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Retaining female postgraduates in academia: The role of gender and prospective parenthood

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Women remain under-represented in almost all academic levels at universities internationally, and previous evidence has suggested that women move out of the university system in increasing numbers as they progress from postgraduate study to an academic career. The current study aimed to explore the role of gender in the reports of study experiences and future career plans of Australian postgraduate research students ($n = 249$). Questionnaire data indicated women were significantly less likely than men to rate an academic career as appealing. In particular, female postgraduate students without dependent children were least likely to want to pursue an academic career. On the basis of qualitative analysis, we attribute this finding, at least in part, to a perceived incompatibility between motherhood and an academic career and discuss the implications for gender equity in higher education.

Keywords: academic careers, equity, gender, parenthood, postgraduate students

Introduction

Over recent decades, enrolment of women in university degree programs has grown such that gender parity has been achieved at the undergraduate level in most countries (Fiske, 2012). The number of women completing doctoral degrees has also increased dramatically (England et al, 2007; Maher, Ford & Thompson, 2004). However, it is still the case that fewer women than men attain doctoral degrees globally, and fewer still progress to postdoctoral academic careers (Fiske, 2012; Mastekaasa, 2005). In Australia (the context of the research reported here), although similar numbers of women and men complete Higher Degrees by Research (HDR)—such as PhDs and research masters degrees—this achievement does not correspond with rates of participation and success for women in academic employment (Bell & Bentley, 2005).

Indeed, despite the increasing representation of women in senior academic positions, especially in English-speaking countries (cf. Baker, 2010a), the current state of representation is not at a level that could be expected, were the large numbers of women

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² Contributions made by each author on this paper were equal.

who entered the sector in previous decades promoted at the same rate as their male counterparts (Bailyn, 2003; Benschop & Brouns, 2003; Dever et al., 2008; Doherty & Manfredi, 2006; Krefting, 2003): Women remain under-represented in senior levels at universities internationally. For this reason, Barinaga (1992) employed a 'leaking pipeline' metaphor to describe how women exit the university system in increasing disproportionate numbers as they progress from postgraduate study to an academic career. This paper aims to explore factors affecting women at the early end of the 'leaking pipeline', and to consider the extent and ways in which gender remains a barrier for retaining female HDR students in academia.

The career aspirations of HDR students

Although much research has investigated the experiences of HDR students, less work has focussed on HDR students' career aspirations and perceptions. One example is Bieber and Worley's (2006) US-based interview study, which explored perceptions of academic life held by HDR students interested in an academic career. Participants discussed personal motivations for, and observations of, an academic career (e.g., individual encouragement from a professor); seeing academia as focussed primarily on teaching and mentoring (a positive feature for most participants); and the flexible lifestyle of an academic (allowing potential for the combination of family and career). However, although Bieber and Worley spoke to both men and women, they did not examine the influence of gender on their participants' perceptions.

Research indicates that postgraduate women face a number of challenges during their HDR that could influence them not to pursue an academic career. Postgraduate women are less likely than men to be involved in research collaborations (Seagram, Gould & Pike, 1998). Women studying in departments containing predominantly male staff report less support, and consequently exhibit a lower commitment to career progression than other student groups (Fox, 2001; Ülkü-Steiner, Kurtz-Costes & Kinlaw, 2000). Women also tend to have lower income expectations for future work than men (Schweitzer, Ng, Lyons & Kuron, 2011); an expectation that comes to be fulfilled for many women (Dever et al., 2008). Furthermore, it appears that many postgraduate women regard motherhood as deleterious regarding their career: Women are more likely than men to perceive that having children during their postgraduate degree will affect their studies and future employability (Dever et al., 2008; Svanberg, Lampic, Karlström & Tydén, 2006).

In spite of these challenges, it has been reported that female postgraduates, even those in male-dominated disciplines, may avoid reporting, or even deny, gender as an influence on their own study experiences. Erickson (2012) examined how female HDR students in engineering 'covered' their personal gendered identities, while acknowledging broader gender disparities within engineering. For example, gender was mentioned in relation to combining parenting and academia—a combination reported as uniquely challenging for women—but participants did not typically relate this to their current experiences as HDR students. Although some women did consider that this incompatibility between motherhood and academia would affect them in the future, Erickson did not discuss the issue of future careers in detail.

The experience of women in academic careers

Given that HDR training tends to involve an apprenticeship model (Pearson & Brew, 2002), where students learn by working closely with supervisors, the career decisions of postgraduates are likely to be influenced by their observations of their supervisors' experiences, and those of other academics (Austin, 2002; Bieber & Worley, 2006). Amongst these academics, the experiences and expectations of women appear to remain different to those of men. For example, Baker (2010a) found that most women she interviewed, in contrast with most men, did not believe they would ever be promoted to the professoriate.

Although not all academic women have, or intend to have, children, one factor potentially inhibiting women's career progression has been suggested to be an incompatibility between career development and motherhood (Baker, 2010b). Although both men and women report challenges in combining work with family life (Baker, 2010a, 2010c; Grummell, Devine, & Lynch, 2009; Santos & Cabral-Cardoso, 2008), women tend to be disproportionately disadvantaged. Baker (2010a) identified women, but not men, who reported putting unpaid caring responsibilities before their academic career. Santos and Cabral-Cardoso (2008) explain that although women often describe caring responsibilities as a major concern, men tend to describe a more equal concern for work and family.

Parenthood can also result in substantially different career trajectories within academia. For many, if not most, men, academic careers take a linear trajectory. This trajectory is regarded as normative and, therefore, tends to be rewarded (cf. Bailyn, 2003; Blackmore, 2002; Dever et al., 2008). Women, who generally assume a higher proportion of childcare, are more likely to experience career breaks, or to be employed on part-time, casual, or sessional contracts; all associated with a range of difficulties for career advancement (Blackmore, 2002; Brown, Goodman & Yasukawa, 2010; Dever et al., 2008). Given that perceptions of academic lifestyle constitute one element of HDR students' motivations for postgraduate study and, potentially, an academic career (Austin, 2002), it is possible that gender disparities in career progression, and their link to parenthood, are a factor in the career decisions of postgraduates.

The current study

Although there are challenges for women throughout the academic 'pipeline', recent research has reported that the 'most difficult academic transition for women (when compared to men) appears to be retention in academia after the doctorate' (Shaw & Stanton, 2012, p.3740). The reasons for this gender difference remain unclear. Our study, therefore, aimed to examine how gender remains a barrier for female HDR students considering an academic career.

Method

Based on relevant factors highlighted in previous research (e.g., LeCouteur, Augoustinos, Crabb, Purcell & Ekberg, 2008), an online questionnaire was constructed (using *SurveyMonkey*) to investigate aspects of HDR students' experiences and career ambitions. This questionnaire contained 110 structured items, as well as 13 open-ended questions, where participants could provide qualitative responses. Questions were organised into the following areas: demographic and candidature information, perceptions of HDR experience, perceptions of academia, and perceptions of future prospects.

Ethical approval for the study was obtained from the University of Adelaide's Human Research Ethics Committee. To enable gendered comparison, both men and women were recruited, and to avoid priming participants, gender was not made explicit as a focus of the study. Inclusion criteria included being currently enrolled in a HDR, with some proportion of supervision from within the Faculties of Sciences or Health Sciences. By including these two faculties—one where women have a long-standing equity in HDR programs (Health Sciences) and another where equity is relatively more recent (Sciences)—we aimed to access a diverse group of students. Taken together, these faculties contained roughly equal numbers of women and men, reflecting the broader gender pattern of HDR students in Australian universities (Bell & Bentley, 2005). The study was advertised in newsletters regularly disseminated across the University, and invitations to participate were emailed by postgraduate coordinators to eligible students.

The questionnaire took 10-20 minutes to complete. It was administered in late 2009 and returned by 294 students (around 27% of the population)—both male ($N = 103$) and female ($N = 191$), and from the Faculties of Sciences ($N = 108$) and Health Sciences ($N = 186$). Questionnaire responses were anonymous and, as the first author had a supervisory relationship with several potential participants, the second author (a HDR student at the time of the study) administered the data processing.

Quantitative data were analysed using SPSS, primarily by comparing responses from male and female participants across the range of questions. Qualitative data were analysed thematically, with a focus on 'identifying, analysing and reporting patterns (themes) within data' (Braun & Clarke, 2006, p. 79). This involved an analytic process of coding, then the refining of codes into themes. Both authors engaged in this process independently, and then discussed results to reach a consensus.

Analysis

We provide here both our quantitative and qualitative analyses in an integrated results section. We first present results relating to participants' responses about the impact of gender on their HDR experience and future career intentions; that is, while gender was not made explicit to participants as a focus of the study, it was one of many demographic factors asked about in the survey. Although many participants did not explicitly indicate gender as impacting on their career decisions, there were nevertheless gendered patterns across responses to particular questionnaire items, which we consider next. Broadly, women were significantly less likely than men to rate an academic career as appealing, and women without dependent children were more likely to report ambivalence about an academic career than their counterparts—men, or women with children. Analysis of qualitative data suggested a perceived incompatibility between academia and motherhood affecting women's choices regarding an academic career. As this pattern extended across the two faculties we studied, and no significant faculty differences were detected, we report all data collected as a whole.

The impact of gender on study and career plans

Participants were asked to indicate their age, living arrangements, and whether they had dependent children. They were also asked about their enrolment length and conditions, status as a scholarship recipient, and extent and type of paid employment. There were no significant gender differences across any of these items. Thus, our male and female

respondents appear to share relatively similar circumstances, although our sample may represent a younger group of postgraduates than the Australian average; recent national data report only 37.9% of HDR students being aged less than 30 years (Department of Education, Employment and Workplace Relations, 2011), compared with 56.5% in our sample.

In subsequent sections of the questionnaire, we asked participants to comment on the impact of demographic factors, including gender, on their HDR experience and career plans. In these open-ended responses, participants were divided. Some participants discussed the irrelevance of demographic factors, including gender:

Both my gender and sexuality have nothing to do with my progress into my PhD program!
(Male, two children)

I am intent on pursuing a career path that will fulfil my long term goals and dreams. Factors such as my sexuality, ethnic background and child care status are irrelevant for me. I will do a job I love to the best of my ability. (Female, no children)

These participants utilise what could be seen as discourse of individualism and meritocracy (cf. Bagilhole & Goode, 2001; Erickson, 2012), presenting study progress and career choices as related solely to individual ability and preference. In contrast, many participants did discuss the impact of broader, rather than individual, factors, including structural features of the academic role and institutional constraints. Of particular interest was the extent to which participants mentioned gender as influencing their HDR experience and career choices. For many participants, typically women, gender was explicit in descriptions of their university experiences, with participants often reporting negatively on the gendered nature of university culture:

Totally sick of the university environment, particularly in my department, and the politics, bickering and boys-club. (Female, one child)

... I see that females within our school are not very highly regarded. (Female, one child)

Here, participants describe an unsupportive, even discriminatory, workplace: a 'boys-club,' where 'females ... are not very highly regarded.' There were no equivalent descriptions from men. However, similar to Erickson's (2012) findings, most participants who mentioned gender equity issues in their questionnaire responses reported the experiences of other women, or women in general; few disclosed any personal discrimination. One participant made this distinction very clear:

I have never experienced first-hand negative or positive bias as a result of my gender. However in the [...] Department we employed our FIRST EVER female academic only this year. I have also heard from the experiences of many other female scientists (including Baroness Professor Susan Greenfield, Director of the R[oyal] I[nstitution] London) that combining a family with a research career is particularly difficult for women (Professor Greenfield elected not to have children in order to accomplish her ambitions). If I were more interested in a career as an academic then I doubt these testimonials would stop me from choosing this path, though they do present an obvious downside. (Female, no children)

Although this participant reports not experiencing gender discrimination herself, she does describe the gendered culture of her specific academic department and the experiences of other women more generally (including those of Susan Greenfield, a British scientist who is well known in Adelaide due to her involvement in *Adelaide Thinkers in Residence* program, and her role in establishing the *Royal Institution of Australia*). This participant seems to be discussing role models—women demonstrating possibilities by example. In this case, a role model is regarded as conveying a potential incompatibility between an academic career and motherhood; topics which will be discussed further below.

In summary, our analysis of qualitative data identified that gender has an impact on the study experience and career plans of some female HDR students. Our quantitative analysis, however, did not suggest that this was a widespread trend. We asked participants to rate the impact of gender on their experience of and progress within their candidature (as ‘positive’, ‘neutral’, ‘negative’, or ‘not applicable’), and did not find a statistically significant difference in responses made by men and women ($\chi^2(3, N = 282) = 6.09, p = .107$). In asking whether their gender would make participants more or less likely to pursue an academic career (with rating options of ‘more likely’, ‘neither more nor less likely’, ‘less likely’ or ‘not applicable’), there was also no significant gender difference in participants’ ratings, with most participants choosing the mid-point of the scale, or ‘not applicable’ ($\chi^2(3, N = 265) = 4.03, p = .258$). In this sense, the explicit factor of gender was not treated by a significant proportion of respondents as being relevant in decisions about a future possible academic career. Despite this, however, we found clear gendered patterns in other questionnaire responses.

Gendered patterns in accounts of career plans

Analysis revealed that, when asked to rate an academic career as ‘appealing’, ‘neither appealing nor unappealing’ or ‘unappealing’, women were significantly less likely than men to rate an academic career as appealing (45.9% women vs. 68.1% men; $\chi^2(2, N = 266) = 12.15, p < .05$). This finding was sustained when considering the impact of parenting. As Table 1 shows, regardless of their parenthood status, more men than women found an academic career appealing, and particularly men without dependent children. Furthermore, women without dependent children were the group most likely to rate an academic career as ‘neither appealing nor unappealing’ or ‘unappealing’.

Table 1. Participants’ ratings of the appeal of an academic career

	Appealing	Ambivalent	Unappealing
Men without children ($N = 68$)	70.6%	22.1%	7.4%
Men with children ($N = 26$)	61.5%	19.2%	19.2%
Women with children ($N = 43$)	55.8%	23.3%	20.9%
Women without children ($N = 129$)	42.6%	37.2%	20.2%

Participants were also asked whether they were considering an academic career—both at ‘this point in time’ (when completing the questionnaire) and retrospectively, ‘when [they] commenced [their] PhD’, with the response options of ‘Yes’, ‘No’, and ‘Unsure’. A higher percentage of men than women reported that they had considered an academic career at the outset of their HDR (see Table 2), although this difference was not statistically significant ($\chi^2(2, N = 266) = 3.79, p = .150$). The gender difference in intentions at the time of

completing the questionnaire, however, was more pronounced. Although fewer participants of both genders were intending to pursue an academic career, compared with at the outset of their HDRs, women were significantly less likely to report a current intention to pursue an academic career ($\chi^2(2, N = 266) = 7.04, p < .05$).

Table 2. Participants' ratings of their intent to pursue an academic career.

	At the outset of a HDR			At the time of the study		
	Yes	No	Unsure	Yes	No	Unsure
Women (N = 172)	51.7%	16.3%	32.0%	40.1%	22.1%	37.8%
Men (N = 94)	63.8%	10.6%	25.5%	55.3%	11.7%	33.0%

Using the ratings regarding both time points also allowed us to categorise participants in terms of the stability or change in their intentions regarding an academic career between starting their HDR and the time of the study. There were a number of participants, of both genders and with or without children, who reported changing their mind about pursuing an academic career, indicating a general trend for HDR students to reconsider career prospects during their degree. However, analysis of respondents without children showed that significantly greater numbers of women, compared to men, reported changing their mind away from pursuing an academic career ($\chi^2(5, N = 197) = 11.38, p < .05$). Only 29.5% of women without dependent children reporting a continued intent to pursue an academic career, compared to 50.0% of men without dependent children.

Thus, as well as fewer women *without* dependent children finding an academic career appealing, compared with any other group of HDR students, these results suggest that at least some of those women came to reach this conclusion *during* their HDR. However, the quantitative results from the questionnaire give no indication as to *why* this might be the case. Qualitative analysis of the open-ended data, however, does enable some explanation of why women without dependent children might be less inclined to pursue an academic career.

A dominant pattern identified in the open-ended data was that many participants, particularly women, discussed issues around family and children (both current and potential children) when asked to comment on their experiences and choices regarding their future career. In line with other research (Baker, 2010a, 2010c; Grummell et al., 2009; Santos & Cabral-Cardoso, 2008), both men and women described time-related difficulties associated with having a family and studying. However, female participants also described a tension in relation to their future employment:

I am considering a career in academia, however whether I stick to this will essentially depend on opportunities and work/life balance. This is particularly because I have a young child, might want to have another one, and do not want to work full-time. I feel that women are extremely disadvantaged in science academia unless they sacrifice a lot of time with their children for their career (which is something I am not willing to do). (Female, one child)

This extract depicts a family and an academic career as mutually exclusive and oppositional, with one necessarily detracting from the other. The attempt to have both is described as involving 'sacrifice'. It is perhaps unsurprising then that participants without dependent children were not immune to this perception of academia as being in opposition to parenting. In particular, there was a clear pattern in the data relating to women without

children, whereby potential mothering was described as influencing choices about future careers:

The desire to start a family in the future is a big barrier to considering an academic career as it does not seem like the work pressures and work load would make it easy to accommodate children. (Female, no children)

Such female participants cited their intention to have children as a factor in their consideration of a future academic career. That is, these women were not currently mothers, but were considering their career plans with their intended future mothering status in mind. Consistent with previous research (Sullivan & Smithson, 2007), this kind of response was almost exclusively given by female participants. Some of these respondents even described the issue as explicitly gendered:

I have read enough about the incompatibility of academia with having families/children for women to know that if I pursued a career in academia I would be unlikely to be in a position to have children for many years. (Female, no children)

While I think the flexible hours is a bonus, it seems as though academics work much harder than average and don't have much of a work-life balance. So much emphasis is put on publishing and teaching that people seem to lose focus of everything else. I'm a female and I want a big family, and unfortunately I don't see how this is really possible with an academic career. (Female, no children)

These extracts provide examples of ways in which female participants made gender relevant in their open-ended responses to our questionnaire, particularly in their descriptions of balancing an academic career and parenthood. Not only was family planning a factor in contemplating an academic career, but it was described as a factor specifically relevant for women.

It should be noted that some men did mention family as a consideration in their current study and future careers. Men with children commented on the difficulties in finding adequate time for family and study, and reported observing poor work/life balance in academics. A few men also reported that their current family arrangement influenced their choices for the future:

I like research and have to stay in Adelaide for my child, so I will consider any position that allows me to do at least some research. (Male, one child)

Being male means that there is a perception that you will be the main income earner, so deliberately taking a pay cut, especially after all the sacrifices, would not be acceptable to me nor my partner. (Male, one child)

These men were among the very few who explicitly mentioned their family in relation to their future career and, as noted, they already had children. The first participant above describes how fatherhood places a restriction upon him in terms of the geographical location of any future employment. The second extract describes a gendered pressure to be the 'main income earner' and focuses on the financial implications of an academic career for the participant's family. Thus, despite both these participants reporting family as a factor in

their future choices, the way in which family was described, and the family-related issues reported, was in contrast to the typical representation offered by female participants.

Only very rarely did a man without children express a perception that balancing the time obligations associated with both a family and an academic career would be difficult:

I have already experienced the strain one has on trying to fit everything in one's life (e.g., girlfriend, sport, music, leisure etc). My research demands a lot of my time and I can only imagine that it becomes harder to keep it all together as one starts a family and buys a house etc... (Male, no children)

This example was an unusual comment from a male participant without children, regarding the perceived difficulties in managing potential fatherhood with a career. However, this description is not framed in the explicit terms of many of the women's comments; for example, no male participant made a comment similar to that reported earlier from a female participant: 'I want a big family, and unfortunately I don't see how this is really possible with an academic career.' Instead, the male participant above frames the challenges in the abstract ('as *one* starts a family,' emphasis added), rather than writing about his personal plans for children. He also does not present the balance of work and family as explicitly affecting his decision to pursue a research career, as many of the female participants did.

Despite this clearly gendered pattern in the way that men and women described the relationship between their career and family plans, when we asked respondents explicitly whether *potential future* child caring responsibilities would make them more or less likely to pursue an academic career (rated as 'more likely', 'neither more nor less likely', 'less likely' or 'not applicable'), we found no significant gender or parenthood differences ($\chi^2(3, N = 265) = 6.90, p = .075$). That is, in this question, women without dependent children were no more likely to report that future child-caring responsibilities might deter them from pursuing an academic career.

A final finding of the study warrants mention in relation to the issue of women without dependent children being significantly less likely to report an intention to pursue an academic career. Analysis of our questionnaire shows that those respondents from this category who had academic role models (asked as a yes/no question) were significantly more likely than their non-mentored counterparts to express an interest in pursuing an academic career (48.8% vs. 18.2%, $\chi^2(2, N = 129) = 12.70, p < .05$). This was not the case for the other demographic groups. It seems, then, that the specific challenges that this subsection of HDR students can face may be ameliorated, at least in part, through mentoring.

Discussion

It is clear from existing literature that gender inequities persist in the higher education sector internationally, despite dramatic increases in the number of women enrolling in university study. The reasons why women are 'leaking' out of the academic 'pipeline' are undoubtedly complex and multi-faceted; the current paper aimed to contribute to understanding this process by exploring factors affecting women who are considering the transition between postgraduate study and an academic career—a shift reported to be particularly difficult (Shaw & Stanton, 2012). Specifically, we sought to investigate ways in

which gender remains a significant barrier for transitioning female HDR students into academic positions. Thus, we considered whether, and how, men and women explicitly reported their gender as influencing their postgraduate studies and career planning, and whether there were gendered differences in students' accounts.

Although there were individual respondents who reported that gender had an impact on their studies or future career plans, we found no significant difference between men and women in ratings of the impact of gender on intentions regarding an academic career. We did, however, identify sustained gendered differences, particularly in relation to future career plans. In particular, women were less likely than men to report finding an academic career appealing and to indicate an intention to pursue an academic career. More specifically, women without dependent children were significantly less likely than other demographic groups to report an intention to pursue an academic career, and a significant proportion of these women had arrived at this decision during the course of their HDR. Our qualitative analysis suggests that this difference could be related to a perceived incompatibility between motherhood and a successful academic career.

Despite the contrast between some of our quantitative and qualitative findings, on reflecting on the limitations of the study, we believe there is good reason to give the qualitative findings credence. The questionnaire only distinguished between women (and men) with and without dependent children. This meant that women who indicated not having dependent children could include: those who (1) plan to have children but have not yet actualised their plans; (2) have no current plans to have children; (3) have adult (and therefore not dependent) children; or (4) are past child-bearing age. Not distinguishing between these women may have made it difficult to find a significant quantitative difference in relation to whether future child-caring responsibilities had an impact on ratings of an intention to pursue an academic career. In open-ended responses, however, both men and women could mention future child-caring when it was relevant for them. In this context, the gender differences in responses were notable.

A further potential limitation of the survey related to the inclusion of a 'not applicable' response option for some questions. In the version of *SurveyMonkey* used to administer the questionnaire, sections of questions were required to have the same fixed responses. For instance, where participants rated the impact of gender on their likelihood of pursuing an academic career, we did not intend originally to provide a 'not applicable' option. However, because we needed to offer this option for other variables in the same section (e.g., current childcare responsibilities), it was automatically provided for ratings regarding gender. We would suggest, though, that participants choosing this response potentially intended to convey a similar meaning to the mid-point option, or, at least, they still had the option of reporting a positive/negative impact of gender. Thus, whilst acknowledging this limitation, we do not believe it substantially changes the related findings.

With an ageing academic workforce in Australia and elsewhere, there is a current opportunity for a new generation of improved gender equity in the tertiary sector. Institutional policies and practices have a strong potential to facilitate improved gender equity. In relation to postgraduate students specifically, and in support of other existing research (Bagilhole & Goode, 2001; Dever & Morrison, 2009; Todd, Madill, Shaw, & Bown, 2008), we find that mentoring can have positive benefits for the very group of HDR students that we found to be least inclined to pursue an academic career. We suggest that mentoring

programs for HDR students, particularly those that model how an academic career can be combined with parenthood, should therefore be further investigated, as a potential means of promoting greater numbers of women developing academic career pathways.

Furthermore, very little published literature is concerned specifically with support programs for (female) HDR students that address issues of gender and career development. There do appear to be a number of programs in US universities, focussed around Women in Science and Engineering (WiSE). For example, Miraglia, Alestalo & Bhatia (2012) have recently reported on the WiSE Future Professionals Program (WiSE-FPP) at Syracuse University, which provides support to female HDR students, in workshops and other events, in order to develop their skills and networks, including strategies around work/life balance (see also Bernstein, 2011). We were unable to locate similar systems of support for female HDR students in Australian universities; although many university websites discuss mentoring and career development activities for women academics, including early-career, very few programs specifically target women HDR students.

It seems therefore that insufficient support is currently given to HDR students to facilitate their career planning. Our research suggests that this is particularly problematic for women without dependent children. One potential suggestion would be that universities should consider extending programs for early career researchers to include HDR students. Research should also build on the few programs that do exist (e.g. WiSE-FPP), which may guide the development of strategies to support female HDR students considering an academic career and to address their perceptions of gender inequity in academia.

Although our findings suggest that postgraduates' decisions around career and family are shaped by *perceived*, rather than *experienced*, inequities in academia, a further mechanism by which these perceptions can be addressed is to continue to focus on the well-documented inequities that academic women do experience. We suggest that providing increased opportunities for women, including mothers, to reach senior levels of academia would improve both the experience of female academics, and the perceptions of postgraduate women regarding academia as a career path.

Indeed, research points to a gendered pattern in the experiences of academics who become parents, whereby motherhood tends to impact more on the careers of women than fatherhood does on those of men (e.g., Baker, 2010a; Probert, 2005), an example of the continued impact of the 'motherhood' or 'child penalty'—the employment 'costs' experienced by women who are mothers (Baker, 2010c). The recent controversy surrounding Slaughter's (2012) article, "Why women still can't have it all", points to the strength of ongoing broader debate around equal employment opportunities for women and mothers outside of academia as well.

Our study does not provide a clear direction regarding how best to resolve these challenges of gender inequity—such recommendations require further research—however, based on previous research, we suggest that one condition that requires addressing is the legislative and institutional culture surrounding people (both men and women) potentially having both caring and career responsibilities. There is a widespread need to tackle the current problem of the 'invisibility of care' (Grummell et al., 2009); a problem that disproportionately disadvantages women over men and the perception of which, in our study, appears to be dissuading some women from pursuing an academic career. Both women and men with caring responsibilities can be disadvantaged by the notion of the ideal

academic as one who can pursue a linear career trajectory and give the fullest proportion of their life over to work—a ‘care-less’ worker (Bailyn, 2003; Grummell et al, 2009)—although it appears to remain the case that academic women are more likely to be subjected to a greater share of childcare. Continuing to reduce the ‘invisibility of care’ and the emphasis on a linear career trajectory in academia is potentially one way in which the ‘child penalty’ for women can be minimised.

Following Bailyn (2003), what are also needed are work cultures in which individuals experience both equal opportunities and constraints. The current culture, in which women are disproportionately engaged in child-rearing, can be seen to engender situations where constraints and opportunities are not equal: Women are less able to engage fully in their work lives, and men in their family lives. As Baker (2010c, p. 223) writes ‘[f]athers are seldom encouraged by governments, employers or families to share equally in the daily emotional and physical care of children, although they are expected to contribute financial support to the household.’ Therefore, we suggest that research and policy in higher education should look to ways in which the balance of opportunities and constraints can be shifted, allowing both genders greater possibilities for choice in work and life, and, potentially, increasing the appeal of an academic career for postgraduate women.

Our paper provides a new contribution to existing literature by demonstrating that the gendered pattern regarding academic careers and parenting is having an impact on the next generation of academics. Perceived gender inequalities affecting academic women, and particularly mothers, seem to be having a notable effect on the consideration female postgraduate students give an academic career, even if they do not currently have children. That is, prospective parenting appears to be having a strong influence on women’s decisions about an academic career, based on a perceived incompatibility between motherhood and an academic career. This may be one reason why, in our study, there was a significant difference between the numbers of postgraduate men and women considering moving into academia.

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