FRED

Forum for Research into **Equality and Diversity**

Gendered experiences of academic staff in relation to research activity and the REF2014

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Acknowledgements

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Executive Summary

1. This report is based on research commissioned by the institutional Research and Knowledge Transfer Office between June 2015 and June 2016. This research has focused on generating qualitative and quantitative data as to the potential reasons why there appears to be a gender disparity in research productivity within the commissioning institution. In particular, the number of women self-selecting for representation in the REF2014 was comparatively low. This research was led by Dr Chantal Davies (as part of her broader remit in relation to the Forum for Research into Equality and Diversity) with Dr Ruth Healey as co-researcher and Anthony Cliffe as research assistant. A Steering Group made up of representatives from across the institution oversaw the process.

2. This research was also intended to support the University commitment to the development of excellence and equality in research. This commitment has been evidenced by the institutional application to three key national/European initiatives in this area:

    *   The University was granted the HR Excellence in Research Award by the European Commission in January 2013.
    *   The University submitted an application for a Bronze Athena SWAN award from the Equality Challenge Unit in November 2014 and has now been successful in achieving this.
    *   In September 2014 the University was one of only 5 HEIs to be awarded the Bronze Gender Equality Mark award from the Equality Challenge Unit.

3. In relation to all three projects, core action plans state the need to explore the reasons for differentiation between numbers of male and female research-active staff. In addition, the Public Sector Equality Duty (pursuant to the Equality Act 2010) requires public bodies (and therefore HEIs) to have 'due regard' to the need to eliminate unlawful discrimination; advance equality of opportunity; and foster good relations between people who share a protected characteristic and those who do not share it.

4. Findings are presented around the obstacles and enablers to research activity within the research institution. Explanations for women's continuing under-representation in relation to research activity within the institution are put forward and pointers for action are offered to tackle these issues.

5. A full reading of the findings presented points to a number of emerging issues that have implications for institutional and national policy and strategy in relation to the support and development of female research productivity and performance within the research

institution and across HE more generally. There were a number of gendered distinctions in relation to definitions of 'research activity'. Men were more likely to view originality and increasing knowledge as defining what research meant to them. Whilst, women were more likely to be concerned with the Research Excellence Framework (REF) and how their involvement in this defined them in terms of research activity. Equally, there was a statistically different approach towards the link between teaching and research. The importance of research to the development of teaching was significantly more important to female academics. Supporting wider studies in this area, the data suggested that those women participating were more likely to have a non-typical career trajectory that often involved a significant period in professional practice before entering HE. This had an impact on research awareness and productivity and was particularly seen in those female dominated disciplines within the institution such as Health and Social Care and Teacher Education where academics are far more likely to have come from a professional background. Equally, female academics demonstrated a less formal and focused approach towards career planning and progression than their male colleagues.

6. A number of obstacles to research productivity for women were evident from an analysis of the data. Whilst an initial reading of the questionnaire data had suggested that (in contrast to most studies in this area) those with caring responsibilities were likely to be more research active than those without, on further investigation it could be seen that the majority of those stating caring responsibilities (particularly during the REF2014 preparatory period), were those without young children. Data collected from focus groups and interviews demonstrated that those with caring responsibilities considered this to be a significant obstacle to research productivity. When time is at a premium and research is often carried out beyond the standard working day, women are unable to undertake this due to their wider domestic responsibilities. This was supported by the perception of those staff without caring responsibilities who considered that having such pressures would have a significant impact on career progression and research productivity. Equally, those who worked part-time (in spite of the remission permitted by the REF process), felt that this reduced their ability to conduct research. There was a perception that those working part-time may be less willing to work beyond their stipulated hours in order to engage in research activity.

7. There was little evidence of overt discriminatory behaviour on the basis of gender within the institution. However, a recurrent theme was a perception that there was a lack of diversity at management level within the institution and that the reasons for this needed to be addressed. Equally, several female participants made reference to a lack of transparency of decision making (particularly around workload planning and networks) within the institution which resulted in them feeling excluded or being unaware of how they could become more productive and progress. This was supported by a perception of some female participants that they and their work was undervalued by colleagues and they had to fight to see the inclusion of female and feminist issues included within the curriculum. Some women felt that they were seen as 'troublemakers' if they spoke out about these issues within the institution. For the majority of academics, both male and female, finding time for research was a key challenge. Some departments had approached this through different workload 'models' such as allocating a day a week no contact time, or providing research leave. However, this was not the norm within this institution. It was suggested that a lack of allocated time in the workload model would likely effect female academics more than males due to issues around confidence in their research abilities.

8. Whilst the obstacles above were on occasion seen as formidable for those women participating in the study, there were also a number of enablers to research activity that could be determined from the data. A majority of all participants considered that mentoring support was vital for research productivity. A lack of institutional consistency in relation to mentoring support could be seen from the data. Where no support was provided female participants in particular felt frustrated and isolated as a result. However, ineffective mentoring was seen as just as detrimental as no support. Participants did not point to the need for gendered mentoring. For those undertaking mentoring, women were more likely to see this as a 'moral obligation' whilst men saw it as an important activity for which remission should be given. It is important that successful women are not penalised and drained by mentoring schemes that place excessive pressures on their already squeezed time. In line with wider studies, collaboration was a female rather than male focus. Female participants pointed to the personal satisfaction as well as objective benefits to productivity of collaborative and interdisciplinary working. However, such working was viewed by some women as being penalised by the REF process that discouraged internal interdisciplinary collaborations in terms of how publications were submitted to Units of Assessments.

9. The institution has already taken some important steps towards introducing positive action initiatives to address the gender disadvantage and underrepresentation within the institution. The majority of male and female participants supported the use of positive action. However, where such action was not supported, men were more likely to consider that no disadvantage exists whilst women were more likely to feel that any positive action initiative would eat into precious time that could be used for research. Where such action was supported, men were more likely to favour inclusive provision in relation to research activity, whereas women on the whole supported targeted measures.

10.   Pointers for action have been put forward in five broad areas as follows in summary (full details can be found at section 8 of the report):

    a) ***Gender equality monitoring and data collection****:* The data demonstrated that investigating visible gender diversity and evaluation of areas where diversity does not exist, in order to develop initiatives for improvement, is vital in providing women with the confidence to develop their research productivity and potential. Whilst it is recognised that some data collection and evaluation in this area already takes place within the institution, it is proposed that more detailed collection and analysis is required.
    b) ***Positive action initiatives****:* Consideration needs to be given to the use of additional targeted positive action initiatives based on gender. Where possible, inclusive provision should be adopted but in some areas a targeted approach towards positive action and specific action in relation to gender should be considered.
    c) ***Mentoring****:* Whilst targeted mentoring has often been viewed as important in the development of female progression, it is considered that a more formal mentoring system in relation to research activity should be developed across the institution for both male and female academics. Inclusive provision in this regard will seek to redress any existing disadvantage to women as well as benefitting early career researchers more generally.

d) *Diversity awareness*: Analysis of the data demonstrated that there was a need across the institution for a greater awareness of the importance of gender diversity.

e) *General*: Dedication to addressing systemic inequalities across characteristics is vital in redressing gender disparity. Thus a number of specific pointers for action should be considered.

f) *Further research*: Analysis of the data suggests that follow-up research in several key areas should be undertaken including gender disparities at professorial level, the implications of discipline on female academic staff and the implications of caring responsibilities in relation to research activity.

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Introduction

Description and Rationale

This research explores the gendered experiences of academic staff in relation to research activity and the 2014 Research Excellence Framework (REF) within the research institution.

Pursuant to the Equality Act 2010, there is now a legal duty for public bodies and therefore Higher Education Institutions (HEIs) to have 'due regard' to the need to:

- eliminate unlawful discrimination;
- advance equality of opportunity; and
- foster good relations between people who share a protected characteristic and people who do not share it (Equality Act 2010, section 149).

Attending to this in the context of Higher Education (HE), individual institutions need to consider and explore understandings of female academics with a view to generating qualitative data about the experience of this group. This is particularly important in HEIs where the numbers of women actively researching, participating and/or self-selecting to be considered in the REF are comparatively low. This study provides an important contribution to existing research in this area and provides an appropriate evidential base for institutional diversity and equality strategies.

The Researchers

Principal researcher: Dr Chantal Davies

This research was carried out by Dr Chantal Davies, School of Law, University of Chester who had responsibility for the management and conduct of the project. Dr Davies has been a qualified solicitor for 18 years and her practice has specifically focused on areas of equality law and human rights. After graduating with a Law degree from Oxford University, Chantal Davies qualified as a solicitor with Eversheds in Cardiff specialising in Employment, Human Rights and Discrimination Law. She then moved on to practice as a Senior Solicitor in Davies Wallis Foyster in Manchester. In 1998, she moved to work as a solicitor for the Equal Opportunities Commission (EOC) in Manchester heading up a Department tackling strategic and wider enforcement of the gender equality legislation. Whilst working as a solicitor for the EOC, apart from undertaking a number of major legal test cases, including two that went to the Court of Appeal, she also gave lectures and presentations. She has appeared on Legal Network television discussing the legal implications of the Part Time Workers regulations and on Einstein Network legal videos. She worked with the IPPR think tank on the possibility of setting up a Fair Employment Commission and was a member of the Euroneb Working Group on strategic enforcement. She has published a number of articles for various publications including the Equal Opportunities Review and has been involved in several projects investigating issues of gender equality.

Dr Davies is now a Senior Lecturer in Law and Module Leader for Public Law, Human Rights Law and Discrimination Law in the School of Law at the University of Chester. She is also a member of the University of Chester Diversity and Equality Committee, a Diversity Advocate and Disability Link Tutor, which demonstrates her continuing commitment to and experience of equality issues in the HE context. She recently developed and is Director of the Forum for Research into Equality and Diversity. Her recent research focuses on the experiences of BME students within HE. She is also currently carrying our research in collaboration with Glasgow University looking at the implementation and use by

organisations in the UK of the positive action provisions of the Equality Act 2010. She is a board member of the Equality Challenge Unit and a trustee for Cheshire Warrington and Halton Race and Equality Centre.

Co-researcher: Dr Ruth Healey

Dr Healey is a Senior Lecturer in Human Geography at the University of Chester. She is a Social Geographer by training with an interest in marginalisation and exclusion, and the impact of gender on such experiences. Specifically her research has focused upon immigration and exploring refugee and asylum seeker experiences in developed contexts.

Dr Healey began working at the University of Chester in 2009. She completed her PhD from the University of Sheffield in the same year. In 2012 she became Programme Leader of Combined Honours Geography and became a Senior Fellow of the Higher Education Academy in 2014.

Research assistant: Anthony Cliffe

Anthony Cliffe is a Postgraduate research assistant in the department of Geography and International Development at the University of Chester. His research interests are focused around sustainable aviation building upon his MSc in Sustainability for Community and Business, which followed his BSc (hons) in Geography. He has worked as a research assistant for the department since 2014, completing and assisting in a variety of research projects, as well as assisting in admin duties and student support roles in the department.

Objectives and Deliverables

The principal aims of this research are 1) to further current understandings of the influence of gender on the experiences of academics in relation to research activity and the REF 2014, and 2) to examine the particular nature of these experiences within the research institution with the view to using this information to develop University research strategy as we move towards the next REF (or equivalent). This research was funded by the research institution's Research and Knowledge Transfer Office (RKTO)

In light of a lack of evidence around the substantive experiences of female academics in relation to research activity and the REF 2014, the key objectives in achieving these aims are as follows:

a) To assist the research institution in fulfilling the requirements of the Public Sector Equality Duty (pursuant to the Equality Act 2010) and the action plans agreed as part of the institutional commitment to the Gender Equality Mark (GEM), Athena SWAN and HR Excellence in Research.
b) To investigate gendered differences in the perceptions of academics in relation to research activity and the REF within the research institution.
c) To analyse the lived experience of research activity of female academics within the research institution.
d) To utilise this qualitative data to complement and develop the findings of existing gender equality data that the research institution is legally obliged to collect and publish on an annual basis.

Background

The following section provides a brief summary of the research institution's recent submission to the REF 2014.

The Research Excellence Framework 2014 (REF2014)

The Research Excellence Framework is the new system for assessing the quality of research in HEI's in the UK, and replaces the Research Assessment Exercise (RAE), last conducted in 2008. The drive towards equality was significant to the REF process. To enable this, institutions were permitted to reduce the number of research outputs submitted for individuals whose 'special circumstances' constrained their ability to work productively throughout the assessment period. The relevant panels then assessed this work on an equal basis without the usual penalty for reducing the number of submitted outputs. Each institution making a submission was required to develop, document and apply a code of practice on selecting staff to include in their REF submissions. Further support in developing an effective Code of Practice was provided by the Equality Challenge Unit (ECU). On making submissions, the head of institution was required to confirm adherence to this code. In order to support this, the funding bodies required that institutions' codes of practice be submitted to the REF team by July 2012. The REF Equality and Diversity Advisory Panel (EDAP) then examined these in advance of the submission deadline, and all institutions' codes were published with the rest of the submissions at the end of the assessment process.

The research institution and the REF2014

All staff that fulfilled the REF eligibility criteria within the research institution were given an opportunity to be considered for inclusion. All eligible staff were required to provide a full and accurate record of activities within the reporting period, including copies of research outputs (on request) in an agreed format. The selection of staff was made primarily on the basis of the quality of the research outputs produced during the qualifying period (1st January 2008 to 31st December 2013). The decision for inclusion or exclusion of individuals and Units of Assessment (UOAs) was based upon the University's understanding of the likely impact of the assessment results on funding and reputation. It was recognised that this could mean that threshold criteria varied between UOAs. The criteria used to select staff took account of:

- The absolute quality of individual outputs;
- The average quality of an individual's outputs;
- The average quality of outputs across a UOA;
- The existence of 'missing' outputs (which were automatically graded as unclassified);
- The number of outputs, taking into account 'special circumstances'.

The institution assessed the quality of outputs on the basis set out in the published guidance on submissions and panel criteria by the REF.

At each selection stage, the University formally monitored the process for identifying individuals whose circumstances might need 'special consideration', and maintained records of the evidence used to inform decisions and actions. 'Special consideration' meant that reductions in the number of outputs could then be taken into account in applying the selection criteria.

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The University took into account the 'Panel criteria and working methods' (REF01.2012) and examples provided by the ECU, as well as those circumstances listed in REF 02.2011, paragraph 92. To summarise, the 'special circumstances' taken into account were:

- Qualifying as an Early Career Researcher (ECR) (i.e. starting their career as an independent researcher on or after 1st August 2009);
- Part-time working;
- Maternity, paternity or adoption leave (could include but not limited to: medical issues associated with pregnancy or maternity; health and safety restrictions in laboratory or field work during pregnancy or breastfeeding; constraints on the ability to travel to undertake fieldwork due to pregnancy or breast-feeding);
- Secondments or career breaks outside of the higher education sector, and in which the individual did not undertake academic research;
- Disability;
- Ill health or injury;
- Mental health conditions;
- Childcare or other caring responsibilities;
- Gender reassignment;
- Other circumstances relating to the protected characteristics (i.e. age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation).

Institutional Code of Practice on the Selection of Staff for the REF2014

In light of sector and legislative requirements, a commitment towards seeking to ensure equality was at the heart of the research institution's strategic planning for the REF. In line with the REF requirements, a Code of Practice on the Selection of Staff for the REF2014 (COP), intended to ensure consistency, equality and transparency in the selection process, was implemented in line with the ECU's guidance. This was submitted to HEFCE in February 2014. An Equality Impact Assessment (EIA) of this Code of Practice was completed as part of the University's approval process and drew upon information and evidence of the impact of the Code of Practice in place for the RAE2008.

To ensure that the University engaged and consulted with protected groups the COP was published on the institutional intranet. Human Resources notified the protected groups of this so that there was opportunity to provide feedback. The COP was drawn up based upon the guidance issued by the REF team and the ECU. The draft COP was discussed at the institutional Research Committee, Council Human Resources Committee, the Joint Policy Review Steering Group, Council Policy Committee and the University Council. Members of staff belonging to the Disabled Staff Network and LGBT Staff group were also contacted by email to draw the COP to their attention and staff absent from work were also informed.

Consideration of the RAE2008

This COP was a development of the one used for the RAE2008 following a full EIA of the RAE2008 process and taking into account the HEFCE (2009) commissioned report 'Selection of staff for inclusion in RAE2008'.

An institutional analysis of RAE2008 data had shown that:

- The proportion of female staff considered for selection and those actually submitted was low compared to the staff population (11% of female staff submitted compared to 19% of males; only 37.6% of the staff submitted were female when in the staff population they account for 52.8%);
- Mode (i.e. FT/PT) had no effect on submission;
- Contract type had little effect – 32.9% of submitted staff had fixed term contracts when they account for 28.8% of the staff population;
- Disability had little effect – only 2.3% of staff declared a disability but none were considered or finally selected;
- Race seems to have had relatively little effect - 85% of submitted staff has declared a variety of 'white' backgrounds compared to 77% the staff population. However, 13% of submitted staff declined to declare or their race was unknown – compared to 20% in the staff population. Only 3% of staff declared an ethnicity other than 'white' compared to 1% of submitted staff.

Sample sizes of considered and selected staff were however quite small so differences in percentage between groups were not necessarily significant. Equally, it was recognised that the Equality Act 2010 had been introduced since the analysis and more protected characteristics needed to be considered in the EIA of staff selection for REF2014. It was notable that there had been no appeals against selection decisions for RAE2008.

The apparent (but not statistically significant) under-representation of women in the RAE2008 could be explained at least in part by the high proportion of female staff in the Faculties of Education and Health & Social Care – which historically were funded primarily on the basis of teaching activity and therefore research activity was lower than in other faculties. In addition, it was recognised that research activity takes several years to feed through into publications (and therefore eligibility for RAE/REF inclusion). It was therefore anticipated that expansion in research activities in these two faculties would potentially reduce the imbalance of female representation in the REF2014 process.

Institutional Equality Impact Assessment
The detailed analysis of the RAE2008 at an institutional level and by HEFCE (2009) also informed the development of guidance and procedures for institutional process in relation to the REF2014.

An institutional Equality Impact Assessment (EIA) informed analysis of data on staff that were eligible for selection in respect of all the protected characteristics for which data was available. The analysis was thorough and systematic in order to determine whether the university's staff selection policy for the REF had a differential impact on particular groups. The EIA was undertaken by staff in the Research & Knowledge Transfer Office (RKTO), with assistance from the institutional Human Resource Management Service (HRMS) to provide the appropriate staff data.

The EIA was then reviewed at key stages of the selection process to ensure that any necessary changes intended to prevent discrimination or promote equality were taken prior to the submission deadline. This was done by comparing data for the following groups:

- all academic staff;
- members of staff who self-selected for consideration;
- eligible members of staff who were being considered for submission;
- final selection of staff for submission to REF2014; and
- staff previously selected for submission to RAE2008.

This process of analysis identified whether there were any discrepancies in the percentages of staff in protected groups at each stage. If discrepancies were found, they were investigated to identify possible barriers to participation and opportunities to advance equality. The EIA was published following submissions, as a matter of good practice.

Data was examined in relation to the following protected characteristics: sex, age, disability, ethnicity, religious belief or non-belief, sexual orientation and marital/civil partnership status. Data concerning permanent or fixed term and full or part time status was also examined in accordance with the REF Code of Practice.

A secondary area of analysis examined the equality profile of research active staff (as defined by those who self-selected for potential inclusion in the REF submission) in comparison to the University's academic staff profile.

First Analysis of Selection Process
An initial analysis was conducted in December 2012 prior to conclusion of the selection process. At this stage, 189 staff had self-selected for consideration for submission. At the time of the analysis, 83 were considered very likely to be submitted, 57 remained under consideration, and the remaining 49 had been judged not to meet the threshold for submission.

This primary equality analysis revealed the following:

- The selection process at that point had had no adverse impact on staff employed on fixed term contracts; in fact, fixed term staff seemed more likely to be submitted;
- There had been no disproportionate impact on part time staff compared to full time staff;
- Females seemed to be slightly less likely to be submitted than males but the numbers were not considered to be statistically significant;
- There was no apparent adverse impact on younger or older staff, disabled staff or black or ethnic minority groups;
- It was difficult to draw meaningful conclusions regarding any disproportionate impact in relation to marital status, religious beliefs or sexual orientation due to this information being unknown for a relatively large number of staff.

Second Analysis of Selection Process
A further examination of equality data was conducted in January 2014 following completion of the REF 2014 submission, to compare the equality characteristics of the 215 staff who self-selected and were considered for submission, and the 151 staff who were eventually selected for submission. The results of this analysis are detailed below:

- Fixed Term Status: 28.4% of the 215 staff that were considered for submission were employed on fixed term contracts, compared to 33.1% of the staff that were submitted. Thus it appeared that the selection process had not had an adverse impact on fixed term staff, in fact the opposite appeared to be the case, with a slightly higher percentage of staff submitted being fixed term than might have been expected, although this was not statistically significant (x^2 (1df, N=151) = 1.67, p>0.05).

- Full/Part Time Status: 12.1% of the staff considered for submission were engaged on part time contracts, compared to 15.2% of staff that were submitted. It therefore appeared that the selection process had not had any adverse impact on part time staff, in fact the opposite appeared to be the case, with a slightly higher percentage of part time staff being selected for submission than might have been expected, although again this was not statistically significant ($x2$ (1df, N=151) = 1.40, p>0.05).
- Sex: 40.5% of the staff considered for submission were female, compared to 37.7% of staff that were submitted. This percentage was slightly lower than might be expected, but this was not considered to be statistically significant ($x2$ (1df, N=151) = 0.49, p>0.05) and therefore the selection process was not considered to have had any adverse impact on female staff.

Analysis of Research Active Staff Compared to All Academic Staff

As a secondary area of interest, the equality characteristics of research active staff (i.e. the 215 staff who self-selected for potential submission to REF 2014) was compared against the profile of all 527 academic and research staff who were in employment on the REF census date. This analysis did reveal some interesting areas for further analysis, which can be summarised as:

- Female staff were significantly under-represented amongst researchers - 40.5% cf. 52.6% ($x2$ (1df, N=215) = 12.7, p<0.01);
- The age profile of research active staff was biased in favour of the younger age groups - the 25-34 and 35-44 age ranges were more research active and the 55-64 age range less research active than the overall academic population. These variations were significant ($x2$ (4df, N=215) = 23.88, p<0.01).
- There was a significant difference in the marital status of researchers compared to the overall academic staff population ($x2$ (2df, N=215) = 10.34, p<0.01), with researchers being less likely to be in a marital/civil partnership (43.7% cf. 54.1%). However the proportion of staff for whom their status was not known was also higher for researchers (24.7% cf. 18.2%). The data for unmarried was 31.6% cf. 27.7%.

Whilst these variations did not suggest that there were any areas of concern in terms of the REF2014 selection process, they were considered to be worthy of further investigation.

Theoretical Context

Background

The national context

In spite of huge inroads and drivers for change in the pursuit of gender equality in HE (in the UK, see inter alia Athena SWAN; public sector equality duty and globally British Council workshop 2012), the puzzle remains unsolved as to why female progression in HE remains stultified at the higher levels of leadership and research activity. Whilst females have numerical dominance at undergraduate level and are rapidly moving towards equality at the lecturer level in the UK, there has been very slow progression towards representation of women in leadership roles and within the professoriate. This underrepresentation threatens the goal of achieving research excellence and particularly in those areas where the starkest underrepresentation is seen such as within SET (Rees 2001; Blackmore 2014). Equally, women would appear to be underrepresented in the more powerful decision-making committees of HEI's (Doherty & Manfredi, 2005).

Across the UK in 2013/14 62.7% of professional and support staff were women but in contrast the majority of academic staff were men (55.4%) (ECU, 2015). Women however comprised the majority of academic staff in ten of 23 non-SET subject areas whilst 57.9% of male academic staff worked in SET subjects. Men also had a large majority in philosophy (74.7%), economics and econometrics (72.2%) and theology and religious studies (65.9%). Particularly high proportions of female staff were in education (65.5%) and health and community studies (65.4%) (ECU, 2015). The majority of all professors were men (77.6%) and this was across all subject areas however the gap was most notable among full-time professors working in SET subject areas where 81.8% were male. Equally 76% of men worked full-time compared with 58.3% of women. Women were also significantly underrepresented at senior contract levels with 12.5% of male staff on a senior contract compared to just 4.3% of women (ECU 2015).

The position in relation to Vice-Chancellors/Principals was equally concerning with just 20% of women represented at this most senior level in 2013/14 (ECU 2015). However, in this regard at least it would appear that the drivers for change are starting to bear fruit in relation to representation of female institutional leaders. Women now hold 22% of all Vice-Chancellor roles and this represents a net increase of seven female Vice-Chancellors since 2013 (Jarboe, 2016). Women now make up 29% of Vice-Chancellors/Principal appointments across UK HEI's (Oakman, 2016). This competes with the 1 in 3 target by 2021 set by Lord Davies in his most recent report in relation to women on Boards (Davies, 2015). Today there are 4 women running Russell Group universities in the UK (Oakman, 2016)

The gender gap is replicated at governing body level in the UK. There were 3300 HEI governing body members at the end of January 2016 and women held 36% of these roles. Whilst women's representation on governing bodies has increased from 32% in 2013, only a third of all HEIs now have gender-balanced boards (i.e. between 40 – 60% of either gender) (Jarboe, 2016). Equally, almost a quarter of HEIs have no women among their top tier academic heads and a fifth have one or no women on their executive teams. Sixty percent of HEIs have one or no internally appointed female member of the academic or management staff on their governing bodies (Jarboe, 2016).

Drivers for change from the regulatory and funding bodies have assisted in improving gender representation. In 2013 HEFCE was asked to work with the sector to address the insufficient diversity of

HEI governing bodies and leadership and asked for this work to continue in its 2015-2016 grant letter. Equally, in 2014 the Committee of University Chairs issued a new Higher Education Code of Governance aiming to identify the key values and practices upon which effective governance of HEIs is based. One of the seven primary elements of the code focuses on the governing body promoting equality and diversity throughout the institution, including in relation to its own operation (Jarboe, 2016).

Since 2013, HEI's have recognized the need to set goals in relation to leadership diversity. Support for this has been given by the specific measures set by HEFCE in its 2015-2020 Business Plan to encourage greater diversity in governing bodies and senior leadership (Jarboe, 2016). In addition the introduction of various diversity and equality awards schemes have been developed (in particular Athena SWAN). The linking of Charter Marks and progress on equality and diversity to grant funding is a major driver. For instance, in 2011, Dame Sally Davies, the Chief Medical Officer, linked the attainment of a Silver Athena SWAN award to being short-listed for National Institute for Health Research funding. Similarly, in 2013 Research Councils UK issued a statement of equality and diversity expectations for applicants of grant funding and in 2015 published diversity monitoring information of grant applicants and recipients for the first time (Jarboe, 2016).

In spite of some progress, underrepresentation of women in leadership positions in UK HEIs remains an issue of concern (ECU, 2015). Equally, the gender gap in relation to research activity in the UK continues (HEFCE, 2014; UCU, 2013). Studies and theorists (as per below) have identified a range of complex factors that may act as barriers to women in the academy. These conceptual justifications can largely be divided into two categories i.e. structural views that differences are not attributable to gender per se but rather to external variables and the socialisation view that observed gender differences represent real psychological differences in the motivation to work that arise out of the different socialisation processes of men and women (Shaw & Cassell, 2007). This report attempts to break this literature into themes as follows: systemic discrimination; networking and collaboration; confidence; mentoring; differential attitudes towards career planning; female driven work patterns and family responsibilities.

The institutional context

The research institution is located in the cathedral city of Chester. The Church of England founded the institution as a diocesan teacher training college in 1839. It was not until 2005 that it was awarded full university status. Taught degree awarding powers were granted in 2003 and research degree awarding powers were granted in 2007. The institution is a member of the Association of Commonwealth Universities, the Cathedrals Group, the North West Universities Association and Universities UK.

The current number of employed staff within the institution (as of January 2015) is 1,795. Sixty two percent of *all* staff are female whilst 52% of academic staff are female. This can be benchmarked against the sector average of 62.7% and 44.6% respectively. The institution recognizes that the higher proportion of female academic staff reflects the substantial areas of its curriculum provision (in particular Health and Social Care and Teacher Education) that recruits predominantly female staff (UOC Equality and Diversity Report, 2016). Equally, 22% of academic staff within the institution work on a part-time basis. The institution has a higher proportion of full time academic staff than the national average. The gender pay gap within the institution is calculated by 'grossing-up' the salaries of all part-time staff to establish a notional full-time figure and then by comparing the average full-time figure for female staff to the full-time figure of male staff (UOC Equality and Diversity Report, 2016). The results are that the female average salary across the institution is currently £29,266.11 compared to a male average annual salary of £34,311.05. This equates to an institutional gender pay gap of 14.7%. This is compared to an overall HE Sector Pay Gap of 18.9% and a UK wide pay gap of 19.2% (ONS, 2015). However, if the university were to

use the same formula as the ONS to establish the gender pay gap in relation to full-time staff it would be 9.09% compared to a national average as of April 2015 of 9.4% (UOC Equality and Diversity Report, 2016). A full Equal Pay Review has now been carried out within the research institution but is currently awaiting senior management approval.

Table 1 provides a breakdown of academic role based on gender for 2015/16 (it should be noted that the grand totals do not provide an overall total due to the double counting of some posts). As can be seen women clearly outnumber men at lecturer and senior lecturer level. Whilst at Faculty management level there appears to be little gender disparity, there is some disparity in relation to departmental managerial level and significant disparity at professorial level. In terms of committee representation across the institution a level of gender disparity can be seen across the decision making bodies within the institution. Senate has 23 men compared to 9 women, Development Advisory Group has 10 men compared to 3 females, Research Committee has 8 men compared to 7 females, Partnership Subcommittee has 14 men compared to 9 women, Student Experience Committee has 10 men compared to 12 women. The small focussed Senior Management Team within the institution does not currently have any female representation.

Table 1: Institutional gender breakdown by role 2015/16

Group	Female		Male		Total Post Count	Total FTE Sum
	Post Count	FTE Sum	Post Count	FTE Sum		
Associate dean	7	6.0	7	5.6	14	11.6
Dean	2	2.0	2	1.0	4	3.0
Deputy dean	1	1.0	1	1.0	2	2.0
Executive dean	3	1.0	4	3.0	7	4.0
Head of department	13	11.0	20	18.0	33	29.0
Lecturer	74	62.5	56	48.5	130	111.0
Professor	12	8.6	43	34.4	55	43.0
Pro-vice-chancellor	2	2.0	5	5.0	7	7.0
Senior lecturer	231	170.6	171	131.0	402	301.6
Sub dean			1	0.2	1	0.2
Grand Total	345	264.7	310	247.7	655	512.4

In relation to research activity within the institution, 86% of academic staff responding to the research questionnaire (see section 6) have research included within their contract of employment. However, the institution has more recently sought to assess research activity based on self-selection for the REF2014. The Equality Impact Analysis was carried out by the institution in January 2014 (see above at section 3) to compare the equality characteristics of the 215 staff who self-selected and were considered for submission, and the 151 staff who were eventually selected for submission. Table 2 below sets out a gender breakdown of staff self-selecting for the REF2014 and Table 3 sets out a gender breakdown of staff submitted to the REF2014 in relation to individual Units of Assessment.

Table 2: Institutional breakdown of staff self-selecting for the REF2014

Unit of Assessment	Female	Male	Grand Total
3	15	17	32
4	16	5	21
10	1	7	8
11	1	3	4
19	4	13	17
22	5	5	10
25	5	8	13
26	5	10	15
27	4	6	10
29	8	7	15
30	3	6	9
33	6	13	19
34	1	6	7
35	7	9	16
17A	4	10	14
17B	1	3	4
25/17	1		1
Grand Total	**87**	**128**	**215**

Table 3: Institutional breakdown of staff submitted for the REF2014

Unit of Assessment	Female	Male	Grand Total
3	12	14	26
4	10	5	15
10	1	6	7
11	1	3	4
19	2	4	6
22	3	2	5
25	1	4	5
26	4	9	13
27	4	5	9
29	5	6	11
30	2	5	7
33	4	10	14
34	1	4	5
35	3	7	10
17A	2	7	9
17B	1	3	4
25/17	1		1
Grand Total	**57**	**94**	**151**

As discussed above, a further analysis was also carried out on the equality characteristics of research active staff (i.e. the 215 staff who self-selected for potential submission to REF 2014) compared against the profile of all 527 academic and research staff who were in employment on the REF census date. This analysis found that female staff were significantly under-represented amongst research active staff based on those who had self-selected for submission to the REF (see section 3 above).

The University is committed to supporting the development of excellence and equality in research. This is evidenced by the Universities application to key national/European initiatives in this area:

- In 2009, the University completed a self-audit against the principles of the Concordat and European Charter, and approved a Concordat Implementation Strategy and Action Plan in June 2010. The Implementation Strategy and Action Plan was reviewed and updated in October 2012, and an application was submitted for the HR Excellence in Research Award. The University was granted this award by the European Commission in January 2013. The HR Excellence in Research award is a UK-wide process, incorporating the QAA UK Quality Code for Higher Education, Chapter B11: Research Degrees and the Concordat to Support the Career Development of Researchers. It enables institutions to gain the European Commission's HR Excellence in Research Award, acknowledging alignment with the principles of the European Charter for Researchers and Code of Conduct for their Recruitment.
- The University submitted a successful application for an institutional bronze Athena SWAN award in November 2014 and this was formally launched at an event in March 2016. The ECU's Athena SWAN Charter has been developed to encourage and recognize commitment to combating underrepresentation of women and advancing the careers of women in STEMM research and academia.

In relation to the above projects, core action plans state the need to explore the reasons for differentiation between numbers of male and female research-active staff.

As part of the institutional application for the Gender Equality Mark (GEM) (which has now merged into the Athena SWAN award), an analysis of data was undertaken in relation to gender equality across the university. Certain areas provided focus during the GEM application process. The key areas of imbalance that the University identified from the data included:

- Research – underrepresentation of female staff submitting to the REF2014 (as explored above) and as members of Research Committee.
- Membership of Senate – membership of Senate is predominantly male.
- Representation of female managers – even the apparently balanced ratio above is belied by data which shows significantly more female staff at the University than male staff, a higher proportion of female staff at lower levels and higher proportions of male staff in managerial positions, particularly SMT.

More generally, in relation to research activity the institution seeks to ensure that all staff have access to training and have adequate resources, including time, to achieve excellence through research. The university states that it offers all staff support to make original and worthwhile contributions to research and to have the quality of their work recognised by peers and policy makers. Details of staff development and training programmes are available to all staff on the University intranet, along with additional support documents and grant information. Equally, the University has stated that it is committed to the provision of staff development for all staff working in the University. Equally, they state that they actively

encourage, enable and support staff in obtaining further qualifications, training and experience which will facilitate personal and professional development enabling individuals and groups to achieve their full potential, perform their roles more effectively and contribute ultimately towards the University's achievement of its aims and objectives. The University facilitates this staff development through annual performance and development reviews.

Support is also offered by the University's Research & Knowledge Transfer Office to all staff when applying for research grants. In addition, the University has established over a number of years internal grant schemes to support research and knowledge transfer activities that will enhance staff research capacity and outputs, and contribute to the development and sustainability of the University's research base. Eligibility criteria for internal grants are based solely on the quality of proposals (and in certain schemes on the subject area), not on the type or FTE of the applicants contract. Where possible, the University has a flexible approach that enables staff to roll over grants from one academic year to the next when they are affected by special circumstances. Deans of Faculty, Heads of Subject and other line managers responsible for workload planning are required to ensure that:

- Duties are allocated in a fair and open manner and performance monitored so that all staff are seen to be contributing fully to the activities of the University;
- There is a reasonable distribution of activity among all academic staff, thus providing equality of opportunity.

In relation to the REF, the University drew upon expertise in equality and diversity legislation and staff training within its HRMS and the resources made available by the ECU to develop and deliver a half-day training session for decision makers and internal advisors (such as the Technical Advisors within the Research & Knowledge Transfer Office and UOA co-ordinators). The session focused upon case studies and was supplemented by an information pack for reference, which was also sent to any external advisors that the University uses. Participation in training sessions for decision makers and all formal internal advisors on the REF was compulsory. The first training sessions ran through the spring term of 2012, and were repeated if staff changed or if the EIA indicated that further tailored sessions were needed to address particular issues.

The legal context
The Equality Act 2010 (EA 2010) harmonised and consolidated previous anti-discrimination legislation. The Act covers the protected characteristics of:

- age
- disability
- gender reassignment
- marriage and civil partnership
- pregnancy and maternity
- race
- religion or belief
- sex
- sexual orientation.

As well as prohibiting direct discrimination the Act prohibits indirect discrimination – following a policy that, although applied equally to everyone, is harder for those with a protected characteristic to comply

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with. Indirect discrimination is not a breach of the Act if it is a proportionate means of achieving a legitimate aim.

In addition, the EA 2010 places requirements on the funding bodies and HEIs as public sector organisations. The public sector equality duty (PSED) of the Act came into force in April 2011. Under section 149 of the EA 2010, the higher education funding bodies and HEIs in England, Scotland and Wales, in carrying out their functions, must have due regard to the need to:

- Eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under the Act;
- Advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it;
- Foster good relations between persons who share a relevant protected characteristic and person who do not share it.

In order to demonstrate compliance with the PSED, the higher education funding bodies need to consider and understand the impact of their policies on equality. The funding bodies have thus been legally required to consider the equality impact of the RAE in the development of the REF, and equality has been embedded into all relevant elements of the REF. As both employers and public bodies, HEIs have also been required by the EA 2010 to ensure that their REF procedures do not discriminate unlawfully against individuals because of age, disability, gender identity, marriage and civil partnership, race, religion or belief, sex or sexual orientation or because they are pregnant or have recently given birth. When developing their REF procedures, HEIs have also been required to be mindful that under the fixed-term employee and part-time workers regulations, fixed-term employees and part-time workers have the right not to be treated by an employer any less favourably than the employer treats comparable employees on open contracts or full-time workers. This is also a gender equality issue. For this purpose, the relevant regulations are:

- Part-time Workers (Prevention of Less Favourable Treatment) Regulations 2000
- Fixed-term Employees (Prevention of Less Favourable Treatment) Regulations 2002

As public sector organisations, the PSED has meant that all HEIs conducted EIAs on their policies for selecting staff for the REF. In addition to the PSED, the EA 2010 permits employers and public bodies to undertake positive action to redress disadvantage suffered by the protected groups under the legislation.

The positive action provisions of section 158 of the EA 2010 permit employers (and other organisations covered by the 'work' provisions of the Act in Part 5) to take action targeted at the protected groups, so long as it is a proportionate means of achieving certain stated aims. The stated aims are:
- enabling or encouraging persons to overcome or minimise disadvantage;
- meeting the different needs of the protected group;
- enabling or encouraging persons in protected groups to participate in an activity (section 158(2)).

Thus proportionate measures to alleviate disadvantage experienced by people in protected groups, to meet their particular needs or to address their under-representation in the workplace in relation to particular activities are permitted, but only where person (P) reasonably thinks that:
- Persons who share a protected characteristic suffer a disadvantage connected to that characteristic,

- Persons who share a protected characteristic have needs that are different from the needs of persons who do not share it, or
- Participation in an activity by persons who share a protected characteristic is disproportionately low (Section 158(1)).

While some evidence or objective justification will be required to support the employer's belief that one of these conditions applies, the parliamentary debate during the passage of the Equality Bill would suggest that the threshold for proof is relatively low. The Equality and Human Rights Commission (EHRC, 2011) Code of Practice on Employment (paragraph 12.14) suggests that it will be sufficient for an employer to rely on the profiles of their workforce and knowledge of other comparable employers in the area or sector, or national data such as labour force surveys for a national or local picture, or qualitative data such as consultation with workers and trade unions.

In assessing whether positive action measures are proportionate in the particular circumstances, the Explanatory Notes (2010) state that this will depend, among other things, on the relevant disadvantage, the extremity of need or under-representation and the availability of other means of countering the disadvantage (paragraph 512).

The EHRC's Code of Practice on Employment (2011) (paragraphs 12.13 to 12.36) includes a number of examples of the types of action which employers can take and these include targeting advertising at specific disadvantaged groups, providing training opportunities in work areas or sectors for the target and the provision of support and mentoring.

The antecedent legislation did not allow for positive action in recruitment and promotion. However, Section 159 EA 2010 introduces limited provisions that can be relied upon at the point of recruitment. The effect of section 158(4) is that employers cannot rely on the general provisions in relation to recruitment and promotion, but must rely on section 159. This exception allows employers to take a candidate's protected characteristic into account when offering employment or a promoted post, if certain conditions are met. A candidate in a protected group can therefore be favoured over another candidate in certain circumstances.

The conditions are:
- the candidate is 'as qualified as' another candidate to be recruited or promoted (section 159(4)(a));
  The Explanatory Notes (2010) explain that:
  > …the question of whether one person is as qualified as another is not a matter only of academic qualification, but rather a judgement based on the criteria the employer uses to establish who is best for the job which could include matters such as suitability, competence and professional performance (paragraph 518).
  This means then that consideration is required in the context of an objective selection process which assesses skills, qualifications and experience overall.
- The employer 'reasonably thinks' that the protected group is at a disadvantage or is under-represented (section 159(1));
- The action is with the aim of enabling or encouraging protected groups to overcome or minimise the disadvantage or participate in that activity (section 159(2));
- The action is a proportionate means of achieving those aims (section 159(4)(c));
- The employer does not have a policy of automatically treating persons in the protected group more favourably in connection with recruitment or promotion (section 159(4)(b)), that is, according to the Explanatory Notes, 2011 (paragraph 526) each case must be considered on its merits.

Where these conditions are met, employers can give "weight" to a particular protected characteristic to increase the proportion of their workforce belonging to the protected groups, and take it into account when making the decision, in a tie-break situation, to recruit or promote a candidate.

Increasingly, there is strong argument that the PSED may go so far as to require public sector employers to at least consider introducing positive action initiatives. As a result of section 149 of the EA 2010, the PSED now seeks to ensure that the promotion of equality is at the centre of the work of the public body. The general duty under section 149 is the requirement that the public authority exercise its functions with due regard to the need to (amongst other things) advance equality of opportunity between persons who share a relevant characteristic and persons who do not share it.

Section 149(3) of the Act develops further to provide that a public authority must have due regard to the need to advance equality of opportunity between persons who share a protected characteristic and those that do not share it. In particular, this involves having due regard to the need to take steps to meet the needs of those who share a protected characteristic that are different from the needs of those who do not share it and encourage those who share a protected characteristic to participate in public life or in any other activity in which participation by such people is disproportionality low. The shift in the legislation from 'promoting' to 'advancing' equality of opportunity would indeed suggest a more focused approach towards equality of outcome and the need for public sector bodies to be more proactive. This may well indicate that there is a requirement that public authorities consider alleviating disadvantage through advancement of equality of opportunity via the means provided by the positive action provisions.

The use of positive action measures in HE can be problematic. Whilst liberal approaches can be viewed as patronising, tokenistic and aimed at 'fixing the women' more radical approaches are accused of amounting to 'reverse discrimination' and can often be unwelcome to the disadvantaged group (Doherty & Manfredi, 2009). In a recent small-scale scoping study carried out by Davies and Robison (2015), the use of positive action in HE was explored. It does appear that the initial findings support anecdotal speculation as to the reasons why the positive action provisions (and in particular section 159) are not being effectively utilised in the UK. The link between the PSED and the positive action provisions was evident in that those public sector bodies responding to the survey were aware of and on the whole had utilised some form of positive action measures in order to redress disadvantage in the workplace. Whilst there was a clear willingness to use outreach measures in order to redress disadvantage, there was evident wariness regarding a move towards preferential treatment as expounded by section 159. Even where individual's professed a subjective appreciation for more developed positive action, fear of legal liability arising from 'reverse discrimination' and concern at creating segregation and stigmatisation for those benefiting from the 'tie-break' measure was clear. Supporting a 2008 ICMPD report, the data demonstrated that third party initiatives were vital in raising awareness and providing the know-how and confidence to utilise outreach positive action. Sector-based kite marks such as Athena SWAN and Two Ticks were considered highly beneficial by those respondents from the educational public sector for example. Whilst respondents appeared to appreciate the business case for and utility of the positive action measures under section 158, there was far less enthusiasm for more direct preferential treatment with many respondents raising serious concerns regarding this (Davies & Robison, 2016). Key findings from this study were supported by Doherty and Manfredi (2005) when they found that academic women mostly wanted practical interventions and a place to discuss experiences specific to women. Their concern though was that unfortunately these initiatives were often very short lived and quickly came to an end once funding withered (Doherty & Manfredi, 2005).

Changing higher education context in the UK

Over the last 20 years the higher education context in the UK has changed dramatically. These changes have necessarily had an impact on gender. The growth in new universities, increase in external regulation, rising student numbers and the demands of internationalisation have all led to a very different working environment for the majority of academics. Equally, the pressure to produce research outputs that can be objectively evaluated has resulted in a performance centred culture being driven by global university ranking systems (Marginson, 2008; Blackmore, 2014).

Greater focus on the legislative and social need for diversity within the workplace has resulted in more transparency and objectivity in promotion criteria, which has ultimately benefitted gender diversity within the academy. Doherty & Manfredi (2005) found that women felt less marginalised in the new universities. However, it is also argued that the new style of corporatisation and managerialism (arguably based on a male dominated style of management) within higher education poses threats for women who may not easily 'fit' what can be seen as a highly competitive and entrepreneurial management focus (Doherty & Manfredi, 2005; Morley, 1999; Saunderson, 2002). This managerial dominance has led to disenchantment with the new system by many women (Blackmore, 2014). Equally, the commodification of knowledge in higher education has led to many academics (and particularly women) who may lack a sense of belonging and entitlement in the new arena feeling marginalised and lacking representation (Morley, 2016).

The pressures of massification and academic consumerism has also resulted in students expecting a more personalised teaching style and enhanced system of pastoral care which of course impacts and distracts from research activity. Many argue that this adversely impacts upon female academics, as they are more likely to pick up the emotional labour within institutions including greater teaching and pastoral commitments (Blackmore, 2014; Ward & Wolf-Wendel, 2004). This becomes particularly problematic when the emerging higher education culture clearly rewards 'aggressive and competitive behaviours over cooperation and pastoral care' (Parker & Jary, 1995 p330).

Research activity in the HE context

The gender gap in research activity is widely recognised (e.g. Aiston & Jung, 2015; UNESCO, 2012; Zie & Shauman 1998; Blake & Lavalle, 2000; Kyvik & Teigen, 1996; European Commission, 2008, 2011; European Science Foundation, 2009; Obers, 2015; Schucan-Bird, 2011). A UNESCO study in 2012 found that men occupy 70% of research positions globally. In Aiston and Jung's (2015) analysis of the Changing Academic Profession (CAP) survey data across five countries (not including the UK), they found that female academics published less than male colleagues over a 3-year period and this gap in research output was particularly an issue for Asian and Japanese female academics (but less of a gender gap could be seen in the USA).

Just as the gender gap in relation to research activity varies geographically so unsurprisingly we see significant variation across disciplines. Doherty & Manfredi (2005; 2009) note that women's research profiles were less developed than those of male academics in their study but that this could be due to a high density of women in the more vocationally orientated schools were traditionally research activity is less pronounced (such as nursing and teaching). Equally, it is suggested that the gender gap in research activity in SET subjects is often more pronounced as work patterns require monitoring of experiments outside of working hours and for women this increases the challenge of balancing caring responsibilities with erratic working hours (Howe-Walsh & Turnbull, 2014). Similarly, Knights & Richards (2003) explored the elevated value attributed by HEI's to the 'hard' quantitative research often dominated by men over the 'softer' qualitative study predominantly populated by female academics.

Whilst the academy has undergone a transformation in the last decade, it is still accepted that research is the most important currency in the prestige economy of HE (see *inter alia* Aiston & Jung, 2015; Morley, 2014; Baker, 2012; Fitzgerald, 2014; Macfarlane, 2012). The performance-based culture of HE still emphasises research activity of international quality and standing (Baker, 2012). As Morley states 'research performance is implicitly associated with the prestige economy in higher education, and is a pathway to academic seniority and indicator for promotion' (2014, p116).

Promotion and reward in HE is still significantly linked into performance indicators and reputation capital that research provides. Morley (2016) laments that in the research economy, women are becoming increasingly side-lined. As long as a gender gap remains in the prestige commodity of HE, and promotion still favours research over other academic activities, then women will continue to suffer in relation to academic progression (Doherty & Manfredi, 2005; Baker, 2012). Therefore, developing an understanding of why women are underrepresented in research across the academy has the potential to address the leadership gender gap within HE (Obers, 2015).

In 2008, Parker looked into UK HEI promotion criteria. In spite of some move towards broadening out promotion criteria to take into account professional expertise, teaching and leadership, he found research excellence to still be an almost exclusive requirement for promotion within the academy. This is particularly true in relation to the pre-92 universities. This is supported by the perceptions of academic staff who still consider research performance as central to promotion (Barrett & Barrett, 2011).

Gender and REF

The REF process (see above at section 3) in the UK is an important tool for both government and universities. As Broadbent (2010) recognises, research assessment processes allow the state to control universities and universities to control their academics. When the interests of the university and state are internalised by academic staff such exercises can be a powerful and cheap form of control (Broadbent, 2010 p14). Several studies have looked at the gendered consequences of research assessment processes (e.g. Knights & Richards, 2003; Haynes & Fearfull, 2008; Brookes, Fenton & Walker 2013). Whilst research assessment processes such as the REF may create the objectivity and transparency that can be beneficial to women, equally the demands of meeting the evaluative requirements may work against female patterns of working and reinforce discriminatory practices (Harley, 2003; Fletcher *et al*, 2007; Barrett & Barrett, 2011).

The UK research assessment process has been blighted by accusations of institutional sexism (AUT, 2004; Donald, 2011). In the HEFCE analysis of the 2001 RAE, it was revealed that around 64% of men but only 46% of women were submitted. This gender disparity led to a focused attempt to eliminate gender bias in the RAE2008 when allowance was made for those with reduced productivity due to extenuating circumstances including maternity leave. The REF2014 solidified and developed the concept of 'special circumstances' further (see above at section 3).

The HEFCE report (2014) on the REF2014 investigated how disability, age, sex, ethnicity, nationality and early career researcher status related to the selection of staff for inclusion in the REF. As with their previous report in 2009 (HEFCE 2009) the data demonstrated a continued marked difference in relation to selection rates between genders. Whilst the proportion of women selected had increased from the RAE in 2008, analysis still demonstrated that 67% of men compared with 51% of women were selected in the 2014 REF. Analysis demonstrated that the majority of HEIs did not have equal selection rates by gender. Unsurprisingly, differences of selection rates across Units of Assessment were also observed.

Equally unsurprising was the finding that there was a larger selection gender disparity for non-early career researchers (58%) when compared with early career researchers (80%). In addition the selection for female early career researchers was actually higher than for male early career researchers. Staff with fractional contracts were significantly less likely to be selected

The HEFCE statistical findings are supported by a survey focussing on the REF2014 undertaken by UCU (2013). UCU received around 7000 responses (43% female, 57% male) from academic staff across 153 HEIs. The data revealed that there were high levels of dissatisfaction regarding the way in which requests for reduced outputs had been handled by individual HEIs. 19% indicated that they had made a reduced output request with female respondents making requests 2.5 times more than male respondents. The unbalanced impact that workload and performance management demands deriving from the REF had placed on women were noted. Close to 75% of female respondents considered they were unable to undertake the necessary work to produce REFable outputs without working excessive hours. Over 60% of respondents (more women than men) felt that pressure to meet expectations in relation to the REF had increased their stress levels. Over a third of those employed on fractional contracts indicated that they had undertaken half or more of their work on REF outputs outside of paid working hours.

Systemic discrimination

Many argue that the gender gap in higher education is maintained via the masculine norm based practices and structures of the academy (Aiston & Jung, 2015; Morley, 2014, 2016; Husu & Morley, 2000; Thomas & Davies, 2002; Bailyn, 2003; O'Connor & White, 2011). If we follow this logic then simply counting women into senior positions will do little to avoid the inherent disadvantage to female academics caused by a disabling masculine structure. Morley (2011) notes that numeric targets in this regard can 'fail, or be meaningless, while femaleness continues to be socially constructed as second class citizenship' (p230). Equally, Morley (2014) argues that 'the inclusion of more women is not always transformative and can result in new constituencies being expected to assimilate and conform to normative practices' (p124). As long as such disabling organisations continue to perpetuate then arguably women will often choose not to seek promotion into leadership roles, which may be hostile and unwelcoming (Pyke, 2013; Bagilhole & White, 2013).

The lack of visible diversity within leadership and research activity within the academy may also act as a barrier to progression for women. Those who are selected for key appointments send out a clear message about the value of women within an institution (Doherty & Manfredi, 2005; Obers, 2015). Indeed the lack of diversity in leadership and senior research positions may well discourage women from aspiring to leadership or research activity (Blackmore, 2014). Thus, the dearth of women in senior positions can perpetuate the perception of a dominant male culture. The presence of women in senior roles can therefore encourage others to aspire to progression (Fox, 2005; Howe-Walsh & Turnbull, 2014). Sader *et al* (2005) state that 'critical mass is a crucial factor both in creating an ethos in the institution where women's voices are heard and taken seriously, and in creating institutional capacity for women to empower other women' (p66).

According to a feminist critical sociology, gender works through organisations in terms of what gets valued and what is debased (Blackmore, 2014). Academic progression can thus be seen as largely determined by masculine criteria, which are only met by male patterns of behaviour (White, 1995; O'Neil *et al*, 2008). Knights and Richards (2003) describe a typical career path structured according to a male perception of success: research-active, participating in the RAE, and an uninterrupted career history. They argue that the system of meritocracy upon which appointment and promotion are based within the academy reinforces a masculine approach to career success and the way in which knowledge is

constructed, debated and discussed. Therefore, in order to seek to resolve the gender gap in the academy, the argument is that we first need to deconstruct the existing masculine structures and mainstream diversity into all organisational practices and procedures (Morley, 2014).

A lack of awareness of the rules of the progression game is also noted by many (see *inter alia* Bagihole & White, 2013; Doherty & Manfredi, 2009; Howe-Walsh & Turnbull, 2014; Morley, 2012; Morley, 2014). Women are hesitant about putting themselves forward for progression due to a lack of information regarding the qualifications and skills required (Bagilhole & White, 2008). Doherty & Manfredi (2005, 2009) demonstrated that once women are clear about the rules of the game they are able to play just as well as men. However, Morley (2014) is concerned that an historical exclusion from the academy means that women lack knowledge of how the research and leadership system works.

The systemic discrimination of women can be seen in all aspects of the academy and nowhere is it felt as keenly as in relation to research productivity. Masculine structures that run through every element of the research and publication process work to disadvantage and exclude women (Morley, 2014). Male colleagues are less likely to read and cite women's research which leads to lost female visibility (Baker, 2012, Morley, 2014). Karlbinder (2014), in his study of female citations across four prominent HE journals, found that women were significantly less likely than their male counterparts to be cited. This in turn constructs a masculine representation of knowledge, which is reproduced. Equally, women are less likely to be journal editors. For example in the political sciences, only 18% of women were editors across an analysis of 50 journals (Stegmaier, Palmer & Assendelf, 2011) and across 12 major medical journals only 25% of editors were female (Kennedy, Lin & Dickstein, 2001).

Equally, academic working patterns would appear to be constructed according to masculine norms. Academia largely roots its culture in male ideologies around structures of work and division of labour (Schlehofer, 2012). Barrett and Barrett (2011) reflect that academics are expected to be 'on the job' at all times with little consideration of the impact this might have on work life balance. Working in evenings and weekends is accepted practice (Kinman & Jones, 2004). Such working patterns will inevitably impact upon women who still undertake the majority of domestic duties and childcare in the UK. Similarly academic progression is increasingly reliant on international visibility and mobility. This assumes that academics are free of the wider duties and responsibilities that may bind them. Again, the static position of women as primary carers creates an insurmountable obstacle to mobility (Blackmore, 2014).

Some studies have suggested that the way in which certain women have resolved this is to adopt masculine patterns of working in order to succeed (Goode & Bagilhole, 1998; LeFeuvre, 2009; White, 1995). This is supported by research suggesting that successful women in management are less likely to marry and have children than their male counterparts (Davidson & Cooper, 1992). Therefore, for those who do not wish to conform to this masculine construct of labour will either choose not to seek progression within HE or indeed opt out completely. Indeed Morley (2014) questions whether women are making 'material calculations regarding the costliness of attachment to leadership aspirations' (p117). Ryan and Haslam (2007) as discussed by Morley 2014 describe the 'glass cliff' syndrome whereby women are often positioned in precarious and unrewarding management areas. Thus leadership can sometimes appear to be less about progression and more a cage restricting independence, research capacity and health (Morley, 2014).

Whilst most of the evidence of gender disparity within the academy would appear to be rooted in either institutional inequalities or based on a range of complex gendered factors, there is much less evidence of widespread direct or overt discriminatory practices and harassment. Nevertheless, some studies point

to isolated incidents of bullying and harassing behaviour towards women by male members. A number of study's report irritating negative attitudes and behaviours from colleagues (Doherty & Manfredi, 2005) such as a lack of recognition and celebration of success when compared to male colleagues (Howe-Walsh & Turnbull, 2014) leading to what O'Neil & Bilmoria (2008, p183) term 'pragmatic endurance', where mid-career women have to operate against the impact of systemic inequality, discrimination and harassment.

Networking and collaboration

The marginalisation of women in the academy is further impacted by a lack of or exclusion from networking opportunities (Aiston & Jung, 2015; Baldwin, 1985; O'Leary & Mitchell, 1990; Barrett & Barrett, 2011; Van den Brink & Benschop, 2012). Networking opportunities as a form of building social capital are seen as vital to increase female research productivity and to enhance career progression (Gardiner *et al*, 2007; Forret & Doherty, 2004). Exclusion from informal networks and thus lack of access to relevant information and decision making sources within the organisation can make it more difficult for women to learn to manage and progress within the organisational structure (Thancoody *et al*, 2006 p 540). Equally, if women are excluded or less able to access influential networks then they will ultimately be disadvantaged particularly when academic promotion often requires endorsement from peers within and without the institution (Howe-Walsh & Turnbull, 2014). Indeed, a study by Glazer-Raymo (1999) found that women, without the necessary informal networks, could find themselves obstructed as they near the top of the hierarchy where advancements are often based on trust rather than performance.

Existing literature explores the power of the 'old boys network' within the academy (e.g. Davidson & Cooper, 1992; Howe-Walsh & Turnbull, 2014) and not only does this limit career progression opportunities, but can also impact upon research opportunities, funding, publications and collaborations. The importance of women sitting on the more powerful university committees is also linked to networking, as this is often how personal networks are developed and extended (Doherty & Manfredi, 2005). Equally, the issue of mobility can become problematic for women in developing the necessary networks. Processes that introduce and enable external networking (particularly in the international arena) arguably disadvantage women whose mobility is often limited by domestic responsibilities and thus detrimentally effects research productivity (Obers, 2015).

Whilst studies show that both men and women appear to recognise the importance of good networks and actively seek to develop them, some women are concerned about exploiting these networks in a way that does not concern men to the same extent (Doherty & Manfredi, 2009). Studies also show that in order to build research reputation and productivity, women should be encouraged to build both male and female networks (Brookes, Fenton & Walker, 2013).

Linked to the importance of networking is the gendered approach towards collaboration in the academy. Importantly Kyvik *et al* (1996) found that lack of research collaboration was a major factor for women in relation to research productivity. They found that a lack of research collaboration had a significant detrimental impact on female productivity but in contrast had little effect on male research productivity. Thus suggesting that women are more dependent on collaborative working environments than their male colleagues (Kyvik *et al* 1996). The relevance of collaboration can be seen most keenly in relation to publication. Studies suggest that co-authorship results in significantly more publications (Nederhof, 2006; Stack, 2002). Schucan-Bird (2011) found that within the social sciences, women are more likely to co-author than male colleagues and that collaboration tends to be between colleagues of the same sex. This would suggest that at least within the social sciences women are engaged in a more productive means of working.

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Confidence issues

The female confidence deficit is one of the most person centred and thus controversial theories for the gender gap in progression and research activity in HE. Numerous studies have focused on female lack of confidence and belief in academic ability as a fundamental barrier to progression (Asmar, 1999; Saunderson, 2002; Fletcher *et al*, 2007; Litzky & Greenhouse, 2007; Doherty & Manfredi, 2005; Bagihole, 1994; Eggins, 1997; Harris *et al*, 1998; Obers, 2015).

This lack of confidence in their social capital and abilities appears to manifest itself in women having weaker career aspirations than their male colleagues and thus being far less likely to put themselves forward for promotion or engage in competitive activities which will enable career progression (Litzky & Greenhouse, 2007; Doherty & Manfredi, 2005). As one participant in Obers 2015 study stated, 'women apply for promotion only once they are sure they meet the promotion criteria whereas men tend to take more of a risk' (p1225). This links in with the well-established 'imposter phenomenon' whereby women who are objectively of high intellect and capable of high levels of achievement internalise feelings that they are an imposter and are not really as capable as others may believe them to be (Imes & Clance, 1984; Taylor, 2009; Jostl *et al*, 2012; Howe-Walsh & Turnbull, 2014). The consequent fear of being found out or failure thus inhibits women from progressing. In contrast, men would appear to be confident in their abilities and thus feel more able to engage in competitive progressive activities (Doherty & Manfredi, 2005).

This lack of professional self-esteem, which may well constrain women from leadership progression and/or pursuing research careers, may mean that they are far more dependent on support in order to progress than their male counterparts (Reskin, 1978). This may also explain why lack of collaboration has a significant negative impact on female (but not male) research productivity (Kyvik *et al*, 1996). Self-esteem as an enabler to facilitate the networking activities necessary for successful research productivity is also notable (Obers, 2015 p1224).

Morley (2006) however warns against placing too much focus on female lack of confidence as an explanation for the gender gap in the academy. It may be facetious to problematize women in this way in terms of the productivity puzzle. Rather, Morley (2006) argues that lack of confidence is a product of the masculine constructed space that works to disempower women so that they feel less able than they are. Thus it is no surprise that supportive communities in which colleagues feel valued has been found to improve levels of self-esteem (Obers, 2015).

Consequently, lack of self-esteem can be closely linked to the systemic undervaluing of female work in the academy. Arguably as women progress into more senior positions and roles that have traditionally been male dominated, so these roles and disciplines become devalued (Doherty & Manfredi, 2005; Morley, 2006). Debatably therefore, if women feel their work is undervalued at an institutional level then this is an additional factor that they will internalise and will impact upon the confidence to seek progression.

Mentoring

The centrality of the 'self-esteem' hypothesis to the academy gender gap debate has resulted in a corresponding focus on what many believe to be the solution to the confidence deficit i.e. mentoring. Studies have shown that the presence or absence of effective mentoring can be closely correlated to female progression within HE. Whilst a lack of effective mentors can act to further marginalise women (Aiston & Jung, 2015; O'Leary & Mitchell, 1990), so the presence of effective mentoring can be a

significant factor in increasing research productivity and progression (Gardiner *et al*, 2007; Fletcher, 2007; Chesterman, 2009; Eliasson, Berggren & Bondestam, 2000; Schulze, 2010; Obers, 2015; Joiner *et al*, 2004; Pyke, 2013; Thanacoody *et al*, 2006).

Nevertheless, mentoring is contentious and as such should not be pursued as a means of 'fixing the women' (Morley, 2012; Schiebinger, 1999). At its best it can work as a redistribution of feminist knowledge and social capital but at its worst it can seek to assimilate women into dominant masculine structures (Morley, 2012; McKeen & Bujaki, 2007). As Blackmore (2014) states 'Academics are more likely to reengage with leadership if mentoring is not merely about learning and complying with, but perhaps changing the rules of the game' (p95).

Equally contentious is the impact that mentoring can have on the 'mentors'. Salzman (1996) suggests that senior women are unwilling to put themselves forward as mentors as they do not feel they are adequately rewarded for such activity. As Morley (2012, p125) explains, mentoring involves 'substantial emotional labour' and may also have the consequence of 'killing the king/queen – the process by which the mentee extracts knowledge, networks and capital from the mentor and then eliminates or displaces him/her' (p125). Thus it may be that mentoring responsibility acts as an effective productivity penalty on successful women who are expected to give time that could be used to further develop research and valuable leadership activity in order to develop their mentees. This relies on women to undertake intensive but less valuable pastoral and emotional labour that detracts from their own progression and productivity.

Much of the research suggests that same gender mentors are critical in the mentoring process (Obers, 2015; Shackleton *et al*, 2006; Ragins & Scandura, 1994). This may be due to the fact that women and men feel more comfortable mentoring their own gender (Ragins, 1989; Thanacoody *et al*, 2006). However, it may also be that mentees feel that the life experience and empathy of women may be more appropriate to the mentoring relationship (Shackleton *et al*, 2006; Clark, 2000; Salzman, 1996; Drazga, 1998; Obers, 2015). However, it is also argued that for effective mentoring to take place women need access to both female and male mentors (Manfredi *et al*, 1999). Indeed, Thanacoody *et al* (2006) found that in one of the countries studied there was a correlation between the success of those women who had been mentored by a male as this had allowed such women access to 'the male power base, networks and rules of the system' (p541). Often opposite gender mentoring is through necessity in that an institution lacks sufficient female mentors (Egan, 1996). A lack of focus on gendered mentors may also avoid the productivity penalty faced by many female mentors.

Differential attitudes to career planning
There is some evidence of gendered distinctions in terms of academic career planning within HE (Bagilhole & White, 2013; White, 2005; 2013; Dever *et al*, 2008; David & Woodward, 1998; Riordan, 2011; Doherty & Manfredi, 2005; Bergmann, 2005; Folbre & Bittman, 2004; Probert, 2005; Pyke, 2013). Many of these distinctions can be linked to other potential obstacles which women face in the academy and in particular the impact of domestic and caring responsibilities on mid-career female academics (see below at section 4(k)).

Doherty & Manfredi (2005) found that men and women appeared to have similar patterns of family formation. However, they found that fewer women than men planned their careers and ultimately had more limited career aspirations. Far more men meticulously planned their careers and planned to progress into management positions or seek professorial conferment (Doherty & Manfredi, 2009). They felt that this could be linked to various factors including the pull of family responsibilities and aspiration

weariness. They also suggested that it may be due to female tendency to focus on personal weaknesses and look more inwards for explanations for lack of progression, whilst men focused on the external world and thus looked to practical measures such as gaining qualifications or publishing more to increase progression potential (Doherty & Manfredi ,2005). Similarly, evidence of this lack of career planning by female academics can be seen in David and Woodward's (1998) study. A propensity towards weaker female career aspirations in the academy is further seen in Litzky & Greenhouse (2007).

As we have seen above, academic identity and career trajectories appear to be solidly based on a masculine constructed model of success. Many women do not conform or identify with this male academic model (Bagilhole & White, 2013). As such, they often have less typical academic careers entering HE much later than their male counterparts (White, 2005, 2013; Riordan, 2011). Pyke (2013) found that many women had unconventional routes to academia and had commenced their careers in professions such as nursing where a doctorate had not previously been considered essential. With the increasing focus on the need for a PhD to progress within academia, this will obviously have an impact on progression of those who have entered academia via non-traditional routes and the professions.

Female driven work patterns

The gendered distinction in career planning can also be seen in relation to gendered academic work patterns and workloads. Recent studies suggest that female work patterns focus on the more undervalued elements of academic life and as such this acts as an obstacle to progression as it leaves women less time to focus on more valuable research and leadership activities (Aiston & Jung, 2015; Turner, 2002; Ropes-Huilman, 2000; Kjeldal, Rindfleish & Sheridan, 2006; Morley, 2007; Barrett & Barrett, 2011; Cotterill *et al*, 2007; Neale & White, 2004; White *et al*, 2011; Glazer-Raymo, 2008; Terosky *et al*, 2008; Poole *et al*, 1997; Probert, 2005; Ward & Wolf-Wendel, 2004; Dobele, Rundle-Thiele & Kopanidis, 2014; Knights & Richards, 2003; Morley, 2014; Schlehofer, 2012; Morley, 2006; Shaw & Cassell, 2007).

It would appear that female academics are more likely to be focused on pastoral care, teaching related functions and non-core committee work within institutions (Kjeldal, Rindfleish & Sheridan, 2006). Ropes-Huilman (2000) described this as women taking on the role of 'academic mommies' and Ward & Wolf-Wendel (2004) referred to this as 'academic motherhood'. Such activity is becoming an ever more time consuming challenge in the consumer driven HE culture and student massification (Knights & Richards, 2003). Aiston & Jung's (2015) study of the CAP, found evidence that junior and senior academic women were spending significantly more time on supporting administration work at the cost to time spent on research activity.

Arguably the feminisation of teaching, pastoral and administrative academic work means that this is viewed as less valuable in the prestige HE economy (Obers, 2015; Morley, 2006). As a result, a working pattern which provides insufficient focus and time for work and which is more objectively valued by the masculine organisations of the academy, is always going to work to the detriment of female academics.

This gender disparity in the nature of work undertaken within the academy could be linked to a greater positive orientation of women towards teaching and pastoral activities (Poole *et al*, 1997). This is in contrast to men, who are more disposed to a singular focus on research and external facing financially rewarding work. Indeed, some studies have suggested that women (rather than men) are more likely to consider an important element of job satisfaction to be focused in the relationships and contact they have with students (Shaw & Cassell, 2007). This propensity may be further increased by the ability of male academics to more readily distance themselves from the emotional needs of students (Knights & Richards, 2003). This gender gap in workload can be further exacerbated by a lack of institutional

transparency in relation to workload planning. A lack of consistency and openness around workloads can result in women taking on or being expected to undertake the lion's share of non-valuable teaching, pastoral and administrative work within institutions (Barrett & Barrett, 2011). It is argued that institutions have a responsibility for ensuring that skewed gendered workloads are resolved by effective and transparent workload planning and that they are cognizant of the importance of balancing teaching workloads with opportunities to carry out research and leaderships activities for all staff (Dobele, Rundle-Thiele & Kopanidis, 2014; Barrett & Barrett, 2011).

There is some evidence that increasing numbers of female academics (in order to not be left behind in the progression race) are trying to undertake research alongside the teaching, administrative and pastoral roles which have traditionally been expected of them and there is concern that this is not sustainable as a long term goal (Doherty & Manfredi, 2005; 2009; Thomas & Davies, 2002). Devine, Grummell & Lynch (2011) describe this phenomenon as the 'elastic self' whereby an individual is expected to engage in increasing levels of work without boundaries. This can eventually lead to accumulative tension between competing demands and ultimately to task overload (Fu & Shaffer, 2001).

Caring responsibilities

Central to attempts to solve the gender productivity puzzle are debates around the impact of domestic and caring responsibilities on female productivity and progression in the academy (see *inter alia* Aiston & Jung, 2015; Bailyn, 2003; Probert, 2005; Baker, 2012; Riordan, 2011; Ledwith & Manfredi, 2000; Blackmore, 2014; Doherty & Manfredi, 2005, 2009; Howe-Walsh & Turnbull, 2014; Fox, 2010; Kyvik & Teigen, 1996; Raddon, 2010; Morley, 2012, 2014; Obers, 2015; Schlehofer, 2012; Pyke, 2013; Thanacoody *et al*, 2006). The image of an insatiable institution compounded by a greedy family is powerful and it is undoubtedly a balance that many women struggle to maintain. Whilst, legislation is attempting to change the gendered culture of caring (e.g. Shared Parental Leave Regulations 2014), statistics unsurprisingly still demonstrate that overall caring remains a gendered task in the UK. Thus any impact of caring responsibilities on productivity and progression is inherently a female issue. In the globalised increasingly commercialised culture of HE, expectations on academics to work increasingly unsocial hours in order to maintain research productivity will clearly impact on women with caring responsibilities who may not have the option to work outside of standard hours (Fletcher *et al*, 2007). Research by Cuddy *et al* (2004) suggests that for men, once they become Fathers, they are perceived as just as competent as previously but are now seen as warmer and approachable. Whilst when a woman becomes a parent she will suffer from the perception that she is no longer as proficient in her work (Cuddy *et al* 2004).

However, some argue that a perceived or over emphasis on the impact of gendered caring responsibilities on female progression may well disguise the systemic discrimination creating barriers to women in the academy (Aiston & Jung, 2015). By not focusing on a 'deficit model' of female performance, it is not argued that caring responsibilities have no impact on women's careers but rather that the productivity puzzle is complex and cannot be explained by a single factor. It is arguable that too readily viewing motherhood as an inhibitor to career success perpetuates the perceptions of others that women are unable to balance work and family. This perception in itself will act as a formidable obstacle to progression (Sax *et al*, 2002). As stated by Bagilhole & White (2013, p10): 'The problem is often the perception among senior colleagues that women must choose between a career and a family and that it is not possible to have both…rather than the career aspirations of the women themselves'.

Added to this is the reported phenomenon that having a child actually acts as a facilitator and gain to productivity (Brookes, Fenton & Walker, 2013 p991). Indeed, more recently some would argue that the 'motherhood penalty' (Baker, 2012) is not always borne out by evidence in academia. Some studies have

suggested that caring responsibilities are not a significant obstacle to productivity and thus progression (Sax *et al*, 2002; Aiston & Jung, 2015; Cole & Zuckerman, 1984; Fox & Faver, 1985; Fox, 2005). Indeed, in some situations women who had taken a break from the academy to have children were actually more productive than their counterparts (Aiston & Jung, 2015). Arguably the reason for this may fall back on Benjamin Franklin's attributed wisdom that if you want someone to do something you should ask a busy person. It has been suggested that women with caring responsibilities may use their limited time more effectively and be forced to sacrifice more of their own personal time in order to ensure continued productivity (Hamovitch & Morgenstern, 1977). However, Kyvik & Teigen (1996) caution against direct comparisons between women with children and those without. They argue that 'when children's age is introduced as a variable childcare turns out to be an important determinant for women's publishing activity' (p55). Thus in their study, women with children under 10 years old were significantly less productive than their male counterparts whereas for women with caring responsibilities for children over this age the distinction was far less marked (Kyvik & Teigen, 1996). The flexibility that academia can often provide may also be more conducive than other professions to a woman's ability to maintain an acceptable work-life balance (Blackmore, 2014). This may well explain why many women have alternative career paths and enter academia from the professions at a relatively late stage in their career cycle. However, this can become a double-edged sword with some suggesting that the flexibility provided by academia (in particular the ability to home work) can actually increase pressure as the boundaries between work and home life become increasingly blurred (Dever & Morrison, 2009; Russell *et al*, 2009).

Linked to the impact of caring responsibilities on academic progression and productivity is the issue of fractional working within the academy (Barrett & Barrett, 2011; Doherty & Manfredi, 2005, 2009). More women than men in HE work on a fractional contract often due to the need to balance work with caring responsibilities. Data from the HEFCE return from the REF 2014 (2015) clearly demonstrate that those working on fractional contracts are less likely to be submitting to the REF. Thus the impact on profession and productivity from fractional working becomes a gender issue once again.

Research Questions

A critical analysis of the literature in this area (as in section 4 above) suggests a number of foundational research questions. In support of the aims and objectives of this research, the underpinning research questions are therefore as follows:

a) What were the gendered experiences of academics within the research institution in relation to the REF2014?
b) Are there distinctions in relation to how male and female academics define 'research activity'?
c) What particular obstacles towards research activity do women within the research institution face?
d) What initiatives would support (or enable) research activity for women within the research institution?
e) To what extent is it possible for the university to redress the gender gap in research activity within the research institution?

Methodology

The research provides a multi-layered, qualitative exploration of the influence of gender upon the experiences of academics in relation to research activity and the REF 2014 within the research institution. It was undertaken using principles of 'Action Research' (Cousin, 2009). Action research is a cyclical, reflective process concerned with social practice aimed towards improvement (Kember, 2000). Utilising the principles of action research was appropriate to ensure that research was conducted in a participatory, reflective manner that permitted progressive problem solving of issues as they arose via feeding into relevant institutional committees. It is recognised that there are variants of the action research process. This project utilised a participatory form of action research since it involved group activities of those affected by the topic to be investigated (Kember, 2000). This form of action research often deals with equality issues and seeks to solve the problems of the exclusion of protected groups (Cousin, 2009). It was intended that the participatory nature of this research would also provide an emancipatory basis for female academics in relation to the issues considered. It was intended that the anonymised information from focus groups and interviews would be fed into relevant impact assessment processes, enabling female (and male) academics across the university to benefit in line with the principles of action research.

The researchers have employed a reflexive attitude to this research and as such considered their positions as female academic researchers with the principal investigator having young children and a background enforcing gender equality legislation. A young male research assistant with no caring responsibilities was employed on this project and this provided a critical friend to challenge any embedded prejudice of the lead researchers. However, in relation to this project, it was considered that the researchers' attitudes, values, skills and approach were more important than their gender.

Data Collection

A variety of appropriate data collection tools were utilised. Although the majority of such tools were qualitative, some limited quantitative tools were used and where appropriate an approach based on a limited mixed methods paradigm was utilised. This is reinforced by Silverman (2006) who states that quantitative data can be used to provide the foundations and background to the findings of a qualitative study. Although, care has been taken to avoid moving to a different data collection method if problems were faced with analysing one set of material (Silverman, 2006).

TABLE 4: Data Collection Methods

Objective	Data Collection Method
To investigate gendered differences in the perceptions of academics in relation to research activity and the REF within the research institution. To analyse the lived experience of research activity of female academics within the research institution.	**Questionnaires** Questionnaires issued to all academic staff. **Focus Groups** Focus group(s) with academic staff. **Semi Structured Interviews** Interviews with academic staff and 'REF decision-makers'. **Documentary Analysis** Thorough review of relevant University information.

Purposive sampling was used to target a specific group of participants. Academic staff (both male and female) within the research institution were deliberately targeted. It was not intended that this form of sampling was necessarily proportionate or representative of the group. Research data was collected by means of questionnaires, focus groups and semi-structured interviews as set out in Table 4.

A 'Steering Group' was selected from interested and experienced institutional staff members in order to create a thematic structure and strategy for a questionnaire, focus groups and semi structured interviews. Interaction with relevant key staff also enabled Faculty members to 'buy into' the project and facilitated the purposive sampling of candidates for participation. In order to achieve its' purpose, this group was chosen by means of 'segmentation' (Cousins, 2009) so that they had characteristics in common (i.e. experience and interest in the area) thus developing unity and facilitating discussion of the relevant issues. This Steering Group was made up of 11 academics and support staff from across the institution and was broadly representative in terms of gender, status and age. It acted as a critical friend throughout the research process and met on four separate occasions as well as conducting reviews of documentation throughout the project.

The research was conducted in three separate stages over a period of twelve months. In the first stage, a questionnaire was distributed to all academic staff (841 staff members) from across the institution in August 2015. It was considered vital that this research should engage both male and female academics. One of the criticisms of existing studies in this area is that empirical investigation tends to focus just on women and does not engage with the views and attitudes of male academics (Doherty & Manfredi, 2005; 2009). In order to get a representation of the gendered experience of academics in relation to research activity it was considered that both male and female participation was required. This questionnaire was sent via the Bristol Online Survey (BOS) system, which is the recommended institutional survey collection tool. The questionnaire provided opportunity for participants to expand upon responses more broadly. This enabled limited qualitative data to be collected from the questionnaire. Consideration was given to the limitations of a questionnaire (Bell, 2005) and thus it was utilised to provide a more broad-brush coverage of the central issues from which to drill down further. The questionnaire also sought to capture limited biographical data of participants in order to ensure analysis of variables could be achieved. One hundred and nineteen responses to the questionnaire were received from academic staff which equated to roughly a one in eight return rate.

Respondents to the questionnaire were asked if they would be willing to take part in a further in depth semi-structured interview or focus group. Thirty-three respondents indicated that they would be willing to participate further. Thus stage 2 of the project was to drill down further into the gendered experiences of academic staff in relation to research activity by means of a series of focus groups and interviews. The 33 respondents who had expressed willingness to participate further were then either placed into a focus group or were approached for an individual interview. Selection for interview and for participation in the focus groups was determined by the research team based on ensuring a representation of participation based on gender, age, discipline and status. Not all of those who had expressed an interest in participating further were available and thus 9 academics were interviewed and 3 focus groups were held (including one with the institutional women's network). The focus groups were considered necessary in order to permit participant's perspectives to be revealed in ways that were distinct from an individual interview through discussion, participant's questions, arguments etc (Bryman, 2008). Having said this, because of the potential sensitivity of the issues, it was recognised that group members may have been reluctant to fully engage if they considered that their views were contrary to the general attitudes within the group (Denscombe, 1998). Therefore, individuals were provided with the opportunity to rectify any such problem by following up the focus group separately with the facilitator.

The use of a focus group in this area of research is known to provide benefits for protected groups since it may provide a safe environment for the group to consider delicate issues (Cousins, 2009).

The semi-structured interviews were carried out with both male and female staff. As stated by Cousins (2009) the semi-structured interview was considered suitable to the "what is going on here?" type of question proposed in this research project. The questions asked hopefully created 'a bridge between person and report, between content and form as well as (background) information and (personal) experience' (Dilley, 2000) thus enabling a conversation ranging over a variety of topics including biography, history, culture, curriculum, pedagogy and the social and working lives of staff. The interviews permitted discussion to wander on the principle that how staff develop their narrative of experience was more valuable than producing comparable data. The use of semi-structured interviews was considered to provide the privacy that some individuals may have required when discussing sensitive areas. Equally, it enabled issues from the focus groups to be drilled down and also promoted the emancipatory nature of this research (Oliver, 1997). The flexibility provided by the semi-structured interviews gave the participants a voice. The interviewer developed a list of specific topics to be covered but the participant was given a great deal of freedom in how to reply (Bryman, 2008).

Stage 3 involved holding interviews with those responsible for managing the REF2014 process (both in a decision making and advisory capacity i.e. the 'REF managers') at an institutional, faculty and departmental level. The term 'REF managers' will be used for the purpose of this report but it should be noted that this categorisation does not suggest that that these individuals were decision makers but rather that they were more usually deployed as UoA co-ordinators. Once again the project steering group were part of the development of this stage. Following analysis of the questionnaire, focus group and semi-structured interview data, it was felt necessary that these interviews should be more structured than previously with some specific questions provided. One of the concerns of the project team and steering group was that the responses from the previous two stages had largely been from those who were already actively engaged in research activity and as such the experiences of those who may wish to be research active but faced obstacles in doing so had not been fully captured. As such, it was considered that stage 3 could attempt to uncover whether participation was truly representative of academics within the institution and whether the picture was unfolding. As such specific questions around this issue were discussed with the REF managers. The interviews also explored a number of themes that had emerged in the early analysis of the questionnaire, interview and focus group data. Six REF managers were interviewed or provided a written response to questions. A greater reluctance to participate was found at stage 3 and some of those approached were concerned that they were not willing to engage in the research when they had not been given the opportunity to feedback on the REF process at a formal institutional level.

The project's research assistant conducted the data collection. As a young male it was felt that this provided an objectivity to the process which may not have been achieved by the principal researcher and co-researcher (both of whom are female) undertaking this role.

Data Collection Analyses

A system of 'triangulation' was utilised in order to produce a more accurate and objective representation of the purpose of the study (Silverman, 2007). As stated by Silverman, the most common application of triangulation in qualitative research is the use of multiple methods. An assumption can then be made that if the data obtained from the variety of methods correspond then it will be possible to establish a

level of validity in those findings. For example, data from the literature review and questionnaires was triangulated with data from the focus groups and semi-structured interviews to attempt to produce comprehensive representation.

It is important to note that this project was not just concerned with what people said but also the way in which they said it and therefore, data was collected via audio recording and transcription (Bryman, 2008). The co-researcher, research assistant and steering group played the role of a critical friend through participation in a continuous discourse with the data and the principal researcher. In order to achieve this, the co-researcher, principal researcher and research assistant conducted regular review meetings to discuss and consider the data in order to ensure an objective approach to analysis.

The initial institutional steering group meeting was used to identify initial emerging themes and patterns. However some themes were theory-driven and a system of pre-coding was utilised to determine these (Doherty & Manfredi, 2009). The emerging themes were then used to formalise the initial questionnaire to be provided to academic staff.

Subsequently, the completed questionnaires were analysed to determine the emerging themes and to decide which issues and themes need to be drilled down during the academic participant focus groups and semi-structured interviews taking influence from the principles of 'grounded theory' (Glaser & Strauss, 1967; Strauss & Corbin, 2008). Grounded theory provides a means of deriving theory from data by the development of a set of well-developed themes and concepts (Strauss & Corbin, 2008). In particular, a system of theoretical sampling was utilised. Theoretical sampling is a method of data collection based on concepts that are derived from the data. Concepts and themes are pulled from the data that are then be used to drive the next round of data collection (Strauss & Corbin, 2008). To this end, the data collected from the academic focus group and semi-structured interviews were coded and categorised to determine emerging themes. Once again the steering group acted as a critical friend in this discourse. This then assisted with the development of questions to be considered and drilled down during the interviews with the REF managers. This meant that data collection was alternated with analysis at each stage. In line with the principles of theoretical saturation, sufficient sampling was considered to have occurred when the major themes demonstrated depth and variation (Strauss & Corbin, 2008). By the use of this developmental means of collecting data, triangulation of the important themes was ensured. Data analysis was on going with themes emerging and developing inductively from the data.

The steering group were provided with a final draft of data analysis and this report for comment. These latter initiatives have strengthened the credibility of the research process (Jessop & Williams, 2009).

Whilst the purposive sample used in this study could not achieve full generalizability, it is considered that the data collected has provided a vital addition to basic statistical data and as such is 'important for the development of a nuanced view of reality, including the view that human behaviour cannot be meaningfully understood as simply the rule-governed acts found at the lowest levels of the learning process, and in much theory' (Flyvbjerg, 2004 as cited by Silverman, 2007). It is fully understood that the data drawn from the participants' narrative descriptions has reflected a subjective representation of experience rather than being a 'single objective reality' (Osler, 1999).

Ethical issues

It is recognised that, as with all research, ethical approval is vital to ensure the appropriate conduct of the research. Due to the sensitive nature of this research a number of particular ethical issues were considered.

It was understood that there could be concerns regarding the anonymity of data where the research population is small or where individual participants can be identified (Cousins, 2009). Section 33 of the Data Protection Act 1998 stipulates that personal information collected for research purposes is exempt from some of the main Data Protection principles. However, it will only be exempt if 'the results of the research or any resulting statistics are not made available in a form that identifies data subjects or any of them' (section 33(4) of the Data Protection Act 1998). In light of this it was felt that the standard process of participants signing consent forms and having information sheets should be supported by several other key measures:

- The project should have a steering group with a range of representatives from across the institution, which would have oversight over the research process (it was considered that this would also help Faculties take ownership of research findings).
- Transcripts of interviews should be sent to each participant in a focus group or interview for checking.

Therefore the steering group was positioned as a core part of the review process for the project (as discussed above). In addition, a full application for ethical approval was made to the Learning & Teaching Institute Research Ethics Committee within the research institution ('LTIREC') and approval was granted in July 2015. In accordance with this approval, the following ethical safeguards were engaged:

- Participation in the research project was entirely voluntary.
- Standard consent forms were provided to all participants in focus groups and interviews.
- A participant Information Sheet was provided to all invited participants in relation to focus groups and interviews.
- Care was taken to ensure that none of those completing the questionnaires or participating in the focus groups or semi structured interviews would be identified.
- Participants' names and addresses or letter correspondence were not stored on hard drives (Holmes, 2004 as cited by Bryman, 2007).
- Identifier codes were used on data files. Participants and their identifier codes have been stored separately and securely (Holmes, 2004 as cited by Bryman, 2007).
- Copies of transcripts did not include participant's names and copies of transcripts were stored in separately and securely (Holmes, 2004 as cited by Bryman, 2007).
- Data was managed in accordance with the Data Protection Act 1998 at all times.
- Participants were made clearly aware of their right to refuse or withdraw participation at any point and for whatever reason. It was made clear that there would be no disadvantage to the individual if they chose not to participate or discontinue participation.
- Any audio recording permitted by participants did not identify participants and were used solely for the purposes of transcription. Transcripts were identified by means of a coding system.
- Raw data was accessible only to the research team. Data was stored securely and was only accessible by the researchers.
- Data files and transcriptions will be kept for a period of ten years securely and in an anonymised format.

- Individual participants will not be identified in any publications of publicly accessible material resulting from the research.

Further approval was sought and granted by the LTIREC in relation to the specific data collection tools (as discussed above) in November 2015 and February 2016.

In addition to the internal Learning and Teaching Institute Ethics Committee Guidance Notes, external guidance has been considered in the conduct of this project (British Educational Research Association, 2004; Economic and Social Research Council, 2005; Socio-Legal Studies Association, 2009).

The approach taken above has facilitated a commitment to working with and considering the role and rights of research participants throughout the project. In addition, a dedication to reflexivity has meant that attention is paid to how researcher positionality could influence the conduct and reporting of the research and has therefore supported the development of an ethical framework (Cousins, 2009).

Discussion and Findings

This section of the report provides detail regarding the key findings that have emerged from an initial analysis of the data collected between September 2015 and May 2016. It is important to note that this initial analysis is to be considered against a developmental and dynamic institutional context. In line with a long-term dissemination strategy (discussed below), it is anticipated that the opportunity to disseminate internally and externally during 2015/16 and 2016/17 may result in further consideration of the important thematic foundations in light of emerging research in this area in the UK. As such, discussion and feedback on these initial findings is both welcome and crucial to the further development of the emerging body of research into the gendered experiences of research activity in the UK. Table 5 (p36) provides a brief overview of biographical details of focus group and interview participants using individual codes that will be utilised throughout. Numerical codes and gender will be used in relation to questionnaire data

The key findings considered in this report are presented and should also be read in the context of existing UK based studies into gender and research activity within HE (see *inter alia*: Aiston & Jung, 2015; Bailyn, 2003; Probert, 2005; Baker, 2012; Riordan, 2011; Ledwith & Manfredi 2000; Blackmore, 2014; Doherty & Manfredi, 2005, 2009; Howe-Walsh & Turnbull, 2014; Fox, 2010; Kyvik & Teigen, 1996; Raddon, 2002; Morley, 2012, 2014; Obers, 2015; Schlehofer, 2012; Pyke, 2013; Thanacoody *et al*, 2006). As such, the following section provides a descriptive and comparative analysis of the data collected in relation to the wider national institutional research.

This section commences with an overview of the statistical evidence collected in relation to gender from the 119 respondents to the questionnaire data. Reference to this is also made alongside the qualitative analysis of data from the questionnaires, focus groups and semi-structured interviews and a consideration of relevant institutional data.

The findings in this section is then outlined and discussed in relation to key themes which emerged from analysis of raw data:

a) Gendered interpretations of 'research activity'.
b) Obstacles to research activity:
   i. Caring responsibilities;
   ii. Gendered workloads;
   iii. Systemic discrimination;
   iv. Gendered academic career trajectories and the discipline effect.
c) Enablers to research activity:
   i. Mentoring;
   ii. Collaboration;
   iii. Positive action initiatives.

The findings presented in this report are based on an analysis of qualitative data gathered from questionnaire data from 119 academic staff, 3 focus groups held with 12 academic staff, semi-structured individual interviews with 9 academic staff and 6 REF Managers from across the research institution.

Table 5: Participant codes and biographical details

CODE	GENDER	AGE	STATUS	PARTICIPATION
SSI1	Male	35-44	Lecturer	Interview
SSI2	Female	35-44	Senior Lecturer	Interview
SSI3	Male	45-54	Professor	Interview
SSI4	Female	45-54	Senior Lecturer	Interview
SSI5	Female	25-34	Lecturer	Interview
SSI6	Male	35-44	Head of Department	Interview
SSI7	Female	35-44	Professor	Interview
SSI8	Female	35-44	Senior Lecturer	Interview
SSI9	Female	45-54	Professor	Interview
1FG1	Female	45-54	Senior Lecturer	Focus Group
1FG2	Female	25-34	Lecturer	Focus Group
1FG3	Male	45-54	Professor	Focus Group
2FG1	Female	25-34	Lecturer	Focus Group
2FG2	Female	25-34	Senior Lecturer	Focus Group
2FG3	Female	55-64	Professor	Focus Group
3FG1	Female	Unknown	Unknown	Focus Group
3FG2	Female	Unknown	Unknown	Focus Group
3FG3	Female	Unknown	Unknown	Focus Group
3FG4	Female	Unknown	Unknown	Focus Group
3FG5	Female	Unknown	Unknown	Focus Group
3FG6	Female	Unknown	Unknown	Focus Group
3FG7	Female	Unknown	Unknown	Focus Group
3FG8	Female	Unknown	Unknown	Focus Group
3FG9	Female	Unknown	Unknown	Focus Group
3FG10	Female	Unknown	Unknown	Focus Group
3FG11	Female	Unknown	Unknown	Focus Group
RM1	Female	Unknown	REF Manager	Written response
RM2	Male	Unknown	REF Manager	Written response
RM3	Female	Unknown	REF Manager	Interview
RM4	Male	Unknown	REF Manager	Interview
RM5	Male	Unknown	REF Manager	Interview
RM6	Female	Unknown	REF Manager	Interview

Statistical Overview of Questionnaire Data

The questionnaire was distributed via BOS to 841 academic staff in the institution. 119 Academic staff returned a response, representing 14% of all academic staff in the institution. The data was coded and then analysed in Statistical Package for the Social Sciences (SPSS) in order to objectively assess any potential relationships between variables. One main variable that was considered throughout the project was whether there were any distinct differences between genders. The following is an overview of the key data points collected with gender focused on as the dependant variable. Any P values are from Chi-squared tests unless otherwise stated.

Of the 119 academic staff respondents, 43 (36%) were male and 76 (64%) were female. Age ranged from 25 to 65 and over for both genders. 64% of the sample were aged between 35 and 54. Just over half of the respondents, 55% were married (57% of male, 53% of female participants); 15% single (19% of male, 13% of female); 14% cohabiting (7% of male, 17% female), 5% divorced (2% of male, 7% of female) and 3.4% in civil partnerships (5% male, 3% female). 77% of respondents identified as White and 80% identified as British (although 13 different nationalities are represented in this sample). 35% of respondents stated they were Christian with a further 30% declaring they had no religious beliefs. 5 participants (4.2%) identified themselves as having a disability (4 female, 1 male). 23 different job roles were recorded across the sample, ranging from Lecturers to Deans. 56% of males were either a lecturer or senior lecturer, as were 57% of females. Respondents from 26 different Units of Assessment completed the questionnaire.

Table 6: Job Role by Gender

	Male		Female	
Job Title	Count	% of gender	Count	% of gender
Lecturer	5	11.6	11	14.5
Senior Lecturer	19	44.2	32	42.1
Professor	7	16.3	6	7.9
Post-Doctoral Researcher	1	2.3	0	0
Programme Leader (usually senior lecturer)	1	2.3	2	2.6
Head of Department	0	0	6	7.9
Dean	1	2.3	1	1.3
Associate Dean	1	2.3	1	1.3
Research Fellow	1	2.3	1	1.3
Faculty Co-ordinator	0	0	2	2.6
Health Officer	0	0	1	1.3
Research Assistant	1	2.3	1	1.3
Researcher	2	4.7	0	0
Director of Partnerships	0	0	1	1.3
Deputy Head of department	1	2.3	3	3.9
Reader	1	2.3	0	1.3
PGCE student	1	2.3	0	0
Postgraduate Research Assistant	0	0	1	1.3
Staff development training officer	0	0	1	1.3
PhD student	1	2.3	0	0
Education Manager	0	0	1	1.3
Teaching Fellow	0	0	1	1.3
Lab Assistant	0	0	1	1.3
Unknown	0	0	2	2.6

Gender and self-selection for the REF 2014

49% of staff in this survey self-selected to REF2014, 32% did not and a further 19% were non-applicable or not in post within the institution for the REF2014. 11% more males self-selected for the REF than females, with around 20% of both genders being ineligible for the self-selection. If those who were not eligible are taken out, then 60% of those who were eligible self-selected. 13% more males (69%) self-selected than females (56%) but there is no statistical significance between the two genders. 22% of respondents were eventually selected to submit to REF2014. 25% of males were selected to submit to the

REF and 20% of females. 63% of respondents were planning on submitting to the next REF (65% of males, 62% of females). 25% of both genders stated that they are unsure about their plans to submit to the next REF. Reasons cited for this were insecurity over their contract/post and concerns over the hours for teaching and admin leaving little time for research.

Special circumstances

Two thirds of respondents were aware of reduced REF outputs based on special circumstances (69% of males, 65% of females). 16% of respondents applied for a reduction for their REF submission. Females (24%) were significantly more likely to apply for a reduction than males (4%) (Fisher Exact 1. Sig sided *P. 0.041*). Of all those who applied for reduction from the respondents, 100% were granted.

Gendered Interpretations of 'Research Activity'

Respondents were asked if they were research active between 1st of January 2008 and October 31st 2013. 79% of respondents indicated that they were research active during this time period (Males 88%, Females 74%). In the summer of 2013, 81% of staff indicated they were research activity (88% of Males, 76% of Females). Neither of these were statistically significant differences. However, these differences may relate to the way in which 'research activity' is interpreted by different genders. An analysis of different interpretations of 'research activity' indicates some interesting similarities and nuances in how the male and female participants defined research activity. Four key areas are discussed below: formal notions of research; linking teaching and research; developing the research field or society; and type of research. They are discussed in order of importance within the research findings starting with the points that were raised most within the questionnaires, interviews and focus groups.

Formal notions of research

Across the data collected the top four interpretations of research activity (those mentioned the most) related to formal notions of research: publications, dissemination, writing proposals and accessing funding, and the Research Excellence Framework (REF). A similar percentage of men (72.3%) and women (70.1%) considered publications to be a key part of research activity. Of all the comments made about 'research activity', reference to publishing was by far the most regularly identified characteristic (95, 22.9%). For example, when asked what the term research active meant to them the following points were made:

> "*Publishing in peer-reviewed journals and in academic collections and monographs*" (Q16 Female)

> "*The publication of journal articles, of books, of conference papers and all the usual types of dissemination*" (SSI6 Male).

Publications in this context were related to traditional mechanisms of sharing research findings – through journal articles, books/monographs and academic conference papers.

Writing proposals and seeking funding were the second most common characteristic of being research active. Although not a statistically significant difference (p=0.085), this was more regularly identified by women (35.6%) than by men (21.3%). Someone is considered research active if they are:

> "*[a]ctively engaged in applying for research grants*" (Q55 Female).

They should be either currently engaged:

"in research or in putting forward a bid for a research project" (Q72 Male)

With the fundamental requirement that they are attempting to:

"secur[e] external research funding" (Q117 Male).

The greater concern of women about seeking funding for research projects may also relate to how it was only women who mentioned qualifications in relation to enabling them to be research active (5.7%) (statistically insignificant p=0.095):

"I think that the way to do it traditionally is to start on a, you know, a postgraduate PhD probably and then move on from there" (SSI8 Female).

A lack of confidence in having appropriate qualifications for some women, particularly when it comes to applying for funding may further increase the level of anxiety about being able to be 'research active'.

The third most common characteristic mentioned in response to this question was that of dissemination (39, 9.4%). There was a gendered difference in the participants who mentioned dissemination (Male 23.4%, Female 32.2%), however this was statistically insignificant (p=0.264). Depending upon how dissemination is interpreted this could relate to concerns by women that in order to be 'research active' you need to share your research in particular ways: journal articles, books/monographs and academic conference papers. This may be more difficult for individuals who for whatever reason are not achieving traditional forms of publication or have other commitments that make conference attendance difficult.

Interestingly over twice as many females (26.4%) than males (12.8%) considered the REF to be central to a definition of research activity (statistically insignificant p=0.067):

"I know it means eligible for submission to the REF" (Q18 Female).

This quote suggests that if someone is not eligible for the REF then they are not considered research active. Whilst for some this is a limited definition of research activity:

"Someone who is actively engaged in research project(s), the research does not necessary have to be submit able for the REF" (Q86 Male).

Others considered this to be emphasised by the institution as a whole.

The male participants quoted here perceived research activity to be broader than just the REF, but recognised that the REF was an important context to be considered. Whereas the female participants noted that it was important for their work to be included in the REF:

"It means publishing in outputs that are recognised by the REF for my sub-discipline" (2FG2 Female).

They defined their own status as 'research active' on their REF (or equivalent) submission background:

"I have always been research active as I was entered for the RAE in 2000" (Q21 Female).

These differences may influence female perspectives of research activity, believing that unless they are achieving the status of being included in the REF then they will not be considered research active by the institution, their colleagues, or themselves.

Linking teaching and research

The fifth most common characteristics linked teaching to research activity. The majority of responses linked research activity to taught courses, but eight out of twenty references to linking teaching and research discussed postgraduate research supervision. There was a statistically significant (p=0.019) difference between male and female responses here with more women identifying both taught courses (17.2%) and postgraduate research supervision (8%) in relation to research activity than men (6.4% taught, 2.1% postgraduate). Where they did make a link between the two this was done in different ways by different genders. The female participants discussed:

"using research to inform teaching" (Q45 Female).

They talked about their teaching and work with postgraduates being led by their research:

"When I think of my research, which I would use the term 'research-led teaching' about what I'm trying to do" (SS12 Female).

This suggests that more female participants considered research to be relevant if it was used to inform their teaching. In contrast, the male participants considered the relationship more generally, for example defining being research active as:

"remaining passionate and involved with the subject you teach" (Q58 Male)

This quotation suggests enthusiasm for the subject comes from being actively involved in research, rather than in the teaching itself. This sense of research being 'additional' to the 'day job' based around teaching is also identified by the following example. Research activity is being:

"active in academic research beyond that required for support of teaching" (Q6 Male).

This quote notes that a certain level of research is necessary to develop teaching resources and lectures, but that for someone to be considered as 'research active' this must be in addition to the work conducted for teaching alone. The way teaching and research are linked by the different genders also suggest greater value applied to the teaching by the female participants than the males, with the female participants wanting to use research to enhance the teaching that they did, and the males seeing it as something more separate.

In relation to postgraduate research supervision specifically there were examples from both genders that considered the necessity for postgraduate research students to build capacity for further research in their department.

"I had been hoping to get a PhD student in the area broadly that my PhD was on you know, proposing to build on that and broaden it, so I guess planning that kind of research would for me be research activity as well" (SSI5 Female).

For this individual, PhD supervision, if in a closely related field to her research interests, would also be considered research activity. With this in mind and the potential for postgraduate research students to support the development of research in a department, one male participant noted that it was necessary to be:

> *"Supervising PGR students to contribute to capacity building of new researchers to the field"* (Q77 Male).

Therefore, both genders had a more pragmatic view of linking teaching and research when it came to postgraduate supervision. Although only 1.7% of all responses actually related research activity to postgraduate supervision, this may reflect the limited extent to which the participants had experience of postgraduate supervision.

Development of the research field or society

A slightly higher percentage of male (27.7%) than female (23.0%) participants cited 'impact' or 'outputs' in one form or another as being an important characteristic of research activity. For example, research activity was defined as being:

> *"engaged in research which is time-based, outcome driven and has wider application/impact"* (Q71 Female).

However, when these individuals identified 'impact'/'output' they did not specify what they meant by the terms. Others were more specific in their meaning, identifying research activity as being an original contribution to increasing knowledge. Nearly 20% more males (34.0%) than females (14.9%) identified this as a characteristic of 'research activity'. This was a statistically significant difference (p=0.010). For example: Research activity is about *"generating new knowledge"* (1FG3 Male). This was often highlighted in relation to:

> *"making a contribution to the expansion of knowledge in the field, the development of the discipline nationally, internationally"* (SSI3 Male).

This example argues that original insights should develop the participant's discipline, and that this should be at least at the national level. It was recognised that developing the discipline was important for specific changes to practice alongside developing knowledge for its own sake:

> *"It's really important to contribute to the worldwide community of both practice and learning in terms of the furtherance of knowledge and knowledge for knowledge sake and also knowledge for practicality and for the business community"* (SSI7 Female).

The argument here that the type of 'impact' may relate to contributing to society as well as developing the academic discipline, provides a broad definition of 'impact'/'output'.

Type of research

Respondents were asked to identify the type of research they conducted. 32% stated that they were mixed method researchers, and 22% as qualitative researchers. However, females were significantly more likely to state that they are qualitative researchers compared to males *P 0.027*. Males were significantly more likely to be scientific researchers than females (Fisher exact 1 Sig. Sided *P.0.046)*. However, when it

came to discussing what 'research activity' meant to them, relatively few responses mentioned type of research (8.6% of all of the responses mentioned type of research). However, within these there were two elements that are of interest. Firstly, a similar number of male (8.5%) and female participants (9.2%) mentioned some form of practical research. For example, research activity means:

> *"[t]hat you are producing research outputs in your field of expertise which has something to say to the discipline and/or to practice"* (Q40 Female).

This point emphasises that research activity should influence either the discipline or practice in that field. The notion of practice may vary depending upon the background discipline of the individual. Secondly, twice the percentage of females (9.2%) identified theoretical research as part of their definition in comparison to males (4.3%) (not statistically different p=0.299):

> *"So philosophically I'm somewhere in between because like, you know Plato or Aristotle they weren't into philosophy just to philosophise, they wanted to make the world better so that's really my philosophical stance"* (SS17 Female).

This example links theoretical ideas to making a difference and having an impact, justifying how theoretical work still has positive implications for society. Whatever the preference in terms of type of research, it is important to note that more women (16.1%) commented that research was something that took up time than men (8.5%). This link between research and time suggest greater concern by some women as to how they are able to carry out research in the context of other pressures upon their time (see below).

Summary

Although there were key similarities in the interpretations of 'research activity' between genders, for example publications and having an impact/output, there were also some important differences. More men identified originality and increasing knowledge than female participants. This statistically significant difference suggests that males are valuing this element of research more than females. More female participants connected the REF, writing proposals and seeking funding, dissemination, time concerns, the link to teaching and theoretical research to research activity than their male counterparts. These differences suggest that overall the females involved in this research were more concerned about the Research Excellence Framework and how their involvement in this defined them as research active or not. The other factors of writing proposals and seeking funding, dissemination and time underpin this and the potential to achieve the publication record to make individuals eligible for submission to the REF. The statistically significant different approaches to linking teaching and research between male and female participants also demonstrate how teaching is given overall greater value by the females than males, and therefore likely given more time.

Gendered Obstacles to Research Activity

Caring responsibilities

Unsurprisingly, one of the consistent obstacles expressed in the interviews, focus groups and the questionnaire in relation to research activity was the time available to conduct research. Of the questionnaire respondents 29% were the primary carer for at least one child during the 1st of January 2008 to the 31st of October 2013 this equated to 30 (41% of females) and 4 (9% of males). Females were

therefore are significantly more likely to be the main carer for a child in this sample than males (p=0.000). Of those with primary care role for children, 38% had one child, 38% had two children, 7% had three children and 2.9% had four or more children. 26% of males had other caring commitments and 32% of females did also. However, despite the differences in gendered care responsibilities there was no statistically significant gender disparity in relation to those who considered this to be the core obstacle to research productivity (see below). However, the literature clearly indicates that a lack of time will inevitably have a detrimental impact on female academics. In this research 35% of the respondents made a distinct reference to a lack of time for research as one of the fundamental barriers to their research activity. Males made reference to this on 16 occasions compared to 25 mentions from female academics. The need for more time to improve research activity was also a point that occurred more frequently in the questionnaire, with 37 mentions from male respondents and 91 mentions from female respondents. Globally and nationally, women are still the primary caregivers. As a result, where the academic role is already squeezed in relation to teaching and wider administrative responsibilities and research is forced into the broader social space outside of working hours, this will inevitably impact upon those whose social space is already filled with caring responsibilities. In a sector that is increasingly led by consumerism and student numbers, time for research activity is driven outside of working hours. This then impacts upon those female caregivers who may have a heavier teaching load and are unwilling or unable to sacrifice their domestic responsibilities in favour of career progression (Fletcher *et al* 2007).

Some literature is ambivalent as to the extent caring impacts upon female research productivity (Brookes, Fenton & Walker, 2013; Cuddy *et al*, 2004; Sax *et al*, 2002; Aiston & Jung, 2015; Cole & Zuckerman 1984; Fox & Faver, 1985; Fox, 2005). On initial analysis of the questionnaire data, it appeared that far from being an obstacle to research productivity within the university, those with caring responsibilities were slightly more likely to be research active than those who are not. 85% of main carers identified themselves as research active as of the summer of 2013, compared to 80% of non-carers. However, it would appear that this initial headline might not be all that it seems. The literature suggests that it is women with young children under the age of 10 whose research productivity is most detrimentally impacted (Kyvik & Teigen, 1996).

As such, the importance of drilling down further on this theme was vital in the second and third stage of data collection. Whilst the majority of those interviewed or engaging in the focus groups made reference to caring responsibilities as providing an obstacle to research activity, only four of these participants stated that they themselves had caring responsibilities. Of these four, one had had caring responsibilities for a sibling and parent during the REF period, one had grown up children during this time and the other two had young children under the age of 10. There was a gender balance in relation to those making reference to caring responsibilities as an obstacle during interviews and focus groups but those with stated caring responsibilities were all female. Therefore, only female participants in this regard gave a first person perspective. Indeed, none of the male participants engaged in the focus groups or interviews stipulated any caring responsibilities. This gender imbalance in relation to caring responsibilities likely relates to the relatively small proportion (9%) of males who had primary child care responsibilities from the questionnaire.

Impact of childcare on time
All of those who made reference to caring responsibilities in the focus groups and interviews considered that this would have a detrimental impact on the ability to engage in research activity due to even greater restrictions on time and the inability to engage in research within the domestic space. Fletcher *et al* (2007), support this. As one male professor described, when time is squeezed research is often the casualty:

"It's always going to be the research which is placed at the lowest priority, in terms of the time" (SSI6 Male).

The acknowledged 'norm' of out of hours working for academics disproportionately affects people with childcare responsibilities (most often women). Academics work in their own time in a variety of different ways, whether it is working early in the morning or evening, going away for meetings or fieldwork, or attending a conference. Many would argue that in order to keep up with the different requirements of the job it is necessary to work beyond the normal 9-5 hours. Whilst stretching of the working day allows for flexibility in the job that is appreciated by many who undertake such employment, and may be beneficial at times for people with caring responsibilities, these same responsibilities may be prohibitive of exceeding normal working hours at other times.

The participants in this research, like other academics, commonly worked beyond the normal 9-5 working day:

"I do tend to be at weekends, on top of the thirty-six and a half hours in inverted commas that I do in the week, the sixty hours I do in the week. And that would be the same for most staff" (SSI6 Male).

Working extra hours during the week and giving up time at the weekends is more challenging when there are other pressures on an academic's time:

"I used to get up for six in the morning and I know other people do that, and perhaps that's why I have made achievements alongside other opportunities that have been made available to me, but I am aware of the constraints when you've got childcare" (SSI8 Female).

It was recognised that the obstacles to working outside of standard hours for female academics were often greater than for male colleagues:

"I don't want to sound sexist now, like I see potentially men might be more research active because they don't have to do as much in their homes as women do, because the woman will be there doing all the household stuff" (SSI4 Female).

"It was a glass ceiling situation, particularly for women, because obviously, well men, particularly medics, particularly medics and they had wives, or they had au pairs or nannies" (SSI9 Female).

Caring responsibilities make it difficult to work beyond traditional working hours as childcare is less accessible and more expensive outside of these times. This view that domestic responsibilities impacted upon research productivity was also noted by a number of the REF managers:

"When you have a big bid going in you have to stay up 'til midnight, you have to work weekends, these are crazy schedules that you have to maintain. If you've got a two year old and a four year old and you are, you know…you are the one who is the main carer for those two, there's no way that a big bid looks more important than a two year old and a four year old you know in the scheme of things" (RM3 Female).

"Inevitably there are still gender differences in terms of the roles and responsibilities outside of work that women, and men have for that matter, maybe they're not shared as equally as they might be" (RM5 Male).

For those with caring responsibilities, the lack of time outside of working hours in which to engage in research activity is seen as a heavy burden:

"I'm not working at the moment towards a PhD, I want to but with three kids, two of which have special needs, that's problematic to find the time when you work full-time" (SSI8 Female).

"The nature of an academic post is that you don't just switch on and off for a lot of it, particularly the research side of it…and if you've got to go home at five o'clock and then you've got children you're not, you haven't got the option to do research" (SSI9 Female).

The idea of having to exhibit an 'elastic self' (Devine, Grummell & Lynch, 2011 p632) was significant. Whilst, recognising the obstacles created by one participant's care giving responsibilities, she was clearly trying to balance this against her desire to engage in the research activity that she felt would benefit her career:

"I go and do my teaching, then I leave often just before five to go and pick them up, they're in After School, and then I will deal with them and then at probably eight, nine o'clock I'll start my work again" (SSI8 Female).

In line with this, there was also a clear recognition that attempting to create an elastic identity was not sustainable in the long-term and that ultimately, at some point this would lead to career burnout.

Another strategy that people adopt in order to be productive is to change their work environment, for example working in the home. For some people this can be:

"a good thing because if you know that you don't have any meetings or whatever that you have to be on campus" (SSI5 Female).

Yet, if you have caring commitments the home can be a place of distraction and the focus of other responsibilities. As 'out of hours' work often also takes place in the home this is a further challenge for such individuals. The need for some 'out of hours' work just to address the day-to-day teaching and admin workloads make the idea of taking on additional research work appear too challenging, unless the academic gets some remission from their existing commitments:

"So if they can't buy themselves out of the teaching where do they find the time to do the research at the weekends? And in which case they won't apply for the grant because they're not going to apply for the grant if it's not going to get used for the buying out…" (SSI6 Male).

Unless funding is also available to 'buy' time for research within the working day, opportunities to conduct research is limited for those women with caring responsibilities in particular.

Furthermore, engaging in the full research cycle requires dissemination of the work. A key mechanism for this is attending conferences to share findings. The impact of caring responsibilities on the ability to progress was also recognised in relation to the ability of academics to engage in research promoting

activities. In an increasingly globalised community, international engagement is vital to academic progression. This adds an additional burden on people with caring responsibilities:

> *"[For] staff who've got children and they're young children, to go away on an international conference for five days is actually very difficult because you're putting a pressure on the partner that stays behind"* (SSI6 Male).

> *"Researchers with young families - male or female - are at a disadvantage as it much harder for them to maintain international links, to travel and to spend time away at conferences. This has an impact on research and discipline specific contacts"* (RM2 Male).

Without significant support, caring commitments impair opportunities for staff to work beyond normal office hours or fully partake in the research cycle.

Perceived impact of child caring

This idea of choice linked to caring responsibilities was a recurrent theme in the interviews and focus groups. In particular, for those participants who did not have children or wider caring responsibilities, this was often seen as a conscious choice they had made due to the potential impact on their career of having family responsibilities:

> *"I think one of the reasons for me not having children is probably I'm worried about what would happen to my career and about managing it, just because of the time stress and not really allowances being made for that"* (SSI2 Female).

For some a lack of caring responsibilities was seen as an enabler to their progression and research activity:

> *"So far I was, well, maybe I'm blessed or I'm very happy and I'm very thankful for not having such external parameters playing a role"* (SSI1 Male).

This perception of caring responsibilities as a burden and penalty on an academic career was notable for both female and male participants without caring responsibilities:

> *"If I had children it would be worse, I don't have children, I'm not going to, so I don't have to worry about that in the same way my other colleagues do, I don't have caring responsibilities either which means I'm not juggling that kind of private family life balance in that way, I do have a partner but I don't have kind of a heavy burden of caring for elderly parents or, you know, a sibling or someone who needs more physical and mental help, and I know for colleagues who have that, again, kind of like career suicide"* (SSI2 Female).

> *"It certainly suggests that there's an association between academic success and not having caring responsibilities, so I think that is notable, and I would be very confident that there are… that it's more difficult to sustain an academic career in the context of responsibilities for caring for young children, given that women disproportionally are doing the caring for young children, that would mean, that would result in disproportionate, you know, that impacting, felt disproportionally by women"* (SSI3 Male).

This perception of the negative impact of caring responsibilities on productivity potentially perpetuates the detrimental impact to carers within HE. Arguably, this perception impacts upon individual self-regard and confidence in terms of ability to progress and engage in research for those with caring responsibilities. Those such as Sax *et al* (2002) and Bagilhole and White (2013), have cautioned against the problems created by perpetuating the perceptions of the 'motherhood penalty' in the academy. An example of this unfortunate consequence can be seen in relation to a female senior lecturer with an impressive high-level professional background. In spite of her professional capital, she considered her caring responsibilities to be a 'trap' in relation to her ability to progress within academia:

> *"I did go along, I think it was about a year and a half, two years ago maybe, to one of the sessions about part-time PhDs that they put on here to explain what was involved in that, you know, how you fund it to how much work you're intending to put into it, which I think was something like twenty hours a week, and I just felt at the time that wasn't doable for me. As the kids are getting older that is getting easier because they're more able to do stuff for themselves, and my daughter, she's now 15, she can do a lot for the family, I'm not quite as trapped [laughs] as I was before"* (SSI8 Female).

Other caring responsibilities
Whilst, less significant, there was some focus on the impact of wider caring responsibilities (beyond child care) on time demands and thus productivity. Again, in a sector where valuable research activity is undertaken beyond standard working hours elder care can have a significant impact on academic progression and output.

> *"I don't think this is just a gender issue but then women do tend to get left with looking after the aged parents"* (SSI7 Female).

Whilst this is often seen as a gendered issue as above, it was clear from the data that this was a problem which (unlike childcare) appeared to affect men and women equally.

> *"I have an elderly mother who's got dementia and has recently gone through various transitions of moving out of her own home into a sheltered accommodation and now she's actually in a care home…if I'm going down this weekend to see my mother and to look after my mother, that's the weekend which I would normally be doing my research"* (SSI6 Male).

However, there was a feeling that whilst often women were expected to be able to balance caring responsibilities with their work life, more leniency and support was giving to men particularly when caring took the form of elder care. One female professor (having described a detrimental distinction in treatment by management in relation to her elder care responsibilities when compared to a male colleague) reflected:

> *"He got immense slack cut for him…In terms of gender, maybe that was, you know, men can't cope with it and need more sympathy"* (SSI8 Female).

Summary
Caring responsibilities have been central to the dialogue surrounding gender disparity in academic career progression and research productivity. Most studies support a finding that those with caring responsibilities are less likely to be able to undertake research outside of standard working hours and thus time becomes at an even greater premium for these academics. Whilst at first consideration a

statistical analysis of the questionnaire data suggested that those participating in the study with caring responsibilities were more likely to be research active than those without. However, when this was drilled down further it could be seen that the majority of those who appeared to be research active with caring responsibilities were those without young dependent children. Studies show that it is this group of predominantly female carers who are more likely to suffer a detriment in relation to research productivity. Data from the focus groups and interviews supported wider studies in suggesting that women with caring responsibilities find it more difficult to be research active. Further, colleagues without caring responsibilities perceived this to be a significant obstacle in relation to productivity and progression. Studies suggest this perception in itself can create further obstacles for women with such responsibilities.

More support needs to be provided to those academics with caring responsibilities of young children under 10 in particular to enable them to engage in research where this is considered to be relevant. Consistent provision for research time built into academic workloads should be provided with caring responsibilities being taken into account in providing this support. It may also be relevant to consider providing research grants specifically targeted at those with young children to enable them to buy out teaching.

Gendered workloads

The literature points to a distinction in female and male academic workloads and work patterns. In particular, studies suggest that female work patterns focus more on teaching, pastoral and administrative duties which are often undervalued within the academy (see *inter alia*: Aiston & Jung, 2015; Turner, 2002; Ropes-Huilman, 2000; Kjeldal, Rindfleish & Sheridan, 2006; Morley, 2007; Barrett & Barrett, 2011; Cotterill *et al*, 2007; Neale & White, 2004; White *et al*, 2011; Glazer-Raymo, 2008; Terosky *et al*, 2008; Poole *et al*, 1997; Probert, 2005; Ward & Wolf-Wendel, 2004; Dobele, Rundle-Thiele & Kopanidis, 2014; Knights & Richards, 2003; Morley, 2014; Schlehofer, 2012; Morley, 2006; Shaw & Cassell, 2007). Within the research institution and beyond, the opportunity to be research active and participate in the REF is influenced by the workload of the individual and time pressures. This section discusses workload by analysing different types of workload (teaching, research, and administration) and the proportion of time participants assessed themselves as committing to each, alongside different perceptions of workload and the challenges underpinning participants' capacity to conduct research.

Teaching context

A discussion of gendered workloads needs to be set within the specific context and ethos of the research institution. Across the participants the most common point in relation to workload, related to the culture of the institution. Fundamentally, it is the:

> *"students [that] are bringing in our salaries, that's always going to be the priority"* (SSI6 Male).

With this in mind the consequent balance between teaching and research is uneven:

> *"I think part of this is [the research institution] and where [the research institution] is as a post-92 university figuring itself out. And there is a tension I do think between the teaching and the research"* (1FG3 Male).

It is this institutional history that generally formed the basis for participants' perceptions of their workload and the time they had available for research. One participant went as far as to provide a formalised ratio as to the relationship between teaching and research:

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"Essentially there's a 550 rule within any university that a members of staff can work up to 550 contact hours but it depends how you interpret 550 and contact. Now staff get allocated, I think it's a 170 hours in a year which is for research and scholarly activity and that's allegedly sacrosanct" (SSI6 Male).

In a teaching intensive university where for every 1 hour of research there is 3.24 hours of teaching contact, the workload of academic staff is automatically skewed towards teaching responsibilities.

Yet when it comes to career progression participants had different views as to whether this balance was appropriate as it fed into internal promotional criteria:

"You can just be promoted even if you don't do any research, which I find very problematic myself because, and I've said that to a few people a few times, we're not a school so we should be approaching teaching in a different way" (2FG3 Female).

This participant believed that research was what distinguished academics from school teachers. The perception of the importance of research as part of an academic position was echoed by another participant:

"I was shocked to discover the rules for promotion and what they involve and that management of teaching is necessary to gain promotion, whereas in other universities scholarly and research activity are given much more, much higher priority in terms of gaining promotion. It's like the whole structure of the place is geared towards teaching and management, and research really just isn't taken seriously" (2FG2 Female).

The continuous emphasis on teaching was frustrating for this participant, as she felt that research was therefore not given serious consideration within the institution. However, others had slightly different views about this:

"I think [the research institution has] just about got it right but I think it's a choice, if you want to further your career, and it seems now you have to be research active, you've got to put in the time and it is hard but it's a hard world out there" (SSI7 Female).

Whilst arguing that the research institution had the balance 'about right' this participant did also acknowledge that if you want to progress in your career you need to be research active. This is particularly true if people wish to develop their careers beyond the particular university.

Within the wider higher education arena research is fundamental to future job opportunities (Obers, 2015; Morley, 2006). The continuing cycles of research assessment across the country has emphasised the need for institutions to recruit on the basis of research background and/or research potential. As one participant argued:

"If you want career progression outside the institution you're in, research and a research profile is very, very important" (SSI6 Male).

Whilst some institutions have developed their progression structures to provide routes for academics that have specialised in teaching, these are still less common than those travelling the path of traditional 'research':

> "I think it's almost written into the career progression because the sort of titles of reader and professor are based on research" (1FG2 Female).

Consequently some staff are considering their workloads and, where possible, attempting to be strategic in their approach to what they agree to take on:

> "My mentor for my doctorate has been advising me to take a more strategic look at my workload and which things I focus on and it's actually backing up some of the things, as you say, it's about not spending as much time doing the pastoral stuff, it's not saying yes to projects that might be nice, might be helpful but actually thinking, being more strategic and being more focused on what I need to do to progress" (3FG8 Female).

Whilst this section has applied to both male and female academics in the university it establishes an important context based on attitudes towards teaching and research, with the recognition that for career progression research still plays an important part.

This context is reflected in the proportions of time participants reported spending on teaching. 95% of the questionnaire respondents had teaching as part of their contract, although slightly more males (98%) than females (93%) noted teaching as part of their contract. However, overall females had higher teaching loads than males. Figure 1 indicates that 61% of females in comparison to 45% of males had over 50% of their time on teaching. The same high percentage of males (18%) noted that their teaching equated to 20-29% and 50-59% of their time. For females the highest percentage of people (25.4%) self-declared 60-69% of their time on teaching. The different proportions of time male and female academics are spending on teaching consequently influences the time they have available for other activities, particularly time for research.

Figure 1: Self-assessed proportion of teaching time by gender
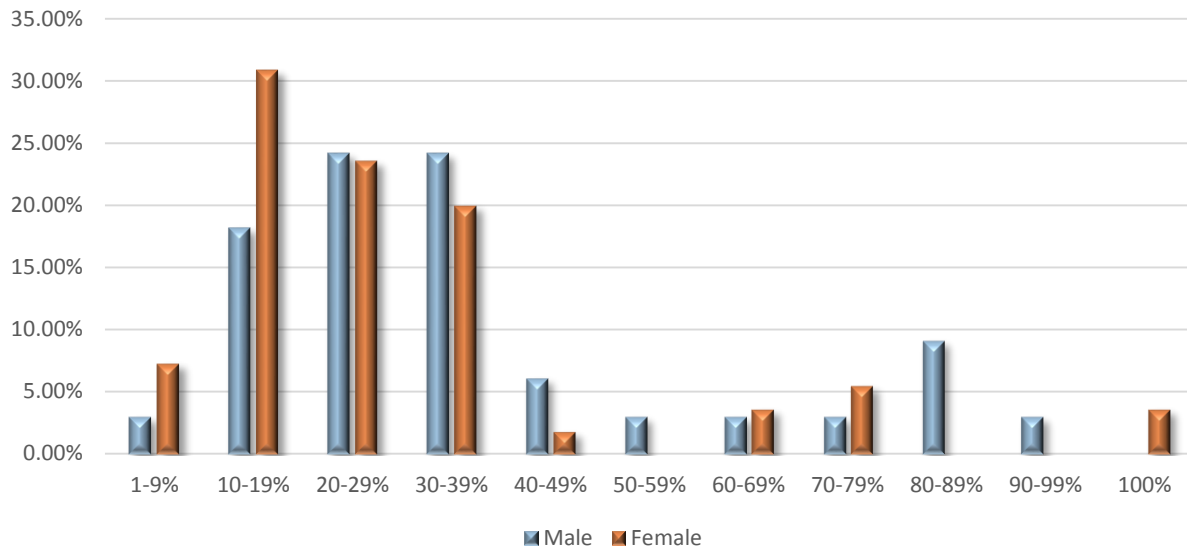
Time for research

Of the 86% of questionnaire respondents that stated that they had research in their contract there were slightly more males (90%) than females (84%). As Figure 2 demonstrates there is some discrepancy in the amount of research time by gender. 85% of women had 0-39% of research compared to 72.6% of males. The most common time percentage for women (30.9%) was 10-19%. 24.2% of males selected both 20-29% and 30-39%. The percentage of people who have above 40% or more of their time on research drops off for both genders. However, this is much more so for female participants (14.5%) than males (27.2%).

Figure 2: Self-assessed proportion of research time by gender
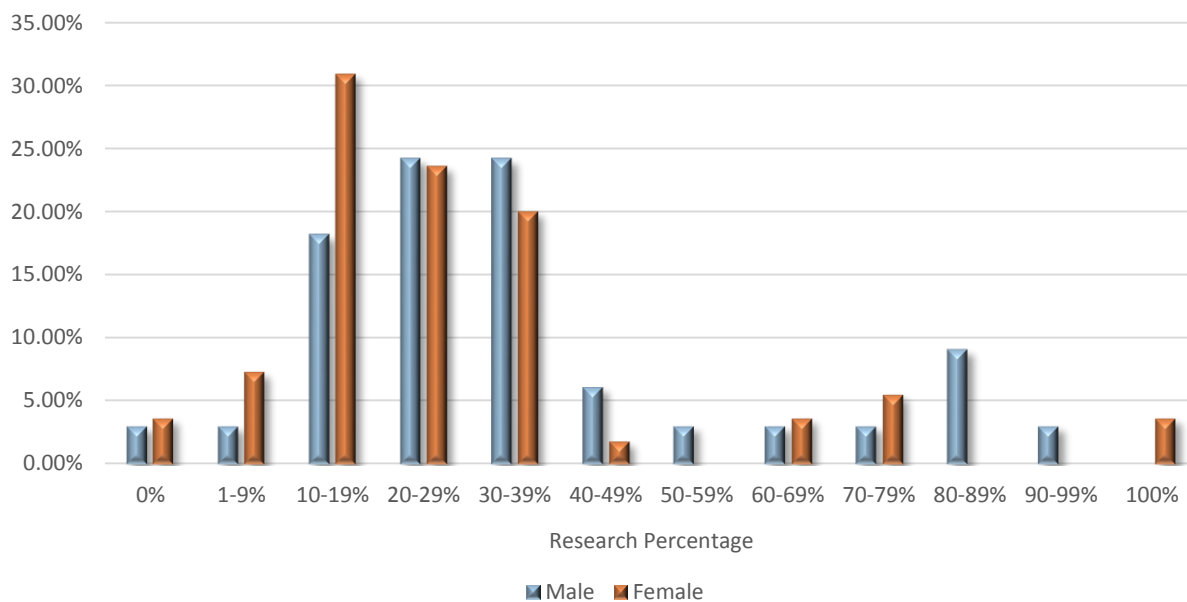
Taking on board the above it is clear that there are some gendered differences in the proportions of time spent on research. Therefore it is important to explore the different ways in which research time is achieved to determine if this has a particular impact on women. Three key areas emerged from the research relating to 1) the nature of the contracts of individuals; and 2) the workload models departments are working to.

i.   Contracts

Overall 77% of the respondents had a full-time post. On a national scale, 58.3% of women and 76% of men work full-time within HE in the UK (ECU, 2015). In this research, 10% more males (84%) than females (74%) worked full-time, although 12% more females were in permanent contracts (69%) than males (57%). 10% more females (26%) than males (16%) were on part-time contracts. 82% of 35 to 64 year olds were in full time positions in the University, whereas only 62% of 25 to 34 year olds were in full time employment. 66.7% of over 65's were in part-time and temporary employment. See detailed breakdown in Table 7.

Table 7: Questionnaire respondents by contract, gender and age

Male	Age	Permanent contract	Temporary Contract
	25-34	14.3% (1)	85.7% (6)
	35-44	61.5% (8)	35.5% (5)
	45-54	58.3% (8)	41.7% (5)
	55-64	100% (8)	0% (0)
	65 and older	0 (0%)	100% (2)
Female			
	25-34	28.6 (4)	71.4 (10)
	35-44	60.9% (14)	39.1% (9)
	45-54	92% (23)	8% (2)
	55-64	81.8% (9)	18.2% (2)
	65 and older	100% (1)	0% (0)

Male	Age	Full time contract	Part time
	25-34	85.7% (6)	14.3% (1)
	35-44	100% (13)	0% (0)
	45-54	76.9% (10)	23.1% (3)
	55-64	87.5% (7)	12.5% (1)
	65 and older	0% (0)	100% (2)
Female			
	25-34	50% (7)	50% (7)
	35-44	70.8% (17)	29.2% (7)
	45-54	84.6% (22)	15.4% (4)
	55-64	81.8% (9)	18.2% (2)
	65 and older	100% (1)	0% (0)

More generally and within the particular sector part-time roles are populated largely by females. Often part-time working is taken on in order to accommodate childcare responsibilities. Whilst, it was recognised that this entitled individuals to submit reduced outputs to the REF, those on part-time

contracts are less likely to have submitted to the REF2014 (HEFCE, 2015). Within the research institution, 12.1% of the staff considered for submission were engaged on part time contracts, compared to 15.2% of staff that were eventually submitted. This relates to the way in which the part-time experience impacts upon research time in particular ways.

Given the disproportionate percentage of females who are part-time in relation to males, more women are affected by the challenges a part-time post presents. Fundamentally a part-time post affects more than just the number of hours someone has available to do research:

> *"There's economies of scale and you are here full-time for example and you may have better relations with admin staff … so you do tend to have a little bit more capacity to do the things like research I believe, it's harder for the part-time staff and they are predominantly women"* (SSI9 Female).

Whilst being on a proportional contract might reduce the expected outputs from for example one 3-stared paper a year to 0.6 of a paper in a year, the reasons why someone is working part-time may have a significant impact upon what research, and particularly publications, they are able to produce. There was not always an easy fit between part-time working and the general expectations on academics:

> *"I do think when you work part-time there's a, there's also a mentality in part-time staff that they work fixed hours but the nature of an academic post is not like that […] the nature of an academic post is that you don't just switch on and off for a lot of it, particularly the research side of it, and that's when, yeah, when it's economies of scale, you do lose out and if you've got to go home at five o'clock and then you've got children you're not, you haven't got the option…"* (SSI9 Female).

If an individual has decided to work part-time following maternity leave the 'extra' time an academic puts into their job, which is often where research occurs, is more difficult to manage:

> *"Most of the females, are part-time and some of them have recently gone on maternity leave and have come back in part-time posts, temporarily reduced contracts, for them it's just to get through the teaching and the admin"* (SSI9 Female).

Instead colleagues focus on the day-to-day priorities of the teaching and the admin which they are directly accountable for.

There was a feeling that colleagues and management did not take into consideration part-time working in terms of work allocation:

> *"Well I think it's harder because, I think it's easier for people to forget that you're part-time"* (1FG1).

However, there was also a feeling that part-time working was a conscious life choice and that to some extent the consequences would have to be accepted by those that had taken that option. Thus it was perhaps felt that in electing to work part-time with the flexibility that provided, the penalty in terms of research productivity should be accepted as a compromise:

> *"When its only 25 hours…but then it's a choice isn't it. It's a choice whether they want to invest any of their own time as well into research"* (SSI9 Female).

"You know, a lot of women are saying 'Well we stay at home and look after children we should get a payment'; you know. In terms of that argument and academics, yes, but we all have choices so, you know, it's a fine line" (SSI7 Female).

One manager felt that some of those who work part-time are more likely to treat their academic role as a fixed role to be undertaken during standard working hours. This is in contrast to the expectation that academia is a calling and a lifestyle choice rather than a 'job' per se:

"It can be a challenge and it can also be a challenge when there are some members of staff who work part-time and, as I say, have this idea that they're only working set hours and if they do anything else over then they take that back in lieu" (SSI9 Female).

ii.   Research within the workload 'model'
A number of departments attempt to provide time for research by allocating specific research time to staff. One mechanism that has been used has been to work with timetabling to allocate staff a day a week when they do not have timetabled teaching:

"We want to make sure we provide for the infrastructure for that in terms of clearing research days, giving people space wherever possible to be doing their own research" (SSI3 Male).

This time is also regarded as 'research time' by other staff so that other meetings should not, where possible, be scheduled on this day:

"It's not absolutely sacrosanct, but people would be, you know, entitled to be not coming to meetings that are scheduled on that day. So there might be some urgent reason in a particular week where it was unavoidable, that something had to be dealt with" (SSI3 Male).

This suits colleagues who find it difficult to accomplish research tasks in small slots of time between other activities:

"I do actually find it hard if I, I'm not somebody who can kind of go oh right, I've got an hour there on Monday, I've got 2 hours on a Tuesday, I feel like I need a block of time, particularly when it's writing, I'm not somebody who can sort of get into it" (SSI5 Female).

The need for a 'block' of time allows individuals to focus their mind on that particular research activity rather than the distractions of the rest of the job. However, having a day a week for research, is not the norm within the university and therefore can be challenging to implement:

"But every now and then you just get the sense that that is… that we're, kind of, you know, pulling at university norms on that" (SSI3 Male).

When the provision of a day a week for research is not available it is easy for people who are less confident in conducting research to concentrate on the common tasks of the day job.

"I think there's an anxiety about it that makes it easier for people to fill their time with teaching and administration rather than be brave and take the next step into another world which is new and different" (1FG1).

Without support and specially allocated time towards research some people may lack the confidence to take on the research challenge. This may have a greater impact on female academics as the literature demonstrates that they may experience greater challenges when it comes to confidence than their male counterparts (see *inter alia:* Asmar, 1999; Saunderson, 2002; Fletcher *et al*, 2007; Litzky & Greenhouse, 2007; Doherty & Manfredi, 2005; Bagihole, 1994; Eggins 1997; Harris *et al*, 1998; Obers, 2015). Furthermore, when a weekly research day is available it is still challenging for people to use this one 'free' day a week just for research:

> *"Even though in our department you get a day off a week it's still hard to protect that a lot of the time because [the research institution is] a very admin-heavy institution"* (SSI2 Female).

This 'research day' is often impacted upon by other factors such as marking or other administrative duties around teaching, particularly at certain times in the academic year. Equally, this is potentially more challenging for female academics as studies have shown that women are spending significantly more time than male colleagues on supporting administrative work (e.g. Aiston & Jung, 2015).

An alternative model for allocation of research time is based on research performance. Individuals are given 'rewards' on the basis of the strength of their research profile:

> *"We get allocated a certain number of hours in our workload for research depending on our performance over the year on research and if you don't reach those targets you get moved down"* (2FG2 Female).

Members of the department are categorised into one of four different 'bands':

> *"The scholarship band you get a hundred and seventy-five hours, for the developing band you get three hundred hours, for the active band you get five hundred and five hours, and for the leading band you get six hundred and seventy-five hours"* (2FG2 Female).

Whilst some colleagues have benefitted from this scheme, unfortunately:

> *"a number of colleagues have found it to be an incredibly punitive system"* (2FG2 Female).

This reduces the incentives and may further decrease the confidence of those 'penalised' individuals to do research.

One department provides four-month research leave for staff once every three years. This type of extended research leave is rare within the university but is particularly important for certain disciplines, for example where monographs are expected. This may also create the gendered difference in experience noted in the self-assessment proportions of time:

> *"In [my discipline] if the Gold Standard is the monograph and for women who are caring or who have maternity breaks or childcare, monographs are just harder to push out than"* (SSI2 Female).

The lack of sabbaticals in subjects where a monograph is required may be particularly challenging for women with caring responsibilities as they lack the extended time to focus on such an output during the working day (see above).

Administrative duties

Overall, 94% of participants stated that they had administration included in their contract.   The distribution of time spent on administration was similar for both genders with male (87.5%) and female (83.1%) participants self-assessing their administrative work as taking up 0-49% of their time. The most common time spent on admin was 20-29% for both genders (male 28.1%, female 32.2%).

Figure 3: Self-assessed proportion of administrative time by gender
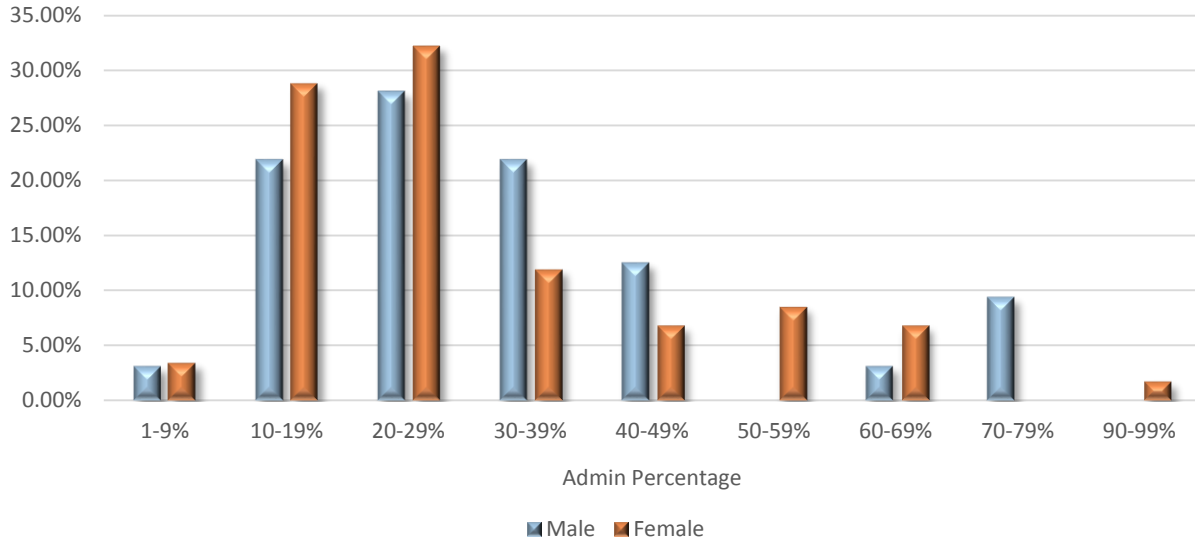
In building a research record, the work that you do in the other areas of academic responsibilities can support or distract from this. It was suggested by the participants that the nature and extent of administrative duties undertaken may be influenced by the gender of the individual. This is supported by studies in this area (see inter alia; Poole *et al*, 1997; Barrett & Barrett, 2011). Some of the female participants commented that they:

> *"get more pastoral kind of issues thrown at [them] and that tends to happen quite a lot I think to women"* (SSI2 Female).

It was suggested that the stereotypical expectation that women were more nurturing had led them to undertake administrative roles which suited this belief. Again this was supported by the wider literature (see inter alia: Ropes-Huilman, 2000; Ward & Wolf-Wendel, 2004). One participant commented that a colleague would joke about referring students in distress to her:

> *"Oh my God, you're crying, go and see Dr [SSI2], she's much better at these things than I am'"* (SSI2 Female).

Although meant as a joke, SSI2 Female did experience situations where colleagues would seek her out to deal with difficult pastoral issues. This potentially indicates that a disproportionate amount of admin time on 'nurturing' issues may be taken up by women. This limits the time available for them to build up further understanding of higher education research:

"The sort of research related activities which might clue somebody in just to that, those, all those soft skills around how research works, you know, what kind of little strategies you can use to, you know, when you apply for grants […] if you are, you know, given admin duties that are related to research that's going to help you? Whereas if you're given admin duties that are related to just kind of other…" (1FG1 Female).

The tacit knowledge developed through doing administrative duties around research may help to support an individual as they build their own research by providing them with insights and strategies on how to approach their work. However, in the context of this research it was found that:

"*my male colleagues get to do all the research goodie stuff"* (2FG2 Female).

Summary

There are a number of factors that may influence the gendered experience of workloads leading to lower research outputs form females. These relate to all three areas of the academic job: teaching, research and administration. The teaching focused context of the research institution undermines opportunities for research for both genders. However, it was found that female participants had a higher teaching load than their male counterparts. Possibly consequently, females were also found to have a lower proportion of time on research. A number of factors might affect this: firstly, the nature of the contracts people have, with more women having part-time contracts than males. Secondly, the impact of different models for providing research time may not suit females (particularly with childcare responsibilities) as much as males. Finally, whilst administrative loads are similar between genders, the nature of administrative roles may be different for women offering fewer opportunities to develop tacit knowledge about research in higher education.

Systemic discrimination

In line with current feminist thinking in this area (see *inter alia*: Aiston, 2015; Morley, 2014, 2016; Husu and Morley 2000; Thomas and Davies 2002; Bailyn 2003; O'Connor & White 2011), debate around the obstacles that female academics face to productivity and progression is often centred around external masculine structural norms. Such structures are often so embedded into the culture of the institution that they become a minefield which women have to navigate in order to achieve institutional and therefore external recognition. Many argue that breaking down these masculine structures which disadvantage women cannot be achieved simply by playing a numerical game and increasing female representation in HEIs (Morely, 2014). Nevertheless, it is argued that the lack of diversity within senior management roles within an institution can lead to a culture whereby women feel undervalued and thus do not aspire or have the confidence to develop their careers in a manner which will secure progression (Doherty & Manfredi, 2005; Obers, 2015, Blackmore, 2014). On the whole, the research institution has worked hard to demonstrate its commitment to addressing structural inequalities relating to gender. A commitment to Athena Swan and achieving institutional bronze award in this regard together with participation in the Leadership Foundation Aurora Programme have achieved much in seeking to break down hidden and systemic disadvantage to female academics. Indeed, in the 2015 institutional Staff Survey 92% of participants considered that the University was committed to promoting equality of opportunity for those of different genders. Nevertheless, a concern regarding a level of systemic disadvantage could be seen from the interview and focus group data.

Diverse management

The gender diversity within the research institution was a recurrent theme throughout (see section 4 above). The gender disparity within institutional senior and departmental management was an issue that

was raised by several participants. In particular, it appeared that the staff survey had not unearthed the level of frustration that both male and female participants felt at the lack of gendered representation within institutional management. One female senior lecturer stated:

> "It was just like, like what is it, a million percent of people think the Senior Management is great, I'm like are you kidding me, diversity anyone, hello all you white, middle-class men; like, you know" (SSI2 Female).

Particularly troubling was a concern that staff had chosen not to respond to the staff survey for fear of their identity being found out if they spoke out in relation to this issue:

> "We had quite a lot of members of our department who refused to do it [complete the staff survey] for that reason. Yeah, oh and I lied about who I was, I think I ended up being a gay man in my fifties…It's like I'm not telling them who I am" (SSI2 Female).

There was a clear awareness of the gender disparity in certain faculties and a concern for the impact that this might have on female progression. Thus supporting the wider dialogue which recognizes that the lack of a representative leadership can often perpetuate disadvantage as women will choose not to seek progression to a club they feel they may be excluded from (Blackmore, 2014). One male professor reflected on the lack of visible gender diversity in his own faculty and in particular the impact that this would have on progression and research productivity:

> "Senior faculty are, you know, the vast majority are male. So, and that's much worse, surprisingly than something like chemistry, where they recruit fewer female undergraduates, but that percentage stays constant all the way through, so they don't lose people on the way…it has significant consequences for research, and so I think as a discipline we need to be attentive to appreciating that there could be very serious barriers to the progression of women students, and then staff going through" (SSI3 Male).

Whilst the lack of diversity within the senior management team was an issue for some participants, in some disciplines and even at a departmental level this was a concern. One male professor reflecting on the gender disparity within his own department stated:

> "I might be, just thinking about it I think there's five professors within the faculty and three are male which is interesting if you think that 90% of [those working within our area] are female" (1FG3 Male).

Equally, a lecturer from another discipline expressed concern at the lack of diversity within the management team of her current department when compared to her previous pre-92 institution:

> "I was used to seeing women as Deans and Professors and Heads of Department…and then to come here and to see obviously not all but from my own perspective and in my own department like most of the positions of power being men, and sort of people kind of not really knowing why that's an issue or people going, 'well, so? That's because the 6 people best positioned to be on the committee', it's like yes, but why are they the 6?" (SSI5 Female).

In particular, this female lecturer recognized Morley's (2011; 2014) argument that we should not simply be counting women into leadership positions but that we should be questioning the systems accepting

that as the status quo:

> *"It's too simplistic to say that you know, simply there should be a woman…it's more than that, it's sort of thinking about why isn't there you know, it's not about going to stick another seat around the table so that a woman can sit, it's more why is it that the 6 people…"(SSI5 Female).*

Similarly, one female REF manager (who was concerned not to be identified) expressed concern at the gender disparity in professorial representation across the institution particularly when considering that the majority of academic staff are female:

> *"With a relatively small number of men, the number of male professors!"* (RM6 Female).

Transparency and 'insider knowledge'

Many have argued that systemic disadvantage is perpetuated by a female lack of awareness of the 'rules of the game' and the organizational and structural norms which exist (see inter alia: Bagilhole & White, 2008; Bagihole & White, 2013; Doherty & Manfredi, 2009; Howe-Walsh & Turnbull, 2014; Morley, 2012; Morley, 2014). This is particularly true in relation to leadership and research systems (Morley, 2014). Thus an institutional lack of transparency in how research and leadership decisions are made together with a lack of consistency across disciplines in how 'game rules' are imparted can have a significant effect on female progression and productivity. Studies demonstrate that men are more likely to seek out the rules for themselves or indeed have the confidence to enter into the game without a full understanding of the informal rubrics in place (Doherty & Manfredi, 2009; Bagilhole & White, 2008). Indeed, some have argued that women will only apply for promotions or take the step towards research activity when they are sure they understand and meet the criteria (Obers, 2015). To some extent, this was supported by the initial gender disparity which led to the commencement of this research (see above at section 3). The question was then to determine whether a gender disparity could be found in relation to the covert rules of leadership and research progression and in particular in relation to the REF within the research institution.

From an analysis of the questionnaire data, out of the 43 male academics who responded 7% considered that a lack of understanding of the processes was a major obstacle to their research activity and in some cases had led to a lack of self-selection for the REF. In comparison, 11% of women who responded felt that a lack of understanding of processes impacted upon their research activity. This gender disparity in levels of understanding was supported further in focus groups and interviews. Whilst not a key focus, a couple of female participants expressed their feelings of not really understanding the systems at work. This was particularly relevant in those disciplines where senior managers at a discipline level were not research active and where staff predominantly came from a professional rather than academic background:

> *"So a lot of us in those younger years hadn't got the PhD and now we're in a position where we've got a full teaching load and it's in some ways chicken and egg situation, so from the top down of the Head and the Deputy Head, one comes from a practice background, one comes from an academic background, and as far as I know my Head of Department doesn't have a higher degree, other than his undergraduate degree, at the moment. So because of that, the research focus is limited"* (SSI8 Female).

The perpetuation of systemic inequality is further preserved by a lack of institutional transparency in relation to game rules. In relation to research activity, female participants (in contrast to male colleagues) felt that they were unclear how the time was allocated within their department and felt that the lack of

consistency and openness in terms of the applicable rules had often impacted upon their workload and ultimate ability to have the time to carry out productive research. The need for institutional consistency around the system of workload planning is an issue which Barrett and Barrett (2011) focused on. One female lecturer expressed concern that a lack of transparency in the allocation of time to conduct research within her department meant that the same people were being given time to conduct research and thus this was impacting on those who were not then able to break through the barrier to receive time to research. She felt that this perpetuated disadvantage which she linked to gender:

> *"[My department] is a female dominated department, very much so, it's around three quarters female. But the kind of the research stars tend to be male so when I was speaking again about the sort of criteria and the different kind of allocations we have in terms of the hours we get, so the kind of the top categories, the research leaders…So there used to be more women in that research leading category but who've been demoted to the lower categories so even though still this sort of majority male, in previous years it was that kind of proportion was, wasn't 80%/20%, it was a little bit better. And because those are the people who do get the most time for the research it means they obviously have more opportunity to research…" (*1FG1).

Equally, there was a feeling that opportunities were provided to individuals to undertake research activity without any consistent or objective criteria. This sense that there was a system of institutional favouritism that benefitted those able to engage in the hidden rules of the game was expressed by one female senior lecturer:

> *"And you can see that there's people who are the favoured people, and that's from the very top downwards, are the people who get the chances and that's how this university operates. So in terms of the REF it happens at every single level from the most minute opportunity with some little bit of funding or just knowing who's undertaking what piece of work, right through to how decisions are made for more senior things"* (2FG2 Female).

Ultimately this feeling of not being part of the game and the lack of transparency led to this particular female academic feeling that there is:

> *"a lack of transparency, lack of openness in general about how decisions are made…when things are decided via personal preferences or a lack of transparency then these prejudices creep in and it makes you lose trust in what's happening"* (2FG2 Female).

Another female senior lecturer anecdotally recalled how she felt her work had been shut down without any clear understanding of why this had occurred:

> *"Let's just say there are times when that I do was shut down completely and then it's just got through and I think that's kind of at the whim of what's suiting certain people at certain times"* (SSI2 Female).

The importance of recognizing the barriers to women created by a lack of transparency around academic conventions and approaches (particularly in relation to research), was noted by a female REF manager:

> *"I think there are opportunities for us as an institution to do something different, that would actually help us to really promote the careers of women in an institution that, you know, does have a lot of female academics, so that we provide structures which help women to understand the*

rules of the game, because there are rules to the game, and also cut through a lot of the stuff" (RM6 Female).

This lack of transparency creating a loss of clarity around the 'rules' applicable to research activity was equally linked to the problems of male dominated networks. This marginalization of women from male institutional networks has been well documented (Aiston & Jung, 2015; Baldwin 1985; O'Leary & Mitchell 1990; Barrett & Barrett, 2011; Van den Brink & Benschop, 2012). The disadvantages this created for female progression and research activity was expressed in the following terms:

"Things in this university are often decided informally…and so friendship patterns, networks amongst certain people, and very often the networks are masculine. And in sociological terms there's a concept called homosociability which means that men prefer to work with men and I feel that at an informal level that goes on all the time. And so men will work with other men, they might never be consciously aware that they're excluding women but it happens by default" (2FG1 Female).

The impact of this gendered networking and the consequent disadvantages faced by female academics have been recognized extensively throughout the literature (e.g. Ferrario, 1994; Davidson & Cooper 1992; Barnard *et al*, 2009; Howe-Walsh & Turnbull, 2014). Unfortunately, for this particular academic, she felt that her perceived exclusion from key networks had had a significant impact on her motivation:

"When you've had a few experiences that, where you've been excluded or male colleagues are favoured in terms of opportunities, eventually you just feel like giving up because why would you carry on? That's what I feel, I feel in the end you become demoralised and you just know there's no point because you're, it's you against a very oppressive system" (2FG2 Female).

Undervaluing of female work
In line with existing literature in this area, the data collected overall did not demonstrate any overt discriminatory behaviour towards women within the institution (Howe-Walsh & Turnball, 2014; Doherty & Manfredi, 2005; O'Neil & Bilmoria, 2008). Indeed, even in discussion around potential systemic discrimination, this was often mitigated by those participants with a caveat that they did not perceive this as intentional discrimination.

However, an emerging theme from the data was the perception that colleagues and management were undervaluing work because a woman had undertaken it:

"I remember the odd sometimes, just the odd email that comes from, you know, like someone in the faculty about something and there'll just be a slight kind of belittling of another colleague's work who's a woman who's doing quite well or, you know, that kind of thing" (SSI2 Female).

For this senior lecturer, this feeling that work was undervalued was exacerbated when applied to work involving a feminist element:

"there was a slight kind of suggestion from some male colleagues, not in this department but across faculty, well, what the fuck is that for…" (SSI2 Female).

This sense that female work was undervalued was related to the feminization and undervaluing of certain disciplines more generally by one REF manager, a theme which runs through the literature in this area

(Morley, 2011; 2016):

> *"Potentially, also, issues about the kind of areas that people choose to research in within the discipline and the fact that certain areas of the discipline are both more 'male', in inverted commas, and more valued"* (RM6 Female).

In particular, a couple of female participants reported having to battle against colleagues to have feminist and female issues included in course content. There was a sense that such content lacked importance and validity in an academic context. One female lecturer recounted a situation in which a male colleague had attempted to prevent a topic on feminism being included in a postgraduate programme:

> *"The Masters students for example had a lecture on feminism, somebody thought maybe that should have been removed and it's quite irritating, I guess if I wasn't here maybe that would have happened, that particular lecture would have been taken away, because I was here to fight that battle and say, "no, hold on, this is important because x, y and z"* (SSI5 Female).

That sense of women needing to fight to include gender diversity in the curriculum was further supported by a female senior lecturer from another discipline:

> *"I do try and just fight the corner the whole time in terms of the curriculum and syllabus and making sure that there's women on reading lists when they should be and being attentive to gender when it does kind of slip back, you know, slip a bit in the department"* (SSI2 Female).

The need for women to constantly have to exhibit a persistent 'pragmatic endurance' fighting through the impact of systemic inequality and discrimination is supported by the literature in this area (O'Neil & Bilmoria, 2008; Doherty & Manfredi, 2005).

A female REF manager expressed the importance of the institution prioritizing gender awareness and pursuing a mandatory approach, particularly in relation to staff training:

> *"I don't think the institutions in the forefront if you like of dealing with the gender issues. I think it's trying to catch up..you know there are genuine efforts. It's an institution however that believes in people signing up to do things and to do things voluntarily and willingly, so nobody's going to get training in gender awareness and this kind of thing unless they ask for it yeah, and there's quite a debate about whether that approach is a reasonable one to be operating, you know in this day and age"* (RM3 Female).

The undervaluing of female issues and work was further supported by a recurrent perception from female participants that in speaking out and challenging the status quo in any way would make them appear aggressive and a 'trouble maker':

> *"I think hard as it can be at times I do highlight these things and I do bring them up and I'm probably a bit of a troublemaker, but things go unnoticed if they aren't highlighted"* (SSI5 Female).

> *"I think there is a kind of, when I've kind of been on Boards outside of the faculty there is a kind of 'I'm a gobby young woman'"* (SSI2 Female).

Such self-perception is likely to impact upon progression. Even if this is a perception which is not borne

out in practice, the fact that these highly qualified women feel that they are viewed as being 'gobby' and a 'trouble maker' for speaking out and supporting the issues they are passionate about, will inevitably inhibit them from expressing their professional and academic views. The supporting literature focuses on lack of female confidence as a barrier to progression (Asmar, 1999; Saunderson, 2002; Fletcher *et al* 2007; Litzky & Greenhouse, 2007; Doherty & Manfredi, 2005; Bagihole, 1994; Eggins, 1997; Harris *et al* 1998; Obers, 2015). If women feel that they are viewed as too outspoken and their work is undervalued by the academy, this will inevitably impact upon their confidence to progress. One female professor had turned this self-perception on its head and far from perceiving herself as appearing 'gobby' and 'aggressive' she had overcome this by perceiving herself as having taken on male characteristics in order to succeed:

> *"People used to say 'you're just a bloke in a frock', you know, so I don't know whether I'm seeing it clearly or not but I don't feel there was any issue about gender"* (SSI7 Female).

Summary

Whilst studies generally and this data rarely point to overt harassment and discrimination within the academy, many argue that they systemic discrimination faced by women in HE results in a lack of productivity and progression. The perception of a lack of gender diversity within the management structure at a departmental, faculty and institutional level was a recurrent theme. Studies have demonstrated that where such perception exists within an institution, women are less likely to challenge the status quo and demonstrate progression and productivity at the same levels as their male colleagues. However, it is clear that academic staff recognize that increasing the numbers alone is not sufficient and there is a necessity to look at the structures in place that result in this lack of diversity. The data also pointed to perceptions of a lack of transparency within the institution in relation to research activity and progression that resulted in female academics lacking understanding of how decisions were made particularly around workload planning. This lack of transparency was often perceived to benefit male colleagues particularly in relation to workload planning issues. Some participants felt that decisions were made on the basis of informal networks that as women they did not feel readily able to access. Evidence of systemic discrimination could be seen in a perception from some female academics that their work was undervalued in comparison to male colleagues and in particular that they had to fight to get female and feminist topics included in the curriculum. Equally, some women perceived themselves as being viewed as a 'troublemaker' and 'gobby' if they spoke out within the institution.

Attention needs to be paid to ensuring gender diversity at Governing Body, institutional, faculty and departmental level. Formal networking opportunities for male and female researchers may be advisable. At present, whilst the Women's Network provides targeted support for female academics it does not engage men in ensuring the development of non-gendered networks. Objective decision-making at all levels is vital with clear and public feedback given as to the criteria applied and reasons for the decision made. In particular, objective workload planning should be supported consistently across the institution. Training should be provided to all managers on the importance of valuing female work and women should be encouraged to speak up where this is not happening.

Gendered academic career trajectories and the discipline effect

The literature suggests that academic career trajectories may well be built on the male normative concept of success (Bagilhole & White, 2013). As a result, studies have pointed to the fact that women are more likely to have less typical career paths and often enter HE at a later stage than male counterparts and equally often enter academia in those disciplines with a professional focus (White, 2005; 2013; Riordan, 2011; Pyke, 2013). This can therefore mean that women are entering into the academy at a late stage without doctorates and often their roles are heavily focused on teaching and professional knowledge

transfer rather than research activity. A lack of research focus within their discipline will therefore impact upon progression and research productivity for these individuals, particularly as within the research institution and beyond progression is still largely based on traditional understandings of research productivity.

Research productivity remains central to readership applications within the institution. In recent years however, the university has attempted to broaden out professorial promotion criteria beyond research to include academic leadership, teaching and learning and enterprise and professional activity. Nevertheless, for professorial conferment, (as is usual across Higher Education) references are expected from those at professorial level (rather than from professional and industry referees) and equally the professorial committee relies on external professorial judgement in determining promotion in this regard. Therefore, it is likely that research profile remains central to the professorial promotion process as referees who are providing the external benchmarks are those who are more likely to replicate traditional expectations in relation to research productivity.

Thus, it is those from the professionally focused disciplines who are less likely to be research focused and considered suitable for readerships and professorial appointment. Equally, if we consider, as studies demonstrate, that it is women who are more likely in general to have entered academia later from the professions then this creates an additional detriment. The research institution has traditionally focused on professional areas such as teaching and nursing. Women already heavily dominate these areas and many of these women will have had careers as teachers and in health before entering the institution. Whilst often highly experienced in their discipline, many of these women will not have any higher qualifications or formal research training. Thus they often find that institutional progression is limited. Any analysis of research productivity more generally or in relation to the REF2014 submissions has to take this into account. Based on the institutional data, those disciplines with significant majorities of female staff and students are within Health and Social Care and Teacher Education (institutional Equality and Diversity Report, 2015)**.** These areas are unsurprisingly linked to professional practice.

The Units of Assessment for the REF2014 do not entirely correlate to the institutional Faculty and Departmental structure so it is not possible to undertake a direct comparison. However, it can be seen that the percentages of those self-selecting from institutional female dominated and professionally focused areas (where it is possible to link to a specific UOA) suggest some gender disparity. For example, if it can be assumed that those from the institutional Faculty of Health and Social Care would be more likely to submit to UoA 3 and 22 of the REF (i.e. Allied Health Professions, Dentistry, Nursing and Pharmacy and Social Work and Social Policy respectively), then crude analysis of gender disparity in this area can be undertaken. If a basic assumption is made that only those within the Faculty of Health and Social Care submitted to the relevant UoAs (in reality such a crude assumption cannot be made as UoA 3 also draws in staff from Biology, Clinical Sciences, Institute of Medicine and Social and Political Science), then just 29% of female academics within this Faculty (employed on a substantive contract in 2013) self-selected for the REF compared to seemingly all relevant male academic staff. If this is compared to a more traditional academic discipline such as English Language and Literature and again an assumption is made that all of those employed on substantive contracts submitted to UoA 29 (English Language and Literature - which can be more readily mapped from the research institution's departmental structure in this regard) of the REF, we can see that no significant gender disparity exists. Indeed, 67% of women employed in the Department of English within the institution self-selected for submission to the REF compared with 58% of men. Thus, this would suggest (although on the basis of a very rudimentary analysis) that women working within professionally focused disciplines are far less likely to be research active (when considered

in relation to REF submission), with heavier teaching loads (see above) and thus find it more difficult to progress within HE.

A consideration of the interview and focus group data points to some limited evidence of gendered career trajectories within the institution. Equally, the analysis above is supported by the fact that all of those women who were interviewed and had entered academia from a profession at a later stage in their career (without postgraduate qualifications) were from departments with a heavy professional focus. All of the men interviewed or participating in the focus groups and some of the female academics appeared to have a more traditional academic career trajectory obtaining a PhD early in their career usually followed by a postdoc period in a research-intensive institution. For those women who had an atypical career path, the frustration at not having an academic background is clear:

> *"I was at [a leading Russell Group university], it wasn't even that much encouraged, it was oh you know, do you really want to look at this, you know, you'd be better going off into professions if you want to be a professional; whereas these days it's a slightly different focus. So a lot of us in those younger years hadn't got the PhD and now we're in a position where we've got a full teaching load and it's some ways chicken and egg situation"* (SSI8 Female).

Another female lecturer with a professional background expressed her concern about the value of a doctorate later in her career and whether her time was better focused on her teaching role:

> *"At the moment I've finished my master's, it took me 8 years to do it …so it took me a very long time and I think that's kind of put me off then going on to do a doctorate, and I've thought about doing and I thought are there other things that are more personate to my role as in qualification-wise than doing that? I'm not convinced really"* (SSI4 Female).

Both of these women had come from professional backgrounds and had been well established in their individual areas but expressed a lack of confidence in their ability because they did not have the academic background. In particular, one stated:

> *"I get a kind of inferiority complex really because, you know, although I've, you know, gone to a really decent university and I've done very high profile [professional work], I still, 'cos I don't really know what research is all about, feel a little bit 'it's the other'"* (SSI8 Female).

This link between research productivity and career trajectories was recognised as being central to the REF2014 process. In particular, one REF manager stated:

> *"The reasons they may be less research-active and also were not submitted to the last REF were largely to do with where they are in their career, and that could be at an early stage in their academic career but it doesn't necessarily mean they're young, they're people who switch their career and therefore are just establishing an academic career for that reason"* (RM5 Male).

However, another REF manager from a professionally focused department felt that encouragement of those with non-typical backgrounds to undertake professional doctorates had the potential to change female research productivity in relation to the next REF:

> *"My impression is that more women will be submitting next time and that is not through any active policy to encourage women to do research, that's because several colleagues have come*

through the [professional doctorate programme] successfully, they've now got their doctorates, they've got stuff that can be published" (RM4, male).

In line with Doherty and Manfredi's (2005) findings, even those women who had followed a traditional career trajectory appeared to be less focused on planning their career paths than their male counterparts. A recurring theme throughout the interviews with such women (who had often been very successful academically) was that their academic career had somehow just happened rather than being planned:

"In a way I fell into [my subject discipline], so that's why I'm now after all that background and long story I'm a lecturer" (SSI5 Female).

"I mean I think I'm quite uncommon in that I didn't there wasn't a kind of like traditional route through which I kind of got a job" (SSI2 Female).

This was in contrast to those men who when recounting their career trajectories appeared to have planned their career along a traditional academic paradigm. Equally, one REF manager appeared to suggest a link between gender in her Faculty and ambition in relation to research productivity:

"In my particular faculty at the time I think it was that the aggressively ambitious people tended to be males but again I am not sure it was really related to gender but to personalities" (RM1 Female).

Summary

Studies suggest that women are more likely to have non-typical academic career trajectories. Therefore, many women are entering into academia at a later stage with a strong professional profile but limited postgraduate qualifications. Thus their exposure to research experience is limited and therefore research productivity and opportunity to progress within HEI's is restricted. This is borne out by the data. The research institution has a heavy focus on professionally dominated disciplines such as teaching and health and social care. These areas are predominantly staffed by female academics and as a consequence whilst these are by far the largest disciplines within the institution are not proportionately research active (as assessed by self-selection to the REF) in comparison to those disciplines, which are not professionally focused. The data reflects this with those female academics based in professional disciplines having non-typical career trajectories and far less understanding and experience of research activity. Equally, in line with Doherty and Manfredi's (2005) findings, female academics demonstrated a less formal and focused approach towards career development and planning that may also impact upon research productivity.

Thus greater focus and support to promote research activity is required in those disciplines that are female dominated and recruit largely from professional practice. This may mean drawing from wider expertise from across the institution. Consideration needs to be given as to how women (and men) from professional backgrounds can feel valued by the institution. Equally, consideration needs to be given to supporting female academics more generally in relation to research planning and focus. This may be via a mentoring scheme or via targeted events.

Enablers to Research Activity

Mentoring

Due to the centrality of the confidence deficit argument in relation to female lack of progression and disparities in research productivity in HE, there has clearly been a correlative focus on the need for mentoring. Indeed, the research institution has already demonstrated its commitment to female focused leadership mentoring with the rolling out of the Aurora Programme. Unsurprisingly, the literature demonstrates that lack of mentors can have a detrimental impact on female progression (Aiston & Jung, 2015; O'Leary & Mitchell, 1990). Equally, the availability of effective mentors can have a significant impact on gendered productivity and progression (Gardiner *et al*, 2007; Fletcher, 2007; Chesterman, 2009; Eliasson, Berggren & Bondestam, 2000; Schulze, 2010; Obers, 2015; Joiner *et al*, 2004; Pyke, 2013; Thanacoody *et al*, 2006).

Thus when asked via the questionnaire what support needed to be provided in relation to research activity within the institution, 43% of respondents made reference to the need for mentors. Thirty-two percent of all male respondents made reference to the need for mentors in comparison to 49% of all female respondents. Thus, whilst mentoring was viewed as an enabler to research activity for both genders, women were slightly more likely to focus on the need for this form of support in their responses. This was drilled down further in the interviews and focus groups.

Mentoring provision across the institution would appear to be inconsistent and sporadic. Some departments have clearly adopted a formalised strategic mentoring scheme geared towards developing research activity:

> *"In relation to mentoring, what we decided in the end to do was not make it a, sort of, hierarchical senior and junior, two person relationship, but divide the department into, sort of, subject areas, and ask those areas to form slightly more informal research groups, and for, sort of, research conversation and mentoring to take place within those groups on a, sort of, peer-to-peer level, so that we weren't, sort of, instituting this sort of, senior junior relationship all the time"* (SSI3 Male).

Other departments had a more informal mentoring system in place that largely relied on the cooperation and collaboration of colleagues:

> *"I'll include myself in this but I get staff asking me questions about publications they might be editing … and so there's mentoring on an informal basis that when they need something they know that they can approach us and ask for it and they know where to go"* (SSI6 Male).

Informal mentoring, using personal networks rather than an imposed formal system, often appeared to work equally well particularly for female respondents who felt able to seek such support out. Some (e.g. SSI2 Female) viewed the finding of useful mentors as the product of luck based on friendship and networking groups whilst others (as can be seen by SSI9 Female in the second quote below) had a far more focused approach towards seeking out coaching and mentoring:

> *"I'm really lucky that I've got colleagues who are friends who might be a bit further ahead in their career, who might be at the same level, there's a lot of healthy discussion about what to do and when to do it and how…there's about three or four colleagues who I often go and go oh, I can't do anything about this, do you think I should do this?"* (SSI2 Female).

"Throughout my career I've always identified someone as a coach, not a coach, a mentor, sorry, and someone I can trust and have open conversations with and it can be about the personal difficulties … which was affecting my work and just struggles and/or just, yeah, research and personal development" (SSI9 Female).

Sadly, for other departments there seemed to be little evidence of any mentoring schemes in place. All of those participants who made reference to a frustration at the lack of mentoring and support within their particular department were female. The following are two examples of frustration at a lack of mentoring and direction given at a departmental level:

"Yeah definitely lack of mentoring, lack of direction really I suppose from managers" (SSI4 Female).

Even where formal mentoring was made available, this was not always effective. Poor and ineffective mentoring can be counterproductive and actually damage progression particularly where it results in trying to assimilate women into dominant male structures (Morley, 2012). Ineffective mentoring had left the following female senior lecturer feeling disappointed and frustrated:

"Well anybody who's new to research is paired up with somebody who's supposedly more experienced in the research area but that pairing doesn't necessarily give you anything so I'm paired up with somebody but when I ask him how he manages his, he just says, find the time! …so there's no mentoring, I don't get mentored" (3FG3 Female).

All of those who made reference to the need for mentoring in the focus groups and interviews felt that such provision was vital to support the progression and development of early career researchers. This was a recurrent theme from both male and female participants:

"Well, as a new member of staff, I'm just a lecturer here, but certainly I would like to have a mentor and, you know, guide me through career development, you know, certainly there are many things more to learn in this process" (SSI1 Male).

*"I think if I felt confident and I had someone there just to hold my hand, you know, just to point me in the right direction and say, you know, this is how you go about it, this is what this means, then I would feel far more comfortable about putting the time in" (*SSI8 Female).

A number of the female participants discussed their own experiences of acting as a mentor for more junior female colleagues. Often this was as a result of external engagement and was beyond the institution whilst others made reference to input into the Aurora Programme. Those involved in mentoring generally felt that it was rewarding both for themselves and those they were paired with:

"I'm part of the mentoring scheme for one of the academic organisations that I look at, which meant, you know, so I'm mentoring a woman in her earlier stage of her creating research and I could be mentored by someone else" (SSI2 Female).

One female senior lecturer who had acted as a mentor for the Aurora Programme did question whether mentoring across roles as part of that initiative was particularly effective:

"I was a mentor for the Aurora Programme…and we were given a bit of support from HR which

was really useful but then I was kind of mentoring people who came from different backgrounds and I'm not sure necessarily how useful I was" (2FG3 Female).

There was a general feeling that the females participating who had reached a fairly senior level within the institution wanted to 'pass on' their expertise and support more junior colleagues:

"I think it's important for all genders not just women, for all members of staff who are starting new in the research, they need some mentoring and I've always been very careful to extend that to people because people have been so generous to me in my time" (SSI7 Female).

"I've shared with them my strategies and approaches where I've mapped out where I am and then where you need to be and how you can get there in terms of rungs on the, you know, the different job descriptions, your current job description, the next level" (SSI9 Female).

In line with the literature referencing the pressure gendered mentoring schemes can place on successful women (Morley, 2012), reference was made for the need to provide those with mentoring responsibilities the remission in order to do this. This was a point made by a male rather than female participant:

"Certainly [individual professors] get remission against teaching in order to look after the leadership of research, which includes mentoring" (SSI6 Male).

Studies point to a greater willingness of women to give their time to supportive work (whether that be for staff or students) (Ropes-Huilman, 2000; Ward & Wolf-Wendel, 2004) often without the expectation of remission. Thus, whilst a senior male participant referenced the need for remission (when referring to his male professorial colleagues), a senior female professor appeared to consider that mentoring was something that should be expected of those at professorial level and that this should be something that is part of a normal workload:

"My experience of quite a few professors, not just at [the research institution], in other institutions, by and large many of them are very selfish with their time and they will moan and whinge and say they haven't got time to spare, whereas they really do, because people at the coalface have an immense amount of teaching" (SSI7 Female).

There was little reference to the importance of targeted gendered mentoring by the participants. Studies suggest that women and men feel more comfortable being mentored by the same gender (Ragins, 1989; Thanacoody *et al*, 2006). However, other studies have suggested that effective mentoring for women requires access to both male and female experience (Manfredi *et al*, 1999; Thanacoody *et al*, 2006). Most of those making reference to mentoring for female progression appeared to assume that the mentoring would be provided by the same gender. This is supported by the Aurora Programme model. However, one senior female professor expressed the view that:

"I think mentoring is very, very important but again I think this is less to do with gender than personality" (SSI7 Female).

Another female professor and manager stated that she had offered to mentor both men and women but only women had taken full advantage of this:

"I'm currently mentoring three of the female staff, I've offered the male staff, and we do do it but

it's not as often as the females [laughs]" (SSI9 Female).

Summary
Studies demonstrate that a lack of mentoring opportunities can have a detrimental impact on female productivity and correspondingly effective mentoring has been shown to have a positive effect on female productivity and progression. The data from this project demonstrated that a large minority of both male and female participants considered that mentoring was vital for research productivity and progression. During focus groups and interviews, mentoring was referred to by both genders. The experience of mentoring across the institution was inconsistent. Whilst some departments clearly had formal strategic mentoring systems in place others had a more informal approach whilst others had no formal or informal processes. All of those who expressed frustration had experienced a lack of mentoring opportunities and were female. Participants made reference to the need for women to have both male and female mentors and what appeared to be more important was a mentor who had been effectively trained and was interested in providing the support. Studies have pointed to the 'mentor penalty' that some women face whereby support places excessive burden on successful women. Whilst, this was not overt in the data collected it did appear that those senior female academics who had taken on a mentoring role saw this as a moral obligation in addition to their existing duties, whereas male colleagues viewed it as a necessary part of their role but which the institution should provide remission for.

Effective mentoring is needed for all academics geared towards developing research activity. This should be a centrally driven initiative in order to ensure consistency. Targeted female mentoring is not necessarily required and women should have access to both male and female mentors. Remission and value should be attributed to mentoring activity and regularly reviewed in order to ensure effective mentoring is taking place.

Collaboration

Linked to the importance of effective mentoring for female progression and productivity is the need for supportive collaboration. Kyvik *et al* (1996) found that a lack of research collaboration has a significant detrimental impact on female productivity and that women are more dependent on collaborative working environments than their male colleagues. In line with the literature, on the whole it was only women who made reference in the interviews and focus groups to the importance of collaborative working in supporting research activity.

> *"I'm really open to sort of making connections with people outside of our department and whatever and I have done that and I have forged a couple of good links you know"* (SSI5 Female).

> *"I don't think collaboration would be that much of an obstacle because we work with so many other institutions anyway … I've got so many you know, external links"* (SSI4 Female).

The benefits and importance of collaboration were referenced in terms of personal satisfaction:

> *"Some of my colleagues are quite active cross-faculties and have an immense amount of pleasure working with other colleagues…I've done stuff with [other departments] and it's been a great delight"* (SSI7 Female).

But also in terms of the more objective benefits associated with heightened research productivity:

> *"It's encouraged to collaborate with people within the faculty because that then boosts the*

faculty's ratings in terms of research and publications" (3FG4 Female).

Where a lack of collaborative opportunity was felt, this resulted in feelings of isolation particularly where this lack of opportunity was experienced at an internal departmental level:

"When you do feel a bit isolated in terms of your research, especially when you are early career and you do want to learn… it would be really nice if there was somebody within the department who you know, who had done quite a lot of work on x, y and z that I'm interested in, that I could learn from and that I could collaborate with going forward, but unfortunately that isn't really the case I think" (SSI5 Female).

A couple of participants made reference to the difficulties that the REF posed for inter-disciplinary collaborations. This concern reflects the wider literature in this area (e.g. Schucan-Bird, 2011). In particular, it was felt that internal interdisciplinary collaboration could result in one person taking ownership of a publication in order to submit to a REF area, which would of course potentially result in an individual not being able to submit this in their own area:

"If you're collaborating with another department, it's kind of who gets the ratings? "(3FG8 Female)

"So it's really a bad thing because in fact what REF does, it stops that, because I'm thinking 'This is a really nice placed paper, it's a really great, great paper, it's a top grade journal and I might have to give it away to a junior colleague so his REF looks better'. So I've now got to go and write another paper and get it in" (SSI7 Female).

In this way the REF was seen as a barrier towards internal interdisciplinary collaboration and thus potentially would lead staff to seek collaborations with external colleagues and thus take away the benefit of institutional collaborative and mentoring opportunities with more junior academics:

"It's easier for me to collaborate with someone from another institution than here and actually I believe that we should be building strong teams here and the mentorship thing, unless you're altruistic, which my colleague and I will probably give it to this other person. The junior, in terms of mentorship, it's unhealthy because that person's never going to get the credit…" (SSI7 Female).

Summary
Studies point to the importance of collaboration to women in relation to research productivity. In line with the literature, it was only women who made reference in the interviews and focus groups to the importance of collaborative working in supporting research activity. This was referenced both in terms of the personal satisfaction gained from collaborative working and also the objective benefits to research productivity. Lack of opportunity for collaborative working resulted in feelings of isolation. Reference was also made to the REF process more generally being viewed as a barrier to interdisciplinary collaborative working at an institutional level due to problems with determining which UoA a publication would be submitted to in these situations.

Formal opportunities should be provided to seek to develop collaborations. This may be via formal networking opportunities or by linking disciplines together via management teams. Consideration should be given as to how to mitigate any potential damage caused by REF UoA selection to collaborative working.

The use of positive action initiatives (permitted via sections 158 and 159 of the Equality Act 2010) (see above at section 4) have increasingly been used by HEIs across the UK seeking to redress the historic disadvantage and underrepresentation faced by women in the higher ranks of the academy. However, whilst there would appear to be an institutional willingness to roll out targeted initiatives focused at alleviating such disadvantage, there is also an awareness that such initiatives may result in accusations of 'reverse discrimination' and in some situations may be unwelcome by the targeted group (Doherty & Manfredi, 2009; Davies & Robison, 2016).

Within the research institution there have been a number of targeted projects in relation to gender (including this research) that have aimed to collect quantitative and qualitative evidence to feed into discussion of possible action at an institutional level in order to mitigate disadvantage. Such work includes the Gender Equality Mark and Athena Swan project groups. As a result of recognition of national and institutional underrepresentation and potential disadvantage being faced by female academics (particularly in relation to female visibility at higher levels), the institution has introduced several initiatives aimed at alleviating this disadvantage and underrepresentation. Such initiatives include:

- The introduction of a Women's Network geared towards academic and support staff;
- The rolling out of the Leadership Foundation Aurora Programme;
- Encouragement for women to apply for roles where they are underrepresented within the institution (e.g. within professorial and readership calls).

In light of this, participants were asked to consider whether they felt that targeted positive action initiatives aimed at addressing female disadvantage in relation to research productivity (particularly in light of the gender disparity in women self-selecting to the REF2014 within the research institution) was necessary and relevant. Not all respondents to the questionnaire responded to this question. However, whilst 81% of women responding to this question felt that targeted positive action initiatives were necessary within the institution to alleviate disadvantage, only 69% of males responding felt that such action was necessary. Therefore, whilst the majority of both male and female respondents supported positive action a significant minority of males did not support such action. The majority of those who did not consider positive action initiatives to be necessary based their view on one or more of the following:

- the potential problems of reverse discrimination against the non-disadvantaged group;
- that they did not consider disadvantage based on gender existed within the institution;
- that targeted initiatives such as extra training can further disadvantage by eating into precious time that could be used to research;
- that inclusive rather than targeted provision would be a better aim.

Although there was a range of responses across the genders, some disparity could be seen in relation to the focus of those who considered that positive action initiatives were not required. Whilst men were more likely to consider the lack of need for positive action to be routed in a lack of evidence of disadvantage to any particular group, women were more likely to express concern that any such initiatives would impact upon already tight time restrictions. Thus for women time is often at a greater premium due to wider responsibilities beyond work which has already impacted upon time to conduct research (see above):

> *"It's not obvious what groups are disadvantaged in terms of research"* (Q19 male).

"I have not formed the impression that at least in terms of gender there has been any discrimination positive or negative". (Q88 male).

"Training courses, in particular, are likely to be counterproductive, since they will further eat into academic staff time to do their jobs" (Q18 female).

"Most research active people admit that they have to engage in their research activity in their own time at evenings and weekends. This option is not available to those caring for children or other dependents outside of work" (Q50 female).

For those who considered positive action provisions to address disadvantage to be relevant and necessary, women were more likely to focus on specific provision targeted towards female academics, whilst men focused on the need for more general provision for early career researchers of both genders:

"Gender is a factor in inclusion and exclusion from research. It operates both in the form of self-exclusion by those, usually female, staff who lack confidence in their ability to pursue a research career, and it is reflected in the lack of up-to-date gender awareness training for managers and academics, which is crucial if they are to be enabled to reverse existing biases" (Q21 female).

"More junior/early career academics are particularly badly served here in terms of support and training for research activity and academic career development more widely" (Q54 male).

Both female and male respondents made reference to the fact that any positive action initiatives required a strong evidential basis in order to determine whether disadvantage exists. Indeed this supports the requirements of legislation in this area (section 158 and 159 Equality Act 2010) that not only requires evidence to determine whether an organisation 'reasonably thinks' that disadvantage exists but also requires that such initiatives are proportionate to the aim they are seeking to achieve:

"If research of this kind reveals structural issues in relation to disadvantaged groups, we should use pro-active strategies to try to address these for next time" (Q9 male).

"If the evidence shows that women were disadvantaged in the institution. This has to be addressed" (Q55 female).

Summary
The institution has already taken steps towards implementing several positive action measures in order to redress gender disparity and disadvantage. The data demonstrated that participants of both genders supported the use of positive action although a greater majority of women (81%) compared to 69% of men felt that such action was relevant and necessary. Men were more likely to view positive action as unnecessary due to a lack of demonstrable disadvantage whilst those women who considered positive action unnecessary felt that any initiatives introduced were likely to eat into precious time that was already at a premium for them. For those who supported positive action, the need for a strong evidential basis for such initiatives was vital. Equally, men were more likely to consider inclusive non-gendered provision to be more appropriate whilst women were more likely to support targeted initiatives towards female academics.

All positive action initiatives should have a strong evidential basis and should be subject to a clear evaluation process. More consistent and thorough data collection is required and this should be published and disseminated to staff. Where an initiative is introduced the disadvantage it seeks to address should be clearly communicated to staff.

Conclusions and Implications

Furthering understanding is not only vital to the support of emerging dialogue of national research in this area but also in relation to the development of the female academic profile and research productivity within the research institution. In order to develop successful strategies and policies aimed at resolving the gender disparity in female research productivity, particularly to feed into future research evaluation exercises (i.e. the REF or equivalent processes), it is necessary to provide a strong evidential basis. It has been the intention of this project to attempt to do this through the construction of a clear understanding of gendered perceptions of the REF and research activity so as to inform the development of policy and practices within the research institution. It is also intended to use this qualitative evidence to support work towards maintaining the institution's Athena Swan Bronze Award and also towards meeting the demands of the Public Sector Equality Duty under section 149 of the Equality Act 2010.

A full reading of the findings presented in this report points to a number of emerging issues that have implications for institutional and national policy in relation to the support and development of female research within the research institution and across HE more generally. There were a number of gendered distinctions in relation to definitions of 'research activity'. Men were more likely to view originality and increasing knowledge as the defining characteristics of research. Whilst, women were more likely to be concerned with the Research Excellence Framework and how their involvement in this exercise defined them in terms of research activity. Equally, there was a statistically different approach towards the link between teaching and research. The importance of research to the development of teaching was significantly more important to female academics. Supporting wider studies in this area, the data suggested that those women participating were more likely to have a non-typical career trajectory often involving a significant period in professional practice before entering HE. This had an impact on research awareness and productivity and was particularly seen in those female dominated disciplines within the institution such as Health and Social Care and Teacher Education where academics are far more likely to have come from a professional background. Equally, female academics demonstrated a less formal and focused approach towards career planning and progression than their male colleagues.

A number of obstacles to research productivity for women were evident from an analysis of the data. Whilst an initial reading of the questionnaire data had suggested that (in contrast to most studies in this area) those with caring responsibilities were likely to be more research active than those without, on further investigation it could be seen that the majority of those stating caring responsibilities (particularly during the REF2014 preparatory period), were those without young children. Data collected from focus groups and interviews demonstrated that those with caring responsibilities considered this to be a significant obstacle to research productivity. When time is at a premium and research is very often carried out beyond the standard working day, women are unable to undertake this due to their wider domestic responsibilities. This was supported by the perception of those staff without caring responsibilities who considered that having such pressures would have a significant impact on career progression and research productivity. Equally, those who worked part-time (in spite of the remission permitted by the REF process), felt that this impacted upon their ability to conduct research. There was a perception that those working part-time may be less willing to work beyond their stipulated hours in order to engage in research activity. There was little evidence of overt discriminatory behaviour on the basis of gender within the institution. However, a recurrent theme was a perception that there was a lack of diversity at management level within the institution and that the reasons for this needed to be addressed. Equally, several female participants made reference to a lack of transparency of decision making (particularly around workload

planning and networks) within the institution which resulted in them feeling excluded or being unaware of how they could become more productive and progress. This was supported by a perception of some female participants that they and their work was undervalued by colleagues and they had to fight to see the inclusion of female and feminist issues included within the curriculum. Some women felt that they were seen as 'troublemakers' if they spoke out about these issues within the institution. For the majority of academics, both male and female, finding time for research was a key challenge. Some departments had approached this through different workload 'models' such as allocating a day a week no contact time, or providing sabbaticals. However, this was not the norm within this institution. It was suggested that a lack of allocated time in the workload model would likely impact on female academics, more than males due to issues around confidence in their research abilities.

Whilst, the obstacles above were on occasion seen as formidable for those women participating in the study, there were also a number of enablers to research activity that would be determined from the data. A majority of all participants considered that mentoring support was vital for research productivity. A lack of institutional consistency in relation to mentoring support could be seen from the data. Where no support was provided female participants in particular felt frustrated and isolated as a result. However, ineffective mentoring was seen as just as detrimental as no support. Participants did not point to the need for gendered mentoring. For those undertaking mentoring, women were more likely to see this as a 'moral obligation' whilst men saw it as an important activity for which remission should be given. It is important that successful women are not penalised and drained by mentoring schemes that place excessive pressures on their already squeezed time. In line with wider studies, collaboration was a female rather than male focus. Female participants pointed to the personal satisfaction as well as objective benefits to productivity of collaborative and interdisciplinary working. However, such working was viewed by some women as being penalised by the REF process that discouraged internal interdisciplinary collaborations in terms of how publications were submitted to UoAs. The institution has already taken some important steps towards introducing positive action initiatives to address the gender disadvantage and underrepresentation within the institution. The majority of male and female participants supported the use of positive action. However, where such action was not supported, men were more likely to consider that no disadvantage exists whilst women were more likely to feel that any positive action initiative would eat into precious time that could be used for research. Where such action was supported, men were more likely to favour inclusive provision in relation to research activity, whereas women on the whole supported targeted provision based on gender.

It is clear from the growing body of work in this area that any steps taken in relation to the development of policy and practice aimed towards resolving gender disparity in research activity must be carried out in a subtle and cautious manner. In particular, Singh (2011) when considering steps taken to redress disadvantage within HE warns that action must be carefully driven to avoid 'reinforcing stigma, which may result in negative outcomes'. Indeed, most researchers in this area advocate inclusive practice and policy development, which is directed at all staff. It is with this in mind that the following pointers (rather than recommendations) for future action should be read. It should be noted that these pointers have utilised existing research recommendations in this area together with the findings from this project in order to develop some generalised implications for policy and practice within the research institution in relation to academic staff only.

Gender equality monitoring and data collection

The data has demonstrated that visible gender diversity and evaluation of areas where diversity does not exist in order to develop initiatives for improvement is vital in providing women with the confidence to develop their productivity and potential. Whilst it is recognised that some data collection and evaluation

in this area already takes place within the institution, it is proposed that more detailed collection and analysis is required around gender. Therefore it is proposed that the institution should consider the following:

I. Develop a more detailed and consistent system of monitoring figures relating to gender on an annual basis. This should be represented in the same format each year in order to ensure a longitudinal analysis. In particular, analysis suggests that data should be collected in relation to the following:
   - Gender and role breakdown within the institution and discipline level;
   - Gender, caring responsibilities and role breakdown (wherever possible);
   - Part-time status and role breakdown;
   - Gender breakdown of the awards of internal research funding (e.g. QR funding);
   - Gender breakdown of core institutional committees;
   - Gender breakdown of management teams and committees;
   - Gender breakdown of Scientia workload planning data;
   - Gender breakdown of Chester Rep material;
   - Gender breakdown of institutional Governing Body.
II. Decide on the benchmark by which progression towards gender equality will be measured. In some cases this may be determined by reference to national or regional figures and in others it may be by reference to institutional targets.
III. Analyse and evaluate the data collected above on an annual basis in order to determine any gender inequalities that should be explored further.
IV. Continue to conduct audits of any future REF in order to determine further exploration of any gender inequality.
V. Continue to conduct and develop an annual gender analysis of promotion statistics for key positions in the institutional hierarchy.
VI. Continue to conduct and develop an annual equality report that presents and comments upon the above data and analysis. This can be supplemented by individual investigations and reports into particular areas of concern.
VII. Continue to conduct and develop dissemination and publication of this annual report across the institution.

Positive action initiatives

Consideration needs to be given to the use of additional targeted positive action initiatives based on gender. Where possible inclusive provision should be provided, but the following approach towards positive action and specific action in relation to gender should be considered:

I. Ensure that any positive action initiatives targeted at female academics have an evidential basis and that the institution is able to demonstrate disadvantage or underrepresentation. The institution should also ensure that any action is proportionate in seeking to alleviate disadvantage in light of any potential disadvantage to other groups. The impact of such initiatives should be evaluated on a regular basis and care should be taken not to discontinue such initiatives without clear justification.
II. Any positive action initiatives should be publicly disseminated to staff with details of the justification for such action together with the disadvantage/underrepresentation the initiative is intended to redress.

III.   Develop special schemes or grants to help female academics with young children and those returning from maternity leave in order to maintain their research profile.
IV.   Introduce targeted support in relation to research activity (via training and additional mentoring) for those women in professional disciplines who are less likely to have a research background.

Mentoring

Whilst targeted mentoring has often been viewed as important in the development of female progression, it is considered that a more formal mentoring system in relation to research activity should be developed across the institution for both male and female academics. Inclusive provision in this regard will seek to redress any existing disadvantage to women as well as benefitting early career researchers more generally. Thus the following should be considered:

I.   Introduce an institutional formal mentoring scheme in relation to research activity. This will ensure consistency across disciplines and need not be managed at a departmental level.
II.   Mixed mentoring should be encouraged (although where requested women may prefer to be mentored by another woman and this should be accommodated) with focus being placed on the relevance of the expertise and experience of the mentor to the mentee rather than gender.
III.   Appropriate workload remission should be given to mentors and value placed on mentoring activity in any promotion criteria.
IV.   Appropriate training should be compulsory and provided to mentors. Equally, regular objective evaluation of mentoring activities should be carried out.

Diversity awareness

Analysis of the data demonstrated that there was a need across the institution for a greater awareness of the importance of gender diversity. Thus the following should be considered:

I.   During management training and developmental activities, include debate and reflection about management style and the gender implications of this. Encourage awareness of the importance of mainstreaming gender issues into the curriculum
II.   Build into the person specifications of all senior staff (from Deputy Head of Department and above) a requirement for gender awareness and a commitment to achieve gender equality.
III.   Ensure there is a gender mix on decision-making panels (including funding, REF UoA submission and promotion panels). In addition, this good practice should be extended to set equality standards for the selection and preparation (perhaps through the provision of written briefing materials) of external panel members and to make clear that selection decisions should be based only on the evidence presented to panels.

General

Dedication to addressing systemic inequalities across characteristics is vital in redressing gender disparity. Thus the following general pointers should be considered:

I.   The development of formal non-gendered research networks in order to promote the development of interdisciplinary and collaborative working. Inclusive provision in this regard will ensure that female academics have the opportunity to collaborate and network with other female and male academics in order to avoid isolation and exclusion.
II.   Establish methods to help staff plan their research activity (and future REF submissions) and in particular in relation to postgraduate study and funding bids. These might include training senior

managers so that they can support their staff better and/or building in some central support within personnel, training and development services.

III. Monitor and review gender split in workload data across the institution. Monitor workload data at a departmental level to ensure fairness in spread of nature of roles not just in overall loads.

IV. Work with individual departments to identify an appropriate workload model which allows for a block of allocated research time for academic staff (e.g. a day a week non-contact time).

V. Review workloads at an institutional level to ensure that necessity and expectations of after-work activity is not creating disadvantage to particular groups.

VI. Ensure staff understand workload model operation and feel able to challenge accuracy of data. Ensure transparency of workload, roles and opportunities for staff.

VII. Create awareness of needs of those transferring from industry or other professions (e.g. consider providing training and familiarization opportunities to HE career structures and opportunities as well as research activity and any forthcoming REF).

Further research

Analysis of the data suggests that follow-up research in the below areas should be considered:

I. Gender disparities at professorial level within the institution.

II. The implications of discipline on the research activity of academic staff within the institution.

III. The implications of caring responsibilities in relation to research activity of academic staff within the institution.

IV. Gender disparities in female progression for non-academic staff within the institution.

V. The nature of the institutional identity in relation to research and potential conflicts with individual academic identity.

Dissemination

Dissemination to Date

In a study such as this, that is intended to continue further current thinking and dialogue in an important and sensitive area, it is considered vital to implement a diverse and continuous dissemination strategy. Throughout the study, the Research and Knowledge Transfer Office and the Steering Group have received regular reports and updates from the research team.

In addition, Dr Chantal Davies, Dr Ruth Healey and Anthony Cliffe have presented papers at the following internal University events:

- Davies, C. & Healey, R. (2016). Melting the Iceberg: gender equality in Higher Education. Paper presented to the Women's Network, Chester, United Kingdom.
- Davies, C. Healey, R. & Cliffe, A. (2016). Gender and research activity in higher education. Paper presented at the Women in HE Conference, Chester, United Kingdom.
- Davies, C. (2016, March). Gender and research activity in HE. Institute of Gender Studies Launch Conference, University of Chester, Chester, United Kingdom.

Papers have also been presented at the following external conferences:

- Davies, C., Healey. R. & Cliffe, A. (2015, December). Scaling the mountain: an exploration of gendered experience of academic staff in relation to the Research Excellence Framework 2014. Paper presented at the Society for Research into Higher Education Annual Research Conference 2015, Newport, United Kingdom.

The Forum for Research into Equality and Diversity in collaboration with the Centre for Diversity Policy Research and Practice has also hosted a two-day symposium from the 15th – 16th June 2016 at the University of Chester. This symposium welcomed participants from across the UK and beyond who are leading the research agenda in this area. It focused on the theme of gendered experiences of research activity in higher education. The objectives of this symposium were to re-engage with the longstanding dialogue in this area and to explore emerging discourse. This event has provided the opportunity to feed the findings from this research into the national dialogue, to ensure the development of future networks, as well as to provide the opportunity to commence discussion on recommendations and implications for practice for HEIs in this area.

In July 2016, the researchers are presenting the findings from this research at a leading Higher Education conference in Amsterdam.

Planned Dissemination Strategy

In addition to internal dissemination, the researchers will continue to proactively pursue wider national dissemination if considered appropriate. It is considered that research in this area is of fundamental importance to current national debates. Therefore papers will be submitted to relevant conferences as and when relevant and if considered appropriate. In terms of publication, the researchers intend to attempt publication across a range of journals and disciplines in order to ensure maximum impact.

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