What Researchers Think About the Culture They Work In

wellcome

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Executive summary

The research sector is widely seen as producing great work, but there are concerns about the culture that has developed to support this. Are policies, incentives and assessment processes, leadership approaches or other factors undermining research?

To investigate researchers' experiences of research culture and their visions for the future, Wellcome commissioned specialist market research agency Shift Learning to undertake a study. This began with a literature review, followed by 94 qualitative interviews, four workshops and a quantitative online survey of over 4,000 researchers. The aim was to generate a rigorous foundation of data from which to better understand the current culture and target interventions at problems.

The picture is not uniform, but there are many common themes. Researchers are passionate about their work and proud to be part of the research community – they see it as a vocation, not just a job. Culture varies a great deal from place to place, and different individuals have very different experiences, with underrepresented groups experiencing the most challenges. Researchers say that their working culture is best when it is collaborative, inclusive, supportive and creative, when researchers are given time to focus on their research priorities, when leadership is transparent and open, and when individuals have a sense of safety and security. But too often research culture is not at its best.

While most researchers feel that their sector is producing high-quality outputs, they also report deep concerns about how sustainable the culture is in the long term. They say that conditions are being worsened by a complex network of incentives from government, funders and institutions that seem to focus on quantity of outputs, and narrow concepts of 'impact', rather than on real quality. The upshot is that they feel intense pressure to publish, with too little value placed on how results are achieved and the human costs.

They accept competition as a necessary part of working in research, but think that it is often becoming aggressive and harmful. They also have widespread concerns about job security – especially in academia.

While many researchers enjoy and feel equipped to manage their teams, those being managed are often missing out on the critical aspects of good management such as feedback. And worse, many have experienced exploitation, discrimination, harassment and bullying.

These cultural problems have consequences. Concerns about these fall into three categories: the impact on researchers, the impact on research and the impact on society.

For researchers, poor research culture is leading to stress, anxiety, mental health problems, strain on personal relationships, and a sense of isolation and loneliness at work.

For research, the perceived impacts include a loss of quality, with corners being cut and outputs becoming increasingly superficial, problems with reproducibility, and the cherry-picking of results and data massaging.

For society, the dangers are seen as loss of talent from the sector and a reduction of real innovation and impact resulting from a narrow set of priorities, as well as a loss of trust from the public.

Researchers are keen to support improvements, and they have many suggestions, including:
- changes to funding structures and criteria to improve incentives
- better support for early-career researchers
- training to strengthen managing and mentoring
- identifying and deterring bad behaviour
- procedures to help researchers raise concerns safely
- policies to share and promote good practice.

The findings in this report provide clear evidence that there are widespread problems in research culture. Those who fund, publish, evaluate or conduct research can now use this evidence as a starting-point to implement solutions in their own communities and working groups.

Achieving a successful research culture will require collective responsibility and change at all levels. Participants said that research culture is best when it is creative, supportive and collaborative – and in making cultural change, these three qualities will be key as well.

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"These results paint a shocking portrait of the research environment – and one we must all help change. A poor research culture ultimately leads to poor research. The pressures of working in research must be recognised and acted upon by all, from funders to leaders of research and to heads of universities and institutions."

Jeremy Farrar, Director of Wellcome

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Participants

Participants

After a review of current evidence on the topic, the research consisted of in-depth interviews, co-creation workshops and then an online survey.

94 UK researchers were interviewed individually about their perceptions of research culture:

- 81 in higher education (HE), 5 in non-university research institutes, 8 in industry
- 19 late-career, 31 mid-career, 15 early-career, 10 postdoc, 18 PhD students/entry-level
- 51 in biomedical or biological sciences, 20 in other sciences, 15 in social sciences, 8 in humanities
- 68 white, 15 Asian, 6 black, 5 other ethnicities
- 53 male, 38 female, 3 non-binary
- 83 with no disability, 9 with some disability

Four co-creation workshops in London, Manchester and Glasgow, each involving nine researchers, focused on solutions and visions for an improved research culture (total of 36 participants):

- 34 in HE, 3 in non-university research institutes
- 3 heads of research, 5 late-career, 14 mid-career, 5 early-career, 4 postdoc, 5 PhD students/entry-level
- 17 in biomedical or biological sciences, 6 in other sciences, 9 in social sciences, 4 in humanities
- 29 white, 3 Asian, 2 black, 2 other ethnicities
- 18 male, 17 female, 1 non-binary
- 32 with no disability, 1 with some disability

4,267 researchers completed an online survey to build on findings from the previous stages and to allow comparisons between different groups. The respondents were self-selecting, so they are not necessarily representative of the general researcher population – the most obvious thing to note is that while the survey was open worldwide, the respondents were mostly in the UK:

- 76% in UK
- 84% in academia/universities, 12% in industry (including government), 2% in healthcare
- 74% employed or freelance, 21% students, 4% no longer in research community
- 9% late-career, 49% mid-career, 37% early-career (including postdocs), 5% PhD students/entry-level
- 30% in biomedical science, 26% in biological sciences 18% in social science/psychology, 18% in medicine, 10% in humanities, 4% in chemistry, 4% in engineering/technology, 3% in computer science, 3% in physics, 2% in earth and environmental science, 2% in agriculture and food
- (of UK respondents) 84% white, 11% Black, Asian and minority ethnic (BAME)
- 60% female, 37% male, 1% non-binary
- 92% with no disability, 6% with some disability, 13% with a health condition affecting day-to-day activities

Separate reports on the evidence review, the in-depth interviews, the co-creation workshops and the online survey are available, including more details of the methodology and respondents.

Investigating different perspectives on research culture

Investigating different perspectives on research culture

The research revealed a complex and interconnected set of conditions and behaviours affecting researchers and their working environments.

Researchers had highly varied feelings about research culture, influenced by many aspects of their own situation including career stage, working environment and current job satisfaction, as well as their backgrounds and life experiences in general. Perceptions tended to differ from team to team rather than following subject or institutional trends. But despite the many differences among researchers, many common themes emerged.

While researchers considered the quality of research outputs to remain high, many felt that problems in research culture were becoming more apparent, and there was real concern about how sustainable current systems are and the high personal cost on the researchers themselves.

They never expected a research working environment to be like an average office job, and they recognised that certain working practices were more standard in research (such as long working hours, solitary activities and frank discourse). To an extent, they were willing to accept such practices – and many took the view that working in research was a vocation rather than just a career.

But that does not mean that they don't have serious concerns about their working culture. And it is precisely because they care so much about research that they want this culture to improve.

What is the current research culture?

Many of the researchers interviewed felt it would be easy to look at the quality of UK research and its outputs – generally seen as good – and to conclude that UK research culture must be healthy. But many agreed there were tensions underlying this quality, related to increasing pressure to produce more and more outputs and still keep quality high. Many, even those that felt supported in their current culture, had concerns about the sustainability of research culture for the future.

When asked for words to describe their current experience of research culture, survey respondents gave a range of answers, some more common than others (Figure 1 highlights the most common words provided). When then asked about the general sentiment they associated with these words, the majority of words were reported to be negative (55%, Figure 2). This negative sentiment also emerged in the view of some researchers that research culture was getting worse.
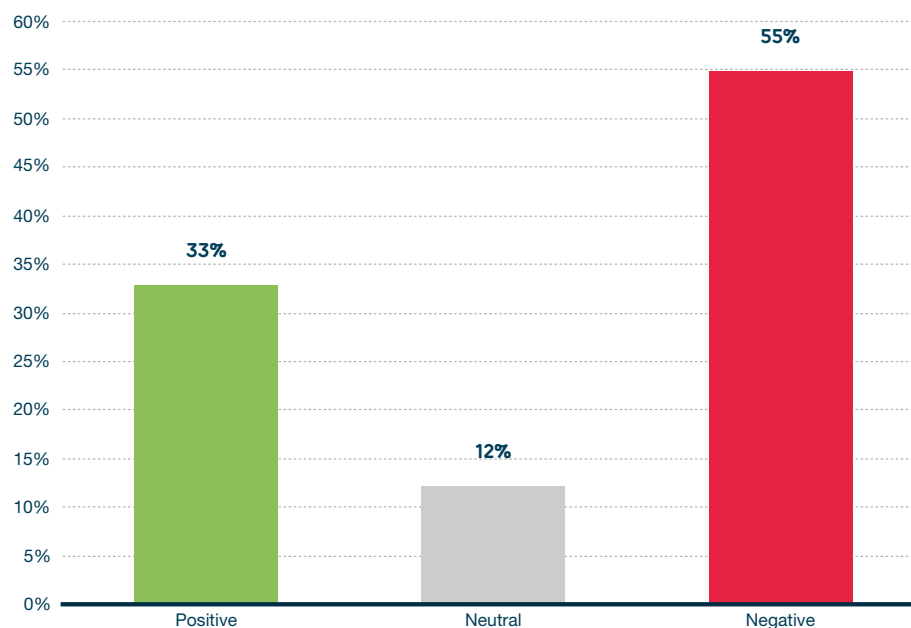
Figure 1:
Words that researchers would use to describe research culture

Survey, n = 2839 – research community, UK and international.

Figure 2:
What sentiment researchers attach to the words they use to describe research culture

Survey, n = 3768-3913 – research community, UK and international.

"Really, I think [research culture is] about to collapse. Huge things need to change, otherwise they're going to find everybody's going to have left academia. Some incredible geniuses will make it, but some extremely good researchers, who had fantastic knowledge and ideas that could have really revolutionised science, have left and gone to industry because it's just getting too difficult."

Postdoc, Russell Group institution

"I think that the stress issue is an intrinsic problem of the research culture. Unfortunately, speaking to Human Resources, I don't think they really understand that. I had to explain to somebody quite recently that researchers often see their job as rather more important than a job. It's a vocation, it's a way of life kind of thing. That's something that for an outsider is not very easy for them to understand."

Mid-career researcher, MillionPlus Group institution

Roles, incentives and structures

Expectations and the uniqueness of the role
All study participants were passionate about their research area, placing great value on the quality of research they produce. Many of them saw research not just as a job, but as a vocation.

Many interviewees said that they faced long working hours and high expectations, and this is seen in the survey data too (57% reported a long-hours culture), but interviewees added that the causes of these were complex. Regardless of any pressure from employers or external stakeholders, they are also driven by their own beliefs, ambition and love for their discipline. This means that failure can feel deeply personal, exacerbating the negative impacts of the culture felt by some researchers.

Interviewees often stressed the uniqueness of working in research, which they considered to be demanding in terms of the range of skills required as well as the high levels of passion and resilience needed to achieve within this culture. While many expected a career in academia to include long hours, high-pressured working environments and multiple commitments, historically these had been offset by benefits such as job security (once in permanent positions), autonomy, collaboration, creativity, flexibility, and the sense of contributing to society. But many felt these previous advantages were increasingly negated by a system that was open to gaming, under financial pressure, and focused on metrics at the cost of individuals.

"There's always more and more intensity, uncertainty, more and more metrics, more and more demands from the students as well. Overall things are going to get far more intense and far more stressful for people."

Late-career researcher, MillionPlus Group institution

Creativity and collaboration
Research was considered to be an inherently creative endeavour.

While most survey respondents believed that creativity was welcomed and recognised in their local working environment, most were also concerned that creativity was being stifled by a continued focus on impact (Table 1).

All interviewees felt that funders had significant influence on creativity, and could support it by rewarding creative research and providing longer-term funding. Many said that shorter-term projects brought extremely tight and often unrealistic timelines, whereas longer-term funding provided more breathing space to think creatively, re-evaluate and refine experimentation – enabling them to deliver more rigorous and accurate findings.

It was also felt that funders' emphasis on impact was negatively affecting creativity. The interviewees felt that this led to some research subjects and techniques being prioritised at the expense of others, which was pushing academics to produce research not directly related to their interests and curbing creativity. They also felt that less attention and funding are given to blue-sky research, the real-world applications of which are often not immediately obvious.

Table 1:
Researchers' views on creativity in their working environment

	Disagree	Agree
Creativity is welcomed within my working environment in all its forms	23%	60%
Creativity is stifled due to research being driven by an impact agenda/emphasis on impact	12%	75%

Survey, n = 4065 – research community, UK and international, excluding unemployed and retired.

Collaboration was also widely seen as an important aspect of good research culture. Environments that encouraged and supported collaboration were generally perceived to have better working cultures than those that didn't. For some, good collaboration – within teams, within departments, cross-institutional or international – was an important antidote to siloed thinking and some aspects of unhealthy competition. It was also viewed as a critical component of good work – widening perspectives, allowing for increased technical expertise, offering advice and challenging thinking in a constructive way.

Some interviewees raised concerns that in the current culture, good collaboration was increasingly threatened:

61% of survey respondents said that their working environment promoted a collaborative culture. Some academic interviewees suggested that collaboration was easier to achieve in those HE institutions where research was in demand and funding was less of an issue, as positions there felt more secure.

Incentives and structures

Interviewees agreed that individual expectations, ambitions and behaviours influence the research culture. But when thinking about recent shifts in research culture, they judged that such personal characteristics had remained largely unchanged and so were not the cause. Instead, they believed that the wider environment and the incentives set by policy makers, institutions and funders were responsible.

Interviewees mentioned a complex set of factors, many of which are already documented: changes in the publishing sector[1], proliferation of metrics[2], limitations in management and supervision[3], a lack of diversity[4,5], and the commercialisation of HE[2]. Such changes were reshaping research culture, often without support networks in place to compensate for any unintended negative consequences.

These findings are in line with the Royal Society's exploration of research culture and surrounding themes[6], which distinguished two perspectives:

- top-down – the role that public policy, funding and research assessment frameworks play in setting the incentives that shape research culture
- bottom-up – the potential for researchers to catalyse behavioural and attitudinal change at the level of research groups and institutions, and how this might bubble up to form new social norms.

This study builds on that distinction, by highlighting the impact of the way HE institutions interpret top-down strategies and frameworks and translate them into the policies and processes impacting on individuals. A key finding was that institutions' interpretations of top-down requirements are often seen as knee-jerk and short-term, creating significant unsteadiness and instability in the research culture.

The complexity and interlocking nature of the causes of negative culture often made it difficult for researchers to imagine how positive change could be achieved.

Changing role of universities

Survey respondents often thought that an increasingly pressured HE climate was harming academic research culture at both institutional and individual levels. Many were critical of decision-making by senior leadership (Figure 3). This attitude was more common among researchers in academia than among those in industry: 34% of those from academia agreed that senior management made wise decisions compared to 47% of those in industry.

Figure 3:
Researchers' views on whether senior management makes wise decisions

Survey, n = 3885 – research community, UK and international, employed and students.
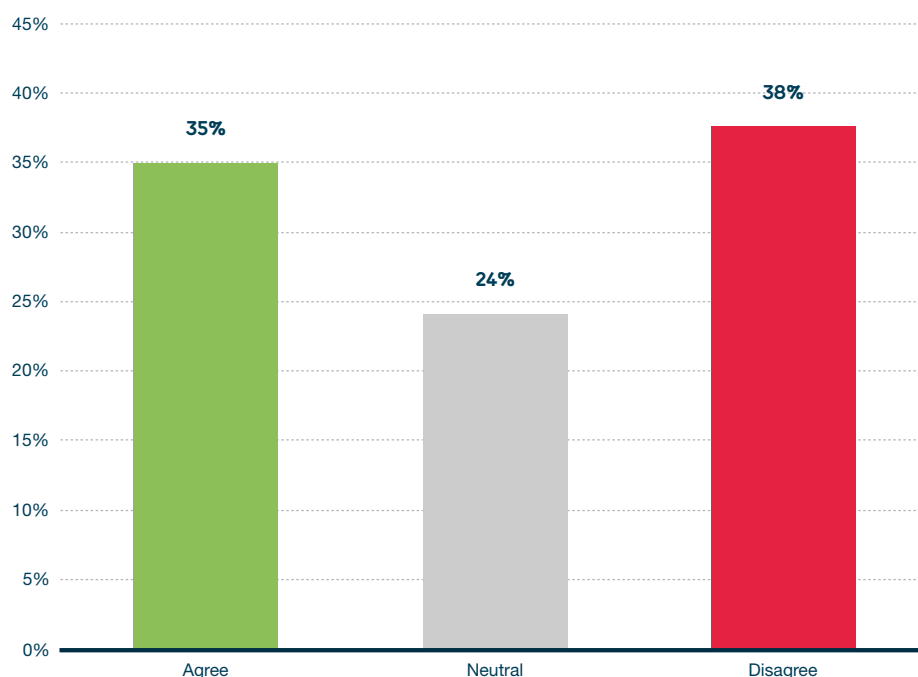
Researchers were sympathetic about the challenging environment facing senior leadership in academia but acknowledged that such challenges could exacerbate the conditions that lead to poor research culture. In particular, the competitive economic climate was seen as requiring institutions to focus more on student recruitment and experience and shifting attention, resources and time away from research.

"I don't know who decides this, but somewhere in senior management, whatever seems to be the most urgent imperative for REF is what is suddenly messaged down to the rest of us. One month it will be 'oh my god, impact is the most important thing in the world and we must all stop doing everything else and just do impact'. Next, it will be 'you're not getting enough research grants. Everybody must be applying for research grants'. It's entirely arbitrary to the rest of us what it is we're supposed to be doing at any one time. It shifts constantly. It's exhausting and it's not helpful".

Late-career researcher, Russell Group institution

39% of survey respondents agreed that their working environment hinders them getting on with their research (Table 2). Those in academia were significantly more likely to agree to this statement than those working in industry.

Table 2:
Researchers' views on workplace priorities

	Disagree	Agree
My working environment hinders researchers getting on with their research	40%	39%
My institution/workplace places more value on meeting metrics than it does on research quality	33%	43%
My institution/workplace's expectations of me to undertake a number of roles leave me little time for research	33%	44%

Survey, n = 4065 – research community, UK and international, excluding unemployed and retired.

Heavy expectations on researchers

Many respondents believed their workplace hindered them getting on with research, that it put overwhelming expectations on them and that it attached more value to metrics than research quality (Table 2). For many, career progression depended on being able to demonstrate success across a variety of highly different skills.

"Everyone in their job has to multi-task, but this is a bit different. This is a bit absurd, where you go from lecturer, you need to be a teacher, you need to be a scientist, you need to be an accountant, you need to be a politician, you need to be a very skilled writer, an excellent communicator and all of those different things take up a bit of time, so that's possibly in second place why I will eventually leave the job. It's pulling you in too many directions… That makes doing research tricky, because to really do the very best research, you need clear blocks of time. Having 40 minutes free, or an hour, just doesn't cut the mustard. … I haven't even mentioned management. As a university professor, you have to be a manager of people and projects."

Mid-career researcher, Russell Group institution

Only 45% of respondents felt able to effectively balance the competing roles required as part of their employment (Figure 4).

Interviewees working in academia often raised frustrations that their research was increasingly sidelined in favour of teaching and administration duties. While some grants did offer researchers buy-out from these other commitments, they said that in reality institutions often did not implement this correctly. The result of this sidelining of research, many said, was not simply a shift in their balance of duties but an overall increase in workloads and hours. They saw research as core to their career fulfilment, so they worked more to get it done (often in their personal time).

Figure 4:
Researchers' views on whether they can effectively balance the competing roles required in their jobs

Survey, n = 4065 – research community, UK and international, excluding unemployed and retired.
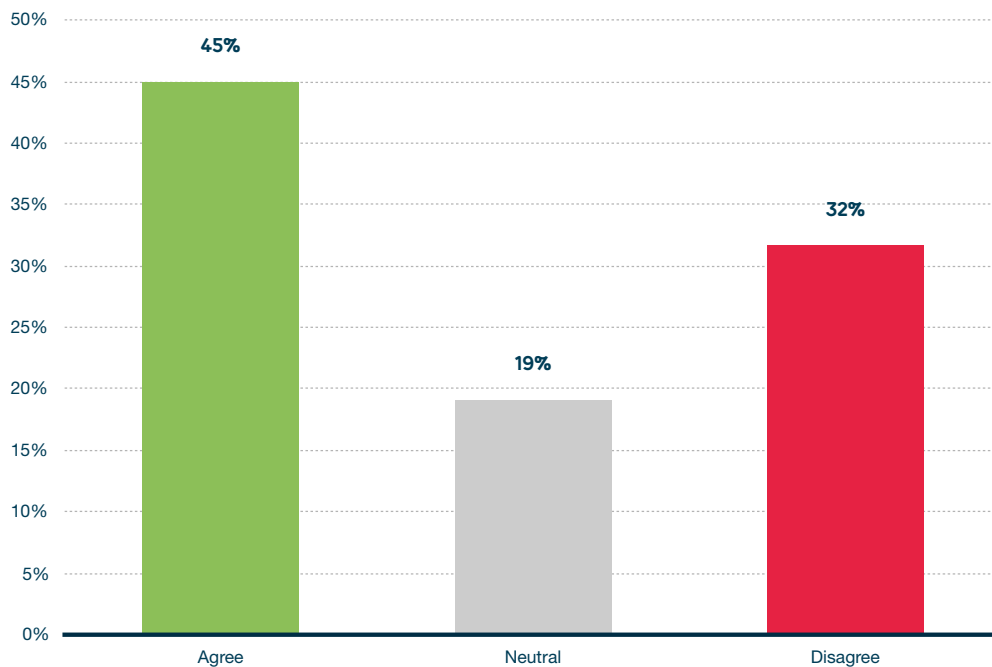
Trends in funding and careers

Several commonly identified causes of poor research culture were related to funding priorities and career trends: risk-aversion and short-termism, funding criteria, increased competition, lack of job security, and lack of career flexibility.

Risk-aversion and short-termism

Interviewees often said that key stakeholders in the sector (government, publishers, funders and institutions) were increasingly risk-averse and only interested in short-term gains. This was generally seen as a barrier to creative work, different ways of thinking, and diversity of the workforce. To do well in this type of system, researchers often said, it was important to:

- be already established and part of the status quo
- have significant output (measured by publications and impact factor)
- follow conventional thinking
- design research that has instantly obvious practical application.

This was widely considered to be limiting for the broader development of knowledge, as well as a means of keeping current hierarchies in place. It was felt that some peer review stifled innovation and creativity, with reviewers potentially motivated to reject papers or grants that might conflict with their views and bring personal tensions into the review process.

"Sometimes when you have a paper out for review and the reviewer will be in a similar field, but may be working on their own research, which maybe contradicts your own research. Maybe not consciously, but unconsciously biased towards your research. Not in the majority of cases, but it happens. People get entrenched in their own ideas and may not be necessarily willing to listen or see the merits and benefits of certain things."

Early-career researcher, Russell Group institution

Funding criteria

Funding conditions were specifically highlighted as influencing research conduct and output, specifically a shift towards:

- fewer but larger grants
- more short-term than long-term grants
- more emphasis on 'high-impact' research at the expense of exploratory research.

Interviewees felt that funding was consistently granted to those with impactful research, and therefore teams that conducted rigorous research to exemplary ethical standards only to discover null data were often overlooked for future funding. The result was that they were judged on their lack of impactful findings, as opposed to their ability to perform excellent research. Many felt this was a systemic issue that cultivated a negative culture in which demonstrating impact was prioritised over good research conduct.

There was a prevalent idea that funding criteria were a core driver of research misconduct. Many argued that the nature of these criteria, which rewarded researchers who had published in higher-impact journals, encouraged negative research behaviours, such as deliberate embellishment or distortion of data.

For example, there are concerns about the need to make research more appealing to funders by focusing on its socio-economic benefits rather than its academic merits[7]. Some interviewees described the result of this as "research by stealth".

Increased competition

While many agreed that competition has always been a significant and necessary part of research culture, many were concerned about unhealthy competition in all aspects of the sector (Table 3).

"Sometimes I feel stressed out and have a wobble because of the pressures that I'm under. Some of those pressures are pressures that I put on myself. There is no doubt that the changing nature of the research world is going to be more competitive, more internationalised, more aggressive and I'm not sure that we are building the research infrastructure that allows people to cope."

Mid-career researcher, Russell Group institution

Generally, researchers believed there was increasing competition for grants, funds and jobs – with more people fighting for fewer resources. They thought this was creating conditions ripe for aggressive, unkind behaviour and crowding out collegiality and collaboration, generating high pressure as researchers tried to succeed and survive in this new environment.

We reflect that it is not easy to see where the line can be drawn between healthy and unhealthy competition. When exploring the sentiment of the word 'competition' (as used to describe research culture), 20% who used this word rated it positively and 56% negatively. In interviews, the negativity of its perception often appeared related to individuals' sense of security and resilience, both of which were often described as tested in the current climate.

Table 3:
Researchers' views on competition

	Disagree	Agree
Unhealthy competition is present within my working environment	37%	42%
Healthy competition is encouraged within my working environment	26%	32%
High levels of competition have created unkind and aggressive research conditions	11%	78%

Survey, n = 4065 – research community, UK and international, excluding unemployed and retired.

Lack of job security

Job security was a key issue for the research community. Nearly half of survey respondents who had left the research community (45%) reported that one of the reasons for their departure was the difficulty in finding a job and facing an insecure career path. Furthermore, only 29% of those currently working in research felt secure pursuing a research career and 38% believed there was longevity in a research career. This is corroborated by recent studies[6,8] suggesting high numbers of UK academics are on some form of insecure contract.

Early- and mid-career researchers were significantly less likely to feel secure than senior researchers (Figure 5), suggesting a general pattern where feelings of security increase with seniority. The exception to this pattern is the relative positivity of entry-level researchers – one to two years into their career, including current PhD students. We reason that this may be the result of their limited experience of working in the sector.

Figure 5:
Researchers' views on research careers
(% at different career stages agreeing)

Survey – research community, UK and international. Entry-level n = 167, early-career n = 1185, mid-career n = 1577, late-career n = 281.
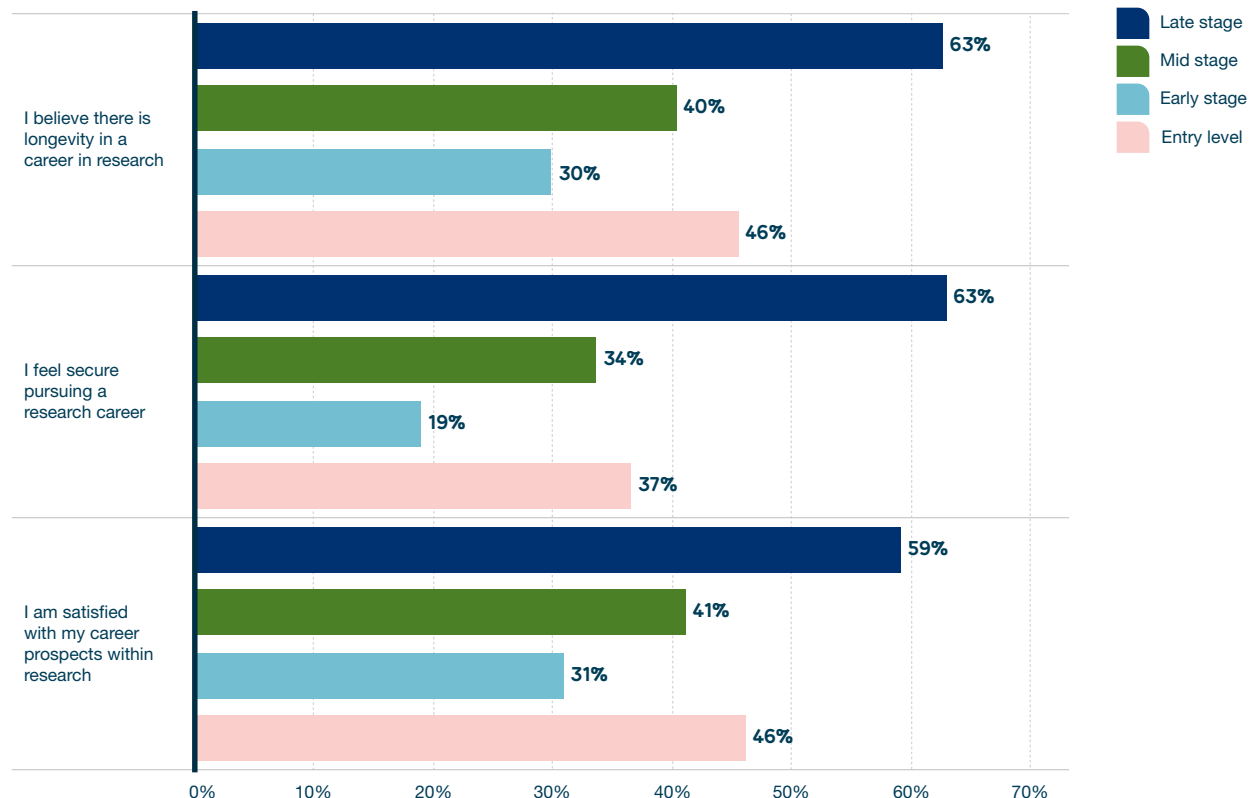
Lack of career flexibility

Many participants saw research as their vocation and struggled to think about careers outside academia. 35% of survey respondents said that a lack of advice and guidance was a barrier to achieving a successful research career.

Many thought that academic researchers faced a limited, linear pathway for career progression, forcing those who wanted to progress in this environment to focus on certain metrics and key performance indicators (KPIs). This indicates that, for those less able to demonstrate success by this definition, career progression could be harder.

While researchers were generally aware of a range of alternative careers that could use their skills outside of research (65%), fewer thought that they had similar options within research (Table 4).

Metrics and performance indicators

Only 57% of survey respondents agreed that the research culture in their working environment supported their ability to do good research. Many interviewees said that current research culture promotes ever-higher production of outputs, competition and accountability – themes that often appear in academic discourse on this topic.

Interviewees spoke extensively about the growing dominance and impact of metrics on research culture. While they were not opposed to metrics in principle, they were concerned with how these are used. The growing focus on performance measures was often blamed for a range of unintended consequences including perverse incentive structures[9], gaming the system and low morale. It was felt that, depending on an institution's interpretation of top-down policies, different metrics would be prioritised and pushed down on to individuals. Correspondingly, little emphasis would be given to activities such as training or supervision, for which there are insufficient structures in place to measure performance.

Some academic narratives in the evidence review also suggest that metricisation can threaten researchers' identities as researchers and their sense of scholarly integrity.

Table 4:
Researchers' views on career options

	Disagree	Agree
I am aware of alternative career options outside of research that could utilise my skills	24%	65%
I am aware of a range of different career options within research	32%	53%
I have flexible career options available to me	38%	40%

Survey, n = 4125 – research community, UK and international, excluding retired.

In these narratives, metrics were often criticised for being created by policy makers too far removed from real-life practices to understand what are unrealistic expectations and what unintended consequences can result. Many held the wider culture of metricisation, particularly the REF and how such frameworks are implemented, accountable for the worsening of culture. Institutions that pushed metrics and KPIs openly onto the individual researcher were generally those where research culture was more likely to be problematic.

This was coupled with a more finance-conscious university system, placing more emphasis on external grant funding and undergraduate teaching at the expense of university-funded research. Industry researchers did not feel these budgetary pressures to the same degree as academic researchers.

This was mirrored in the survey findings too. Only 14% of respondents agreed that current metrics have had a positive impact on research culture, and 43% thought their workplace placed more value on metrics than on research quality (Table 5). Over half (54%) said they had felt pressured to meet KPIs or metrics, such as for REF or grant funding; among researchers in academia, this increased to 63%.

Table 5:
Researchers' views on metrics

	Disagree	Agree
I think current metrics have had a positive impact on research culture	58%	14%
My institution/workplace places more value on meeting metrics, than it does on research quality	33%	43%
I feel pressured to meet Key Performance Indicators/metrics, e.g. REF, grant funding	22%	54%

Survey, n = 3917-4175 – research community, UK and international, excluding unemployed and retired.

Behaviours
and practices

Behaviours and practices

Incentives and system structures were thought to have a significant influence on behaviours and practices. As we can see with metrics, the design, implementation and interpretation of incentives and systems can directly lead to specific behaviour and practices by shifting priorities away from outputs that are not measured, such as leadership. Similarly, behaviours and practices can play a significant role in how these incentives and systems operate on an individual level and how they ultimately impact on culture. We consider that these factors are deeply interconnected and multi-faceted. Behaviours such as bullying and exploitation appear both as an influence on the culture and as a consequence of it.

Management and leadership

Leaders throughout the system appeared to play an important role in setting the tone of the culture to staff. Respondents who saw their working environments as particularly positive and inclusive often credited this largely to the actions of management and leadership.

While there were some examples of poor behaviour by principal investigators (PIs) and other supervisors, these were in the minority. Most respondents saw their supervisor as decent and trying their best, but constrained by a system that rewarded outputs and money over individuals.

"Our head of department is extremely supportive, in terms of helping us to achieve our research goals, where possible, and not putting huge amounts of pressure on us as PIs, to get the next grant, the next paper. We all have those pressures, which we place on ourselves, but we're not getting that additional pressure from above."

Mid-career researcher, Russell Group institution

Generally, researchers appeared to be more positive about their manager or direct supervisor than about their institutional leadership team (Figures 6 and 7).

Opinions were divided almost evenly as to whether leaders were clear about the working culture and conduct that they expected. Figures were similar for junior researchers (41% thought so, 41% thought not) and senior researchers (43% thought so, 40% thought not), which suggests that guidance was lacking across the community.

Figure 6:
Researchers' views on management and leadership

Survey, n = 3885 – research community, UK and international, employed and students.

Legend:
- Disagree
- Neutral
- Agree
- N/A

Leaders communicate clear expectations regarding behaviours and/or culture in my working environment: Disagree 40%, Neutral 17%, Agree 41%, N/A 1%

I am satisfied with the way my institution/workplace handles performance reviews: Disagree 42%, Neutral 19%, Agree 33%, N/A 6%
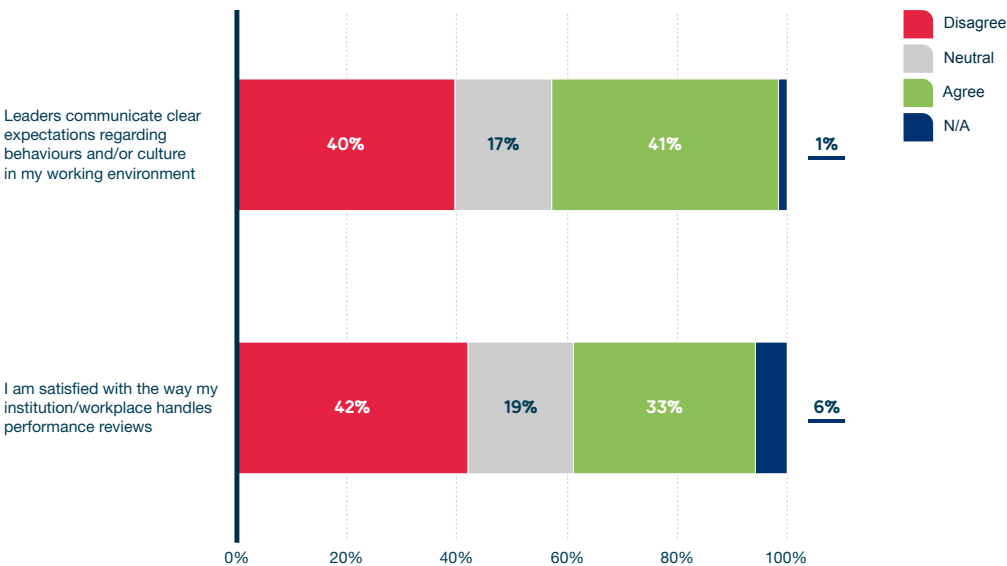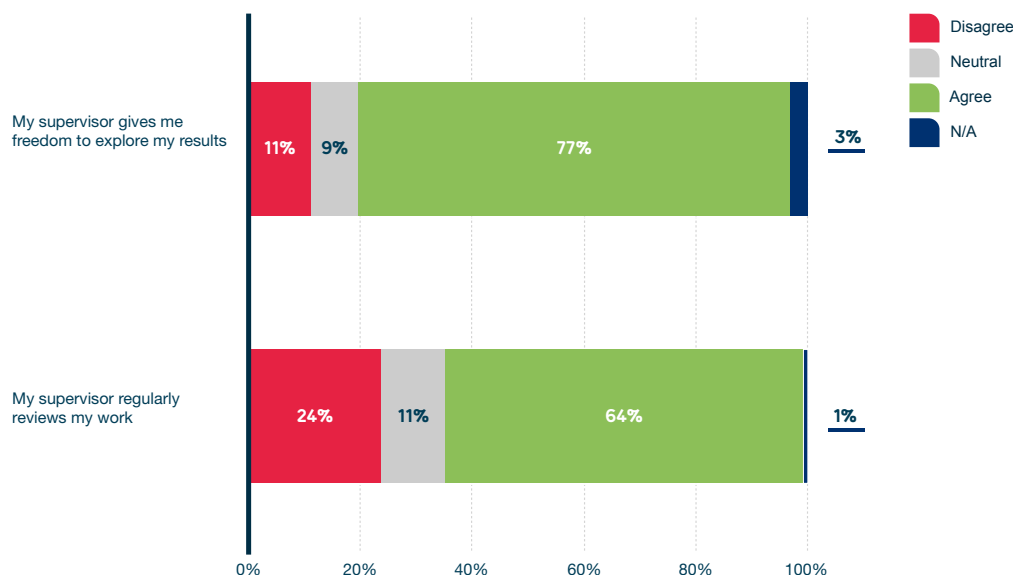
Figure 7:
Junior researchers' and students' views on supervisors

Survey, n = 1832 – junior researchers and students, UK and international.

Attitudes to management

A large majority of the respondents in managerial roles enjoyed managing people (79%), and similar proportions had confidence in their own ability to do so: 80% said that they had the knowledge and skills to manage a diverse team, and 83% that they had the confidence and skills to support others with their professional development (Figure 8).

Despite this confidence, only 48% of managers said that they had received training on managing people. And, from the point of view of the people reporting to them, only 11% of employed or student researchers said that they had been asked for feedback by their manager in the preceding year (Figure 9). In fact, they reported experiencing very few behaviours typically associated with effective management (on average 4 out of the 14 they were asked about). In the last 12 months, only half had received feedback on their performance (55%) or had a formal appraisal (49%). A quarter of junior researchers and students disagreed that their supervisors regularly reviewed their work (24%; Figure 7).

Taken together, these results suggest a disconnect between supervisors' perceptions of their management skills and the reality. We do not know what drives this difference but we reflect that managers may not know what good looks like if

they have not experienced it themselves or taken part in training, or if they do not regularly seek feedback from the people they manage.

This may be compounded by a lack of incentives for good management. Only 44% of those in managerial roles believed good management and leadership was recognised at their workplace, and few respondents overall (5%) identified promotion to a managerial role as a marker of a successful career. This is consistent with the qualitative findings: interviewees rarely mentioned management, and if they did it was normally an afterthought. Academic mid-to-late-career researchers suggested in interviews that they felt that reward and support structures in management were lacking and there were not clear markers for accurately determining their success.

It is clear that researchers would like to see improvements in how they are managed. When asked for suggestions to improve research culture, management themes were frequently mentioned, such as giving constructive feedback and help when needed. This is consistent with other recent research[3], which found that many scientists wanted their PIs to take more training courses in management, and to provide more opportunities to collect feedback from their lab groups more regularly.

Figure 8:
Managers' views on management

Survey, n = 1934 – researchers in managerial roles, UK and international.

Legend:
- Disagree
- Neutral
- Agree
- N/A

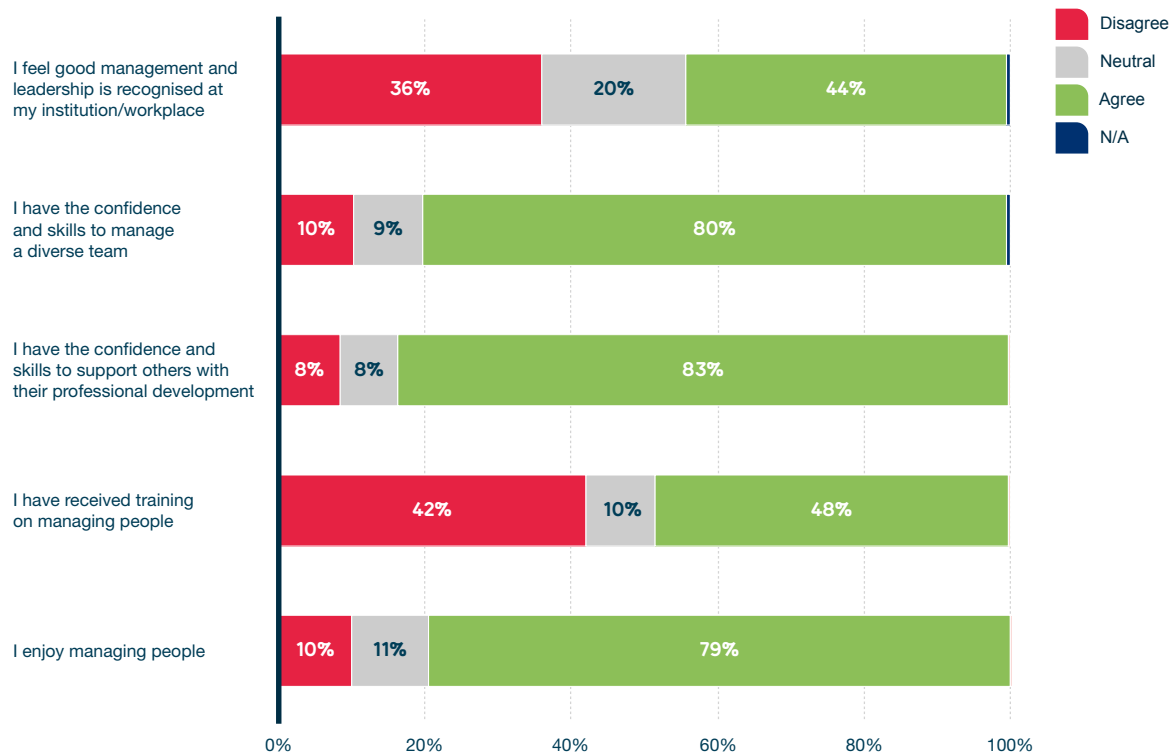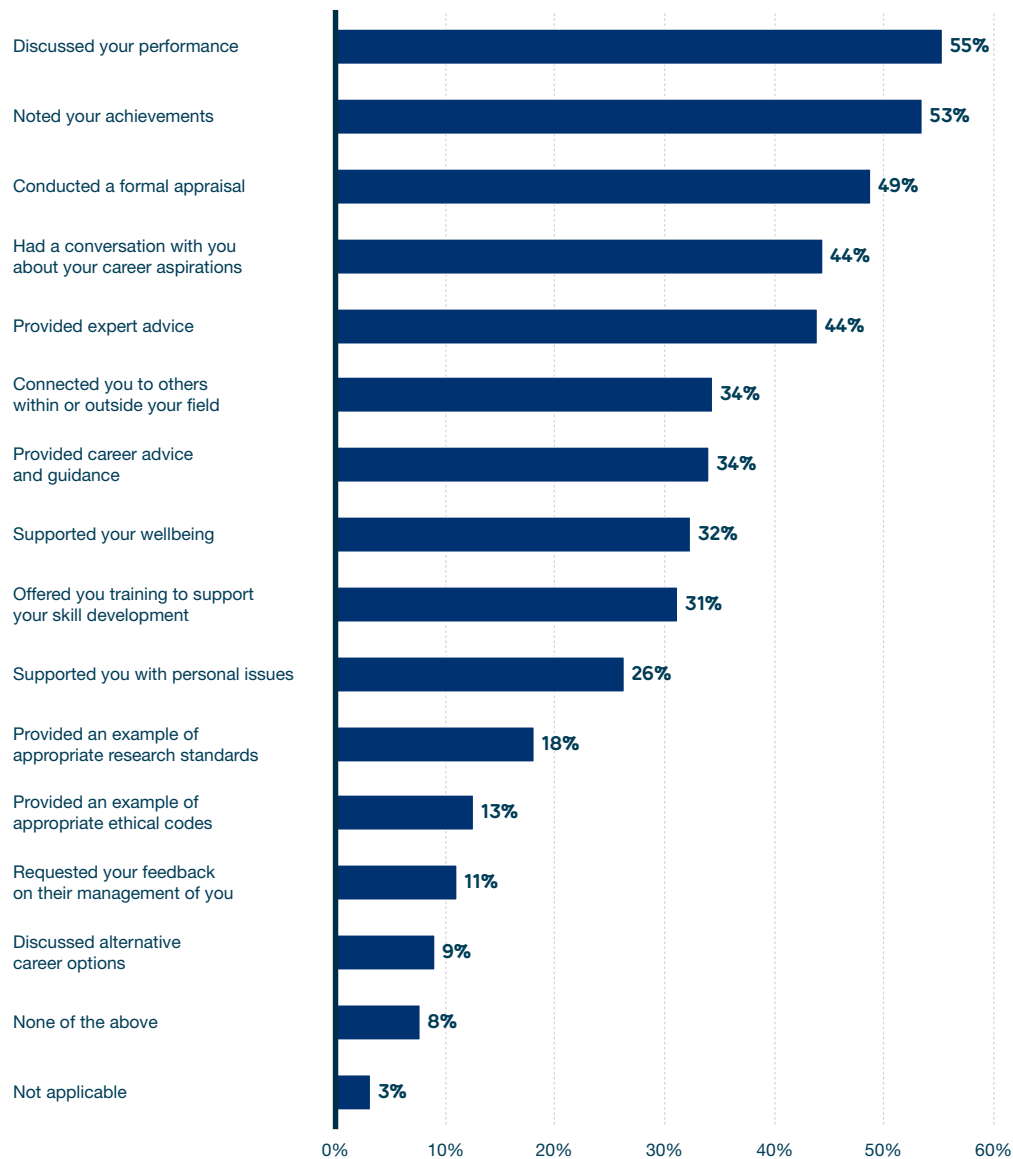| Statement	Disagree	Neutral	Agree
I feel good management and leadership is recognised at my institution/workplace	36%	20%	44%
I have the confidence and skills to manage a diverse team	10%	9%	80%
I have the confidence and skills to support others with their professional development	8%	8%	83%
I have received training on managing people	42%	10%	48%
I enjoy managing people	10%	11%	79%

Figure 9:
Researchers' experience of being managed (things their supervisor, manager or PI had done in the last 12 months)

Survey, n = 3885 – research community, UK and international, employed and students.

Category	Percentage
Discussed your performance	55%
Noted your achievements	53%
Conducted a formal appraisal	49%
Had a conversation with you about your career aspirations	44%
Provided expert advice	44%
Connected you to others within or outside your field	34%
Provided career advice and guidance	34%
Supported your wellbeing	32%
Offered you training to support your skill development	31%
Supported you with personal issues	26%
Provided an example of appropriate research standards	18%
Provided an example of appropriate ethical codes	13%
Requested your feedback on their management of you	11%
Discussed alternative career options	9%
None of the above	8%
Not applicable	3%

"It comes from the supervisor and the sort of relationship he holds with us, and I think partly that he is relatively old and his style has not changed, and he's really only interested in the publications. He's not interested in... well, for us he'll only read the parts of the thesis that might be published and so it's feeling that he's not engaged with the research, but more just the publications, which leads to a lack of feeling of support. From there, you end up in the space where you're a bit isolated and a bit, sort of, working hard but not feeling supported, and that creates the tension."

PhD student, Russell Group institution

Respondents considered that their own teams were far more successful in demonstrating these leadership characteristics than their institution or workplace as a whole. This was particularly the case for those working in academia. However, overall, even these higher team ratings fell well short of the numbers thinking that these characteristics were important. For example, only half of the respondents felt that their team was effectively creating development and career opportunities, despite almost unanimous agreement that such opportunities are important.

What does good leadership look like?

Survey respondents were asked to rate the importance of four leadership qualities on a five-point scale. A large majority rated each characteristic as important – particularly setting and upholding research conduct standards (Figure 16).

Figure 10:
Researchers' views on whether certain aspects of leadership are important, demonstrated in their team, and demonstrated in their wider workplace

Survey, n = 3885-4175 – research community, UK and international, employed and students.
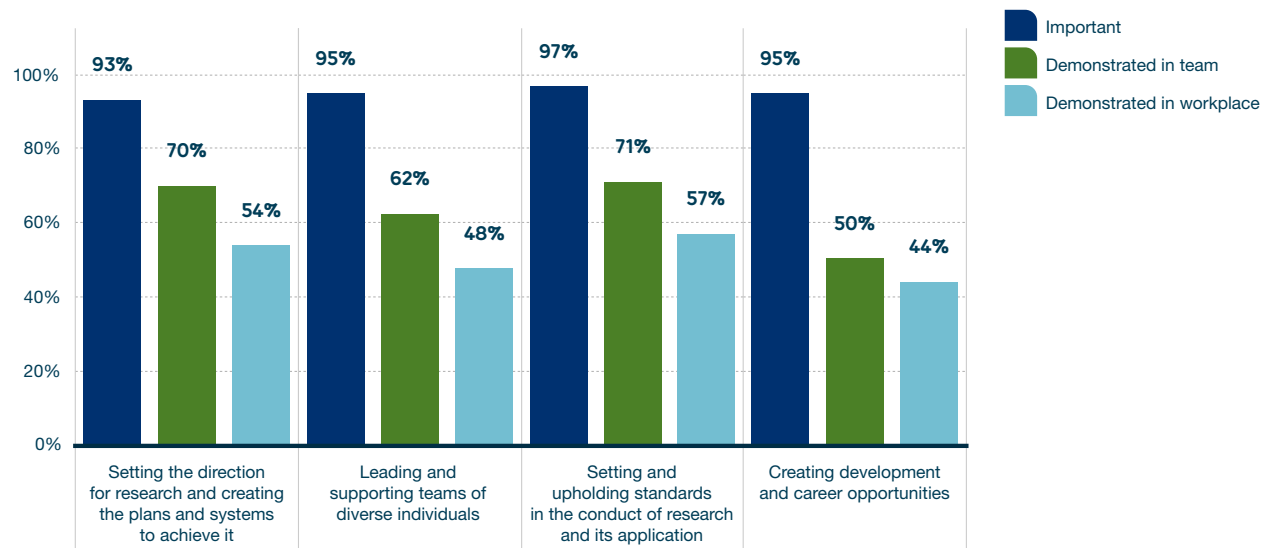
Workplace dynamics

Researchers interviewed identified numerous types of unhealthy, damaging social dynamics and harmful behaviour in workplaces, often related to failings of management and leadership. These included power imbalances and exploitation, bullying and harassment, and a sense of isolation.

These problems were seen as affecting not just researchers personally but also the quality of research output.

Patronage and power

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.

"I think it's difficult when people who are high up in the culture who have a large number of the grants have less good practice. The way that practice is dealt with is quite soft because they're valuable."

Late-career researcher, Russell Group institution

Respondents also spoke of the power senior colleagues had over the future career of junior researchers, such as being needed for references. This was again highly dependent on the individual in the position of power, but some PhD students and early-career researchers felt that there was pressure to kowtow to supervisors in order to protect their career for the future.

Similarly, there was a sense that social capital was important in establishing a successful career. A few interviewees reported instances where they felt university funding was directed towards established researchers and that those associated with these researchers benefited as a result. This dynamic was felt to lead to sycophantic behaviour – researchers feeling an incentive to 'suck up to' those more established researchers – which reinforced power imbalances in pre-existing hierarchies.

"Who gets funded, why did they get funded? Is it their project that is so significant or are they super-talented or is it because they've worked in the lab of Professor X, or is it because they are working on a research project that aligns with the views of Professor Y?"

Mid-career researcher, University Alliance institution

With the constant pressure to secure grant funding and rolling employment contracts, respondents often said that rivalry and competition over scarce resources, made working environments toxic and led to people stepping on one another to get to the top.

"I suppose it's that culture that, in an institution which ostentatiously and explicitly values research very highly, and gives credit and promotion, and glory to those who get those big grants, then it empowers people whose attitudes and personalities can be quite selfish, and unhelpful."

Late-career researcher, Russell Group institution

Bullying and harassment

Bullying and harassment came up frequently through the interviews and was experienced differently by different people. Recognising how individual these experiences are, we did not present survey respondents with a specific definition of bullying and harassment, leaving them free to interpret the terms in their own way.

Many felt bullying and harassment to be culturally systemic and 33% thought that leaders specifically often turned a blind eye to such behaviour. A sense of power imbalance was thought to contribute. When asked who the perpetrators of the bullying or harassment were, the majority (59% those who had experienced it and 60% those who had witnessed it) said that it was a supervisor or manager.

Some thought that such behaviour could be hard to accurately identify and considered there to be a grey area between a management style that appropriately challenged staff to perform well and one that was bullying:

"The problem with all of those things is that one person's bullying is another person's heavy-handed and constructive management."

Mid-career researcher, Russell Group institution

But others thought that such attitudes gave legitimacy to inaction when concerns about bullying and harassment were raised.

Survey findings indicated that 43% had experienced bullying or harassment, while 61% had witnessed it (Figure 11).

Figure 11:
Researchers who have witnessed or experienced bullying or harassment

*Survey, n = 4167-4169 – research community, UK and international.*
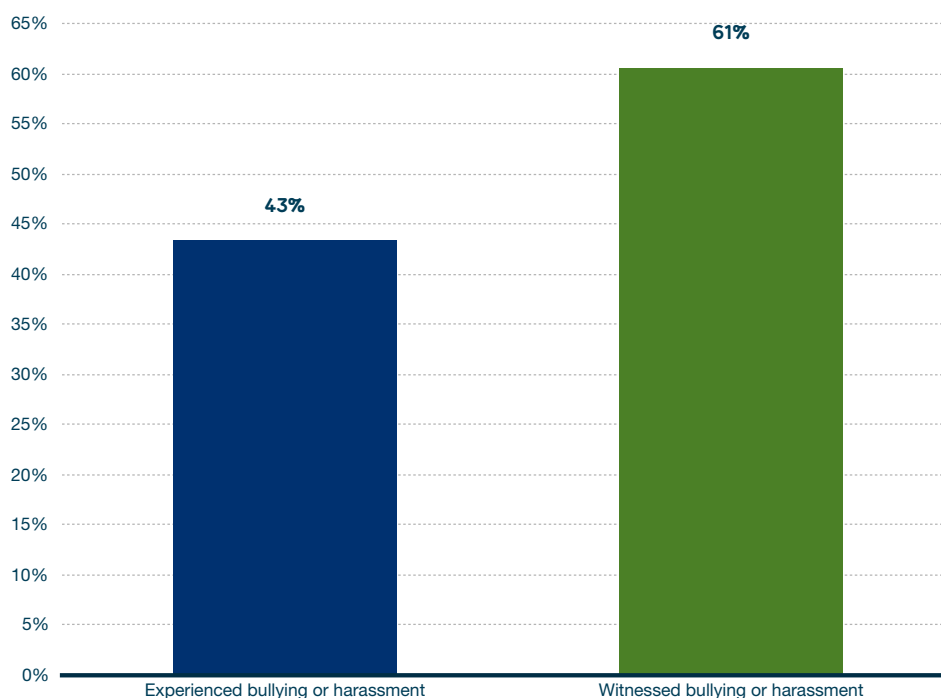
These figures rose when looking at results for those who self-identified as disabled: 62% of disabled respondents reported experiencing bullying or harassment, whereas 73% had witnessed it. Women were also more likely to have experienced bullying or harassment (49%) than men (34%).

In interviews where this behaviour was discussed, respondents recalled conduct that was humiliating, intimidating and threatening. The majority of bullying appeared to be perpetrated by those in positions of power, although it is notable that between a quarter and a third said they had experienced or witnessed bullying from peers (Figure 12).

Figure 12:
Perpetrators of bullying or harassment, as witnessed and experienced by researchers

Survey, n = 1804 – research community, UK and international.
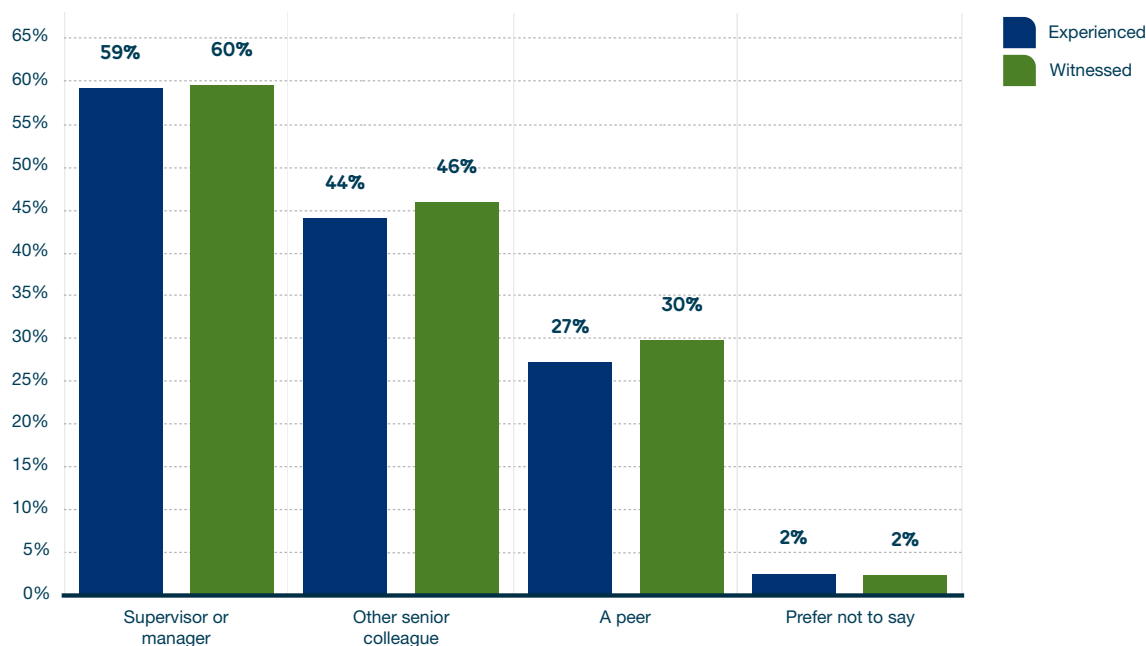
Only 37% of respondents said they would feel comfortable speaking out about bullying or harassment – and only a quarter thought it would be acted on appropriately (Figure 13). Among UK researchers, white respondents were more likely to feel comfortable speaking out than BAME respondents (38% vs 32%).

28% of all respondents said they would not feel comfortable speaking out about bullying or discrimination due to the risk of negative personal consequences, while 34% were unsure; respondents in junior roles were particularly likely to be unsure. 38% of disabled respondents said they would not feel comfortable speaking out.

In interviews many respondents said that even though they were aware of institutional procedures and protocols for reporting bullying or harassment, they might still hesitate to do so, for the following reasons:

- Bullying can be difficult to diagnose as it is a highly individualised experience with no single definition (for victims and witnesses alike).
- Challenging and aggressive behaviour can be seen as an accepted part of the culture.

- Some feared being marked as a trouble-maker, which might result in reprisals affecting their career, and they did not want to rock the boat.
- Some thought that they lacked the mental strength and ability to enter into lengthy reporting processes.
- Some lacked faith in superiors to take action.

"If I was sure that there was bullying going on, then absolutely, but I think bullying is very, very tricky to define. Yeah. I know there is bullying going on, but sometimes the people who say they're being bullied are also bullies themselves in different ways. I think it's a very sticky, very tricky concept"

Mid-career researcher, Russell Group institution

There was a strong sense in interviews that it would take extreme behaviour for individuals to stand up and report cases of poor conduct, and that current practice and policy was not conducive to reporting.

Figure 13:
Whether researchers would feel comfortable speaking out about bullying or discrimination without fear of negative personal consequences

Survey, n = 4169 – research community, UK and international.
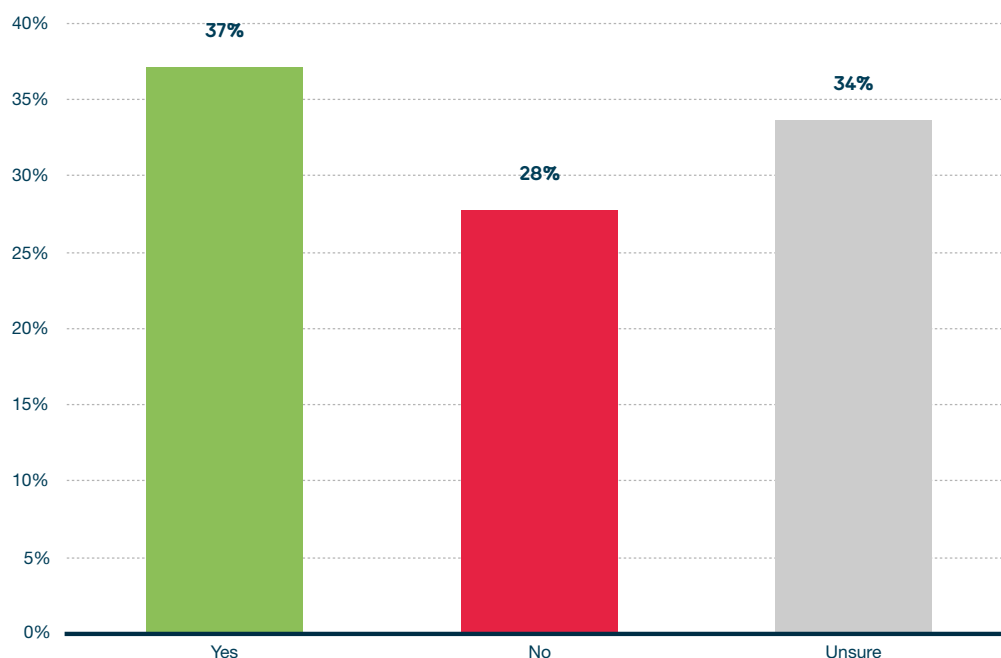
Others suggested that, while they did have faith that their institution would take action if alerted, they would still be reluctant to start a formal complaint, worrying that they would be identified by senior staff as a trouble-maker. This would not only make their day-to-day work more challenging, but could also lead to career repercussions in the future. There was a view that among small, specialist communities, reputations could travel fast.

"There are procedures in place to deal with this. Whether they always work is not the case, but this is not something for which you can ever give a generic answer. They're not always working because there are complicated power plays in play."

Mid-career researcher, Russell Group institution

This feeling of not wanting to rock the boat was pervasive, and for many it was symptomatic of a culture where bullying was tolerated as long as funding and outputs remained high. Putting your head above the parapet was generally considered highly risky in terms of career implications.

While some senior and late-career researchers were keen to stress that, for the most part, managers would respond to concerns or criticism in a decent and understanding way, younger researchers often felt the risks to be too high.
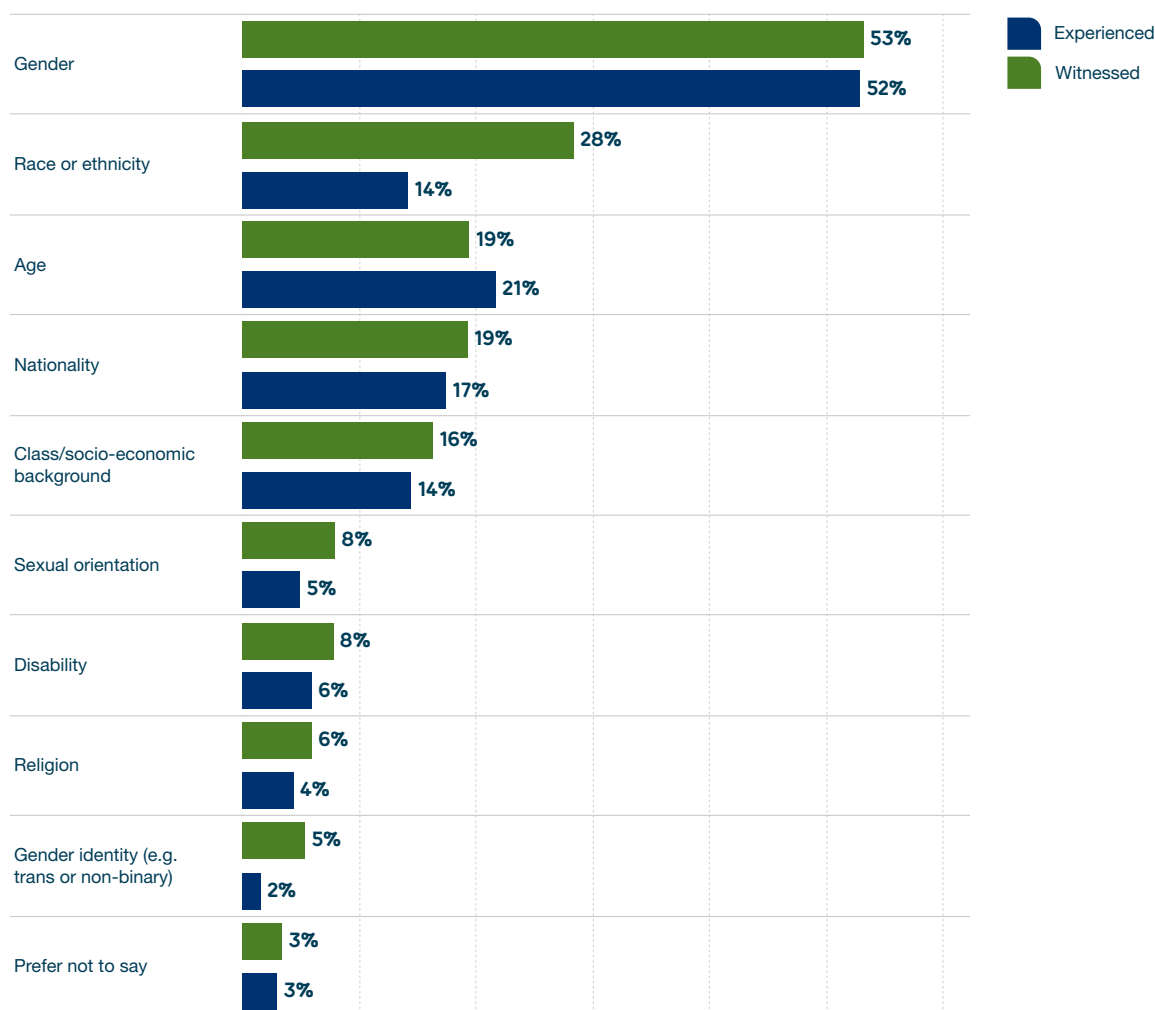
Discrimination

60% of survey respondents thought that their working environment was biased in favour of certain groups of people. Over a third of them reported experiencing discrimination during their research career, whereas 46% had witnessed it. The results were particularly high for women – with 44% having experienced discrimination and 51% witnessing it.

This was reflected in questioning about various aspects of identity that bullying, harassment and discrimination were related to: gender was by far the most common (Figure 15). Furthermore, women (22%) were less likely than men (30%) to believe their concerns relating to these issues would be acted on appropriately.

Figure 14:
What bullying/harassment/discrimination was related to, as witnessed and experienced by researchers

Survey, n = 2260-2863 – research community, UK and international.

Legend:
- Experienced (dark blue)
- Witnessed (green)

Category	Witnessed	Experienced
Gender	53%	52%
Race or ethnicity	28%	14%
Age	19%	21%
Nationality	19%	17%
Class/socio-economic background	16%	14%
Sexual orientation	8%	5%
Disability	8%	6%
Religion	6%	4%
Gender identity (e.g. trans or non-binary)	5%	2%
Prefer not to say	3%	3%

The discrimination felt by women was also seen as tied up with wider issues such as the tension between work and family demands, as women typically bear the majority of caring responsibilities. This was a concern not only for women with families but also for those considering starting one. While attitudes towards the effectiveness of gender equality initiatives – such as Athena SWAN – were mixed, many women respondents said that these had led to more small improvements to the working environment.

While things were thought to be slowly changing for the better for women in research, prejudiced ways of thinking and talking were still often common, particularly among senior management.

"I'm thinking of one individual in particular a number of years ago who commented that individual X would've done so much more if she hadn't stopped to have two babies, and to my perennial shame, I didn't call her out for that, but that kind of attitude is around in some of the higher areas."

Male late-career researcher, Russell Group institution

Many BAME respondents too felt that their experience of research culture (and their ability to succeed within it) was intrinsically worse than that of their white counterparts. 29% of UK-based BAME respondents reported experiencing race- or ethnicity-related discrimination or harassment. They also often appeared to feel less able to report bad behaviour than their white colleagues. Only 58% of UK BAME respondents agreed that they would be comfortable openly discussing biases and discrimination related to race in their working environment, while 28% said they would not. One black interviewee directly linked this to a concern that they would be less likely to be believed due to their race.

"So especially again going back to my identity as somebody that is not white, we tend to think that anything we say is not really considered on the same level of merit as if someone who is from here says the same thing."

Black late-career researcher, University Alliance institution

BAME respondents said that discrimination was often covert – taking the form of being overlooked for promotions, not being properly credited for work or mentored by senior academics, rather than obvious racist behaviour. This in turn made it more difficult for researchers to call out and report such behaviour.

Some LGBTQ+ researchers said in interviews that they didn't feel comfortable being open with colleagues about their sexual orientation. This was supported by the survey, in which many LGBTQ+ respondents (24%) said they would not feel comfortable discussing LGBTQ+ identity

discrimination in their working environment and 25% of LGBTQ+ respondents who had experienced discrimination or harassment reported that it was related to sexual orientation. LGBTQ+ researchers also gave some examples of times when they felt put in difficult circumstances as a result of their identities, such as being placed on secondments to less tolerant countries.

Respondents with disabilities reported substantial ableism within research culture. They thought it was significantly harder for disabled researchers to progress their careers and do well, for reasons including:

- a general lack of adaptations to working conditions
- the early-career requirement to win multiple short contracts (often in multiple locations)
- a perception that disabilities would make researchers more difficult to manage and less productive
- barriers in current funding processes.

In the survey, only 13% of all respondents thought that grant funding was sufficiently flexible to support career breaks or health- and disability-related leave. Among respondents identifying as disabled, this figure dropped to 6%.

We did not collect enough data to report on the experiences of researchers who may face discrimination based on multiple characteristics of their identities. Their experiences at these intersections may well be different from – and indeed worse than – those of others.

Exploitation
For many, the current systems of reward and recognition continued to lead to exploitation. 62% of survey respondents said that the system exploited their interest in the work they do – leading to a heavy workload.

"Creating a culture that kind of shows that we shouldn't have to martyr ourselves just because we like what we're doing. We should be able to be passionate and do something we love, but also not have to struggle, kill ourselves pretty much, over work, and also just get acknowledgement."

Early-career researcher, 1994 Group institution

Feelings of exploitation were often more pronounced for more established researchers, who felt increasingly required to have multiple roles and responsibilities, but early-career researchers were generally considered to be at the sharp point when it came to long hours and less palatable tasks, without any of the recognition or glory.

Early-career respondents who reported exploitation said that it was usually carried out by PIs and supervisors – although many also remarked on how their PIs often led by example. They were also keenly aware that PIs worked long hours too.

Exploitative behaviours reported by PhD students and early-career researchers included:
- being required to work long hours
- being required to do difficult or dull tasks
- having their ideas or work credited to a more senior researcher within the team
- being required to do non-research-related tasks for supervisors.

Those on short or fixed-term contracts often felt particularly vulnerable here:

"I think that people can be very exploitative of people who are on fixed-term contracts and that's a real problem and it's very difficult for people who are on fixed-term contracts to say actually, you're giving me too much work and I don't want to do this… They can just replace you if they want to."

Early-career researcher, Russell Group institution

Younger interviewees also raised concerns about credit and authorship, and not being properly valued and appreciated. In the survey, 40% of all respondents said that they had experienced issues with others taking credit for their work (Figure 15).

Figure 15:
Researchers' views on recognition and credit

Figure 16 – online survey. Agreement statement 7-point scale.
Disagree = 1-3, Neutral = 4, Agree = 5-7. Base n = 4065.

Legend: Disagree, Neutral, Agree, N/A

The work I do is fairly and adequately recognised — Disagree 26%, Neutral 13%, Agree 60%, N/A 1%

I have experienced issues with others taking credit for my work — Disagree 47%, Neutral 11%, Agree 40%, N/A 2%

Long working hours and presenteeism

High workloads and long hours appear to be viewed as part and parcel of research life, but their impact on researchers' wellbeing is felt to be worsening as the demands of jobs grow and competition increases, particularly combined with concerns about job security and inadequate support structures.

40% of full-time employed survey respondents (in either permanent or fixed-term roles) reported working an average of 41-50 hours per week, while 32% reported working more than 50 hours per week (Figure 16). Similar results were found for students – 20% reported working 51-60 hours per week and 12% over 60 hours. This corroborates the findings of a recent *Nature* survey of graduate students[10].

This environment of long hours and presenteeism was particularly problematic for individuals with care commitments. This was acknowledged as a concern across genders, but having greatest impact on women. While some researchers thought that workload and working hours were not excessive, they were in the minority, and often in very specific situations that supported such a personal view.

57% of respondents agreed that there was a long-hours working culture at their workplace, while 48% agreed that they had felt pressured to work long hours. Furthermore, 62% agreed that the system exploited their interest in the work, leading to a heavy workload.

Figure 16:
Average working week for full-time researchers

Survey, n = 2751 – research community, UK and international, full-time employed.
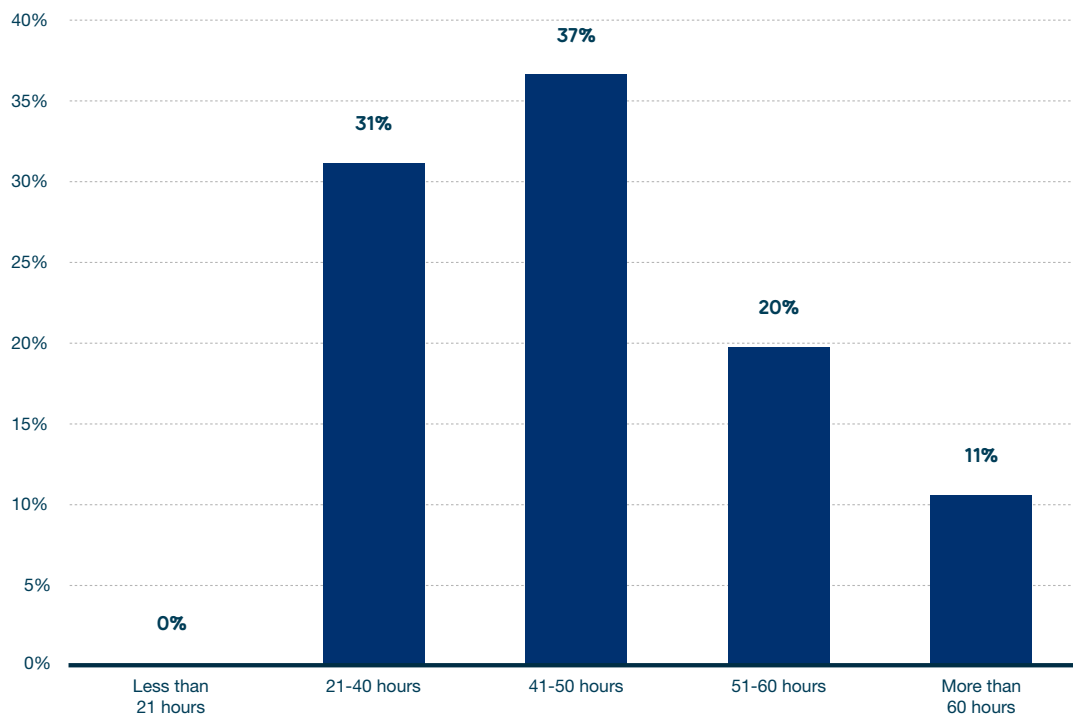
# Impact of current research culture

Impact of current research culture

Respondents rated the impact of current research culture on the quality of research, on individuals and on society. While the impact was more likely to be considered positive than negative on quality of research (by 42% to 25%) and society (by 53% to 14%), the impact on individuals was more often seen as negative (by 40% to 30%; Figure 17).

Figure 17:
Researchers' views on what effect research culture has on research quality, individuals and society

Survey, n = 4065 – research community, UK and international, excluding unemployed and retired.
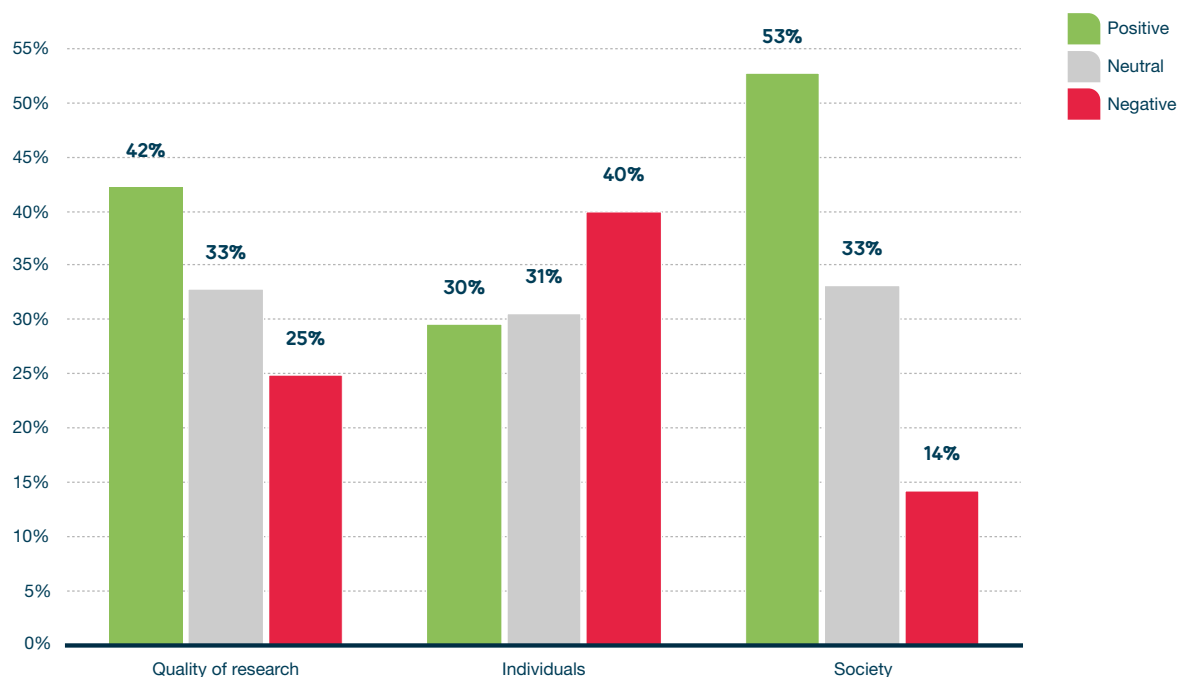
Impact on researchers

Impacts on researchers were often seen to focus on their wellbeing and ability to maintain a reasonable work-life balance. They included:

• increasing stress and anxiety, which affects general wellbeing
• increasing mental health issues
• impact on personal relationships
• isolation and loneliness.

Wellbeing, anxiety and mental health

Overall, 70% of survey respondents who were employed or students indicated they felt stressed on an average working day, with an average rating of 4.9 out of 7 (where 7 = extremely stressed). Respondents working in academia were significantly more likely to report feeling stressed on an average day than those working in industry.

34% of survey respondents reported that they had sought professional help for depression or anxiety during their research career. A further 19% wanted to seek help, but had not done so (Figure 18). Women (38%) and non-binary respondents (66%) were significantly more likely to have sought help than men (25%). LGBTQ+ respondents were more likely to have sought help than heterosexual respondents (45% vs 32%), and disabled people were more likely to have sought help than non-disabled people (68% vs 31%).

Figure 18:
Whether researchers have sought or received professional help for depression or anxiety during their research career

Survey, n = 4162 – research community, UK and international.
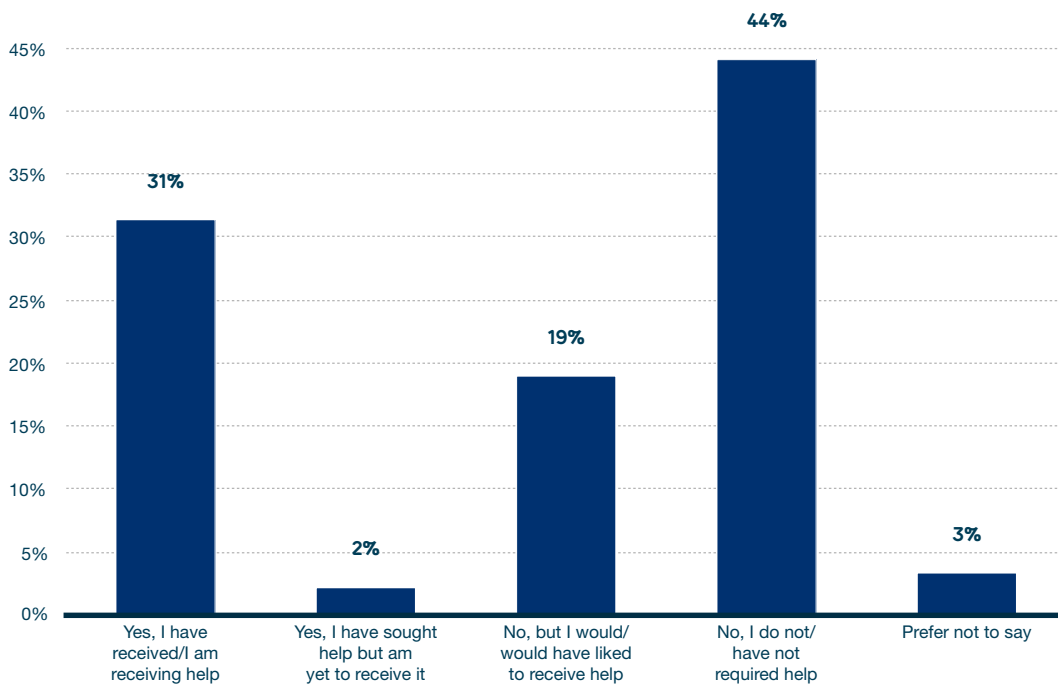
82% of respondents considered themselves resilient, but only 41% agreed they could separate work-related setbacks from their personal sense of self. This supported qualitative findings, in which respondents indicated that their careers were part of their identity.

49% agreed they had difficulty dealing with work-related stresses. Respondents who either had sought help for depression or anxiety or wanted to receive help were significantly more likely to feel this way (68%).

Workplace support was widely seen as inadequate. Only 44% of respondents agreed that their workplace offered adequate wellbeing support, and only 28% agreed that their workplace wellbeing initiatives were appropriate for their own needs. Furthermore, less than half (49%) agreed that wellbeing support was well-promoted at their workplace. This is striking, considering that 96% of respondents agreed that wellbeing is fundamental to an effective working environment (Table 6).

The common view of workplace wellbeing support as inadequate and inappropriate is concerning, especially in light of how many respondents said were having difficulty with stress and that they would have liked to receive help for depression or anxiety. Regardless of whatever problems there may be with limited availability of workplace wellbeing support, poor perceptions and poor promotion of such support could be limiting uptake and preventing researchers getting the help they need.

Furthermore, among respondents who had left the research community, two of the three commonest reasons given for their departure were a desire for a better work-life balance (37%) and a negative impact on wellbeing and mental health (34%).

A culture that neglects researchers' health, wellbeing and work-life balance may have consequences that affect the sustainability of the sector; it may reduce the quality of the research produced and lead to the loss of research talent.

Table 6:
Researchers' views on wellbeing support in their workplace

	Disagree	Agree
I believe wellbeing is fundamental to an effective working environment	1%	96%
Wellbeing support is well-promoted at my institution/workplace	30%	49%
My institution/workplace offers adequate wellbeing support	34%	44%
Genuine and effective steps are taken to support my personal wellbeing	36%	31%
My institution/workplace wellbeing initiatives are appropriate for my needs	37%	28%

Survey, n = 4065 – research community, UK and international, excluding unemployed and retired.

Impact on personal relationships

Many interviewees said that they often had to prioritise research over partners and family. For early-career researchers there were often significant conflicts between their work and personal relationships. They felt that this was made more difficult by short-term contracts and a culture of mobility in which researchers felt obliged to live and travel across the UK and abroad.

"You have to be ready to relocate, to go to a completely different country. You might need to leave behind friends or your partner, you need to change houses and everything."

PhD student, Russell Group institution

Many researchers spoke of the sacrifices they were required to make, in terms of family life and personal relationships, to advance their careers, while some shared examples of times when care commitments (e.g. children, elderly relatives, family with disabilities) effectively stalled their academic careers.

Some respondents did feel they had the balance between work and family right, but often this had taken years to achieve and had only truly come from having supportive leadership within their department and a certain level of agency to be able to say no to requests and demands.

Isolation

The factors discussed above regarding impacts on personal relationships were sometimes cited as creating a sense of isolation and loneliness. This was generally felt most keenly by those at an early stage in their career. While most accepted that much of research (particularly scientific lab work) was often inherently solitary, this was considered to be different from isolation, which was seen as more damaging, both to the quality of outputs and to the mental health and wellbeing of researchers.

Isolation presented in many forms and changed depending on the researcher's circumstances:

- **Solitary working:** Work streams are designed for individual task completion, which suits some personalities more than others.
- **Social isolation:** Increased internal competition and

reward structures (including REF) prevent a sense of community or camaraderie.
- **Personal isolation:** Lack of agency and support to raise issues when things go wrong, or when wellbeing is being compromised.

Social and personal isolation were both considered to be highly damaging, leading researchers to feel a severe sense of loneliness and involuntary separation from the community as a whole. The result of this was often that, when researchers hit difficult patches, either personally or professionally, it could be very difficult to share their troubles and receive support – creating the conditions for stress, anxiety and mental health difficulties.

This seems to be particularly apparent during PhD study. Even those with supportive supervisors often felt isolated during their PhD – unable to raise concerns with peers or supervisors and spending a lot of time working on their own and with long working hours, which prevents extra-curricular activities.

"I think a lot of people can get really bogged down in research... I mean I have actually never suffered from any sort of mental health problems, but I have felt the most isolated I ever have in my life in this PhD."

PhD student, institution not part of a mission group

While interviews identified that feelings of isolation could be particularly acute for those early in their research career, a significant proportion of both junior (70%) and senior researchers (64%) believed a career in research can be isolating and lonely.

Lack of diversity

Overall, only 40% of survey respondents agreed that action was taken in their workplace to remove barriers and provide support for underrepresented groups. Additionally, only 37% agreed that their working environment reflected the diversity within society, despite 66% agreeing that their workplace was committed to promoting diversity and equality (Table 7).

Table 7:
Researchers' views on diversity and equality in their workplace

	Disagree	Agree
My institution/workplace is committed to promoting diversity and equality	15%	66%
I have witnessed diversity and inclusion initiatives successfully in action within my working environment	25%	41%
Action is taken in my workplace to remove barriers and provide support for underrepresented groups	29%	40%
My working environment reflects the diversity within society	51%	37%

Survey, n = 4065 – research community, UK and international, excluding unemployed and retired.

The research identified that diversity was considered to be a crucial part of a positive research culture, in terms of both the workforce and the outputs. Women, disabled researchers and other members of underrepresented groups feel the effects of bad research cultures disproportionately. It is therefore essential that these groups which are hardest hit by current culture are better protected to increase their presence in the sector, protect their wellbeing, foster collegiality and build their important contributions.

Impact on research

There was a strong sense that the system is not prioritising the right attributes when assessing research quality. In part it was felt that this was driven by the ease with which things could be measured, for example measuring numbers of publications and not measuring management and leadership. The negative effects of this culture on research were often identified as:

- lower quality
- corner cutting
- superficial outputs
- replicability/reproducibility issues
- research by stealth (retrofitting to funders' criteria)
- activity focused on the applicable rather than theoretical
- interdisciplinary work not being supported
- null results going unpublished, leading to repeated studies
- conservative research
- cherry-picking results
- data massaging.

While a small number suggested that the results of this culture could be observed in the increasing number of retractions, others felt that generally the quality of outputs did not suffer, largely because researchers themselves were sacrificing their own wellbeing and personal time to ensure that the research remained solid.

Still, few doubted that working continually at this level of speed and output would diminish quality in some way. Researchers that are tired, stressed and under significant competing pressures were not thought to be able to complete their best work.

While 69% of respondents agreed that rigour of results was considered an important research outcome by their workplace, 23% of junior researchers and students revealed that they had felt pressured by their supervisor to produce a particular result. Furthermore, only 60% believed their supervisor valued negative results that don't meet an expected hypothesis and 66% would feel comfortable approaching their supervisor if they couldn't reproduce lab results (Figure 19).

Figure 19:
Junior researchers' and students' views on supervisors' attitude to results

Survey, n = 1832 – junior researchers and students, UK and international.

These results suggested integrity and conduct were not always what they should be, causing issues for quality and reproducibility. This is likely to create barriers to an open and honest environment in which researchers can share mistakes for constructive scrutiny in order to effectively progress and improve.

As mentioned previously, many felt the current reward and recognition systems continued to drive behaviours that led to researchers feeling exploited. In some cases, metrics and targets were imposed on individuals and linked to performance reviews – creating high pressure, furthering the competitive environment and increasing the likelihood of corners being cut.

"The REF system in the UK requires academics to have X papers of X quality by X time and as soon as you put that barrier on someone and the university starts snarling at you, you're inviting people to cut corners to meet those criteria."

Late-career researcher, Russell Group institution

This was reflected in the survey results, with 46% of respondents agreeing that their institution could do more to ensure research practices do not cut corners.

Many researchers (particularly early-career researchers on temporary contracts) felt career pressure to publish high volumes of academic research. The current publishing focus on high-impact journals was perceived to lead to misplaced priorities, with university metrics and funding bodies seen to value where research was published more than its quality.

A 'publish or perish' mentality was clear in the survey results, with 71% agreeing that research culture promotes quantity over quality and 32% agreeing that their workplace values speed of results over quality. Additionally, only 47% agreed that current research culture promotes high-quality research. These findings indicate the negative impact on quality when value is misplaced.

Continued focus on impact and quantity was not thought to be sustainable long-term – not only for quality and trust in research, but because of the consequent pressures placed on the individual. 65% of respondents agreed that current research culture was unsustainable long-term.

Is research integrity being upheld?
Only 46% of survey respondents agreed they had a clear understanding of what their workplace considered compromised research to be. The same percentage said they knew how to report instances of research misconduct. These results raised questions as to how quality and integrity could be achieved or maintained when only a minority are aware of relevant workplace guidelines and policies. Despite these findings, 65% of those surveyed believed high standards and integrity were valued within the

research community.

Most interviewees were able to cite initiatives in place aiming to improve research culture, but they often felt that these did not go far enough and that, crucially, there was a lack of accountability in cases of poor culture. Additionally, many sensed that it was in institutions' interests not to go looking for cases of misconduct, or in some cases to overlook them, so long as KPIs were being met.

Some felt that it would be difficult to report incidents of research misconduct if they were to occur, for reasons such as:
- lack of support from institutions for whistleblowers
- concern about being labelled a troublemaker
- pressure to adhere to the team line (threat of complicity)
- potential difficulties in identifying and judging misconduct, particularly in very technical areas of specific specialisms.

These were also apparent in the survey results, with only 47% of respondents agreeing that they would feel comfortable reporting instances of compromised research standards without fear of personal consequences.

Impact on society

Research culture was generally considered to have a positive impact on society, but there were real concerns about the sustainability of the current culture in the long term.

The most commonly identified negative impacts on society were:
- loss of talent from the sector
- lack of trust from the public
- lack of real innovation and impact in the future.

Loss of talent from the sector
While it was expected that not all PhD students and early-career researchers would remain in the sector, some interviewees suggested that talent was being lost for the wrong reasons.

37% of survey respondents said that they were considering moving to another part of the research sector within the next three years, and 36% that they were considering leaving the research sector entirely within the next three years (Table 8). Interviewees often raised loss of talent from the sector as a concern, with talented researchers already being lost due to increased pressures, instability and inflexibility within current career pathways and promotion criteria.

Table 8:
How many researchers are considering career changes

	Disagree	Agree
I am considering moving to another part of the research sector within the next 3 years (e.g. leaving academia for industry)	42%	37%
I am considering leaving the research community within the next 3 years to start a non-research role	43%	36%

Survey, n = 4125 – research community, UK and international, excluding retired.

Loss of trust from the public

A small number of interviewees indicated that they were concerned about public perceptions and general trust in research, in part driven by negative and sensationalised media headlines. Some felt that a pressure to publish (fuelled by output metrics and specifically those around public engagement) was partly responsible for increasing the media reporting of eye-catching (and sometimes conflicting) new findings.

Lack of real innovation and impact

Creativity, blue-sky thinking and theoretical research were often cited as valuable ways to develop real innovation and impact. But many interviewees were frustrated that the alignment of current culture with the impact agenda actually sought to narrow research outputs, ultimately preventing real innovation and societal impact.

Scepticism about the current research culture debate and initiatives

Scepticism about the current research culture debate and initiatives

Research culture was perceived to be a hot topic of late, and some policies on it were seen as tokenistic. For some interviewees, this was in part because it was not considered the done thing to use a particular policy. Some also suggested that previous attempts to activate a particular policy were ineffective – sometimes because they lacked the personal capacity to put a policy into action, sometimes because support services were unavailable, and sometimes because of a lack of leadership response. This generally led to a sense that while these policies were there in principle, they were less apparent in practice.

The survey also identified a clear lack of trust in workplace initiatives, and strong perceptions of tokenism as well as risks associated with speaking out. These sentiments were particularly prevalent for those who reported experiencing bullying, harassment or discrimination – suggesting first-hand negative experience of such initiatives and policies (Table 9).

A perceived lack of action from workplaces and tokenistic initiatives were likely to leave researchers feeling unsupported and, in more extreme cases, unsafe. Promotion of good practice and ethics was considered vital to ensuring good research culture. However, there was often a lack of clarity around where responsibility for this should lie.

Table 9:
Researchers' views of workplace positions on discrimination, harassment and bullying

	Disagree	Agree
My institution/workplace enacts a zero-tolerance policy against discrimination	24%	42%
I have witnessed diversity and inclusion initiatives successfully in action within my working environment	25%	41%
I think my institution/workplace's diversity and inclusion initiatives are tokenistic	30%	41%
Raising concerns about discrimination or harassment would be damaging for my career	37%	40%
The leaders in my workplace turn a blind eye to bullying and harassment	47%	33%
The leaders in my workplace turn a blind eye to discrimination	51%	26%

Survey, n = 4065 – research community, UK and international, excluding unemployed and retired.

Who should drive change in research culture?

While survey respondents felt that responsibility for changing research culture lay in many places throughout the sector, a majority agreed that individual researchers themselves had a role to play (Figure 20).

On the question of whether individuals were able to make such positive change, those in industry were slightly more likely to agree than those in academia (73% vs 69%), and those at late career stages were more likely to agree than those at entry level (81% vs 64%).

Figure 20:
How much responsibility researchers think different groups should have for changing research culture

Survey, n = 4079-4110 – research community, UK and international.
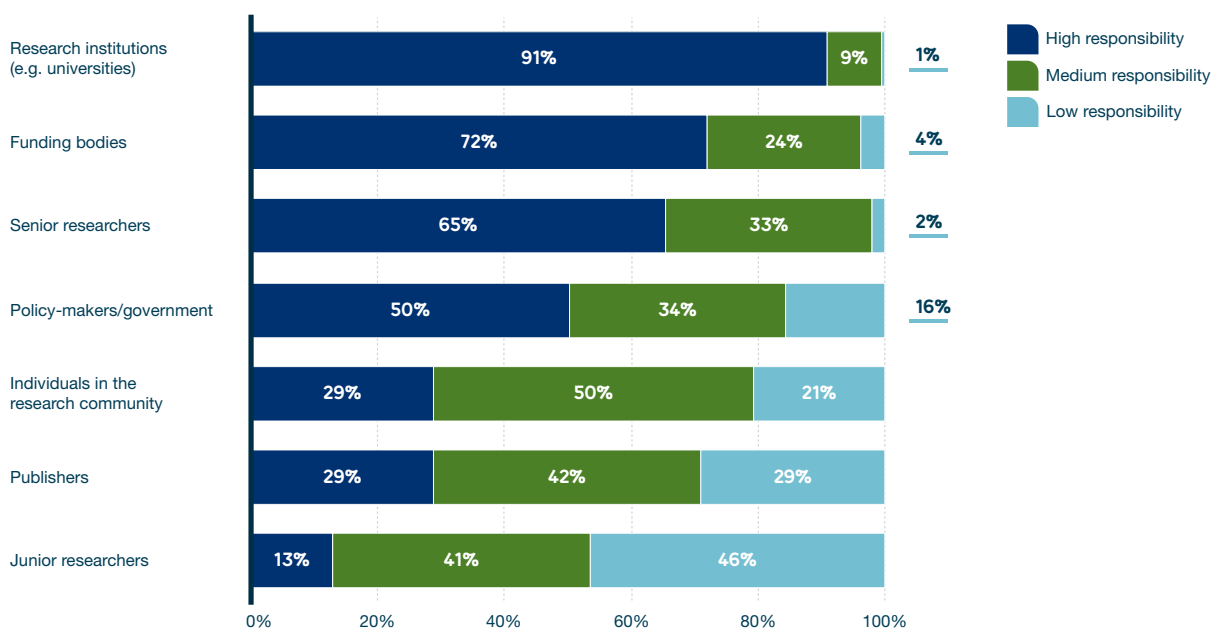
Researchers most commonly felt that individuals could act by setting an example: embodying the values of research integrity could encourage other researchers to do the same. Reminiscent of findings related to encouraging change on a small scale within teams and on speaking up about wrongdoing, it was often thought that senior researchers were more able to do this than junior researchers. 15% of the respondents who believed that individuals could make a change said they did not know what actions they could take.

Findings also revealed that respondents tended to think that research culture was better than average at their own workplace, with conduct worse "elsewhere". In survey responses 20% thought their workplace was worse and 48% better. This suggested that problems were often seen as wider issues, with accountability hard to establish.

Ultimately, it was recognised that change would need to happen at all levels to be effective. While leaders and funding bodies were likely to hold greater influencing power, change would also need to be demonstrated at the peer-to-peer level to shift everyday culture.

Ideas for a
better future

Ideas for a better future

Most respondents felt that UK research is still producing high-quality outputs that benefit society. Life as a researcher was not expected to be the same as that in other careers, and researchers appreciated they had taken on a vocation that is highly competitive and requires significant commitment of time and energy.

This report highlights many areas in which research culture is poor – resulting in harm both to individual researchers and to the quality of research produced, particularly in the longer term. This was particularly the case for those working in the university sector, where conflicting pressures appeared to be more intense.

Furthermore, many felt that research culture is losing its historical positives for them, such as autonomy, creativity and collaboration, with many expressing concerns about the impact this might have on the quality of UK research in the future.

Experiences of research culture are highly individualised, and it is important to remember that respondents often saw culture through their own lens – reflecting their own backgrounds, experiences and biases. These differences may make it harder to build a more inclusive culture – but diversity of experience and views was also regularly cited as critical for a good culture in the future.

What does good culture look like?

Despite huge variation in perception and experience, there was generally agreement about the characteristics that are needed for positive research culture. The most common suggestions were:

- diversity is encouraged and celebrated
- collaboration is encouraged and celebrated
- individual contributions feel valuable and valued
- individuals feel supported
- individuals feel safe and secure
- leadership is transparent and open
- time to think is valued.

When these key foundations were in place, researchers seemed more able to withstand the more challenging aspects of working culture and flourish despite them.

When asked to provide three words that described an ideal research culture (Figure 21), respondents most commonly said supportive (20%), collaborative (17%) and creative (6%). In comparison, only 9% of respondents described the current culture as supportive, 16% described it as collaborative and 5% described it as creative or innovative based on their experiences.

Figure 21:
Words that researchers would use to describe an ideal research culture

Survey, n = 4079-4110 – research community, UK and international.

Mention of competitiveness was notably absent from respondents' words to describe an ideal research culture. While some might relish healthy competition, it seems that the word's connotations are currently negative.

Potential solutions

Many ways to improve research culture were suggested, targeting a broad range of areas. These included:

Changes to funding structures:
- Anonymous grant submissions.
- Padding on short grant contracts to allow time for quality control.
- Specific funding for groups more likely to experience discrimination (such as women, BAME researchers and those with disabilities or long-term health conditions).
- More diversity on funding panels.
- Greater availability of smaller funding awards.
- Simple applications with quick turnarounds (two-phase application process).

More support for early-career researchers:
- Programmes to help researchers get started in their careers – including training and continued mentoring.
- Specific funding for early-career researchers, like seed funding.
- Rewards for those who don't publish – rewarding ideas as well as the final output.
- Events to bring researchers together – allowing them to make further contacts.
- Creating clearer road maps of opportunities.

Rethinking funding criteria and incentives:
- Shift away from the focus on rewarding publications and impact, to seek to motivate good research culture and rigorous ethics.
- Set a precedent by assessing the health of a research environment, the satisfaction of their staff and the rigour of their work prior to allocating funding.
- Take into consideration research findings that may not have been published but exemplified high ethical standards.

Training to help researchers promote good culture through managing and mentoring:
- Set up courses led by experienced academics, with proven success in mentoring early-career researchers.
- Draw on best practice from other sectors (including industry and large corporates).
- Offer advice on how to manage a diverse team.
- Help develop understanding of how to recognise and respond to mental health issues.
- Aid leaders to manage finances effectively.
- Champion mentorship and demonstrate what good mentoring looks like.

Identify bad behaviour in order to deter it:
- Give staff surveys more power – using them more effectively to play a part in identifying problems and highlighting where managers are not supporting staff.
- Use 360° anonymous appraisals and do not base promotion merely on publication.
- Have zero tolerance of abuse in the workplace, including refusal to fund individuals/institutions with poor culture and rewarding those demonstrating good practice.

Ways for researchers to raise concerns without fear of reprisals or prejudice:
- Offer an impartial space to raise concerns for those fearing reprisals for reporting poor behaviour.
- Set up a new ombudsman for research culture, allowing concerns to be collected and considered carefully and impartially (although processes and powers would need to be able to take into account nuance and grey areas).
- Encourage institutions to set up spaces where concerns could be raised and investigated without prejudice (although trust in the institution may need to increase considerably first).
- Encourage funders to provide spaces for research team members to directly report concerns, or introduce final feedback forms covering specifics of the culture.

Promoting good practice:
- Provide the research community with examples of what good culture looks like, in order to help institutions and individuals make real change.
- Build on current good practice guidelines from bodies such as Wellcome, REF and the Royal Society which touch on research culture, creating guidelines with a more specific focus.
- Establish research culture "cafes" to share best practice[11], offering researchers time and space to actively consider culture and the personal responsibility they have to make positive changes (no matter how small).
- Offering a charter for research culture (similar to Athena SWAN), incentivising institutions to actually embed good practice.

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