

Gendered research grant conditions and their effect on women's application (dis)engagement

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Men continue to outperform women in obtaining funding through research grants globally, in both science, technology, engineering and mathematics (STEM) and social science, in multidisciplinary and transdisciplinary fields. This article focuses on the role of research grant funding conditions in women's lack of research grant funding. Grant conditions are the rules of participation and funding use set out by grant funders. This study aimed to answer the question: how do grant conditions limit women's propensity to engage with research grant applications? Research grants from the Open 4 Research database were analysed. Research careers with a reproductive life-cycle perspective and four feminist concepts were deliberately gendered. These resulted in a theoretical framework. A content analysis on $n = 270$ multidisciplinary early career grants for those who already have a PhD was conducted. Grants were selected from both the social science and STEM disciplines. The findings suggest that, overwhelmingly, grant conditions are gender-neutral, assuming no differences between women and men. A comparison between STEM and social science grant conditions also show very little difference. The article provides a framework to guide multidisciplinary and transdisciplinary grant funders in crafting deliberately gendered grant conditions.

Transdisciplinary contribution: A pre-application phase to the research grant application process by problematising gender neutrality in early-career researcher grant conditions is introduced. It is posited that grants' gender neutrality is discouraging women to consider applying, resulting in self-exclusion early in the pre-application phase.

Keywords: Grant conditions; research grants; gender; grant applications; research careers; early career researchers; women researchers.

Introduction

Parity in the numbers of women and men researchers can be achieved, as there are sufficient numbers of qualified women in most major disciplines of study.^{1,2} However, women are less likely than men to be awarded research grants.^{3,4,5,6} Women grant recipients are likely to produce more publications and attain a higher research impact *h*-index than nonrecipients.⁷ Blanchard et al.⁸ indicated that women early-career grant recipients gain economic, social and cultural capital, which are essential for promotion in a researcher career. Receiving grant funding is therefore an important indicator of researcher development and impact. The cumulative effect of grant funding over the span of a research career makes the attainment of grant funding especially important for early-career women researchers. More recently, a number of studies^{9,10,11} on grant funding and gender inequality have focused on the grant application review process. This article aims to contribute to a better understanding of gender inequity in multidisciplinary and transdisciplinary research grants by shifting the focus from the reviewer to the grant funder, specifically to an underexplored area of investigation, namely grant conditions.

Grant conditions are the stipulations by grant funders regarding grants, such as the rules, the mode, the place of research collaboration and the inclusion and exclusion criteria of grant holders. This was the focus of the article, as previous research has predominantly focused on three actors, namely: (1) women grant applicants, specifically improving the writing skills of women in science, technology, engineering and mathematics (STEM) careers to write grant applications;¹² (2) grant reviewers, by investigating differential treatment of women's and men's grant applications through mechanisms such as gendered language use;¹³ and (3) grant funders, such as adaptations of grant scoring and selection criteria by grant funders to increase gender parity in grant outcomes.⁹

Research on these three actors fits into the outline of the three main stages in the funding-productivity nexus,¹⁴ namely: (1) applying for a grant, (2) successful fundraising and (3)

conducting the research. This article argues that there is an additional phase – the pre-application phase – in this nexus, a phase that is invisible to grant funders and grant reviewers. Grant funders, through the grant conditions attached to grant funding calls, play a decision-shaping role in the pre-application phase.

Women have ‘the tendency to be careful, deliberate, and thorough’.¹⁵ Therefore, grant conditions are an important yardstick in the pre-application phase, against which women researchers carefully weigh up their lived realities. If grant conditions do not support the realities that women researchers experience, women’s tendency to be less optimistic¹⁶, more conscientious¹⁷ in adhering to stated grant conditions and more risk averse¹⁸ will lead to disengagement with grant applications. This study therefore focused on grant conditions in the context of the pre-application phase, with the aim of answering the following question: *how do grant conditions limit women’s propensity to engage with research grant applications?*

Theoretical framework

The theoretical framework in the article utilised elements of Christina Hughes’s¹⁹ key concepts in feminist theory, namely difference, care, time and choice.

The first element of the framework is *difference*. Not only are there differences between women and men based on their reproductive and hormonal functioning, but there are also vast differences in their societal roles. These facts are commonly acknowledged.^{20,21} Addressing diversity is key according to Linnehan and Konrad,²² as managers of large systems often misunderstand the role and place of differential treatment to address acknowledged differences in order to achieve equality. Felski,²³ cited in Hughes,¹⁹ asserted that ‘the antithesis of difference is not equality but sameness’. This article argues that sameness in treatment may lead to unintended inequity. In the theoretical framework, this article framed *difference* to have ‘universal commonality of womanhood’,¹⁹ in line with Evans’s²⁴ woman-centred schema of difference, namely that women as a grouping are different from men. In this study, women and men are treated in the binary from a cisgender perspective. This allowed us to explore grant conditions with this heuristic device for purposes of this study, although we acknowledge that there are other distinguishing differences within womanhood. If difference is acknowledged between women and men based on societal structures, it then stands to reason that there are differences in society’s expectations of women researchers. In addition, women are reproductively active and may have children quite early on or decide to have them well past the age of 40.

The second element of the framework is *care*.¹⁹ Care is connected to work, labour, time available to do research and the place where the care needs to be given. In addition to the

dissolution of the nuclear family, the economic survival of families in urban settings, which is where universities and research institutes are mostly located, has brought about the necessity for mothers who are carers to also be breadwinners.²⁵ Women also intentionally aim for economic independence, and in the case of researchers, women participate in education and innovation to develop and utilise their talents towards self-actualisation and the betterment of society. However, care in households, especially care for the elderly, young and vulnerable, in combination with simultaneous earning, results in ‘inevitable periods of dependency and vulnerability across the life course’.²⁵ While most women do not resent their care responsibilities,²⁶ the unpaid care and associated labour they perform form the backbone of the ‘growth and well-being of families and communities’, on which all societies rely.²⁵ In families where care is required for children and/or elderly members, the care is often outsourced and is a personal financial expense item.²⁷ In Europe, involvement of grandparents in regularly caring for the young is increasingly becoming a support mechanism for families.²⁸ Caregiving by extended family members such as grandparents, sisters and aunts²⁹ has been part of the traditional support structure for women from less industrialised countries. Irrespective of whether a woman researcher’s caregiving responsibilities are shouldered by a grandparent or another member of the extended family, the woman researcher remains responsible for the economic stability of the caregiver who is standing in for her. In addition, close proximity to the person who needs the care is required for caregiving to take place.

The third element of the framework is *time*. The linear career path of a male scientist should not be assumed for all researchers, and universities and grant-funding institutions should instead ‘experiment with life course options’.³⁰ Linear time, where time is seen as a set of sequential events – with a beginning that leads to something towards an end – has been challenged in feminist writing.³¹ For instance, many women ‘envisage motherhood as part of their futures; this aspiration is [often] not structured as a plan with concrete times’³² and a specific end-state. Women’s reproductive life cycle, or their potential for reproduction, may result in no childbearing, bearing children at a young age or bearing children much later, since reproductive advances have resulted in women being able to delay having their first child in order to focus on their careers.³³ Therefore, women scientists may obtain a PhD at varying ages during their reproductive life cycle – not necessarily before having children. Research careers are formally built from the point of attaining a PhD,³⁴ which implies that women scientists’ research careers may start at various ages, thus not necessarily following a linear pattern starting at a relatively young age. In addition, women researchers may also choose adoption to overcome biological limits to having a child of their own.³² Of importance is the notion that ‘feminine time exists in relation to the time demands of others’¹⁹ and may therefore not be based on the woman

researcher's preferred choice but instead be dictated to her by life circumstances.

The final element of the theoretical framework is *choice*.¹⁹ Plummer³⁵ asserted that 'the idea that we are autonomous human beings that can choose the kind of personal life we wish to live has become a deeply entrenched one'. However, women's personal lives are intertwined with societal expectations of them being good daughters, sisters, wives and mothers, while also being breadwinners. These constraints entangle to influence women researchers' autonomy in choosing to apply for grant funding during the pre-application phase. Thus, although grant funding opportunities are available to women researchers, the choice to apply for the funding is constrained by social power structures. 'Power works through subjects, "not in terms of crude manipulation, but by structuring our sense of self, by constructing particular kinds of subjectivity"'.³⁶ If the intersection of time and care is viewed within current practices of research careers following a linear path, it may bring about assumptions that women with young children are not suited to a research career.³⁷

When combined, the four feminist analysis elements create a theoretical framework with indicators that can be utilised to analyse research grant conditions. These are summarised in Table 1.

Gendered fields of study

Funding systems are deemed biased in favour of men, a situation that is compounded by a favouring of 'male-dominated and culturally masculine positions and fields', when in fact, grant funders need to consider a wide range of academic disciplines.³⁸ These disciplines are increasingly becoming more multidisciplinary. Fields dominated by men include STEM. Broadly speaking, there are more men employed in STEM fields globally than in fields of work underpinned by qualifications in the social sciences.³⁹ This concentration of a sex in a field is influenced by the pipeline and available talent. It is also shaped by organisational regimes, which are 'loosely interrelated practices, processes, actions and meanings that result in and maintain' gender inequalities.⁴⁰ Therefore, if a greater level of gender equality is to be achieved, the talent pipeline and the organisational regimes need to be

TABLE 1: Feminist framework to analyse research grant conditions.

Feminist theory factors	Indicators of analysis of grant conditions
Difference	Differentiation between women and men
Care	Support related to: Children, dependents, spouses, reproduction Geographical location Travel stipend
Time	Age limit to application Time since completion of PhD
Choice	Support related to: Children, dependents, spouses and reproduction Geographical location Travel stipend

Source: Adapted from Hughes C. Key concepts in feminist theory and research. London: Sage, 2002; p. 59, 137, 179.¹⁹

changed. For instance, regimes dominated by men often have a blind spot regarding care, 'as they are premised on the existence of paid workers who are unencumbered by caring responsibilities',⁴¹ since society may not expect men to be involved in caring or to view caring as central to their identities. The opposite expectations befall women. The division of labour, workplace interactions, cultural symbols, individual worker identities and organisational logic are gendered.⁴² Consequently, the collective of employees within a field also becomes gendered, causing the field to ultimately become gendered. Multidisciplinary fields of study such as engineering and physical sciences, including biomedical engineering, energy conservation and nonrenewable energy and fossil fuels, are dominated by men, while the social sciences are dominated by women.

Research methods and design

The study followed a feminist approach which impacted the elements included in the analysis, the research question and how the data were viewed. From extant literature, the elements that have been found to affect women's intentions to apply for research grants were determined, and a framework of these elements was constructed (Table 1). Thereafter, document analysis to examine available grants internationally was performed, using the framework to expose gender-related hindrances women encounter in considering applying for a research grant.

Data sources

The search terms included *grants*, *women*, *female* and *gender*. The Open 4 Research database was used to draw a sample of international multidisciplinary and interdisciplinary research funding opportunities for analysis. This article focused on grant opportunities for early-career researchers, as these researchers should already be in possession of a PhD, eliminating problematic comparison between groups with and without a PhD. Obtaining grants within the early-career phase is also very important for the career success of researchers.⁷

Sample selection

The search was limited to grants that were open as at February 2022. All funding opportunities other than grants and closed grants were excluded. Thereafter, the *Browse funding* link in the portal menu was used to select the status *Early-career researcher*. This yielded eight research disciplines, which were filtered to include only *Engineering and physical sciences* and *Economic and social research*. Within *Engineering and physical sciences*, the following interdisciplinary fields were selected: (1) *Biomedical engineering*, (2) *Energy conservation* and (3) *Non-renewable energy and fossil fuels*, representing male-dominated STEM fields. The feminised field of *Social science* was selected to allow comparison. Relevant funding opportunities for the chosen categories

were obtained by clicking the *View all* category for results on each discipline. This yielded full information on all applicable funds. The results were filtered according to *Funding type* and *Status*. The *Grant funding* option was selected and refined through the selection of *Current* and *Future* grant opportunities.

Data collection process

The filtered results were sorted alphabetically on the Open 4 Research platform. To create the report, the grants to be included were identified by placing a tick in the relevant box(es) and then clicking to produce a report. The funding search results were then exported to a Microsoft Word document and then transferred to a Microsoft Excel data-extraction sheet (both by Microsoft Corporation, Redmond, Washington, United States). Document analysis using a content analysis strategy was used to collect data from the grant reports. The grant documents were read while collecting data, and pertinent information was entered into the Excel spreadsheet based on the indicators listed in Table 1 to enable a structured examination of the data. The researchers employed content analysis to extrapolate elements identified in the gendered theoretical framework and other points that could assist in answering the research question. Figure 1 is the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) chart detailing the identification, screening and selection of

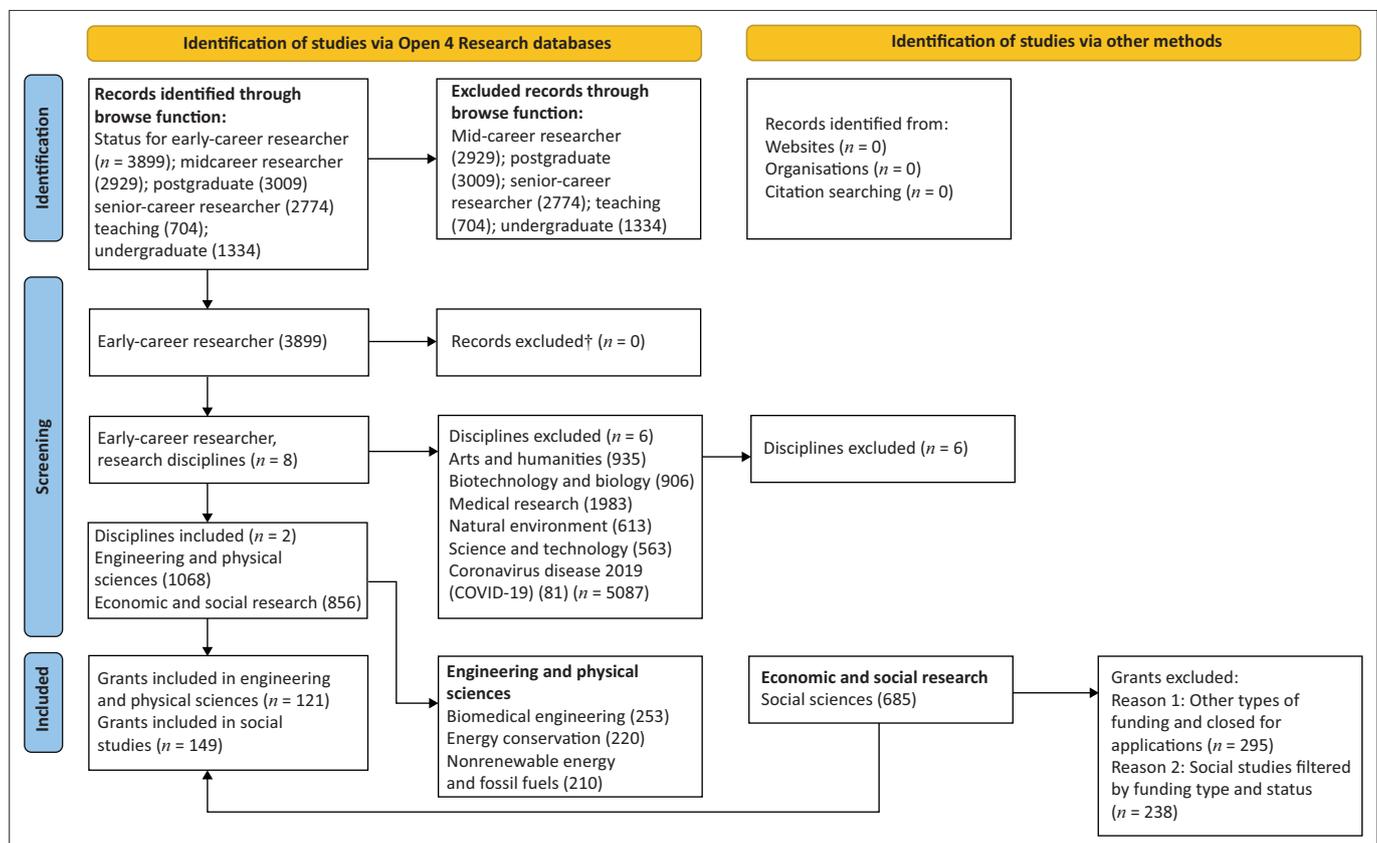
grants. Table 2 reports the search results. The search yielded a total of $n = 270$ grant opportunities for analysis.

Data analysis

The selected grants were analysed using an Excel spreadsheet with the following columns: *Grant name*, *Gender*, *Time since completion of PhD*, *Age*, *Geographical location*, *Travel stipend* and *Family and other considerations*, in line with the four feminist elements as outlined in Table 1. Data analysis followed a systematic process of content analysis, reading and objective reflection during the collection of information from the contextual source. In the analysis stage, the gathered data were sifted and sorted in accordance with the elements identified from literature, shown in Table 1. An inductive process was followed to create data from reading the grant conditions; therefore, points subsequently raised are contextually grounded (i.e. based on data). An abductive process was followed to ascertain whether the framework reflected the collected information.

Ethical considerations

The study utilises secondary data which is publicly available. As such, the study was declared exempt from ethical clearance via the Stellenbosch University, reference number 26079569.



Source: Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*. 2020;372:n71. <https://doi.org/10.1136/bmj.n71>.⁴³

†, If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.

FIGURE 1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) chart showing the identification, screening and selection of grants.

TABLE 2: Search results for available grants.

Discipline	Field	Number of grants available	Total
Engineering and physical sciences	Biomedical engineering	42	121
	Energy conservation	41	-
	Non-renewable energy and fossil fuels	38	-
Social science	-	149	149
Total grants analysed	-	-	270

Results

The sections below provide a description of indicators in Table 1, linked to the findings from the related analysis of the conditions within grants.

Age cut-off

Many grants limit the age of researchers who may apply by stipulating an age cut-off point. The present study's analysis found the following in this regard:

- Social science: $n = 5$ grants specified a cut-off age, namely a maximum age of 30 ($n = 1$), a maximum age of 40 ($n = 3$) and '... preference is given to younger applicants' ($n = 1$);
- Nonrenewable energy and fossil fuels: maximum 40 years ($n = 1$), maximum 30 years ($n = 1$) and 'young people or researchers' ($n = 4$);
- Biomedical engineering: maximum 40 years ($n = 1$), maximum 30 years ($n = 1$) and 'young' ($n = 4$); and
- Energy conservation: maximum 40 years ($n = 1$), maximum 30 years ($n = 1$) and 'young' ($n = 3$).

To determine if this has a limiting effect on women when considering the intersection of age and stages of women's career life cycles as posited by Blackwell and Glover,⁴⁴ the limitation to women's career life cycles were compared.

Reproductive life cycle

There was no specific mention of reproductive life cycles in the analysed grant conditions, although age gives us reference to women's most fertile years.⁴⁵ The age cut off-data stated above is between 30 and 40 years, which correlate with ages when women predominantly have children. In addition, this limitation should be understood in conjunction with care responsibilities. Linked to the age limits for early career grants, women's reproductive life cycles dictate a focus on childbearing that may thus lead to self-exclusion. No grants ($n = 0$) referred to any maternity or childbearing provisions.

Care responsibilities

The present researchers examined whether the grants indicated consideration of women's reproductive life cycle and care responsibilities. Not a single grant ($n = 0$) specified that individuals will be assisted in fulfilling any care duties.

Related to care responsibilities is the reality that the locations of research projects are often abroad in relation to the woman's place of residence. Lubitow and Zippel⁴⁶

contended that a woman's geographical location can limit her mobility for career purposes. This consideration is particularly limiting if a woman has young children. Therefore, the travel stipend indicated in the grants was analysed to ascertain whether this factor was ameliorated.

Social science grants ($n = 3$) indicated a travel stipend but did not indicate that it may be used to visit home, and only one ($n = 1$) grant noted that the organisation was willing to pay a 'mobility allowance', together with provision for 'family- and long-term leave'. This was also the case for one grant ($n = 1$) which was available in each of three male-dominated fields: nonrenewable energy and fossil fuels, biomedical engineering and energy conservation.

Time since completion of PhD

Some grants specified a maximum period from the researcher having completed a PhD:

- Social science: 3 years ($n = 1$); 4 years ($n = 1$); 5 years ($n = 2$); 8 years ($n = 1$); 10 years ($n = 16$); and 12 years ($n = 1$)
- Energy conservation: 4 years ($n = 2$); 5 years ($n = 5$); and 8 years ($n = 2$)
- Biomedical engineering: 3 years ($n = 1$); 4 years ($n = 2$); 5 years ($n = 2$); and 8 years ($n = 1$)
- Nonrenewable energy and fossil fuels: 4 years ($n = 2$); 5 years ($n = 1$); and 8 years ($n = 1$).

Only one grant in each field ($n = 4$) noted that '[c]areer breaks will not count towards the above maximum'. These grants did not specify that women applicants were sought, only that Particular attention is paid to gender balance.

It is also clear that the STEM fields' cut-off points are earlier than those of social sciences, which is not conducive to attracting more women when considering the compound effect of the other factors women have to bear in mind. This externally imposed limitation is thus another variable that needs to be factored in when considering the research opportunity. While aligned to the career path dominated by men, it may create severe restrictions for women who have to balance the right grant at the right time with all the factors related to their age and thus their career life cycle and reproduction.

A concerning finding is that the vast majority of the grants indicated that the opportunities were '[gender] neutral', and exceptions were few. In the field of energy conservation, $n = 3$ grants indicated 'attention to gender balance' and $n = 1$ grant specified 'female researchers'. However, only $n = 1$ of these grants specified 'mobility allowance and family leave'. In biomedical engineering, $n = 3$ grants stated 'attention to gender balance', and only $n = 1$ grant specified 'female', but again, only $n = 1$ grant specified 'mobility allowance and family leave'. In non-renewable energy and fossil fuels, $n = 2$ grants noted 'attention to gender balance' and $n = 1$ grant indicated 'female'. Even in the feminine field of social science,

only $n = 3$ grants noted 'attention to gender balance', while none ($n = 0$) of the grants indicated 'female', and only $n = 1$ grant noted 'mobility allowance and family leave'. Ironically, none ($n = 0$) of the grants that specified 'female researcher' referred to any allowance related to mobility or family leave. Furthermore, it must be noted that all instances of consideration of family were by only one entity – the European Union.

Discussion

The key feminist concepts that formed the theoretical framework in this article – *difference*, *care*, *time* and *choice* – elucidated the circumstances under which women may self-exclude in the pre-application phase, because of the grant conditions set by grant funders. Analysing the research grant conditions from a feminist perspective enabled us to uncover hindrances women face. The way grant conditions are formulated may create discomfort in women's self-assessment whether to apply for grants or self-exclude themselves before application. The analysis of grant conditions reveal that grant conditions are formulated in a gender-neutral manner. On the face of it, gender neutrality is a safe way of stating conditions, as every grant applicant is provided with exactly the same conditions – thereby eliminating any alleged unfair treatment.¹ However, when the element of *difference* between women and men is acknowledged, the gender neutrality argument becomes less egalitarian and more exclusionary. In support of this conclusion, the data shows age cut-offs within childbearing years, no grants providing maternity or childcare benefits, only one grant with a family mobility benefit and only four grants that took career breaks into consideration. Women's career cycles are different from men's, amongst others, because women may need to take a career break to have children and care for them full-time while they are babies.⁴⁷ This alters their career trajectories and career life cycles. Given the purported neutrality in the grant conditions analysed, women are regarded the same as men, without opportunity to acknowledge *difference*.

When considering that many research grants state a term of up to eight years and require the researcher to conduct fieldwork up to 50% of the time, coupled with staff exchange programmes, the conflict women face in terms of fertility and *care* becomes glaringly obvious. These requirements become particularly onerous for women who then have to conduct research far away from home without grants providing for childcare support or family travel arrangements. In addition, women of all ages tend to have care responsibilities within the family. It is thus clear that the finding of gender neutrality in grants (i.e. compliance with equality numbers), will not result in equity for women researchers. Only two grant conditions expressly excluded certain researchers (age and time since completion of PhD). However, women researchers' realities (career life cycle, reproductive life cycle and care commitments) may lead to self-exclusion, resulting in women's underrepresentation in applying to receive research grant funding.

There are also several issues involved in the layering of *time* in grant conditions, for example, age cut-offs and time since completion of PhD. Given the low numbers of grants that move beyond gender-neutrality, it remains disappointing that only 4 grants out of 270 consider career breaks in continuity in respect to time since completion of PhD. Women's gendered roles result in unpaid care work for the elderly and children in families. When considering the pre-application phase of research grants, given the inflexibility of most grants regarding care work, women could make an assessment that the grant will not make provision for their lived realities, resulting in women being unlikely to apply. Grant funders who design and award grants should consider whether age-cut offs are necessary, as well as how restrictive these should be.

When it comes to *choice*, we argue that women may not be at liberty to choose as freely as is assumed to apply for research grants, as they may feel confined by caregiving responsibilities associated with societal norms. Stating that women therefore choose not to apply for grants, without acknowledging the contextual pressures for such so-called choices, masks the underlying assumptions of grant conditions. The grant conditions of the majority of the funders in the dataset did not acknowledge women's realities. The analysis of grants from disciplines dominated by both men and women (i.e. social sciences and STEM) contradicts the assumption that grant conditions are shaped around the characteristics of the majority researchers in a discipline. Instead, grant conditions in both disciplines dominated by men and women remain gender neutral. We argue that it is within grant funders' ability to address these concerns by differently shaping grant conditions to meet the needs of researchers.

The manner in which grant conditions are currently shaped and stated, has the power to limit women's propensity to apply for research grants. Women may be deselecting themselves before attempting to apply during the pre-application phase by contemplating whether they can effectively balance the demands of domestic activities according to gender norms and the requirements of the grant conditions. Grant conditions are an important yardstick in the pre-application phase, one against which women researchers carefully weigh up their lived realities. While data on the number of women in relation to men who apply for research grants is not readily available, we maintain that there are many women scientists who are simply not able to reconcile their lived experiences with the constraints of grant conditions. Therefore, if grant conditions do not support the realities that women researchers experience, women's tendency to be less optimistic,¹⁵ more conscientious and more careful^{17,18} in adhering to grant conditions is likely to lead to their disengagement from the research grant application process.

While none of the limitations under study in relation to *difference*, *care*, *time* and *choice* in isolation seem major, the

compound effect is that once a woman has met the external conditions of age and time since completion of her PhD, she then has to consider her career stage. Once these conditions have been satisfied, she has to calculate her window of fertility, bearing in mind family planning and subsequent childcare, and consider how she would meet any care responsibilities she may have, now and in the future. Even if she has been able to negotiate all these obstacles, research abroad without the necessary support through grant funding conditions may simply be impossible without accommodation of the cost of care and family leave.

Limitations and recommendations for future research

The data for the study were drawn from a single source, the Open 4 Research database, at a single point in time. Although the database serves as a comprehensive collection of available grants, future studies could analyse data from multiple database sources. Future studies could also compare trends in the changes of grant condition conditions longitudinally. Trends, especially a lack of change in grant conditions over time, could support the argument that grant funders are not shifting in their thinking about the role that grant conditions play in shaping women researcher's research careers. Grant funding agencies could analyse whether there is an increased trend for women researchers to apply for grants. Gaining access to grant applicant data is difficult, but grant funders could collect such data for descriptive analyses. Research on the decision-making criteria and contexts under which women researchers carefully weigh up their lived realities in the grant pre-application phase will aid grant funders in shaping grant conditions more optimally.

Conclusion

Women who want to embark on a research career have to negotiate multiple realities, intensified by the intersection between grant conditions on the one hand and motherhood and care responsibilities, coupled with their career life-cycle and childbearing years, on the other.⁴⁵ When viewing multidisciplinary and transdisciplinary grant conditions through a feminist lens with the elements of *difference*, *care*, *time* and *choice*, the article points to several issues that may impede women to seriously consider applying for grants. The self-exclusion may occur during the pre-application phase, which is not open to observation by grant funders. In this manner, grant conditions have the ability to shape women researchers' propensity to deselect themselves.

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Authors' contributions

A.B. conceptualised the study, supervised the work, provided the resources, co-wrote the initial manuscript, developed the analysis framework and wrote the final manuscript. G.P. collected the data, conducted data analysis and wrote the initial draft.

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Data availability

The data that support the findings of this study are available on request from the corresponding author.

Disclaimer

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