A Review of Barriers Women Face in Research Funding Processes in the UK

Julie M. Jebsen[a], Cathy Abbott[b], Rachel Oliver[c], Erinma Ochu[d], Izzy Jayasinghe[e], and Caroline Gauchotte-Lindsay[f]

[a]University of Wolverhampton, [b]University of Edinburgh, [c]University of Cambridge, University of Reading, [e]University of Sheffield, and [f]University of Glasgow.

Correspondence address:

Julie Jebsen
Institute of Human Science
Faculty of Education, Health and Wellbeing
University of Wolverhampton

MC118
Millennium City (MC) Building
Wulfruna street
Wolverhampton
WV1 1LY
01902 325507
j.m.jebsen@wlv.ac.uk

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Abstract

In the UK, women are underrepresented at the highest levels of academia in all subjects but Nursing, but particularly in Science, Technology, Engineering, and Math (STEM) (Advance HE, 2018). Research, and the funding that enables research, is a critical point of career progression. Women apply less often and for lower amounts of funding, and are less successful than male colleagues (UK Research and Innovation, 2018). The common explanations given that women have to apply for more and more often do not sufficiently explain the gender disparities in research funding. This review critically evaluates some of the barriers and biases women face in the process of applying for research funding in the UK. Institutional barriers such as women carrying a heavier burden of teaching and academic citizenship, and lack of support, mentoring and visible role models impact on women's success in securing research funding. Systematic barriers exist at many levels, particularly for parents and carers. These range from the impact of taking maternity leave, to grant deadlines falling during or shortly after school holidays and the requirement to travel for interviews. The focus on track record in grant review, biased language used in evaluation materials and unconscious biases on the part of reviewers further impact differentially on women. Lack of freedom to travel, and thus to network or attend conferences can result in exclusion from multi-national networks and the ability of parents to demonstrate an international profile. The policies and practices that impact on the ability of women to secure research funding must be reviewed and addressed with urgency for the benefit of the research community as a whole.

Introduction

Women are underrepresented in Science, Technology, Engineering, and Mathematics (STEM), with increasingly lower representation from school through academic careers to Professorial level (Blickenstaff, 2005). Eagly and Carli (2007) argues that addressing the problem of recruiting, retaining and progressing women at all career levels in STEM is important as a moral value, and beyond that, increasing women's participation in a labour market dominated by men could be worth between £15-23 billion (Women and Work Commission, 2009) to the UK economy. Meta-analyses of evidence that women do not succeed to the same extent and pace as their male equivalents show that this is not due to gender differences in intelligence or ability (Hyde, 2005; Hyde, 2016) or even, contrary to popular belief, to motherhood, but rather that the difference in academic career progression between men and women is a result of socially interpreted, cultural differences (Kandola & Kandola, 2013; Santos & Dang Van Phu, 2019; Peel, Schlachta, & Alkhamesi, 2018; Thanacoody, Bartram, Berker, & Jacobs, 2006). These differences become particularly acute for black and ethnic minority women (Jones 2006, Rollock, 2019; Royal Society, 2014), for those with disabilities (Brown & Leigh, 2018; Royal Society, 2014), and those who identify as LGBTQ+ (Gibney, 2019; Wellcome, 2020) as these marginalised groups face further systemic discrimination and career attainment gaps. We note in particular that there is very little data available in the literature or elsehwere on funding disparities faced by those whose gender identities are non-binary, or those who are trans. Intersectionality is a term which was originally coined to describe the ways in which race, gender and class combine to multiply barriers in the workplace for black, working class women (Crenshaw, 1989). This extends to academia and STEM in particular. For instance, in 2019, only 35 out 19,285 UK professors were Black women (as identified by The Higher Education Statistics Agency - HESA). Indeed black women are three times less likely to be professor than white women and half as likely as black men, demonstrating the compounding effects of intersectionality.

The aim of this literature review is to critically assess the systemic barriers and biases that affect women in the processes relating to applying for and obtaining research funding, a key factor in career progression in STEM academia. Taking an intersectional approach to examining these barriers allows us to take into account how 'race/ethnicity, class, gender, sexuality, religion, citizenship, ability, and age', shapes the 'structural dynamics of power and inequality', including within academia (Tefera, Powers & Fischman, 2018).

Gender differences in research funding

Research on gender disparities in STEM research funding applications and awards indicate that women apply less often and for lower sums, and are less successful and awarded less of the requested sum than their male colleagues (Eloy et al., 2013; Waisbren et al., 2008). Across career stages, women are listed as Principal Investigators (PIs) less often than men (Ley & Hamilton, 2008). In the UK, a Freedom of Information request reported by the Guardian showed that in 2016-2017 (Weale & Barr, 2018), fewer than 7% of all Engineering and Physical Sciences Research Council (EPSRC) research grants went to teams led by women, with the average size of grants to women being less than 40% than that of their male counterparts. This culminated in £944m awarded to projects led by men compared to £69m to projects led by women. EPSRC explain these numbers as being skewed because of a number of very large grants awarded to male principal investigators (Weale & Barr, 2018).

Further reports indicate that the notion that gender differences in research grants can be explained by women applying less often and for smaller amounts of money in fact overestimates the proportion of funding disparities that can be explained by female application rates. When total numbers are reported yearly by UK Research and Innovation (UKRI), for EPSRC in particular, the data suggest that 1) the proportion of women applying is close to the equivalent academic

population in that subject (as identified by The Higher Education Statistics Agency - HESA) for a given field and 2) success rates for men and women are equivalent. However, this way of reporting data can conceal the discrepancies in terms of amount of funding and prestige of grant. For instance, over the last three reported years of programme grants, a scheme described by EPSRC as awarded to world-leading research groups to address significant major research challenges (EPSRC, 2015, 2016 and 2017), only two of the 41 awards were made to women PIs: 2017, 51.3m programme grant funding awarded in total, 1 woman/10 awardees, 11% of the funding; 2016, 94.3 m total 1/19, 4%; 2015 56.5m 0/12, 0%. This is a real concern as the direction of travel of funding strategy has been towards more large projects and fewer smaller "responsive mode" activities (i.e. projects instigated purely by the PI).

Whilst the situation in medical and biological sciences research councils is less dire, there is still real cause for concern given the healthier gender balance (Royal Society, 2014) at all early career stages. Data for grant applications to the Biotechnology and Biological Sciences Research Council (BBSRC) in 2016-17 show that only 26% of applications and only 23.5% of grants awarded were led by women, whereas (according to BBSRC's interpretation of HESA data) the applicant pool is around 37% women (UK Research and Innovation, 2018). In 2017/2018, only 9 out of 50 applicants to the prestigious Medical Research Council program grants were women. These are the few examples that the authors were able to gather based on data published by funders. The lack of granularity of these data does not allow analysis of intersectional effects but even larger funding disparities have been reported for other marginalised groups, notably BAME STEM academics, and cumulative effects are certainly expected (UKRI, 2020).

Bias in research funding awards is detrimental to individuals because it constrains the research they can engage in, and their career progression and longevity, with grant income being a key selection criterion for senior roles in academia (Lopez et al., 2014). There is an acknowledged "Matthew effect", where past success is a positive indicator for future success

(Merton, 1968), in academic grant funding (Bol, de Vaan, & van de Rijt, 2018) that further penalise disadvantaged groups. Organisations and society also lose out when research funding is not awarded more fairly and broadly because a big section of the potential population that could contribute to research and innovation are denied the opportunity. Bias towards researchers who are typically underrepresented in grant winners is identified as resulting in critical loss in productivity and innovation (Kumar, 2014). Diversity enhances creativity, and encourages the search for original information and perspectives, which in turn leads to better decision making and problem solving (Phillips et al., 2014). Saxena (2014) argues that diversity is a strength for any organisation, and if managed properly, can increase the productivity of that organisation.

Institutional Barriers to applying for funding

The first hurdle in receiving funding is making an application. There is much anecdotal evidence that women are more likely to be discouraged to apply to large schemes by their line manager/ research Deans, but in a more tangible way there are also demonstrable institutional barriers to application.

Firstly, scientists who are women in the UK reported a heavier teaching load than their male counterparts, and also dedicate more time to outreach (Gibney, 2017). They also shoulder more of the citizenship and administration load (Guarino & Borden, 2017). The consequences of this is that they have less time to dedicate to research. For example, academic women carry a disproportionately heavy load of Equality, Diversity and Inclusion (EDI) work and other service tasks that can be considered ‘token’ service. By carrying workloads with more service tasks, women have less time to dedicate to bidding for research funding, further endangering their chances of funding success (Misra, Lundquist, & Templer, 2012; Mitchell & Hesli, 2013). This effect is amplified as women progress in seniority (if they do), as lower numbers of senior female

academics means that they will sit on more committees than men when there is a deliberate effort in balancing gender representation (Hyde, 2017). In turn, lower success in securing funding leads to an increased teaching and citizenship load (Weale & Barr, 2019), perpetuating the downward spiral effect that prevents women from securing grant funding. Here again, women at intersections suffer heightened effects; for instance, black women have reported both heavy workload and heightened levels of structiny compared to their white counterparts which are further barriers to developing research capacity (Jones 2006; Stockfelt, 2018; Wright et al., 2007).

Secondly, internal review systems can act as a direct barrier for women applying for funding but are difficult to evidence. Many universities operate triage systems, sometimes instigated by the funding scheme (e.g. the UKRI Future Leader Fellowship), to pre-select the proposals for submission. Whilst most grant applications require some institutional sign-off, the practice of internal triage is particularly important where letters of institutional support (often high level) are required. This inevitably requires both self advocacy and institutional support. Imposter syndrome, "the internal experience in which the individual believes they are not really bright, despite being a high achiever and of high intellect" (Howe-Walsh & Turnbull, 2016, p. 418) is a recognised phenomenon in the highly competitive academic environment and is pervasive amongst women in STEM (Bravata et al., 2020; Howe-Walsh & Turnbull, 2016; Vaughn, Taasoobshirazi, & Johnson, 2020) and is believed to be associated with their othering in male dominated environments. Thus it is not unreasonable to assume that imposter syndrome makes self advocacy and self promotion more challenging. Even when they do advocate for themselves, women are likely to encounter benevolent sexism, notably in the form of protective paternalism when men want to spare women disappointment of a funding rejection (Maldonado & Draeger, 2017). It is all too easy for Department Heads, for example, to tell applicants that they are "not quite ready" to apply for Fellowships. When the Investigator Awards replaced the previous Wellcome project grants in 2010 with a more minimal application (focused on past record rather than future plans)

that nevertheless required high level HEI support and an interview, the proportion of women achieving an award over the first 3 years was ~16%, as compared with ~26% of project grant awards being made to women over the previous 3 years (Wellcome, 2018).

Generally, in male-dominated environments, women report being less supported in their research by their institutes, schools and faculties (Moss-Racussin et al., 2012; Shen, 2013). Women in Science and Engineering also report a lesser sense of inclusion and helpfulness from permanent staff in their departments, and less recognition for their accomplishments (Fox, 2010). Compoundingly, academics with health conditions identify concerns that their academic achievements are judged through the lens of their disability (Brown and Leigh, 2018) while BAME academics describe negative assumptions being made on their abilities (Wright et al, 2007; Rollock 2019). Finally, beyond lack of support and recognition, transgender women face, in the STEM academic work place, the largest amount of offensive, intimidating, exclusionary and harassing behavious of all LGBTQ+ groups, with 20% regularly considering leaving the profession (Institute of Physics, Royal Astronomical Society, & Royal Society of Chemistry, 2019).

A lack of visible, senior, female role models and mentors can also be interpreted as a longstanding barrier for junior women (Levinson, Kaufman, Clark, & Tolle, 1991; Vokić, Obadić, & Ćorić, 2019) and the gender disparity in funding is at risk of becoming self-fulfilling. Essentially, environments that are not actively inclusive, do not nurture women's ambitions actively and overlook the profound additional barriers to people at the intersections of marginalised groups, effectively reduce the probability of women securing grant funding.

Systemic barriers in the funding process

It is difficult to track why, how and by whom the established process of grant review was designed but it does not appear that it was evidence-based to reduce or even eliminate bias. Indeed, one might argue that, to the contrary, the processes effectively favour a demographic of white cisgender able-bodied men who are not primary carers for children or elderly parents; the demographic that once completely dominated academia and is still the majority. The move by funders over the past 10 years towards giving more money to fewer investigators to support "the brightest researchers with the best ideas" (Chemistry & Industry, 2011) is further advantaging this demographic as they benefit from overt and covert biases.

Funding the "brightest researchers", "applicants who are recognised to be of the highest standard relative to their career stage and on a trajectory to become world-class" (UKRI, n.d.) puts an important emphasis on the track record of applicants. This emphasis on the track record in grant review has been identified as a significant stumbling block to women seeking funding, as highlighted by focus groups discussing challenges faced by women in applying for and being successful in obtaining BBSRC grant funding (McAllister, Juillerat & Hunet, 2015). Track record is a vessel for bias. In a review of the application and materials of three large grant calls, van der Lee and Ellemers (2015) observed that while the assessment of the quality of the proposals were not statistically significant between men and women, the higher success rate for men was explained by their statistically higher score for the "quality of the researchers" criterion. Based on previous studies, van der Lee and Ellemers (2015) likely discounted a real gender difference in productivity (such as number of publications and citations) and attributed the disparity to implicit bias brought on by heuristic approaches in reviewing large numbers of grant and possibly the use of masculine-gendered language in instruction and evaluation sheets, which were easier to match to stereotypical qualities of male applicants. Indeed, 20.8% of funding documents analysed by Lee and Ellemers used gender exclusive language such as only using pronoun referring to one gender ("he") rather than gender inclusive use of pronouns ("he or she", or more inclusively "they") and 86.2%

emphasised masculine-gendered words such as “challenging”, “independent”, and “adventurous” rather than feminine-gendered words such as “responsible”, “organised”, or “thorough”. Witteman, Hendricks, Straus, and Tannenbaum (2019) also found that when women are listed as PIs, they are less likely to be successful, whilst being more likely to be evaluated on the basis of their personal record, rather than their proposed research. When it comes to people reviewing academic performance and standards, the literature is rich with examples of implicit (Frith and Frith, 2008) gender biases, ranging from students’ bias towards female teaching staff (Boring, 2017) to Professors’ biased evaluations of post-docs (Eaton, Saunders, Jacobson, & West, 2019), that corroborate these findings for grant evaluation.

However, it must also be acknowledged that track record evaluation perpetuates the effects of bias that starts well before grant application (Knobloch-Westerwick et al., 2013) and therefore it is possible that at equivalent career stage (year post-PhD), women’s track records are less attractive. Systemic and implicit biases mean that women face more barriers in developing their track record than men (Forret & Dougherty, 2004). For instance, women are less likely to have been trained in elite laboratories, especially those led by men (Sheltzer & Smith, 2014), are less likely to receive support and mentoring (Moss-Racussin et al., 2012; Shen, 2013, Eaton, Saunders, Jacobson, & West, 2019) and women-led publications take longer to publish (Hengel, 2017; Day, Corbet and Boyle, 2020) and are less cited (Lariviere et al., 2013). International collaborations and their outputs are also strongly associated with higher impact and citations (Lariviere et al., 2013) and therefore stronger track records, yet women are less likely to co-author such publications in science. This is partly because women are PIs less often, but also because male PIs are less likely to publish with female authors (Salerno, Páez-Vacas, Guayasamin, & Stynoski, 2020). Industrial collaboration is also strongly correlated with research impact and thus international profile; however, female academics are likely to have fewer industrial partners, particularly in male dominated sectors (Tartari & Salter, 2015). Evidence strongly suggests not that women collaborate

less, but that they collaborate more locally and less strategically and are held back by gendered institutional barriers (Fox et al., 2016; Zippel, 2018). The existence of 'male networks' in academia and industry for STEM disciplines (Howe-Walsh & Turnbull, 2016) are more difficult for women to break into, particularly as they are supported by a masculine culture of business travel. Research indicates that regardless of family situation, men travel considerably more than women for work, and that men's career progression benefits from work travelling (Gustafson, 2006). In academia, international travelling, until the 2020 COVID-19 pandemic and despite a pressing environmental agenda, was widely perceived as the only way to build or as an evidence of international recognition (Eriksson et al, 2020; Storme, Beaverstock, Derudder, Faulconbridge, & Witlox, 2013, Storme, Faulconbridge, Beaverstock, Derudder, & Witlox 2016). Globally, female academics are less likely to be invited as speakers or panel members at conferences (Casadevall & Handelsman, 2014; Yong, 2017; Morehouse, Volkova, & Fierascu, 2018). In 2015, Greg Martin (Bacon, 2015) developed a formula for calculating the probability of getting an all-male panel. Although all-male panels are common in STEM conferences, particularly in subjects where women are the most underrepresented such as Mathematics, Greg Martin argues that if speakers were chosen in a way which gender was not a factor, the probability of having no female speakers or panel members is less than 5% (Bacon, 2015). Women in academia therefore have a harder time raising their "international profiles", with women at the intersection with other marginalised groups facing the greatest challenges; this indirectly skews gender representation in grant awardees (particularly for large grants) as it is an important criterion of evaluation.

Track record evaluation is also perceived to penalise researchers with "non-traditional" career paths (McAllister, Juillerat & Hunet, 2015). such as long-term sick leave, discipline-hopping, parental leave, flexible, and part-time working, whose track record and outputs may appear patchy or limited. Women, Black people and academics with disabilities are more likely to be on short-term contracts, increasing the need for discipline-hopping to secure employment, or to

work part-time for health-related reasons or due to caring responsibilities. Although parental leave is usually an option for both parents, in the UK, women take the most, and are increasingly taking more parental leave. Statistics from the last six years show that less than a third of eligible new fathers use their paternity leave in the UK (Taylor, 2019). The policy of shared parental leave is well-meaning, but in the context of a gig economy where fewer men take up the opportunity of parental leave, the gap between men and women taking time off for the birth of a child is widening (Petter, 2019). This leaves obvious gaps in CV, breaks up continuation of projects, networks, and makes it harder to stay updated on developments in the field. Inevitably, there are lulls in publishing papers when on maternity leave. (We note here that lulls occurring due to leave associated with pregnancy and birth can also occur in the CVs of trans men. Here, and in subsequent discussions of issues affecting parents - and most particularly mothers, we note a paucity of available literature on the experiences of trans men who undergo pregnancy, and a need for further understanding of the issues affecting this particularly marginalised group). Though explicit statements on CVs explaining any gaps can help, grants that emphasise track records in the selection criteria still place an expectation for track records and outputs to be competitive with those of men with no CV gaps. Confoundingly, a large scale study on economists in the US showed that men who took parental leave used the time to publish their research and raise their profile while women truly put their career on hold (Antecol, Bedard, & Stearns, 2016). The effect of motherhood on women's academic careers does not stop at the end of maternity leave. Recent research shows that in general mothers suffer disproportionate earning penalties that can persist for up to 20 years after the birth of the first child (Kleven et al., 2019), and the motherhood penalty is a well-documented in academia (Mason, Wolfinger, & Goulden, 2013) and in STEM fields (Cech & Blair-Loy, 2019). In households where one man and one woman hold parental responsibility, women still take on the larger share of caring for children with a result that they are more likely to move to part-time work once they have a child and have shorter working days.

Beyond motherhood, women are also more likely to care for elderly or disabled relatives and are twice as likely to have reduced working hours than other people who are unpaid carers. Many women are also more likely to be "sandwich" carers, caring for both children and elderly parents (Carers UK, 2014) affecting further their ability to compete in an environment where overworking is the dominant model (Hoskins & Barker, 2020; Parizeau et al., 2016). Caring responsibilities also mean challenges in managing long absences and thus restriction in international travelling, widening the gap in international visibility and its recognition in successful track records. This is more acute for single parents, who are majority women.

While blind review appears as a potential approach to remove some of bias, research indicates that female applicants still receive significantly lower reviews (Kolev, Fuentes-Medel, & Murray, 2019). In particular, the use of broad and narrow words employed by men and women respectively were identified as an important driver of the gender gap, indicating that communication style is a contributor to gender disparities in the evaluation of science and innovation (Kolev, Fuentes-Medel, & Murray, 2019). The lived experience of women in STEM including experiencing imposter syndrome and self-perception of less successful track record (lesser international visibility and recognition of their accomplishment) can likely explain their tendency to write precise, topic specific language to demonstrate their expertise; however, it appears less attractive to reviewers who may beswayed by more hyperbolic, grandiose text even if it doesn't necessarily support a more valuable idea.

There are also several structural disadvantages in funding processes for women and for mothers. Short turnovers have become more frequent, notably on large calls associated with specific governmental funds such as the Global Challenges Research Fund (GCRF; GCRF, 2020), the industrial challenges fund or the plastic research innovation fund. These short deadlines also favour those who can quickly call upon their professional network and, as discussed previously, in male-dominated environments, these people are more likely to be men. For instance, the EPSRC

2018 “Creative Circular Economy Approaches to Eliminate Plastics Waste”, a two-step application, had a turnover between announcing the second round invitation and the deadline for full submission were less than four weeks – a total time between announcement and final deadline of nine weeks. The deadline for the both stages were during the school summer holidays in Scotland and England, which highlights another structural issue specifically for parents; many fixed deadlines are during or shortly after school holidays. Recent examples include the outline applications for the BBSRC “Strategic Longer and Larger grants: Frontier bioscience” due on July 30th 2019 and even the 2018 EPSRC Inclusion Matters full proposals, aimed at proposal tackling inequalities in STEM academia, were due on the Tuesday after Easter Monday, again during the school holidays. Such deadlines are particularly stressful for those who are less able to prioritise grant applications over other commitments (Herbert, Coveney, Clarke, Graves, & Barnett, 2014). For these researchers, it means selecting themselves out for these calls or completing applications ahead of the deadlines, and therefore within a shorter timescale. Another example of additional pressure on mothers who carry the heavier load in caring responsibility through the funding process is the lack of flexibility around interview format, dates and location. Having to organise alternative childcare, particularly for single parents, and again especially if interviews are held during school holidays, is an undue stress in an already stressful situation. In 2016, EPSRC programme grant interviews were held on September 2nd, which fell during the English School holiday; these are only held a few times a year and it would therefore be relatively simple to schedule them outside of UK school holidays, even with the conflated issues of different term dates for the different nations. Additionally, UKRI’s base in Swindon, where most interviews are held, is particularly inaccessible from most parts of the country; an overnight stay is required for most researchers travelling to Swindon and it will induce complicated childcare or other caring responsibilities implications for many female researchers.

Funding bodies are increasingly aware of these barriers and have gender equality policies (EPSRC, 2020), but these are not necessarily applied in the advertisement and selection process (van der Lee & Ellemers, 2015). For example, a recent grant application call from the UK Arts and Humanities Research Council (AHRC; ARHC, 2020) explicitly stated: "AHRC acknowledges with regret that not everyone in our academic community - for example those with caring responsibilities - will be equally placed to take part in it." With a lack of evidence based decision making, transparency and accountability on how selection processes are designed and decisions are made (Adelaine et al., 2020), there is added potential for gender discrimination to take place – despite established policies. Two recent examples from UKRI illustrate these issues with accountability and transparency. First, the UKRI CEO responded to detailed questions about the distribution of research funding to individuals with protected characteristics from the House of Commons Science and Technology select committee of the UK parliament using aggregated data from all UKRI's constituent research councils (including non-scientific councils) instead of disaggregated data per council. This had the effect of obscuring STEM specific issues, where for instance women are much less represented than in other fields, and of preventing independent data analysis (TIGER in STEMM, 2019). We note however that further data were later released. Secondly, the transparency and accountability achieved in a recent funding process jointly organised byUKRI and the National Institutes of Health (NIH) addressing Covid-19 and its disproportionate impact on BAME communities was called into questions when it was revealed that (despite the specific equity focus of the funding call) no data monitoring the protected characteristics of applicants or awardees had been collected and that one member of the assessment panel was a co-investigator on three of the six awards (Adelaine et al., 2020).

Conclusion

The quality of evidence on the barriers facing women in applying for funding is mixed, but is certainly sufficient to mandate both further investigation of the challenges described here, and the trialling of strategies to overcome them. When addressing the greater barriers experienced by women who experience intersectional discrimination, there is little information available in the literature about issues specific to funding applications, and UK funders do not currently release relevant data. Moreover, most funders do not even collect data which would allow researchers to assess the challenges facing LGBTQ+ women. With this paucity of data, it is extremely difficult to properly address the barriers faced by women in non-traditional gender roles (e.g. parents in same-sex partnerships) or gender minorities (e.g. non-binary people who may be wrongly perceived as women, or transgender men who may face challenges faced commonly by women). Collection of a broader spectrum of relevant data and measuring and releasing information relating to intersectionality will be an important starting point to assess the specific needs of intersectional groups.

The data which *are* available are sufficient to constitute an immediate call to action to both Universities and funding bodies. Universities can address inequalities in funding processes by auditing their internal demand management procedures, and ensuring that the balance of workload for staff, such as service roles or other tasks that currently prevent women from forming research-relevant networks, do not disproportionately disadvantage women. They can also facilitate ways in which women can work with role models and mentors who can support decision making, career planning, and developing skills. Funding bodies could audit Universities' triage processes and the extent to which applications arising from a particular University are representative of the available body of applicants at that University. Where such audits highlight that marginalised researchers are under-represented as applicants, funders could mandate the development and implementation of action plans to redress the balance, as a condition for the award of further funding. It is imperative to avoid a situation where funders and Universities each leave to the other the

responsibility for ensuring that demand management does not unfairly disadvantage marginalised groups.

Funding bodies can further support women through evidence-based changes to competitive funding processes. They can introduce more calls with anonymised applications, focusing on the scientific case of the application without identified barriers such as track records. They can avoid the use of gender exclusive language in funding documents and consider carefully how language in application documents is evaluated. They can ensure that policies relevant to equality, diversity, and inclusion are applied to all funding processes. Concerning support for mothers, and indeed for parents more broadly, funding bodies can also avoid short deadlines and deadlines close to school holidays.

The existence of substantial barriers to women's progression are clear. Women, and women facing intersectionality especially, are underrepresented in STEM careers, in many ways, for many reasons, and at every level. Although some societal issues are challenging to address, the policies and practices that directly and indirectly impact women's success in securing research funding can and should be addressed by UK universities, UKRI, and other funding bodies. Improving women's success rates, simply by implementing the practices we suggest above, might have substantial impact on career progression for women and other under-represented minorities in STEM, the wider UK research community, and the national economy. However, while this would help a wider group of people fit within a model originally designed by one demographic for themselves, a more effective approach might be to fully redesign the model to inclusively fit all demographics and to provide from its inception equal chances for everyone to succeed and thrive in STEM research.

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