but of course, we cannot guarantee that students would approach each question in exactly the same way where the wording differs slightly. Both published datasets were anonymised, so we cannot guarantee there is no overlap between the Wellcome and *Nature* survey participants. Data were rounded so percentages may not always sum to 100%. The confidence interval is 95% with a 5% margin of error.

The Wellcome Trust survey allowed participants to state their field of study. One-quarter (25%) of participants were doing research in the Humanities / Social Sciences, 63% in the Life Sciences and 23% in the Physical Sciences. These proportions do not sum to 100% because some students' research was in overlapping fields. *Nature* did not ask participants their discipline, although since the publication is a scientific journal, it is reasonable to assume that responses will be more representative of those in the Sciences than other fields. For consistency, we do not break down our results by subject.

Both surveys were originally analysed by Shift Learning, who specialise in market research for the education sector, and we were able to use the same coding scheme employed by them to group free-text responses into positive, negative and neutral categories. The groupings are available from the author on request.

Background

In 2018/19, there were 101,885 PhD students in the UK.[2] The median age for starting a PhD in the UK is 24 to 25 for full-time students and 32 to 33 for part-time students. Full-time PhD students normally work for three to four years on an individual piece of novel research, which they write into a thesis to defend for examination. Unlike undergraduates, they are not accepted into institutions through UCAS. Rather, they are selected by departmental staff, either as individuals or small cohorts, and work alone, or as part of small staff-led research teams. The doctoral qualifications gained by PhD students are almost always pre-requisites for continuing research within academia and progressing to lectureship and professorship.[3] However, PhDs are also excellent training for other sectors, notably research with industry. In general, students must have a good Master's or first-class Bachelor's degree to study for a PhD.

In 2018, Vitae, part of the Careers Research and Advisory Centre which supports the professional development of researchers, published a report on the mental health of PhD students.[4] It found these students feel institutional messages on wellbeing are aimed at undergraduates rather than themselves. Their report highlights the need to support PhD students' mental health. It recommends 'systematic culture change and top-down commitment to promoting mental health' to support PhD students properly.[5] The *2019 Nature PhD Students Survey* is a worldwide study of the experiences and wellbeing of PhD students within academia. It speaks of 'resilience against a backdrop of stress, uncertainty and struggles with depression and anxiety'.[6] The *Postgraduate Research Experience Survey* (PRES), from Advance HE is a biennual survey to evaluate

the satisfaction of postgraduate students in the UK. In 2019, it included a new question on mental health, using the official measures of wellbeing from the Office for National Statistics. These ask respondents about their life satisfaction, life happiness, how worthwhile their life is and their level of anxiety and have long been included in the HEPI / Advance HE annual undergraduate *Student Academic Experience* Survey. In terms of anxiety, the PRES reports:

> *This wellbeing measure shows a stark difference for PGRs [PhD students] set against the national scores, reflecting a difference of 27%, and also a slight negative difference compared to the undergraduate population, suggesting the pressures of PGR study can create very high levels of anxiety.*[7]

PhD students lie at the intersection of staff and undergraduates. Although they work towards a higher degree, they often publish in journals with academic staff as part of university research teams, therefore contributing to an institution's Research Excellence Framework performance. Many also assist in the teaching and supervision of undergraduates. Indeed, in many countries they are paid employees, whereas in the UK they are students.[8] This dual position means PhD students can often be left out of policy debates. There was little mention of PhD students in the Augar Post-18 Review of Education and Funding and, as remarked upon by Diana Beech, Head of Government Affairs at the University of Warwick, in a recent HEPI blog, 'PhDs, are all students too. Yet they have often fallen between the cracks in the current machinery of Government, with more than one Department having responsibility for postgraduate provision'.[9] This is an even more pressing issue since the shift from one Minister for Universities, Science,

Research and Innovation to one Minister for Universities and another Minister for Science, Research and Innovation. Both Ministers have responsibility for ensuring PhD students receive a high-quality student experience while also contributing to university research output. There is a danger these competing needs may be missed all together.

A recent HEPI report suggests mental ill-health among university academic staff and professional services staff is 'escalating', possibly due to high workloads, unclear career pathways, poor leadership and high-stress performance management.[10] Critically interlinked with wellbeing and mental health for all academics is research culture. The Wellcome Trust's survey of academic staff, *What Researchers Think About the Culture They Work In,* tackles this subject. It finds that 'poor research culture is leading to stress, anxiety, mental health problems, strain on personal relationships, and a sense of isolation and loneliness at work'.[11]

The sector now has a better understanding of research culture, yet how PhD students are affected by it remains largely undiscussed. PhD students are not staff members, so access different support networks and have different expectations within research. It is therefore important that the sector better understands how PhD students differ in their experiences of research culture from paid academic staff. This will allow a deeper understanding of the complexities behind their satisfaction and wellbeing.

In this report, we extract the data of PhD students studying in the UK from *Nature's 2019 PhD Students Survey Data* and Wellcome's *What Researchers Think About the Culture They Work In* (2020). Although the information of these students was

previously included as part of much larger, broader reports, this is the first time that these data have been analysed and published as a standalone set. This allows us, for the first time, to gain a sense of the experiences of research culture of PhD students studying in the UK, including not just figures, but also new qualitative information on students' views.

1. Working hours and pay

Context

Almost all of those working towards a PhD in the UK are registered as students. In many cases, indeed the vast majority in the Sciences, PhD students receive funding for living costs and tuition fees in the form of a stipend. This money often comes from one of the seven Research Councils, overseen by UK Research and Innovation (UKRI), which provide blocks of funding to support individual scholarships and Centres for Doctoral Training or Doctoral Training Partnerships, into which PhD students are recruited by their institution. Institutions then allocate PhD students a portion of their Research Council funding. Although assisted by Research Councils, most institutions make a loss on training PhD students.[12]

Not all PhD students studying in the UK are funded via UKRI, or indeed funded at all. Many students receive money directly by institutions themselves or by charities and many more must self-fund their tuition and living costs. Furthermore, large numbers of international students' study in the UK on scholarships from their home countries. Across the country and within institutions themselves, PhD students' situations vary from being similar to undergraduates to being almost full paid members of staff. The UK PhD funding landscape is highly varied, complex and very non-uniform.

For those students who are funded, receiving a stipend does not qualify them as employees. Stipends are fixed non-taxable incomes given to offset expenses for a piece of work. Therefore, they do not entitle the recipient to benefits such as a workplace pension, annual leave or Statutory Sick Pay

or maternity leave. However, UKRI and most other funders have provisions for sick pay and maternity leave included as part of their grants to students.[13] For those PhD students funded by bodies external to their institution, there is a joint responsibility between the funder and degree-provider to ensure the student's satisfactory experience and progress, both academically and otherwise (for example, to ensure the student is working a reasonable number of hours and receives on time the funding to which they are entitled).

PhD students do not have an employment contract, so they are not required to keep to prescribed working hours in the way employees are. However, many institutions and funders have formal codes of conduct for their PhD students, which set out the number of hours they are expected to work and the leave to which they are entitled. For PhD students, being full-time normally means being expected by their institution to work a full working week, similar to, although not enforceable in the same way as, its employees.

Although many PhD students also teach, for example as assistants in undergraduate lectures and labs, the income they receive from this work is often in the form of a short-term or zero-hours employment contract, entirely separate from their funding. However, huge variations in funding models across institutions and funders makes this information difficult to track.

Hours worked

Both the Wellcome and *Nature* surveys asked respondents how many hours they work on their PhD in an average week. The mean number of hours worked per week is 47, calculated

using the midpoints of the intervals given in the questionnaire (10 hours per week steps, as shown in Figure 1). The majority of respondents work between 31 and 60 hours per week, with 35% working between 41 and 50 hours per week. The percentage of students who work over 60 hours per week (13%) is almost double the percentage who work under 31 hours per week (7%).

The average undergraduate works 31 hours per week, so PhD students are working 16 hours per week more than undergraduates, 50% more on average.[14] Furthermore, since undergraduates work during fixed semesters, whereas PhD students work all year round, in reality the gap is likely to be even larger. PhD students' working hours are, in fact, comparable to those of the average teacher and doctor and are far beyond what is considered to be healthy (39 hours a week), with 64% of PhD students working more than 40 hours per week.[15]

On average, PhD students work four hours less per week than academic staff. Moreover, roughly the same percentage of students (34%) as staff (35%) work more than 50 hours per week.[16]

Pay per hour

Based on the average number of hours worked per week, we are able to calculate the mean pay per hour of the PhD students surveyed. We assume:

- they receive the UK Research and Innovation (UKRI) minimum stipend for 2019/20 of £15,009 per annum; and

- they take 28 days holiday per year, the standard statutory leave entitlement.[17]

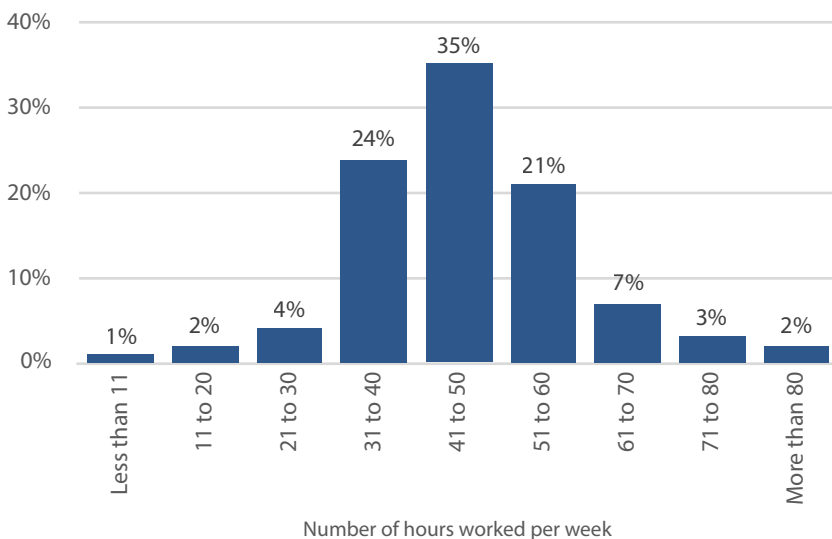*Average number of hours worked per week by PhD students*

Figure 1: Data taken from the combined responses to the *Nature* survey question: *On average, how many hours a week do you typically spend on your PhD programme?* and the Wellcome survey question: *On average, how many hours a week do you work?* Base: all students in both datasets, total sample size 1,069 (526 *Nature*, 543 Wellcome).

On average, these PhD students are paid £6.65 per hour for the work they do. When we assume a more generous stipend, typical of those paid at London universities of £16,500 per annum, this rises to £7.31 per hour. It should be noted that not all students will receive a stipend, some will be self-funded. Furthermore, some will receive funding from organisations other than UKRI, such as charities and overseas governments, who will have different standard stipend levels.

The National Minimum Wage from April 2020 for those aged 21 to 24 is £8.20 per hour and for those aged 25 and over it is £8.72 per hour.[18] This means, regardless of age or

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location, the average PhD student in this dataset is not earning the National Minimum Wage for the work they do. Of course, not being employees means that students are not entitled to the National Minimum Wage. However, this level of pay means they are earning far below what they would expect to if they entered the workplace after graduating with their good Master's or first-class Bachelor's degree. For example, although not directly comparable, the Longitudinal Educational Outcomes (LEO) data tells us the median income for graduates one year after graduation, whose prior attainment was 360 UCAS points (equivalent to 3 A grades at A-Level), is £24,700 per year (£10.95 per hour based on a 47 hour working week and 28 days annual leave).

Those PhD students who wish to stay in academia do not generally have the option to opt for a role with a higher income because a PhD is a pre-requisite for a successful career within academic research. This may be why stipends have not risen to the level of many good graduate jobs in other fields. Indeed, one respondent said their pay was:

> A stipend that is frankly insufficient compared to our level of expertise.

Despite many funded PhD students not earning the minimum wage for the work they do, it is worth noting that a doctoral degree does improve post-graduate earnings. Recent data show that sixth months after graduating, PhD students consistently out-earn both first-degree holders and other postgraduate students.[19] Especially for self-funded students, who of course earn nothing for the research they do, this

indicates that there are benefits to a PhD in the long term, which for some, may offset the shorter term financial costs.

Recently, loans of £25,700 over the course of a PhD were introduced to help students who could not get funding to cover the cost of their degree. However, a recent HEPI report shows they have done little to affect the number of PhD entrants so far.[20] This may be because the loan is insufficient to cover the living costs of a full-time three- or four-year PhD.

Since PhD students are not employed, they are not entitled to a workplace pension. Full-time students starting their PhD at the median age of 24 to 25 will not be eligible for a workplace pension until they are around 27 to 28.[21] No pension payments coupled with a low income for a large portion of their twenties may have consequences for the future financial stability of PhD students. The picture is a little different for PhD students studying in EU countries, many of whom have access to the RESAVER scheme, a portable pension pot for European researchers.[22]

Concerns surrounding low pay

One-sixth of students (18%) in the *Nature* data state they have a job alongside their PhD, with two-thirds giving their main reason as being 'to help make ends meet'. Such students are either working incredibly long hours or compromising on research time to live comfortably. Some students will be registered part-time but if their motivation for doing so is 'to help make ends meet' rather than, for example, to gain additional skills, then this implies they are not being properly supported in their studies.

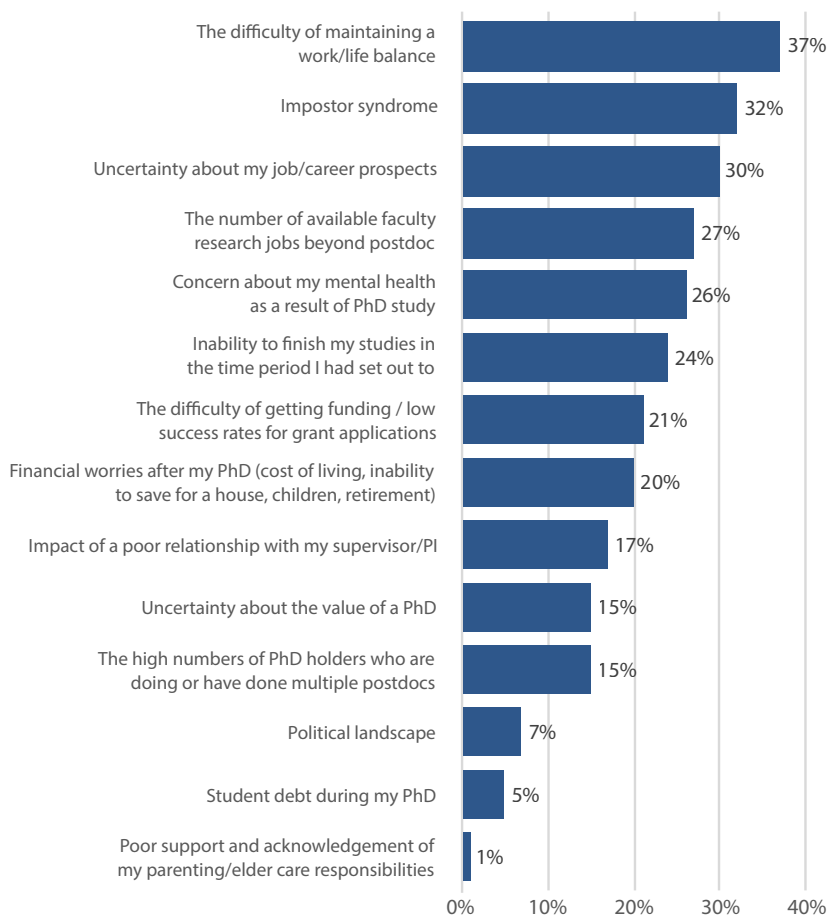## Greatest concerns (ranking in their top three) of PhD students since starting their degree

Concern	Percentage
The difficulty of maintaining a work/life balance	37%
Impostor syndrome	32%
Uncertainty about my job/career prospects	30%
The number of available faculty research jobs beyond postdoc	27%
Concern about my mental health as a result of PhD study	26%
Inability to finish my studies in the time period I had set out to	24%
The difficulty of getting funding / low success rates for grant applications	21%
Financial worries after my PhD (cost of living, inability to save for a house, children, retirement)	20%
Impact of a poor relationship with my supervisor/PI	17%
Uncertainty about the value of a PhD	15%
The high numbers of PhD holders who are doing or have done multiple postdocs	15%
Political landscape	7%
Student debt during my PhD	5%
Poor support and acknowledgement of my parenting/elder care responsibilities	1%

Figure 2: Data taken from the *Nature* survey questions: *What concerns you the most since you started your PhD?* Base: all 526 respondents. 14 options were available, of which respondents ranked their top 10. We report the proportion ranking these as their top three concerns.

Do you have a job alongside your studies?
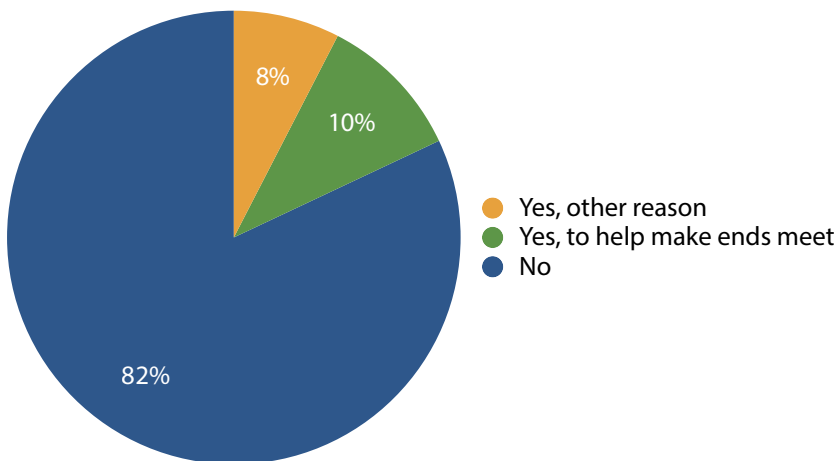
Figure 3: Data taken from the *Nature* survey questions: *Do you have a job alongside your studies?* (Base: all 526 respondents) and *What is your main reason for having a job* (Base: the 95/526 students who stated they had a job)

In the *Nature* data, 25% of PhD students ranked financial worries in their top three concerns about their PhD. There are links between low pay and poor mental health.[23] These students comment on their difficult experiences:

> *In the four years of doing my PhD, any savings I made are now gone. I wouldn't have been able to continue without the financial support of my mum. When my laptop died I had to buy a new one despite a large chunk of my work involving heavy bioinformatics. It feels very unfair that I will finish in my late twenties with no savings to consider buying a house etc. Never mind children or retirement! This is a huge contributing factor in the decline in my mental health.*

Due to being [funded] by a stipend and not through student finance, and not technically being employed by the university means that I am not eligible for childcare funding. The cost of childcare is around £11,000 per year, my stipend is £14,200.

Pay affects the person

PhD students are on average in their mid-to-late twenties, so often have the financial burdens of adulthood outside of their studies. When asked if funding is sufficiently flexible to support career breaks or health and disability-related leave, 20% of students in the Wellcome data agree. Over a quarter (27%) strongly disagree.

When asked if they are happy with the benefits, such as the health care and maternity leave they receive, students in the *Nature* data are similarly unimpressed, with 42% dissatisfied, 24% neither satisfied nor dissatisfied and 34% satisfied.

These results suggest that, while many respondents appreciate the freedom they have as students, this is not universal and many would prefer more structured benefits, commonly associated with paid employment. As these students commented:

The academic system is definitely an easier place to be if you have more money, student living with PhD workload is tough.

As a PhD student you have little in the way of rights within an institute and the culture fuels mental health issues while claiming to tackle them.

To what extent do you agree that grant funding is sufficiently flexible to support career breaks, or health and disability related leave?
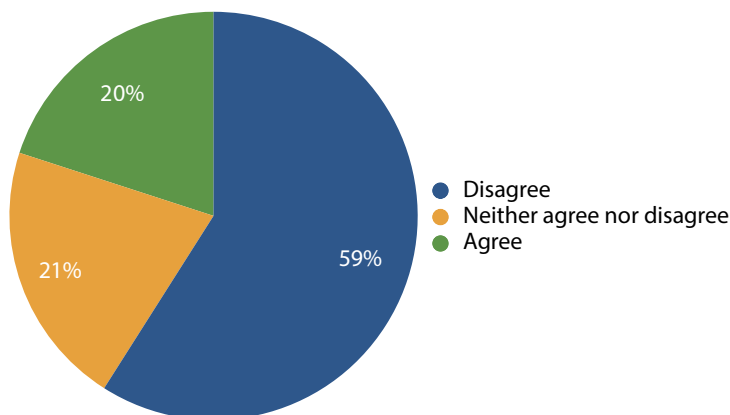
Figure 4: Data taken from the Wellcome survey question: *How far do you agree or disagree with the following statements relating to research culture? Grant funding is sufficiently flexible to support career breaks, or health and disability related leave.* Base: all 543 Wellcome respondents.

While most large funders will include some benefits such as maternity leave in their stipend package, many students are funded by smaller or foreign organisations, or are self-funded and may not have access to these. A lack of open reporting on PhD student funding within these data, and within the sector more widely, makes it hard to ascertain how many students will fall into this category.

How satisfied are you with the benefits (health care, leave, etc.) that you receive?
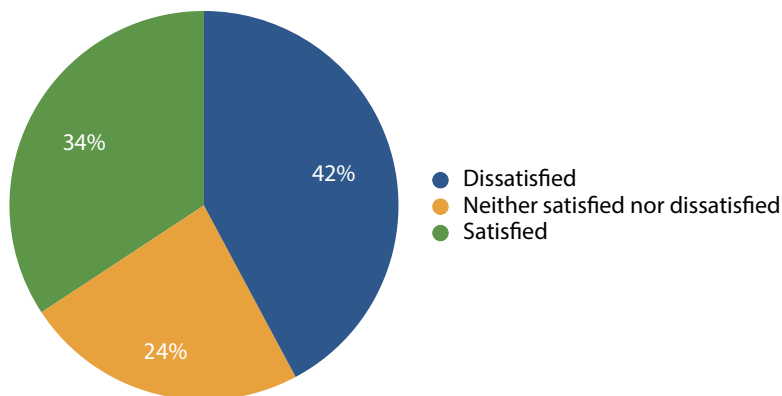
Figure 5: Data taken from the *Nature* survey question: *How satisfied are you with the benefits (health care, leave etc that you receive)?* Base: all 526 *Nature* respondents.

Long working hours culture

Two-fifths (40%) of PhD students in the *Nature* and Wellcome data agree their institution has a long working hours culture and 31% neither agree nor disagree. Three-in-ten (31%) in the Wellcome survey agree they feel pressured into working long hours. Furthermore, 34% believe the system exploits their interest in the work they do, leading to a heavy workload. The Institution for Employment Studies report *Working Long Hours: a Review of the Evidence* looked at the many factors influencing a long working hours culture in the UK workforce in general. It found:

> *The review of the research literature suggests that the attitudes and expectations of managers and, in some cases, workgroup members can be critical in engendering a long hours culture where 'being present' is valued as a sign of commitment to work.*[24]

There is a long working hours culture in my institution
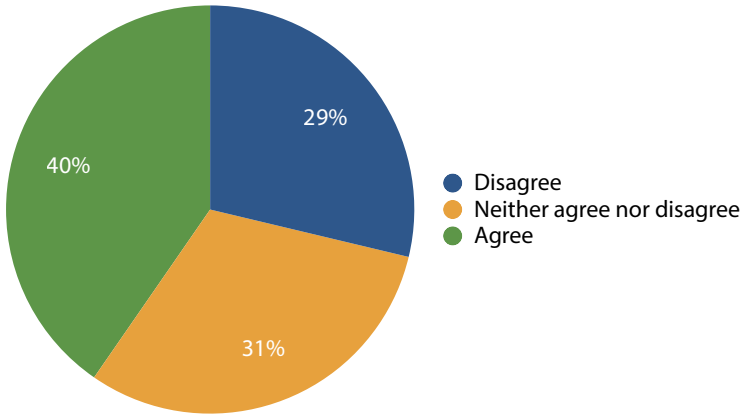
Figure 6: Data taken from both the *Nature* survey's question: *How far do you agree that…?* and the Wellcome survey's question: *To what extent do you agree or disagree with the following statements relating to your institution/workplace…?* Base: total sample size 1,065 (522/526 *Nature* and all 543 Wellcome respondents). Participants to the Wellcome survey ranked agreement from one to eight, which we categorised as agree = six to eight, neither agree nor disagree = four and five, disagree = one to three.

This suggests the experience of those PhD students feeling pressured to work long hours is not unique to their situation and is faced by those in the labour market more widely. However, since PhD students are generally not employees in the UK, we must be cautious when drawing comparisons with workers.

Half of the PhD students in the *Nature* data (48%) are satisfied with the hours they work. However, 30% state they are dissatisfied and 22% are neither satisfied nor dissatisfied.

I feel pressure to work long hours
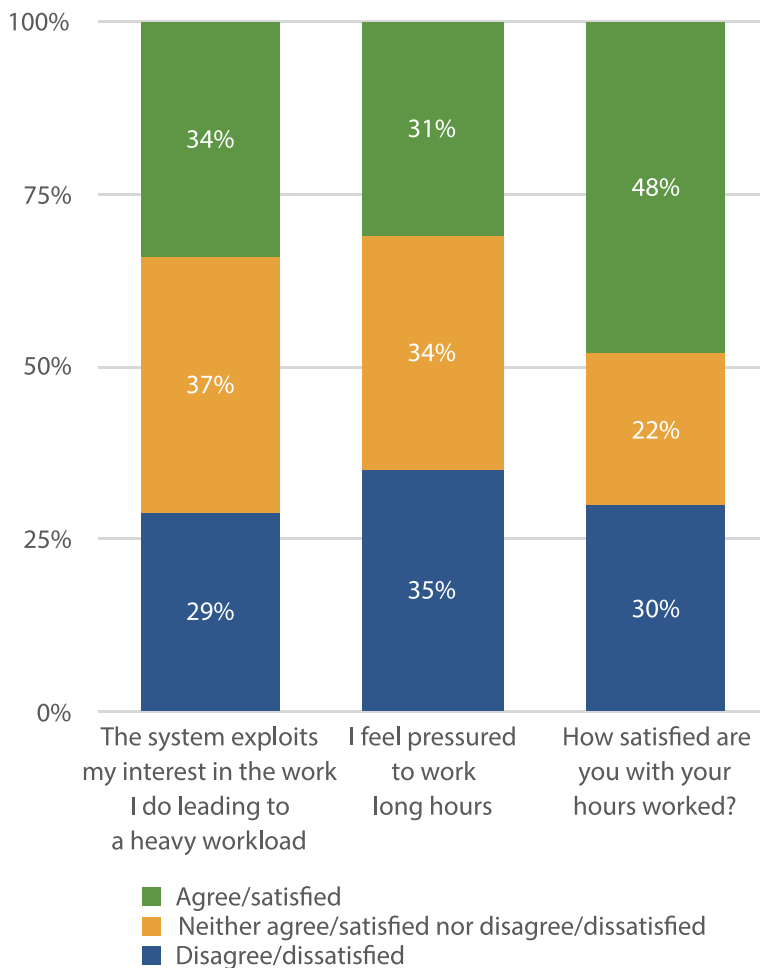
Figure 7: Data taken from both the *Nature* survey's question: *How satisfied are you with hours worked?* (Base 523/526 respondents) and the Wellcome survey's question: *To what extent do you agree or disagree with the following statements relating to your institution/workplace?* (Base: all 543 respondents). Participants ranked agreement from one to eight, which we categorised as agree = six to eight, neither agree nor disagree = four and five, disagree = one to three.

Work-life balance

Nearly half of students (45%) agree their institution promotes a good work-life balance. As seen earlier, the biggest concern reported by students in the *Nature* data is 'the difficulty of maintaining a work-life balance', with 37% of students ranking this in their top three concerns.
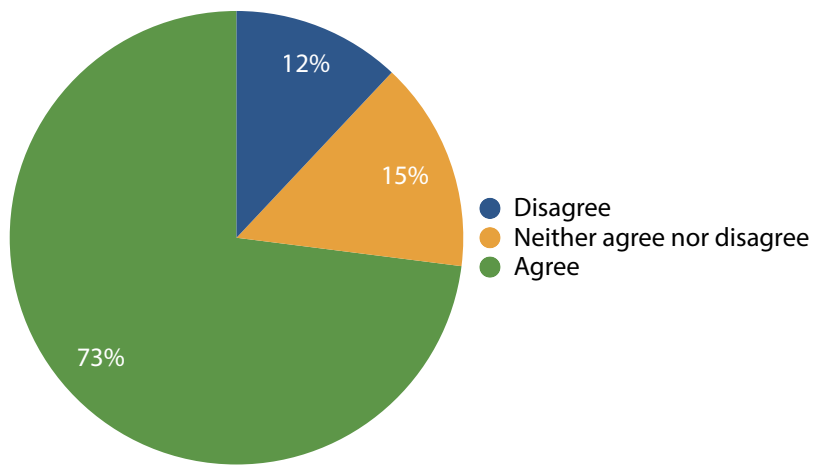
My workplace supports a good work-life balance
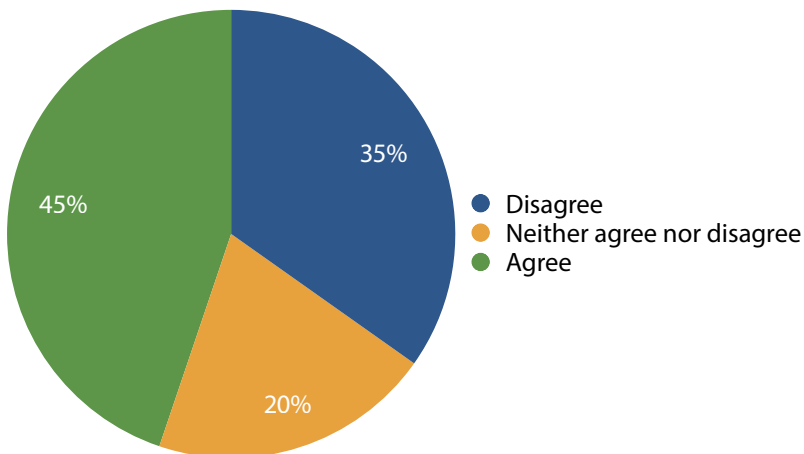
Figure 8: Data taken from the Wellcome survey question: *How far do you agree or disagree with the following statements relating to your current working environment? My working environment promotes a good work-life balance* and the *Nature* survey question: *My university supports good work-life balance.* Base: total sample size 1,065 (523/526 *Nature*, 543 Wellcome). Participants ranked agreement from one to eight, which we categorised as agree = six to eight, neither agree nor disagree = four and five, disagree = one to three.

One reason behind this may be that students feel pressure, both with their studies but also to publish papers and perform other duties beyond their PhDs. When describing their experience of academia, these students comment:

> *It basically seems to be in place to have cheap labour for teaching and other 'boring' academic duties or to use PhD*

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students to churn out papers for the benefit of supervisors/ PIs [principal investigators].

Expectations from the supervisors can be very overwhelming.

Too much of an emphasis is put on publications, leading to supervisors pushing the project in a direction that gives it the best chance for publication. Which is not necessarily the best direction for writing a thesis!

Effect of working hours on quality of output

PhD students and many early-career researchers do not have permanent positions. Successfully applying for their next role requires a strong publication record. Competition for jobs is fierce, so this often leads many to believe there is a culture of 'publish or perish' within academia. Nearly three-quarters of PhD students in the Wellcome data (73%) believe research culture promotes quantity over quality. One student described their PhD as:

> *Negative and toxic. People are stressed and many seem on the edge of a mental break down. There is huge pressure to work long hours and to overachieve. The pressure to publish seems to result in rushed science and papers, which could jeopardise their quality. Since starting my PhD I have almost certainly decided to not stay within academia when I finish, despite enjoying the research process.*

It seems students and staff may be feeling the effects of similar, entrenched aspects of research culture. A recent HEPI report on the wellbeing of university staff states 'Many academics believed

that management had little or no interest in safeguarding against the damaging impact of this culture of overwork'.[25]
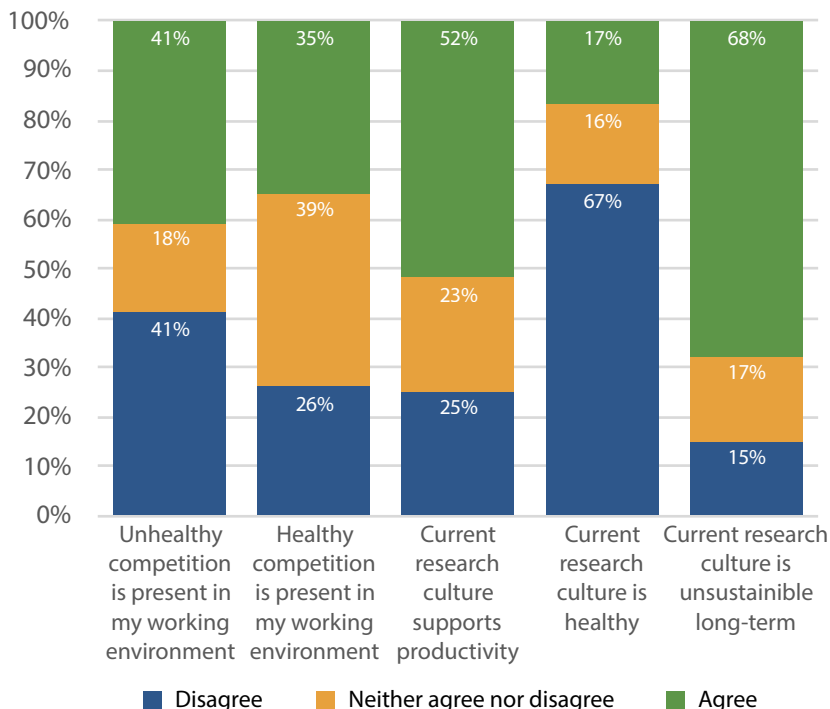
Research culture promotes quantity over quality

Figure 9: Data taken from the Wellcome survey question: *How far do you agree or disagree with the following statements relating to research culture? Research culture promotes quantity over quality.* Base: all 543 Wellcome respondents. Participants ranked agreement from one to eight, which we categorised as agree = six to eight, neither agree nor disagree = four and five, disagree = one to three.

Long-term effects of long working hours

Over two-thirds (67%) of PhD students in the Wellcome data think that research culture is unhealthy and 68% think it is unsustainable long-term. The belief in an unsustainable research culture may stem from high levels of competition reported by PhD students. For example, 41% in the Wellcome data agree unhealthy competition is present within their working environment and 35% agree healthy competition is present. Overall, one-quarter disagree with the notion that current research culture supports productivity.

PhD Life: The UK student experience

Competition, productivity and research culture

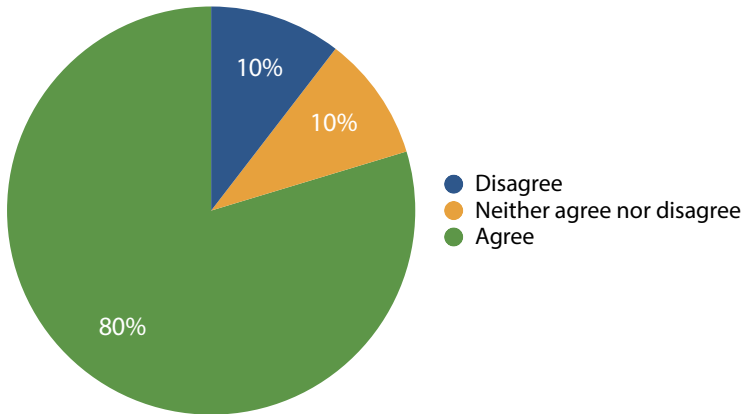

Figure 10: Data taken from the *Wellcome* survey question: *How far do you agree or disagree with the following statements relating to research culture?* Base: all 543 Wellcome respondents. Participants ranked agreement from one to eight, which we categorised as agree = six to eight, neither agree nor disagree = four and five, disagree = one to three

Implications of working hours on people

Students in the Wellcome survey were asked to rate how stressed they feel on an average day on a scale of one to eight. The majority (88%) rank their stress as four-out-of-eight or above and 34% rank their stress as six-out-of-eight or above. Over one-third (37%) of *Nature* respondents have sought help for anxiety or depression caused by PhD study.

When asked if they consider themselves to be resilient, half (51%) agree. Furthermore:

- 43% find it difficult managing their workload when they have personal issues;

- 33% believe they bounce back quickly after hard times;

- 28% believe they have a difficult time dealing with work-related stresses; and

- 19% agree they are unable to separate work-related stresses to their personal sense of self.

According to the Wellcome data, 80% believe a career in research can be isolating and lonely. Although not directly comparable, this is far higher than the rates of loneliness reported by undergraduates (46%).[26] Loneliness may be a particular problem for those in the Humanities, who generally do not have the support of a laboratory structure, with colleagues around them. However, even in these circumstances, PhD students can feel lonely. One student in the *Nature* survey describes their experiences:

> *Being very isolated. Being treated like a student who doesn't know what they're doing whilst simultaneously being expected to behave like a member of staff in terms of working hours, commitment and taking on administrative/support roles that are beyond my studies.*

Although these data suggest rates of loneliness among PhD students are high, there are examples in the sector where institutions are reaching out to tackle this issue. For example, the University of Glasgow has a PhD Society as part of its Students' Representative Council, which includes wellbeing and loneliness as one of its areas of focus.[27]

A career in research can be isolating and lonely

Figure 11: Data taken from the Wellcome survey question: *To what extent do you agree or disagree with the following statements relating to your institution/workplace?* Base: all 543 Wellcome respondents. Participants ranked agreement from one to eight, which we categorised as agree = six to eight, (neither agree nor disagree = four to five), disagree = one to three.
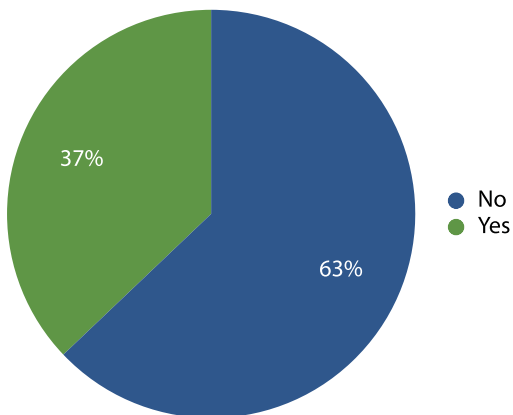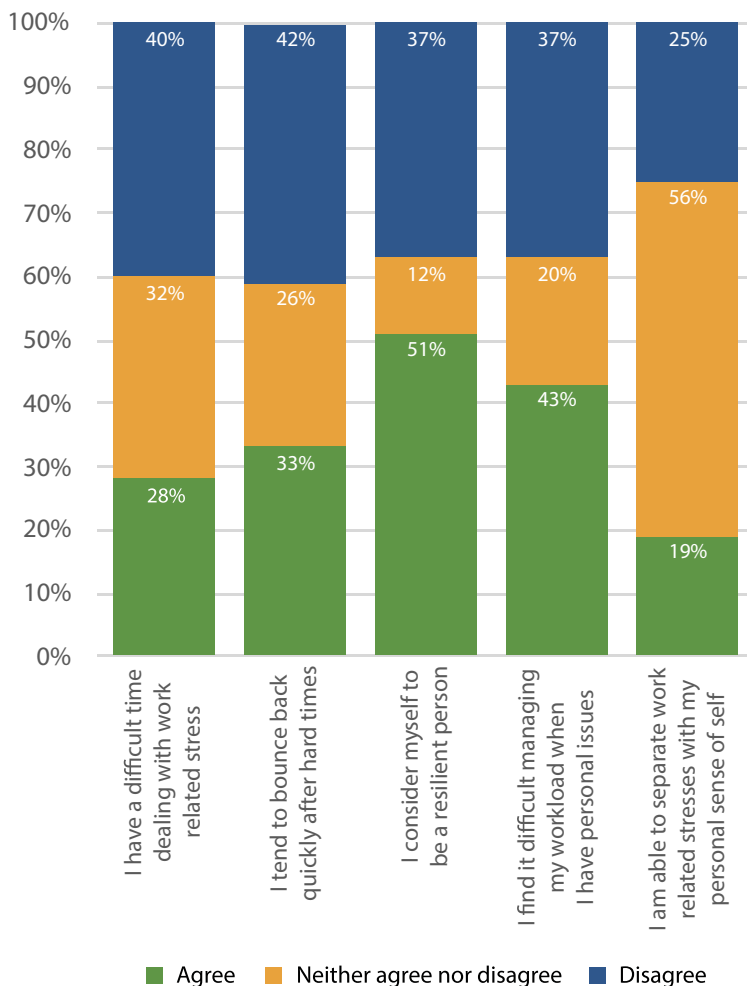
Have you ever sought help for anxiety or depression caused by PhD study?

Figure 12: Base: 523/526 *Nature* respondents.

Students' beliefs in their resilience

Figure 13: Data taken from the Wellcome survey question: *To what extent do you agree or disagree with the following statements?* Base: all 543 Wellcome respondents. Participants ranked agreement from one to eight, which we categorised as agree = six to eight, neither agree nor disagree = four and five, disagree = one to three.

2. Management and leadership

Context

PhD students have an academic supervisor who is responsible for guiding them through their research project and most will have a second supervisor to aid and give advice. PhDs have far fewer deadlines than undergraduate degrees and significantly more independent work with few, if any, taught components. Many PhD students, especially those in the Sciences, form part of wider research groups including postdoctoral researchers, research fellows and lecturers. Members of research teams often work on projects with overlapping themes and, in many cases, PhD students will receive mentoring and informal supervision from other team members. They themselves may also informally mentor and supervise more junior researchers, such as those studying on Master's research degrees. Students outside of the sciences and laboratory environments are less likely to have access to a wide range of managers and managerial opportunities.

Alongside members of their institutions, PhD students will often have other mentors in their fields. Many present their work at conferences and attend workshops and seminars where there are opportunities to network and collaborate with other researchers. However, it is worth noting that not all PhD students will be able to cover the costs of travelling to international conferences, particularly unfunded students or those whose funding schemes do not cover consumables, such as in some Arts and Humanities. PhD students also have access to support networks at universities, such as careers services, students' unions and

counselling services. Vitae's *Concordat to Support the Career Development of Researchers*, which provides guidelines on good research management practice and is signed by many UK institutions and funders, encourages its signatories to apply its principles to postgraduate researchers, as well as paid research staff.[28]

The desire for good management and leadership

The Wellcome data show the majority of PhD students (59%) believe it is the responsibility of senior staff members to drive research culture change.

Which groups do you think should have a high responsibility to drive change in research culture?
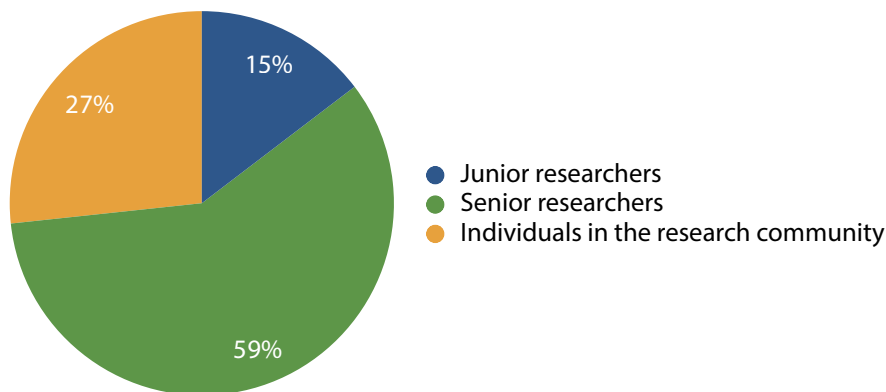
Figure 14: Data taken from the Wellcome survey question: *Which groups do you think should be responsible for driving change in research culture?* Respondents gave either high, medium or low responsibility to different groups, we present the 'high' results. Base: all 543 Wellcome respondents.

This is a reminder of PhD students' relatively weak position in a hierarchical structure, in which those more advanced in their

careers hold permanent positions, whereas those more junior are often on short-term contracts. Poor management can affect PhD students' satisfaction. As one student comments:

> *There needs to be put in place management support for supervisors as post docs have no experience of running a lab and that negatively impacts the students.*

Time spent being managed

Nearly two-thirds (63%) of PhD students in the *Nature* data see their supervisor one-on-one for less than an hour a week on average. Given that PhD students (or their funders) pay tuition fees, this may seem like poor value-for-money, especially since fee-paying undergraduates have an average of almost 14 hours of timetabled contact time per week.[29] However, neither the UKRI guidelines, nor Vitae's *Concordat to Support the Career Development of Researchers*, specify what they consider to be adequate supervisory contact time.[30] Indeed, the amount will differ depending on the discipline and nature of the project.

Infrequent face-to-face supervision is not necessarily a bad thing. The *Nature* data tell us 78% of UK respondents are satisfied or highly satisfied with their degree of independence. As one student wrote about their PhD experience:

> *It's flexible, you work whenever you want, and you have the freedom to take your research in whichever direction you want.*

On average, how much one-on-one contact time do you spend with your supervisor each week?

- Less than an hour
- Between one and three hours
- More than three hours
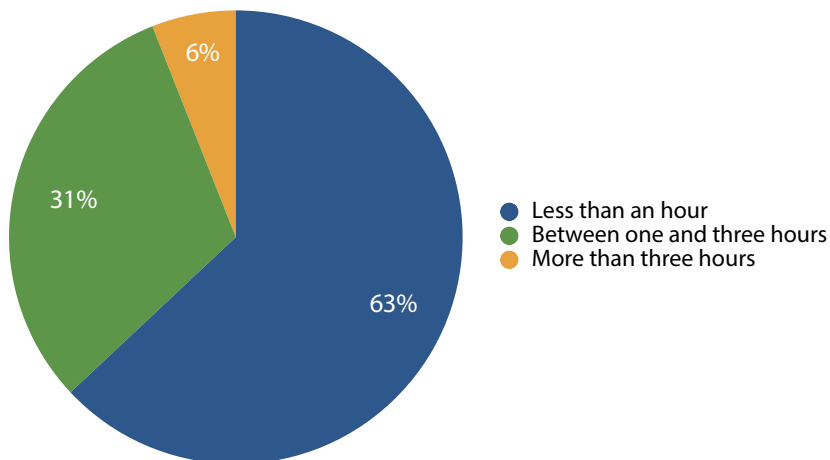
Figure 15: Base: all 526 *Nature* respondents.

How satisfied are you with your degree of independence?

- Dissatisfied or extremely dissatisfied
- Neither satisfied or dissatisfied
- Satisfied or extremely satisfied
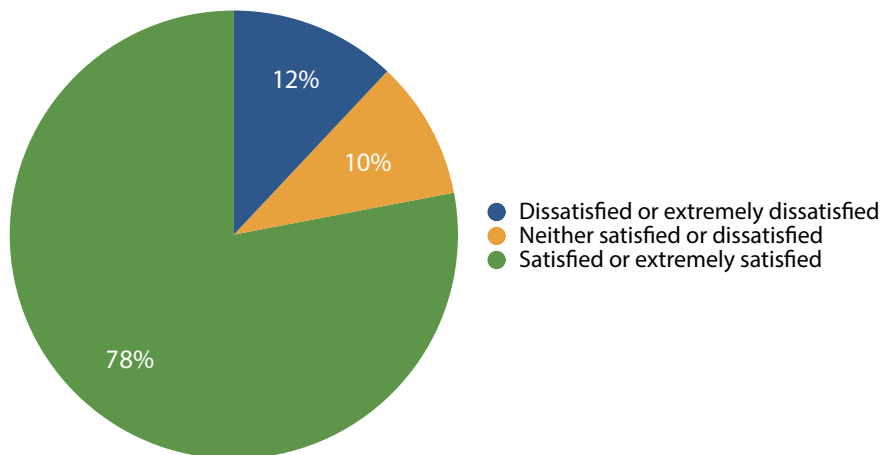
Figure 16: Base: all 526 *Nature* respondents.

Aspects of good management

According to the Wellcome data, PhD students have clear views on what constitutes good managerial practice. Over 93% of PhD students believe the following are important characteristics of good leadership:

- setting and upholding standards in the conduct of research and its application (98%);
- setting the direction for research and creating the plans and systems to achieve it (95%);
- creating development and career opportunities (95%); and
- leading and supporting teams of diverse individuals (94%).

However, institutions do not always seem to meet their PhD students' expectations:

- less than three-quarters believe their institution successfully leads the direction of research (70%) and research standards (69%);
- 58% believe leaders successfully manage diverse teams; and
- 43% believe leaders create career development and career opportunities. However, this relatively low proportion may be due to students going directly to careers services for advice about the future.

One student describes inconsistency in leadership by saying:

> *Every supervisor is making up how to supervise as they go along (which makes sense, since there's no training). It means that it's a lottery whether you will have any form of mentorship/training/guidance, which strongly determines how well the PhD goes.*

Perceived importance compared to successful institutional demonstration of different leadership qualities
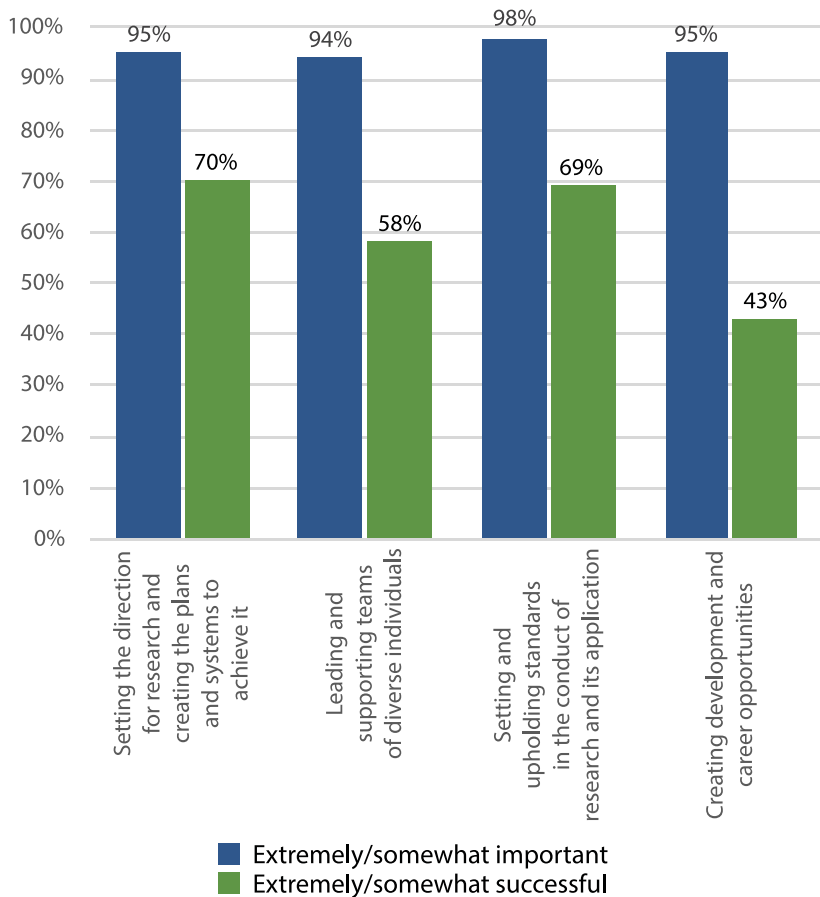
Figure 17: Data taken from the Wellcome survey questions: *How important do you think the following research leadership characteristics are?* and *How successful is your workplace team in demonstrating each leadership characteristic?* Base: 543 respondents from the Wellcome sample.

Receipt of good management practices

According to the Wellcome data on supervisors:

- 72% provide expert advice; and

- 35% offer students training to support their skills development.

Considering the primary role of the supervisor is to guide students in gaining the technical skills and knowledge they need for their degree, these data suggest a worryingly high proportion are not fulfilling their obligations. Furthermore:

- less than half (41%) support their students' wellbeing and 32% have supported their students through a personal issue;

- 26% conduct a formal appraisal;

- one-sixth (16%) provide their students with examples of appropriate ethical codes; and

- less than one-tenth (9%) request feedback on their management.

In the UK, PhD students fall in the gap between students and employees, so there may be differing expectations as to whether supervisors should undertake managerial practices, such as conducting appraisals. However, one student in the *Nature* data highlights that when good management is in place and leaders set clear expectations, PhD students benefit:

> *In my University they have implemented a good system whereby there are milestones and meetings you have to have with your supervisors which help keep you on track.*

An excellent example of good management of supervisors is at UCL, where they have produced a comprehensive guide to good supervision.[31]

Has your supervisor, principal investigator or manager done any of the following within the last 12 months?
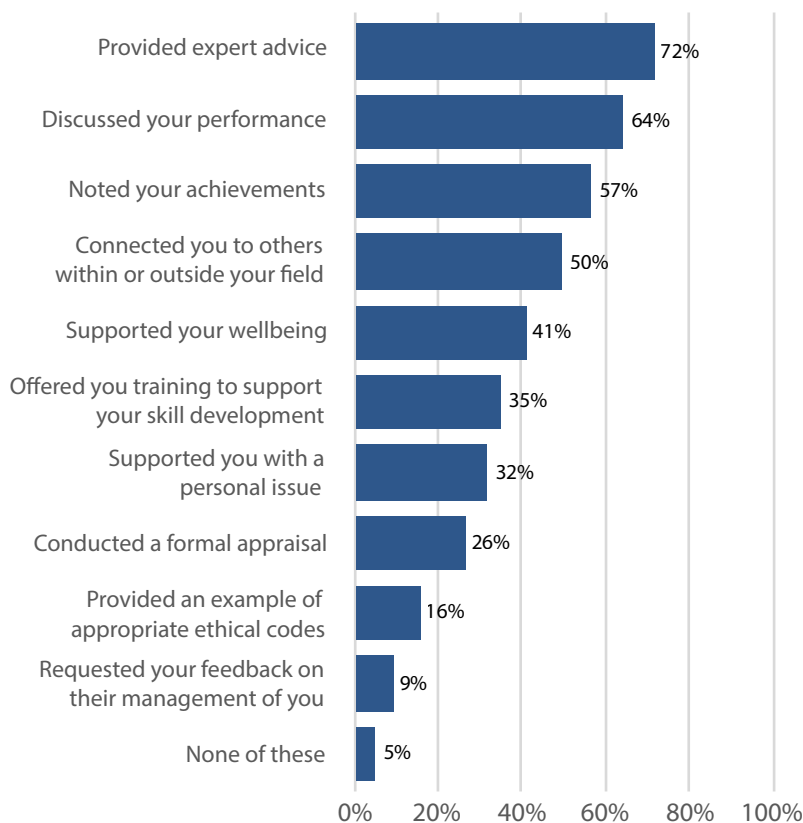

Figure 18: Data taken from the Wellcome survey. Respondents could select multiple options so total does not sum to 100%. Base: all 543 Wellcome respondents. Participants ranked agreement from one to eight, which we categorised as agree = six to eight.

Management and student satisfaction

Nearly one-quarter (23%) of PhD students would change their supervisor / Principal Investigator (PI) if they were starting their programme now and nearly one-fifth (17%) rank worries about their supervisor in their top-three concerns surrounding their PhD.[32] Just over half (55%) are satisfied with the overall recognition they receive from their supervisor / PI. This is concerning, given how many students feel isolated and lonely during their PhD and for whom their supervisor may be the only point of regular academic contact. As one student wrote:

> *The PhD system is way too dependent on decent PIs. Universities should check PIs taking on PhD students much more. Just because a PI has a nice publication record does not make them a good PhD supervisor.*

More students are happy with the academic guidance they receive from other mentors (64%) than from their supervisors (56%). However, overall around two-thirds (68%) of students consider themselves to be satisfied or extremely satisfied with the relationship with their supervisor. These students summarise how for many, satisfaction with their PhD strongly depends on satisfaction with the student-supervisor relationship:

> *Good [experience of academia] since I have a really good relationship with my supervisor.*
>
> *Having a good or bad supervisor can really be a deal breaker, and it is heartbreaking to me that it counts more than the passion that one puts in his/her own research.*
>
> *I have had a really good experience of my PhD which is largely to do with the support I have received from my supervisors.*
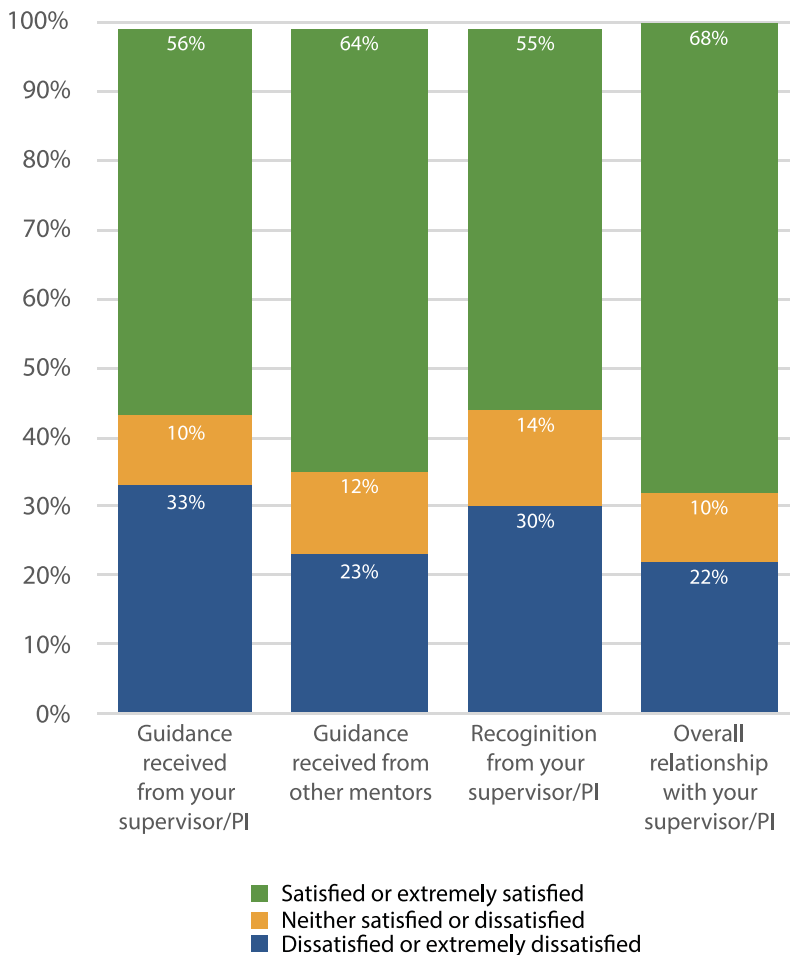
How satisfied are you with…?

Figure 19: Base: all 526 *Nature* respondents, some answered N/A for each question. Participants ranked satisfaction from one to seven which we categorised as satisfied or extremely satisfied = five to seven, neither satisfied nor dissatisfied = four and dissatisfied or extremely dissatisfied = one to three.

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What would you do differently if you were starting your programme right now?
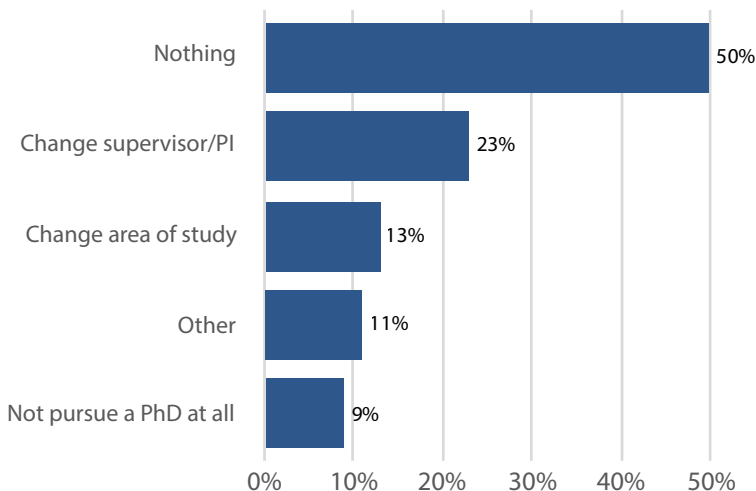
Figure 20: Base: all 526 *Nature* respondents. Participants could select multiple options so percentages do not sum to 100%

Management of careers

The Advance HE *Postgraduate Research Experience Survey* reports 'improving academic career prospects' as a major reason for undertaking a PhD.[33] Despite 95% of PhD students highlighting careers support as an important characteristic of good leadership, according to the Wellcome data, only 15% of their supervisors discuss alternative career options and 39% provide them with careers advice, although nearly half (45%) have had a conversation about careers. Furthermore, while 54% believe members of their Department are open to the idea of them pursuing a career outside academia, just 25% think members of their Department have useful advice for careers outside academia.

PhD students' belief that staff are open to the idea of them pursuing a career in academia against whether they believe staff can provide useful advice on non-academic careers
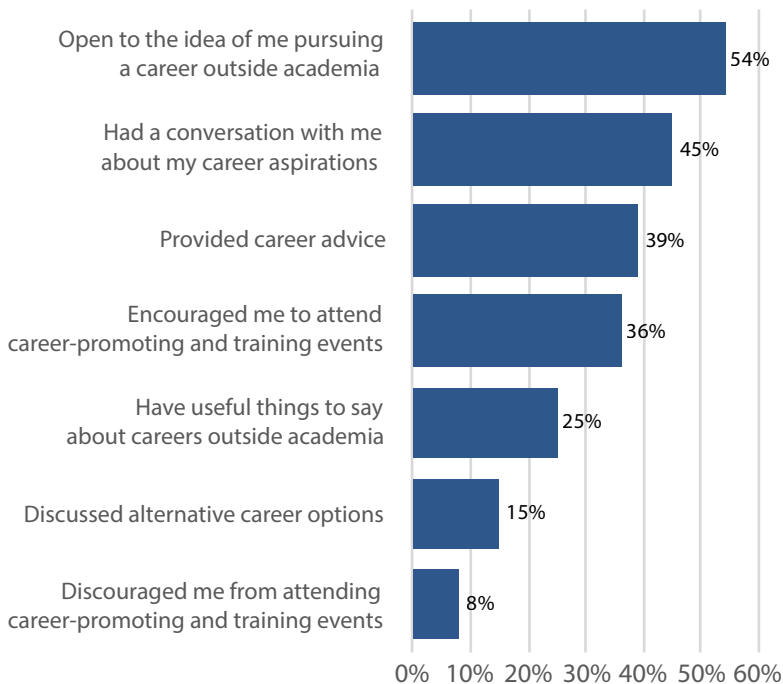
Figure 21: Data taken from the *Nature* survey question: *To what extent do you agree or disagree with the following statements regarding other faculty members or scientists in your department?* Base: all 546 *Nature* respondents (we select 'agree' and 'strongly agree' responses) and the Wellcome question: *Has your supervisor, principal investigator or manager done any of the following within the last 12 months?* Base: all 526 Wellcome respondents. Participants ranked agreement from one to eight, which we categorised as agree = six to eight.

In practice, the majority of students may seek advice on careers from specialist careers provision within institutions rather than talking to their supervisor. However, 39% have been encouraged by their Department to attend career-promoting and training events and 8% have been discouraged from doing

so. Even if institutional careers services are available and high quality, these data suggest Departments are not encouraging students to engage with them. This is in contravention of Research Councils UK's *Statement of Expectations for Postgraduate Training* which states:

> *Career advice should be provided (both prior to embarking on a PhD and ongoing) to enable students to choose the most appropriate type of PhD and have the confidence and skills to explore the impact they can have in a wide range of relevant sectors and so manage their careers ... Supervisors should recognise doctoral study as a wider training opportunity and encourage and support students in developing their careers.*[34]

Management and research culture

If high standards and clear expectations of behaviour are not set by leaders, then research culture is negatively impacted. Over one-quarter (26%) of PhD students in the Wellcome data have experienced issues of others taking credit for their work. For those wishing to stay in academia, this may be very troubling because successfully applying for an academic job requires a strong publication record, not to mention that the PhD itself requires a clear demonstration of new and independent knowledge. Moreover, those wishing to leave academia will still want an accurate depiction of their achievements for future employers. All of these are difficult to gain if another person is credited for your work.

Four-in-ten (41%) PhD students feel comfortable reporting incidences of compromised research standards and misconduct without fear of negative personal consequences and less than two-thirds (65%) believe the work they do is

adequately recognised. Only around half (49%) are confident their workplace would listen and take action if they raised a concern. Furthermore, 58% think leaders are unclear about expected standards of behaviour.

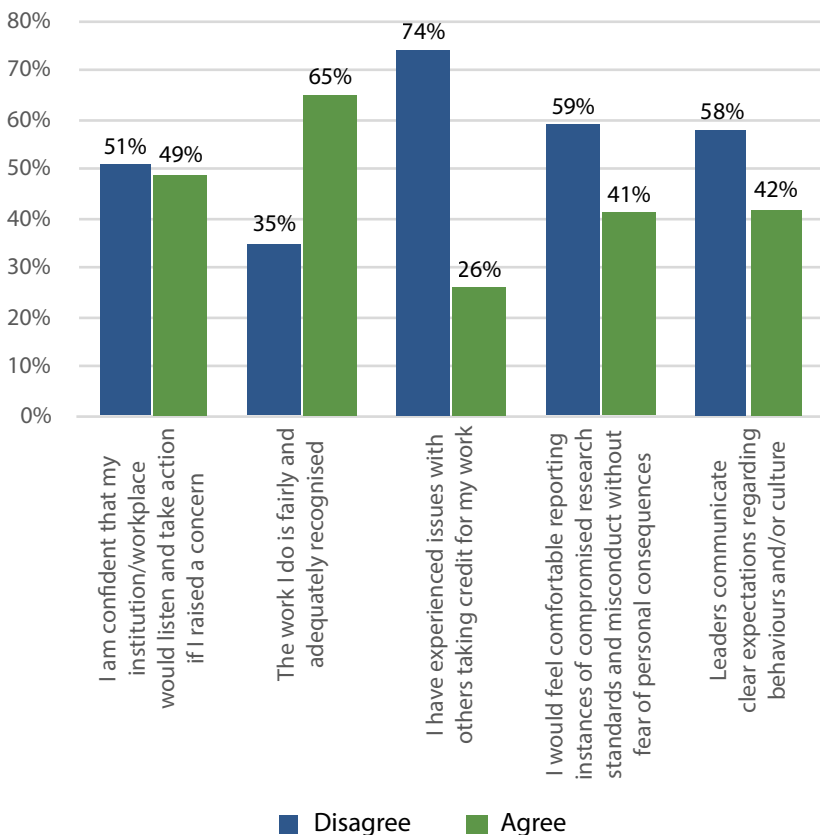*PhD students' perception of managerial practices that influence research culture*

Figure 22: Data taken from the Wellcome survey question: *How far do you agree or disagree with the following statements relating to your career over the last 1-5 years?* Base: all 543 Wellcome respondents.

This concurs with the findings from the wider Wellcome survey of researchers, including staff:

> *Many respondents described a system of patronage and power. Those researchers attracting high levels of funding were perceived to get away with poor workplace behaviour. Junior researchers often felt they would be unable to report such behaviour, or that little would be done to reprimand the perpetrator.*[35]

Given that many PhD students may one day become supervisors or managers within other industries, they may normalise the behaviour to which they are exposed and go on to practise it during their leadership.

3. Bullying, harassment and discrimination

Context

In most institutions, PhD students are not registered as employees so are not generally covered by human resources departments. However, as students they have access to institutions' students' unions and counselling services as well as being able to raise formal academic complaints. Those students who receive funding should also be able to raise allegations of bullying, harassment or discrimination with their funder.

There are many initiatives for diversity and inclusion that apply to PhD students. Examples include Advance HE's equality charters, including the *Athena SWAN Charter* and the *Race Equality Charter*, which 'aim to drive forward the cultural and systemic changes needed if institutions are to remain competitive and attractive to talented staff'.[36] Furthermore, students whose funding is covered by UKRI are subject to their equality, diversity and inclusion policy.[37] In fact, in 2019 UKRI published a review of bullying and harassment in research which found:

> *Certain characteristics of the higher education research environment can act as enablers of bullying and harassment, such as strong hierarchies and incentive structures – significant workloads, competitive behaviours and job insecurity.*[38]

This is especially relevant to the experiences of PhD students who are at the bottom of the academic hierarchy. They are in the most precarious employment position and have years ahead of them before being able to gain a permanent

position. Permanent positions are far scarcer than the number of applicants to them. Therefore, PhD students wishing to stay in academia must be prepared to compete or be forced to look for jobs in other sectors.

Incidences of bullying

One-in-four PhD students in these data feel they have been bullied (25%). Of these:

- 42% believe they were bullied by their supervisor;
- 36% believe they were bullied by another member of staff;
- 22% believe they were bullied by another student; and
- 3% believe they were bullied by another category of individual.

Have you experienced bullying during your PhD?
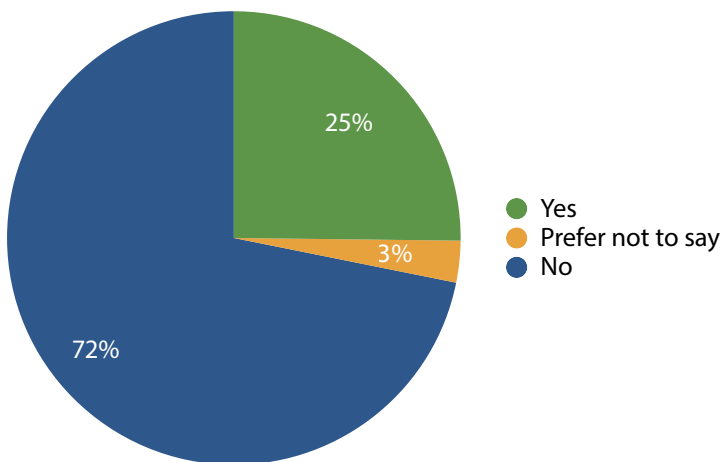
Figure 23: Data taken by combining responses from the *Nature* survey question: *Do you feel that you have experienced bullying during your PhD?* and the Wellcome survey question: *During your career have you ever experienced bullying or harassment?* Base: total sample size 1,065 (526 *Nature*, 543 Wellcome).

Although the proportion of students experiencing bullying seems large, it may be representative of the labour market in general with various studies suggesting between one-quarter and one-third of people are bullied at work.[39]
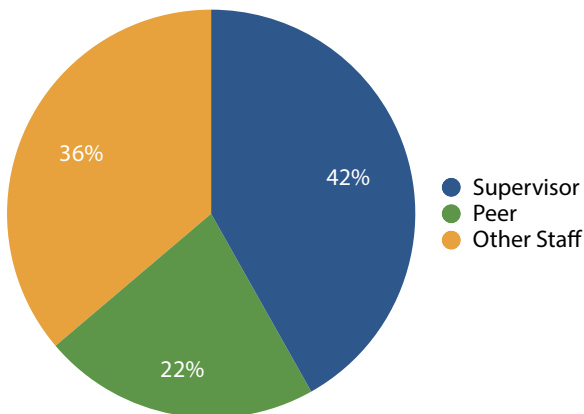
Who bullied you?

Figure 24: Data taken by combining responses from the *Nature* survey question: *Who was the perpetrator?* and the Wellcome survey question *Who bullied you?* Base: the 266/1069 students from both surveys who indicated that they had been bullied or preferred not to say (118/526 *Nature)* and (177/543 Wellcome). Respondents could select multiple options.

Incidences of discrimination

Overall, 20% of students believe they have faced discrimination. The most common type being gender discrimination (29%), although there are also high levels of age (15%) and racial (15%) discrimination. Class discrimination is also mentioned by some, for example, one student reports in the *Nature* survey:

> *If you didn't go to the right schools or the top universities you have little chance of ever getting a position, almost all the staff I meet from different universities are 'pals from [insert elitist uni here]'. As such they have very little*

understanding of the challenges someone from a 'normal' or disadvantaged background faces, especially financially, giving the overwhelming impression that your skills are secondary to your class.

Although the proportion of students facing discrimination seems high, it may be below average for the labour market in general. According to one survey, 49% of workers aged 25 to 34 in the UK believe they have faced some form of discrimination.[40]
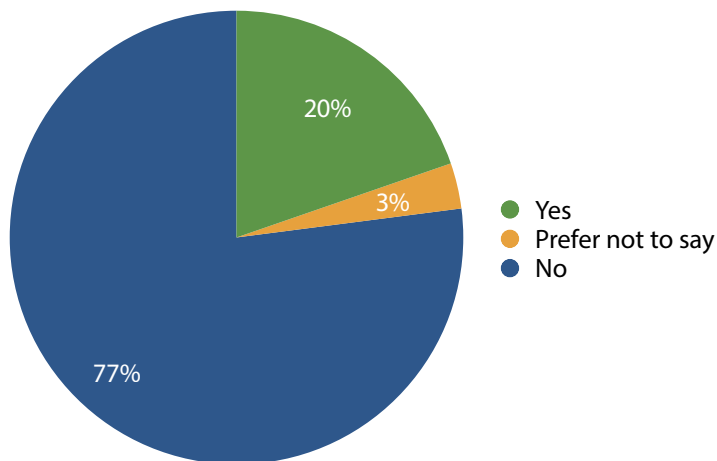
Have you faced discrimination?

Figure 25: Data taken from combined responses from the *Nature* survey question: *Do you feel that you have experienced discrimination or harassment during your PhD?* and the Wellcome survey question: *During your career have you ever experienced discrimination*. Base: total sample size of 1,069 (562 *Nature* and 543 Wellcome).

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Type of discrimination faced by PhD students
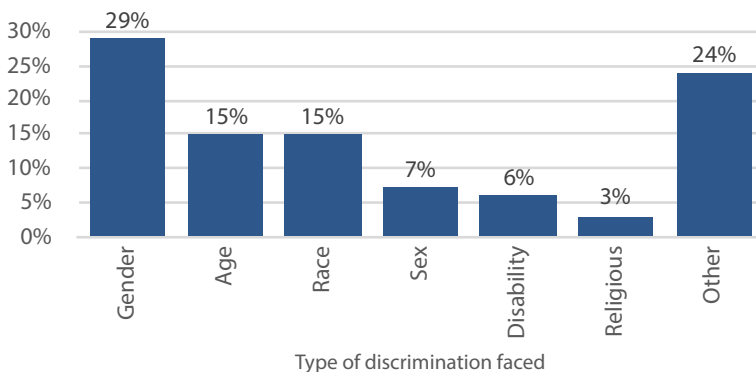
Figure 26: Data taken from combined responses from those in both studies who indicated they had faced discrimination. Respondents could select multiple options, so proportions do not sum to 100%. Base: total sample size of 211 (82/526 *Nature*, 129/543 Wellcome).

Speaking out about bullying, harassment and discrimination

When asked if they were comfortable speaking out about experiences of bullying and harassment without fear of negative personal consequences, 18% of those who have experienced bullying say they are and 22% say they are unsure.

The Wellcome survey considers responses from both those who have and have not faced bullying and / or discrimination. When those who have not been bullied are included, the proportion of those who feel comfortable speaking out or are unsure is 22% higher, at 64%. This implies a different attitude between those who have and have not been bullied and suggests a culture in which those who have not been bullied are unaware of the challenges faced by victims. This may be problematic if procedures regarding bullying, harassment and discrimination are set by those who have not been victims, as they may not fully appreciate the personal impacts of speaking out.

PhDs involve research in highly specialist fields. Word travels fast in such communities and early-career researchers on precarious contracts must work to build a reputation by actively networking to secure their next position. Given their relatively weak position, many PhD students may be unwilling to speak out against bullying or discrimination for fear of jeopardising their future careers. This has implications for the wellbeing of all students, for example, one respondent in the *Nature* data remarks:

> *People don't speak about a need for more free time and emotional support in fear they will be presumed weak and 'discarded'.*

Do you feel able to speak about your experiences without negative personal consequences?

A. Just those who have been bullied
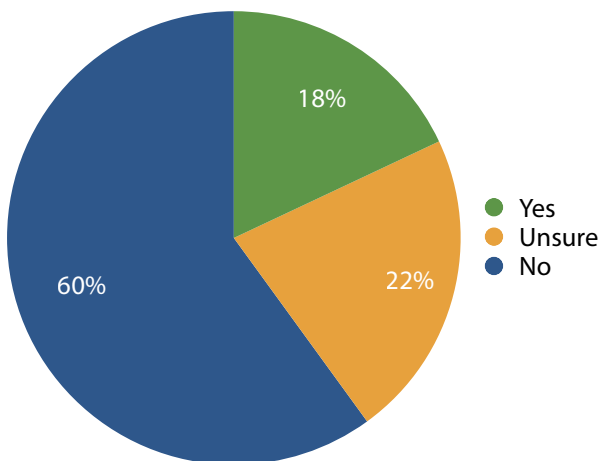
Figure 27

B. Including those who have not been bullied
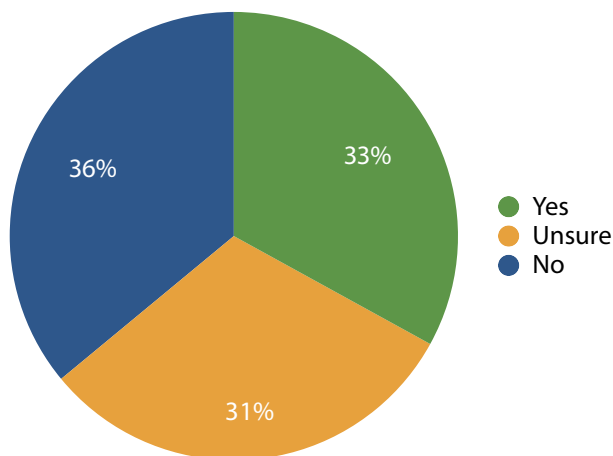
Figure 28: Data taken from those respondents who reported experiencing bullying and harassment from both the *Nature* survey question: *Do you feel able to speak about your experiences of bullying without personal repercussions?* and the Wellcome survey question: *Would you feel comfortable speaking out about instances of bullying and / or discrimination without negative personal consequences from within your workplace?* Base for A: total sample size of 273, (107/526 *Nature* and 166/543 Wellcome). Base for B: total sample size of 650, (107/526 *Nature* and 543/543 Wellcome).

Witnesses to bullying, harassment and discrimination

Almost half (47%) of PhD students in the Wellcome data say they have witnessed bullying and harassment. This is 12% higher than the proportion in the same survey who report experiencing it, implying bullying is either under-reported by victims, even in an anonymised survey, or that incidences of bullying are often witnessed by more than one person. It may be that victims are anxious about revealing their experiences, or it could be that experiencing 'bullying-like' behaviour has been normalised by some, so they do not identify as victims, even though others believe they are.

The witnesses report the perpetrators as:

- a supervisor or manager (45%);
- another senior member of staff (35%); or
- a peer (20%).

Over a third (34%) have witnessed at least one type of discrimination, with the types reported as being:

- age (38%);
- nationality (31%);
- race or ethnicity (26%); and
- class or socio-economic background (25%).

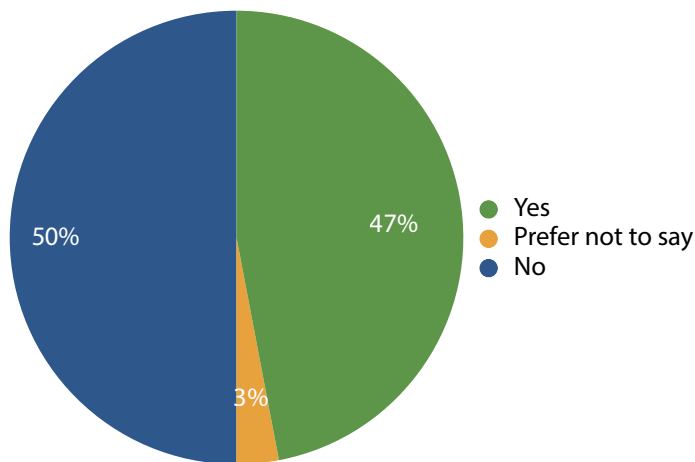*Have you ever witnessed bullying and harassment?*
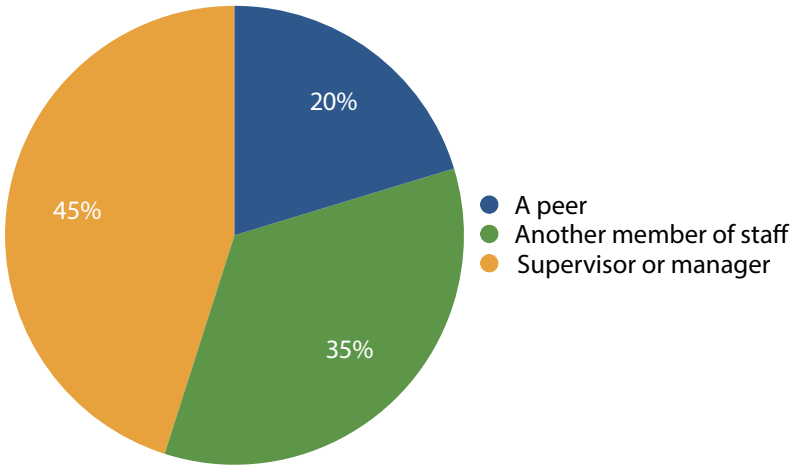

Figure 29: Base: all 543 Wellcome respondents.

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Who was the perpetrator?

20% A peer
35% Another member of staff
45% Supervisor or manager

Figure 30: Base: all 257/543 Wellcome respondents who indicated they had witnessed bullying and harassment.

Have you ever witnessed discrimination?
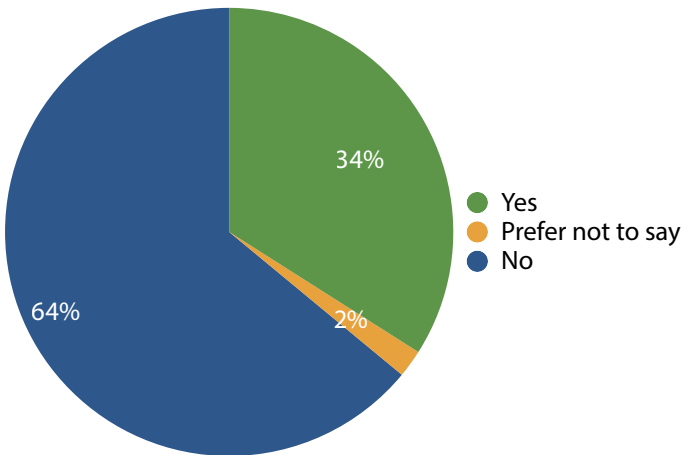

34% Yes
2% Prefer not to say
64% No

Figure 31: Base: all 543 Wellcome respondents.

What type?
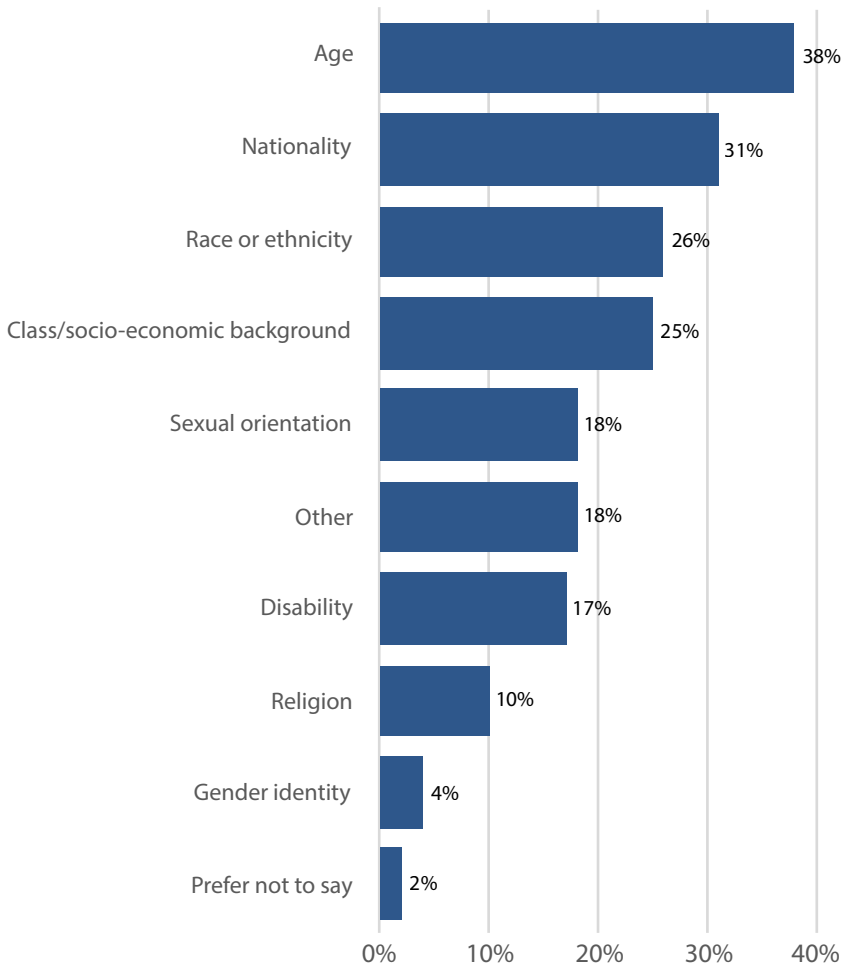
Figure 32: Base: all 298/543 Wellcome respondents who indicated they had witnessed discrimination.

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Diversity and inclusion in the workplace

Of the PhD students in the Wellcome data:

- 38% believe they have witnessed diversity and inclusion initiatives successfully in action within their working environment;

- 38% agree their workplace is committed to promoting diversity and equality;

- 38% believe their working environment is biased towards certain groups;

- 27% think their institutions' diversity and inclusion initiatives are tokenistic;

- 24% believe their working environment reflects the diversity within society; and

- 20% agree action is taken in their workplace to remove barriers for certain groups.

These data suggest the vast majority of PhD students do not witness the effects of institutional interventions on diversity and inclusion. For example, one student in the *Nature* survey says:

> *The higher up you go, the more male and white-dominated the environment becomes. There's only one full female professor in my whole institute, and I have genuinely never met a black PI or professor since starting my PhD.*

These data were collected before both the 2020 Covid-19 pandemic and the date the United Kingdom formally left the European Union. Both Brexit and Covid-19 are likely to impact

on the number of international researchers working within UK institutions. This may change PhD students' perceptions of the diversity of their working environment.

PhD students' views on institutional attitudes towards diversity and inclusion
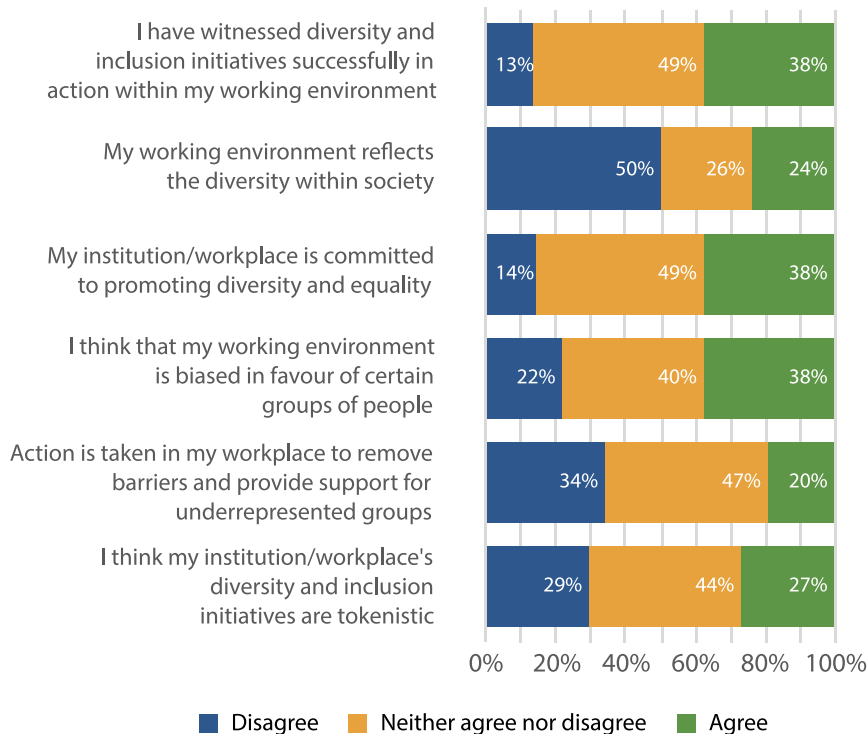

Figure 33: Data taken from the Wellcome survey. Respondents could select multiple options, so totals do not sum to 100%. Base: all 543 Wellcome respondents. Respondents ranked their agreement from one to eight and we categorised as agree = six to eight, neither agree nor disagree = four and five, disagree = one to three.

Acting against bullying and discrimination

Over two-thirds (68%) of students in the Wellcome data believe they would be listened to regarding concerns around bullying and discrimination, but just over one-quarter (26%) believe appropriate action would be taken. These students in the *Nature* data believe there to be a lack of action:

> *No repercussions for poor supervisors if they bring in enough funding to their respective institutions.*

> *Supervisors are allowed to say or do what they want with no repercussions whatsoever as other staff cover for them or they blame students for being snowflakes.*

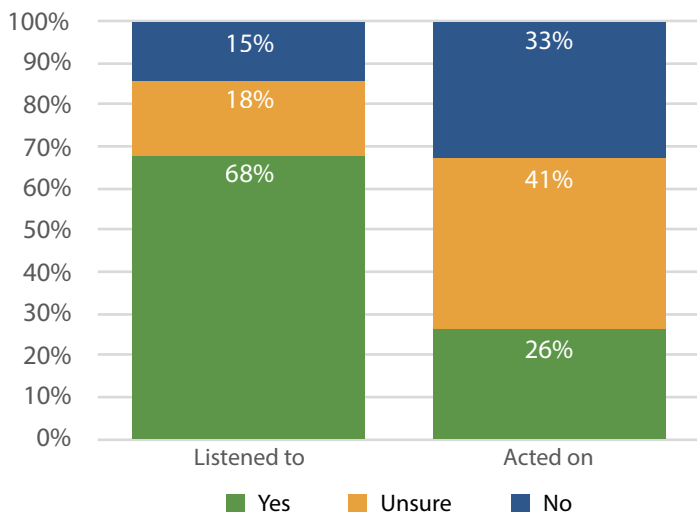*Do you feel that your concerns relating to experiences of bullying and / or discrimination would be…?*

Figure 34: Data taken from the Wellcome survey. Base: all 543 Wellcome respondents.

Leadership attitudes towards bullying, harassment and discrimination

In the Wellcome data:

- 68% agree that they feel safe in their working environment;

- 33% think their workplace enacts a zero-tolerance policy against discrimination;

- 24% believe raising concerns about discrimination or harassment would be damaging for their careers; and

- 23% think leaders in their workplace would turn a blind eye to discrimination.

These statistics paint a picture of widespread distrust in institutions to promote diversity and inclusion, act against bullying and harassment and, importantly, to keep students safe in their place of work. This is in contravention of Vitae's *Concordat to Support the Career Development of Researcher*s, which states institutions should 'Promote a healthy working environment that supports researchers' wellbeing and mental health, including reporting and addressing incidents of discrimination, bullying and harassment, and poor research integrity.'[41]

Agreement with different aspects of leadership towards bullying and harassment
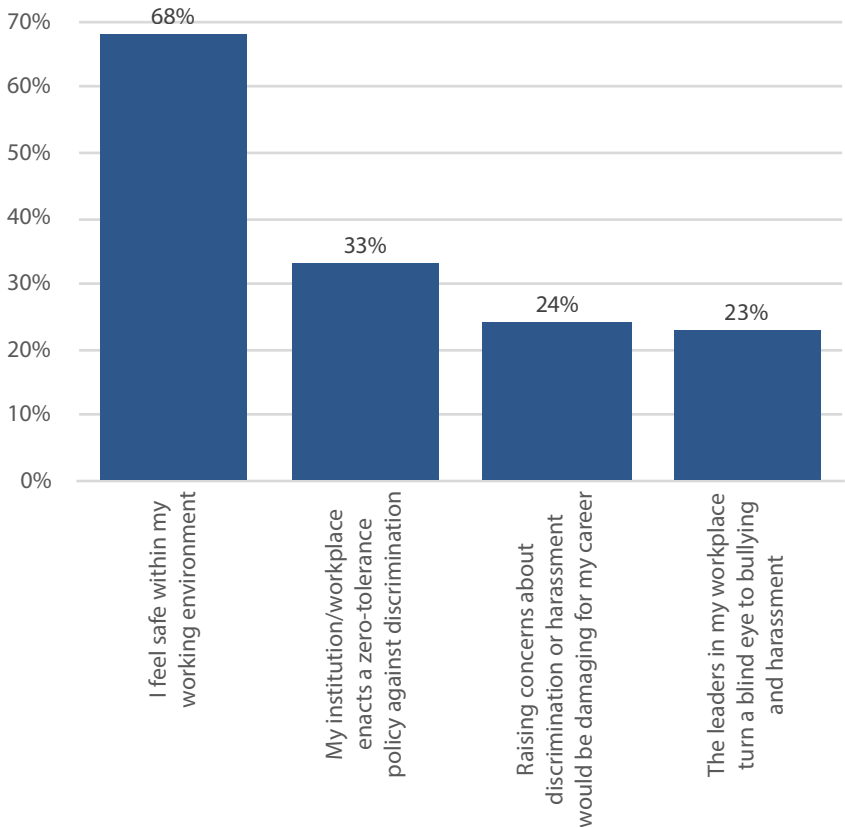

Figure 35: Data taken from the Wellcome survey. Base: all 543 Wellcome respondents.

Research culture and its implications for bullying, harassment and discrimination

From the Wellcome data, 54% of PhD students believe high levels of competition have created unkind and aggressive research conditions. This result, for PhD students alone, is actually the same proportion as researchers at all stages of

their careers, suggesting that the pressures faced by PhD students are the same as academic staff.[42]

However, given their isolated position, many feel these aggressive conditions especially keenly. One student from the *Nature* survey comments:

> *There is an attitude that the point to a PhD is to struggle and be miserable. If you're not struggling and miserable, you're not taking your PhD seriously or working hard enough.*

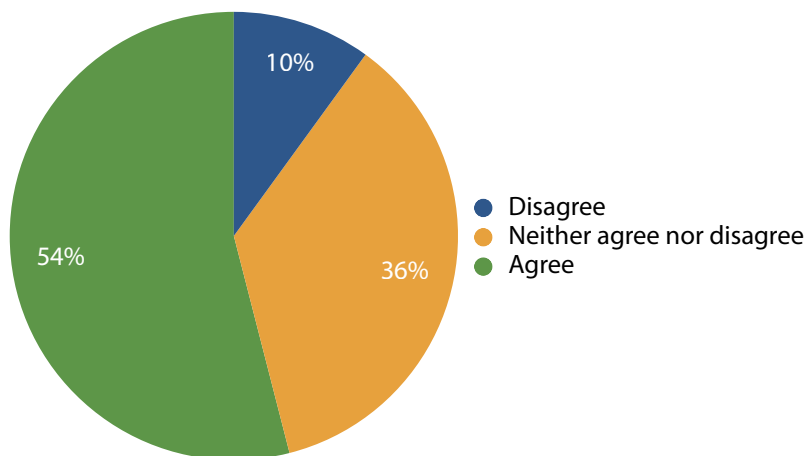*High levels of competition have created unkind and aggressive research conditions*

Figure 36: Data taken from the Wellcome survey question: *How far do you agree or disagree with the following statements relating to research culture? High levels of competition have created unkind and aggressive research conditions?* Base: all 543 Wellcome respondents. Participants ranked agreement from one to eight, which we categorised as agree = six to eight, neither agree nor disagree = four and five, disagree = one to three.

The effects of bullying, harassment and discrimination

Students in the *Nature* survey intending to leave academia gave descriptions of their reasons:

> *I have been so badly bullied and hated my experience in academia so far. Universities are not good places to work in.*

> *The overall toxicity of the academic environment.*

> *It seems that unless you're a man you wouldn't get anywhere so I don't want to waste my time.*

> *The academic culture will be detrimental to my mental health.*

> *I refuse to … perpetuate the cycle of abuse, misconduct, and exploitation.*

Wanting to leave academia is not necessarily a bad thing, in fact having highly-qualified doctoral graduates is a huge benefit to many sectors. Yet, it seems many PhD students want to leave, not because they are particularly passionate about a role elsewhere, but because their experience of academia is such a negative one. Currently, many PhD students do not feel empowered to report experiences of bullying, harassment and discrimination, making culture change challenging. According to the Wellcome data, 69% of PhD students want to see a 'special place' created by funders to raise concerns, with appropriate actions taken.

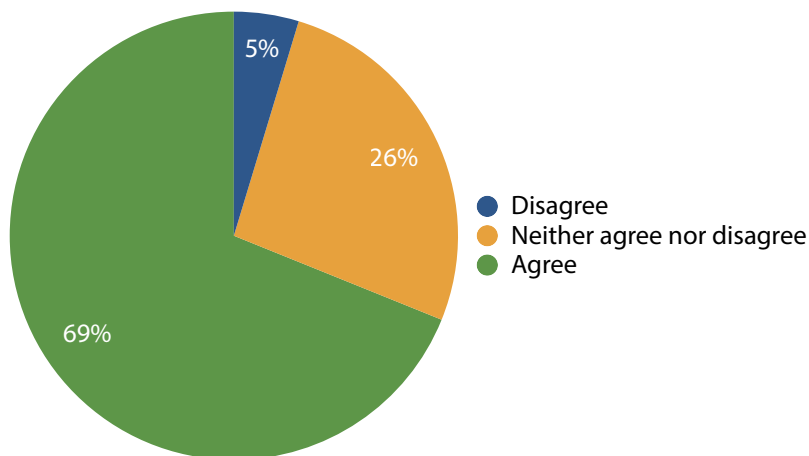*Should we create a special place to raise concerns, with appropriate actions then taken?*

Figure 37: Data taken from the Wellcome survey. Base: all 543 Wellcome respondents. Participants ranked agreement from one to eight, which we categorised as agree = five to eight, neither agree nor disagree = four, disagree = one to three.

Lived experiences of the academic system

The *Nature* survey included a free-text question which allowed participants to answer: 'Overall, how would you describe the academic system, based on your PhD experience so far?' One-quarter (25%) of the responses given (80% response rate) were positive and two-thirds (66%) were negative. The comments include:

> *Structured and engaging. My particular highlight is the continuous professional development in order to develop myself further as an independent researcher capable of integrating within a team.*

PhD Life: The UK student experience

Confusing – you don't know what is expected to be achieved by you and how well you are doing as a PhD student. Cruel – you are still judged by the number of papers and overworking is considered normal.

Rife with infighting, politicking and manoeuvring. Often science takes a backseat to other factors, personality clashes and favouritism. Funding is assigned not to the best scientists but to the best grant writers. Opportunities are very much determined by factors beyond the control of the PhD student themselves.

Type of words used by PhD students to describe the academic system
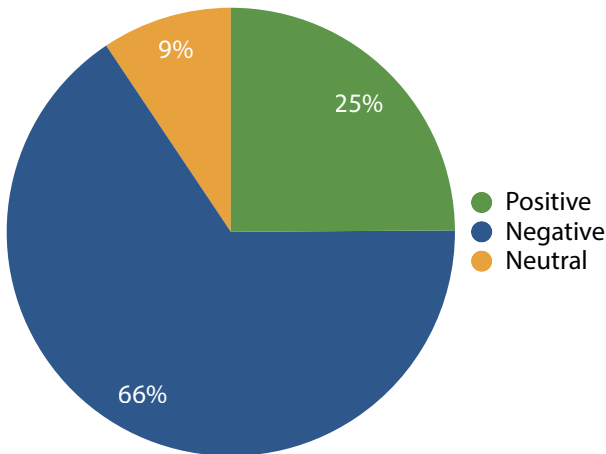

Figure 38: Base: 419/526 *Nature* respondents

Conclusion

Working hours and pay

On average, PhD students in this dataset work an unhealthy number of hours on their PhD each week. They work far longer hours than undergraduate students and almost as many as academic staff.

- **Institutions and funders should be clearer about the number of hours expected of PhD students.**

- **Institutions may also want to equip students better for their future careers by providing them with advice, as part of their training, on healthy working hours and maintaining a good work-life balance. Educating students early in their careers may lead to better mental health for those who decide to stay in the sector and go on to become academic staff.**

The average PhD student surveyed in this report does not receive a sum equivalent to the National Minimum Wage for the work they do. Considering postgraduate researchers are classified as students, any income could be seen as a bonus for their studies. Although many receive funding, many do not. However, it is known that PhD students are frequently stressed by the pressure to perform additional tasks alongside their studies.[43]

PhD students are often expected to publish their work in journals, which contribute to an institution's research status and Research Excellence Framework (REF) performance. Those in the Sciences are also generally expected to be key members of their research groups, using the unique knowledge and

expertise they gain from their research to help others in their team. Furthermore, they are required to adhere to deadlines from their institution around the completion of work, the time they spend using equipment that the institution provides and often the publication of papers.

The government definition classifies a person as a 'worker' if: they are under the supervision or control of a manager or director; they cannot send someone else to do their work; the business provides the materials, tools or equipment they need to do the work; and they have a contract or other arrangement to do work or services personally for a reward.[44] For many funded PhD students, most of these definitions would apply. In which case, it would be reasonable to assume they should be entitled to basic workers' rights, including the National Minimum Wage. Government guidelines aside, given the contribution PhD students make to UK research, local research teams and institutions' reputations, it should be logical to reward them fairly, not least as an incentive to maintain high standards.

In many other countries in Europe, PhD students are contracted employees, rather than students. For example, in Sweden, Norway and Denmark, employed PhD students receive around £25,000, £35,000 and £38,000 per annum respectively.[45] Switzerland, where the majority of PhD students are employees, has the most generous salaries worldwide of around £44,000 per year.[46] In the Netherlands and Germany, where a large number of PhD students are employees, there are salaries of anywhere from £16,000 to £30,000 per annum.[47] The *Nature* survey provides information of PhD students from all of these countries, which we combined into a dataset of 936 students and compared with the UK responses for key metrics.

Table 1 shows the outcome.

Table 1 Comparison of UK PhD students with those in other European countries

Question	UK response	European response
How satisfied are you with your PhD	Satisfied or extremely satisfied = 70%	Satisfied or extremely satisfied = 70%
Have you ever sought help for anxiety or depression caused by PhD study?	Yes = 37%	Yes = 31%
How satisfied are you with the benefits that you receive?	Satisfied or extremely satisfied = 34%	Satisfied or extremely satisfied = 67%
How satisfied are you with your stipend / financial support?	Satisfied or extremely satisfied = 55%	Satisfied or extremely satisfied = 67%
Students ranking 'financial worries after my PhD' in top three concerns	20%	14%
My university supports a good work-life balance	Somewhat or strongly agree = 44%*	Somewhat or strongly agree = 44%
Mean number of hours worked per week	47*	50
Do you have a second job alongside your studies? Number who said this was to make sense meet	Yes = 18%, of which to make ends meet = 10%	Yes = 9%, of which to help make ends meet = 4%

Base: data of the 526 UK *Nature* respondents compared to 935 respondents from different countries in Europe. Namely: Sweden (45), Norway (42), Denmark (33), Switzerland (155), the Netherlands (132) and Germany (528).

*Base: 1,069 respondents of both the *Nature* and Wellcome surveys.

Despite many countries in Europe employing PhD students, satisfaction is comparable to the UK. However, students in Europe are less likely to seek help for PhD-related mental

health problems and this may be because they are less likely to be worried about future financial concerns and more likely to be satisfied with their pay and the benefits they get from employment.

Their work-life balance is comparable to students in the UK and they work more hours, although this may be because they are less likely to have a second job and so can devote more time to their studies. Based on reported satisfaction, and especially in a time of predicted future austerity after the Covid-19 pandemic, it does not seem realistic to recommend that all PhD students in the UK become paid employees. However, the data do suggest that better remuneration and more formal access to work-related benefits could improve the mental health of PhD students.

- **One example of a work-related benefit which may help to alleviate financial-related anxieties, and make students feel more valued, could be to include PhD students earning a stipend in NEST, the government-backed workplace pension scheme. Alternatively, government could lobby for PhD students to have access to RESAVER as part of its negotiations on the future relationship with the EU. Opting in to RESAVER could also have knock on benefits for UK research as it may attract more European postdocs to come to the UK after Brexit.**[48]

These points should be considered carefully for anyone wishing to enhance the wellbeing outcomes of PhD students, not least because a workforce better equipped to manage anxiety and depression is also likely to have better outcomes for UK research.

PhD Life: The UK student experience

Leadership and management

PhD students are happy with their independence. However, they report high workloads in the face of very little contact time with supervisors, many of whom do not display characteristics of good management. Four-fifths (80%) believe a career in research is isolating and lonely. Supervisors are under high levels of pressure with the competing components of their work. It is not a given that good researchers make good managers.

- **Institutions should ensure that supervisory duties are only given to academics who are proven and effective mentors.**

- **Institutions should provide supervisors with appropriate and regular leadership training. One example could be to create comprehensive, institution-specific 'good supervision guides', such as that published by UCL. Not only could this improve the wellbeing of PhD students, but it could also positively impact research culture and research outcomes.**

Institutions and funders should work hard to ensure PhD students are properly supported in preparing for their future careers.

- **If students are unwilling or unable to seek careers advice from their supervisors, then institutions should provide access to, and encourage the use of, specialist careers advice. A good example of where this currently happens are the specialist careers advisors for researchers and research staff at King's College London.**[49]

- **Since PhD students report feeling isolated at work and are not generally studying as part of large cohorts, they may not look outside of their research teams to the wider careers support in institutions without encouragement. Allocating students a specialist careers mentor at the start of their degree, alongside their supervisory team, may persuade them to do this.**

Bullying and harassment

One-quarter (25%) of the PhD students surveyed by *Nature* and Wellcome have been bullied at work and 20% discriminated against. According to the Wellcome data, 47% have witnessed such types of behaviour. The majority of cases are perpetrated by academic staff on students. The vast majority of students do not believe any action would be taken if they spoke out and, even if they did speak out, this would have a detrimental effect on their careers. Some students even report a desire to leave academic research as a direct consequence of the bullying they face.

- **Institutions should do more to ensure PhD students feel empowered to speak out about challenging issues, either as individuals or as cohorts, where there is a more systemic problem. An example of good practice in this area, from which the sector could learn, is the University of Westminster's PhD Society, which describes itself as 'One voice: our platform to communicate our interests to the UoW'.**

These data suggest that leaders do not set an appropriate standard of workplace culture within research. The combination of narrow specialisms, short-term, unstable early-career contracts and lack of contractual protection allows the bullying of PhD students to go unchecked. In such a

hierarchical and competitive system, PhD students are not in a secure enough position to drive change and ensure bullying, harassment and discrimination are no longer culturally acceptable. Real change must come from those in positions of power, not least because a workplace rife with bullying and discrimination is not best placed to produce high-quality, collaborative research.

- **Funders should do more to ensure that their PhD students are given the opportunity to raise concerns about bullying, harassment or discrimination in a neutral environment, where claims can be investigated impartially.**

There is fierce competition for jobs within academia, with far fewer senior positions available than graduate PhD students wishing to gain them. Assuming that the progression of a researcher goes from PhD student to fixed-term employee (including postdoc) to a permanent position then, according to HESA, there are 29% fewer employees in the rung above PhD students than there are PhD students.[50] Therefore, from a purely numerical standpoint it does not matter if many students chose to leave academia for non-academic reasons, because advertised posts receive many high-quality applications. Other industries are not likely to worry either as highly qualified PhD students look for roles elsewhere.

However, just because a system produces the correct numbers it does not mean it works effectively for the people involved or produces the desired outcomes. In order for UK research to thrive, the sector as a whole needs to ensure the best candidates are applying for the roles to which they are best suited; because they have a passion for them and not because

they have been bullied, stressed or over-worked out of positions elsewhere. Promoting positivity and positive choices will lead to a more diverse, motivated and capable workforce, ready to produce the best outcomes for UK research.

Indeed, the Government stated as part of its 2020 Budget that the country has a 'world-beating science and research base'.[51] To make sure this base remains world-leading and fulfils its potential, research culture must be conducive to world-leading research. The sector as a whole should be prepared to challenge the status quo and seriously, fully support its researchers, so that they can fulfil their potential for UK research.

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PhD students, those studying for a doctoral degree, hold a unique position. They are active contributors to UK research output, while being students and not academic members of staff. In the UK higher education sector, far more data are collected about undergraduate students than about PhD students. Consequently, the experiences of PhD students are understudied, limiting the opportunities to improve them.

In this report, we use previously unpublished data to understand the realities of being a PhD student in the UK. We cover three key themes: working hours and pay; management and leadership; and bullying and harassment.