Not simply ‘counting heads’: a Gender Diversity Index for the team level

Anne Laure Humbert, Elisabeth Anna Guenther, Jörg Müller

Authors’ accepted manuscript version, as accepted by Social Indicators Research

Abstract

This article proposes a new composite measure of gender diversity for research teams that goes beyond simply ‘counting heads’. This measure adopts a more elaborated understanding of gender diversity than merely relying on the proportion of women and men, by taking into account the outcomes of gendered processes along seven grounds of diversity (age, care responsibilities, marital status, education, tenure, seniority, contractual position). Rather than focus on the individuals or the organisations, this measure is computed at the level of teams. This is because teams constitute a unit of analysis highly relevant to the context of higher education research but are often neglected. Illustrations of the results for STEM research teams are provided to show the potential uses of the Gender Diversity Index as a diagnostic tool (e.g. in certification schemes such as Athena SWAN in the UK and elsewhere), or to measure and report on the progress of gender change within higher education institutions.

Keywords: gender; diversity; equality; teams; STEM; composite indicator

1 Introduction

Gender inequalities in higher education in the EU, as in the rest of the world, remain widespread particularly in Science, Technology, Engineering and Mathematics (STEM): there are three times as many men as women in engineering, manufacturing, and construction (European Commission 2015). Inequalities grow along the academic pipeline, with women more likely to opt out at all stages of their careers. Gender inequalities do not only affect individuals, e.g. gender pay gap or more precarious career tracks, but also have wider consequences for research itself. Within fields where women are under-represented, the proportion of research that incorporates a gender dimension is low, if not completely absent (European Commission 2015). For example, in medicine, author teams that include women are more likely to address gender and sex in their studies (Nielsen et al. 2017). Moreover, gender balanced teams may be more innovative and creative in their research (Østergaard et al. 2011; Campbell et al. 2013; Díaz-García et al. 2013). Consequently, lack of gender balance within research might not only be a matter of fairness and social justice, but could also be detrimental to innovative research and hence to higher education institutions (HEIs) in general.

The question of gender representation in higher education research has been considered predominantly either at the individual or organisational level (e.g. Timmers et al. 2010). The team level, however, is seldom looked at, despite the rise in collaborative scientific knowledge production (Wuchty et al. 2007; Leahey 2016). Between 1960 and 2000, mean team size has more than doubled from 1.9 to 3.5 co-authors per paper in science and engineering (Wuchty et al. 2007). Explorations of these trends and team work dynamics have intensified in the management literature (Bozeman and Boardman 2014; Joshi 2014; Hall et al. 2018) and gender scholars have developed a more detailed understanding of how gender status beliefs are deeply implicated in interpersonal settings such as teams (Ridgeway 2014). Similar analyses have yet – to our knowledge – to be applied to the context of higher education.

Understanding gender at the level of teams is also hindered by a lack of empirical measurement tools that examine gender diversity in a more nuanced and comprehensive way. Gender diversity can be understood in a variety of ways, including non-binary and non-heteronormative concepts (Guenther et al. 2018). In practice, gender diversity has tended to be used synonymously with women's representation, typically the proportion of women within a team. However, what amounts to counting women's heads does not fully capture gendered processes along the academic career nor within teams. In this paper, we therefore define gender diversity as a group characteristic that comprises the effects of gendered processes along several grounds of diversity. Using this definition, we argue there is a need for quantified measure that better takes into consideration the heterogeneity and diversity of researchers as well as the gendered power relations within teams and more widely in higher education. The aim of the paper is thus to respond to this need by presenting a composite measure of gender diversity within teams. This measure was developed as part of a wider project GEDII – Gender Diversity Impact – Improving research and innovation through gender diversity funded by European Union under the program Horizon 2020 in 2015-2018.

In this article, we argue that such a measure needs to go beyond simply measuring gender representation. Instead, we explore ways in which gender diversity within teams can be understood and conceptualised. Having defined our approach to gender diversity, the conceptual framework adopted for the Gender Diversity Index is presented. This is followed by an account of how data were collected through a team-level survey across Europe to provide suitable indicators. The methodological foundations of how these indicators were combined are then provided, together with some illustrations of the results. After some reflections on limitations, the article concludes with a summary and some considerations for future directions.

2 Theoretical and conceptual background

2.1 Three levels of gender inequalities in higher education

Schiebinger et al. (2018) identified three areas that need to be addressed to tackle gender inequality within academia: *fix the numbers of women, fix the knowledge and fix the institutions*. EU and national agencies regularly report evidence that there is still a need to '*fix the numbers of women'* given how segregated higher education is and how unequal progress is along academic career tracks. Gender inequalities are even more pronounced in the area of STEM: In 2014, women accounted for 26% of students in engineering and only 21% in information and computing technologies at PhD level (Eurostat 2018). Within STEM academic careers, representation drops from 33% at early carer stage, to 24% at mid-career and only 13% in more senior positions (European Commission 2015). These figures show that data on gender and higher education research at the individual level, e.g. through the European Commission, are relatively well developed and exploited. '*Fix the knowledge*' recognises that gender inequalities can also influence research content. Women represent less than a quarter of corresponding authors in

STEM, with evidence that the gender dimension in research is lower in subject areas where there are fewer women (European Commission 2015). The Gendered Innovation project illustrates the pertinence of adopting a gender dimension in research through illustrative case studies (Nielsen et al. 2017; Schiebinger et al. 2018). '*Fix the institutions*' has received much attention within HEIs. The focus has been on the organisational practices and cultures that implicitly foster inequality (Su et al. 2015), building on the understanding that HEIs are gendered organisations (Acker 1990, 1992). The cultures of HEIs are largely built upon the notions of the 'ideal' scientist (van den Brink and Benschop 2012). The 'ideal' scientist is a specific expression of the 'ideal', disembodied worker that is constantly present and/or available, working long hours and unencumbered by caring responsibilities or significant outside commitments (Bailyn 2003; Baker 2016). A first step to change such deeply embedded processes is to make its discriminatory effects visible through empirical evidence (Bailyn 2003), as can be seen through certification systems (e.g. Athena SWAN) and policy initiatives (e.g. government-mandated gender pay gap reporting in UK and Austrian universities).

Measures therefore exist predominantly at the level of individuals and organisations. The development of quantified measures goes together with an increasing audit culture within HEIs (Shore 2008) as well as a strategy for change agents to use quantified data to add more weights to their call (Swan and Fox 2010; Keisu and Carbin 2014). The level of teams remains neglected despite the fact that research is becoming increasingly multi-disciplinary and hence carried out collectively within teams (Leahey 2016). This is particularly the case in STEM (Wuchty et al. 2007). Teams shape the immediate work environment and are therefore crucial for putting policies into practice or create an inclusive environment which may influence overall performance. Despite team's centrality in HEIs, the examination of teams has been scarce so far.

2.2 Gender diversity within teams

We therefore turn our attention to teams as the level of analysis. We examine how status and power produce different outcomes for women and men. A substantive body of literature addressing the role of gender and other diversity attributes has been published in the US from the 1980s onwards, focusing on how gender affects teams, e.g. through gendered status and power differences. Expectation states theory shows that gender stereotypes can affect how competent people appear to others (Ridgeway 2009) since gender stereotypes imply status hierarchies: being a white man is associated with a higher status than being a woman and/or belonging to a minority group (DiTomaso et al. 2007; Haines et al. 2016). Status, as an informal hierarchical relation among group members, conditions the competency expectations among members, which in turn conditions how information is shared and followed up on. Power relations affect teams in various ways (Bunderson and Reagans 2011), most importantly through conditioning the content of shared information. Vertical segregation potentially skews whose information is heard and shared. Women have usually lower status and hence less influence in group interactions than men (Mannix and Sauer 2006). High status members participate more, interrupt others more freely and are more dominant in groups, silencing lower status members. Consequently, it is important not only to examine the number of women and men within a team, but also to look at how the more influential positions within a team are distributed.

Gendered interaction systems which embrace the power disparity and different status beliefs are a source of gendered inequalities in society (Ridgeway and Smith-Lovin 1999) and more specifically in higher education. The effects of this can be seen in the composition of teams. The measurement of these gendered competence expectations and status beliefs is complicated and resource intensive. Instead of concentrating on the process, we focus on the outcomes: more gender inclusive teams. Diversity attributes are seen as proxies for a more gender inclusive environment – potentially affecting team performance through the criteria of inclusiveness. We see a need to go beyond simply 'counting heads', i.e. the proportion of women and men within teams. Instead, we argue that there is a need to develop a more sophisticated measure of gender diversity that considers gendered processes within teams. We are particularly interested in demographic and functional diversity. Demographic diversity consists of socio-demographic categories such as age and race/ethnicity (Chowdhury 2005; Joshi and Roh 2009; Bell et al. 2011) as well as more life-course orientated aspects such as education or marital status (Harrison and Klein 2007). Functional diversity captures different occupations (DiBenigno and Kellogg 2014; Cheung et al. 2016; Zhang 2016), different roles and aspects of seniority, hence aspects are related to an organisational background and work contract.

We propose a measure that examines how diversity attributes related to gender can be combined to provide a measure that reflects a more inclusive environment where teams can thrive: the Gender Diversity Index. Many composite indicators have been developed to bring about gender change, as they provide a useful summary measure that can be easily interpreted and communicated. The apparent simplicity of composite measures makes them appealing, although in practice, careful methodological design is needed to ensure that the intended meaning is not lost in a 'black box'. In the following section, we outline in greater detail what such a measure incorporates.

2.3 The framework of the Gender Diversity Index

A composite indicator is obtained when individual indicators are compiled in a single measure on the basis of a multi-dimensional concept. The Gender Diversity Index aggregates several team level indicators of gender diversity into a statistically and conceptually coherent whole.

To operationalise gender diversity, we selected the most salient grounds of diversity discussed in the literature on gender and academic careers. The nature of quantitative measurement inevitably required narrowing down the grounds of gender diversity that can be considered. Diversity on the ground of disability or ethnicity despite their relevance (e.g. see Perna et al. 2009) could not be captured because the small numbers concerned. Ethical considerations meant excluding questions on sexuality within teams as no-one should feel pressured to come-out within the workplace. The extent to which all relevant – and important – aspects of gender diversity are included is therefore constrained by methodological and ethical considerations. The final list of grounds of diversity included seven different areas, split across demographic (age, care responsibilities, marital status, education) and functional diversity (tenure, contract, seniority).

2.3.1 *Demographic diversity*

Age: The masculine norm of an 'ideal' scientist involves a chrononormative notion (Riach et al. 2014), with strong pressures to achieve specific career steps by a certain age. This norm assumes the most important steps within a scientific career are made in the late 20s and 30s, a period when people often decide whether to have children or not. This can be a very demanding life phase which may affect women differently to men (Kelan 2014), as institutions are aligned to the life-course of the archetype masculine 'ideal worker' (Sallee 2012). Data show that women in academia tend to be younger than men (European Commission 2015) and that they also tend to retire earlier (making retirement coincide with that of their, often older and male, partner), while men are more likely to engage in academic work even after retirement (Baker 2016).

Education: Educational opportunities are influenced by social background and gender. Education here can be understood as a proxy for social class since children from working class background are less likely to become university graduates (Reay 2017), and by extension to achieve doctorate level education. Moreover, class and gendered processes are intertwined, as gender segregation in STEM subjects is lower for children of highly educated parents (Van De Werfhorst 2017). Having a doctoral degree is typically a requirement for careers in academia. Within the EU, 48% of all doctoral graduates in 2015 were women, however, women were under-represented in engineering, manufacturing and construction (29%) as well as information and computer technology (21%) (Eurostat 2018). Moreover, there is an attrition between master degree and doctoral degree, with a lower proportion of women obtaining a doctorate (Eurostat 2018). Women, particularly in STEM subjects, are therefore much less likely than men to hold a doctorate, which may hinder their ability to develop their potential as researchers. Doctoral degrees are relevant since gendered academic trajectories start to diverge in many subject areas after that point. Obtaining a post-doctoral position appears to be a crucial phase for advancing to academia, especially for men (Lin and Chiu 2016). Earlier studies suggested that women were more likely to leave (Husu 2001), but this might need further examination as women's historical disadvantage might be eroding (Asmar 1999; Silander et al. 2013).

Care responsibilities: Academia is considered a greedy institution (Wright et al. 2004) asking faculty to put in long working hours into a very demanding job. This can create a conflict – for women and men – to combine care responsibilities with the demands of the work place (Armenti 2004; Sallee 2012; Cervia and Biancheri 2017; Chung 2018) and contribute to reduced productivity (Stack 2004; Sax et al. 2002). The chrononormative academic career interferes with fertility age, the so-called conflicting 'compelling clocks of tenure and childbearing' (Beddoes and Pawley 2014). This leads to a lower fertility rate among women academics (Stanfors 2014) or women postponing childbirth up to the point that they dispense with having children at all (Mason and Goulden 2004; Baker 2016). Evidence also suggests that men benefit from having children in a way that women do not (Beddoes and Pawley 2014; Magnusson and Nermo 2017). The presence of young children may reduce women's chances to obtain a tenure-track position (Wolfinger et al. 2008), as they are assumed to be less committed to their careers. Care responsibilities, furthermore, reduce international mobility for women (Netz and Jaksztat 2017), which in turn can hamper the academic career. However, when men are also seen as too committed to their family, going against gender norms, they can suffer negative consequences (Sallee 2012). Moreover, fixed term contracts within academia and an ostensible need for mobility (Netz and Jaksztat 2017) complicate taking care of family members, such as aging parents (Baker 2016).

Marital status: As in other highly educated professions, women academic have lower marriage rates (Baker 2016). Within heterosexual relationships, men's academic careers continue to take precedence over women's and men academic tend to receive more household support (Beddoes and Pawley 2014). Men academic are also more likely to cohabit or marry partners that are younger less educated and employed in lower occupations. This conforms to stereotypical gendered roles and affords men with greater opportunities to focus on research activities and prioritise their careers (Baker 2016). In contrast, mate selection patterns among women tend to make them less geographically mobile, which in turn hinders academic opportunities (Kulis and Sicotte 2002). On the whole, women academic are more likely to suffer from career interruptions, contributing to their under-representation (Beddoes and Pawley 2014). Women who stay within academia are therefore more likely not to have a partner and be either single, separated or divorced. Unlike men, after separation or divorce, women are less likely and/or less fast in finding a new partner (Baker 2016).

2.3.2 Functional diversity

Contract: Whether the path to a permanent/tenured position is gendered – and how – remains the subject of debate. Some evidence suggests few differences exist (Webber and González Canché 2018). Others suggest that as women are more likely to work part-time, this hinders possibilities to access a permanent/tenured position (Toutkoushian and Bellas 2003). Fixed-term contracts appear to be increasingly common for early career scholars (Ylijoki 2010), leaving them in a more precarious position and in fragmented career (Knights and Clarke 2014). A permanent contract not only affords more security to the individual but also allows for long-term commitment to a team and greater potential to contribute to its overall performance. Women may suffer from more precarious contracts, with for example Bryson (2004) stating that men were marginally more likely to obtain a permanent position, while women are over-represented in teaching only positions, which are disproportionately on a fixed-term basis (Barrett and Barrett 2011). Furthermore, women academics are asked to perform much more service tasks than men, hindering their prospects (Guarino and Borden 2017).

Team tenure: Women are more likely to opt out of scientific careers than men (Blickenstaff 2005). Team tenure is important as it influences the informal power position of team members since long team tenure can be seen as a status cue and team members with long team tenure are more likely to receive deference (Bunderson 2003; Joshi and Knight 2015). Women's shorter time in teams can be detrimental to their careers in academia and to the overall performance of the team, as it may decrease information processing and increase categorisation processes (Zhang 2016).

Seniority: Women are disproportionally under-represented in senior and leadership positions in academia (Kearney and Lincoln 2016; Read and Kehm 2016; Morley 2018), obeying to the logic of what has been terms a 'glass ceiling effect' that also operates in academia (Jackson and O'Callaghan 2009). Evidence suggests two clear exist points: becoming permanent/tenured and promotion to full professor (Ooms et al. 2018). Hierarchical relations within research teams can produce negative effects on performance through impeding the sharing of information (Bunderson et al. 2016) or creating competition and conflict (Bendersky and Hays 2012) between members. Where women are disproportionately under-represented in the lower status group, it might restrict the extent to which they feel they share the same goals and equal ability to devise a common agenda, leaving their contribution both silenced and overlooked (Tost et al. 2012). The seniority of team members reflects the effects of implicit micro-practices of exclusion.

3 Data, measures and methods

3.1 Data collection

The Gender Diversity Index is based on a survey that combined insights from team science, research performance and gender studies. Ethical approval was obtained by the coordinating institution in March 2015. The survey was complex as it sought information both at the individual and team level. The two questionnaires were designed collaboratively with the project advisory board. A small pilot study in the UK, Spain and Germany contributed to the final versions. Field access was obtained through data mining of authors email addresses and organizational affiliation in the Web of Science (WoS) database. Two important selection criteria guided the initial data collection process. First, articles, and hence authors, were included only if they had published between 2011 to 2016, and, in case the corresponding journal pertained to transport research or biomedical engineering field. The sample of 16 EU countries (Sweden, UK, Germany, Spain, Lithuania, Norway, Finland, Belgium, Denmark, Netherlands, Poland, Czech Republic, Portugal, Austria, Switzerland, and Italy) was chosen to reflect differences in welfare regimes (Esping-Andersen 1990) and innovation capacity (European Commission 2017). Identified authors were contacted via email to initiate the team recruitment process, based upon an organization-based definition for team membership. Team leaders were instructed to include only members in their listing that have a contractual relation with the host organization, including temporary PhD or postdoctoral positions. Although team membership has been defined in many different ways including in terms of co-authorship (Hollenbeck, Beersma, and Schouten 2012), we used an organization-based membership criteria in order to capture the importance of research assistants and other supporting staff that do not author papers but nevertheless contribute to the teams' performance. An organization-based criteria reflects the importance of the organizational context, including the availability of gender equality measures, for shaping different working conditions between teams. By 31 January 2018, 159 teams and 1,357 individuals had completed the survey. Teams were included in the Gender Diversity Index if they met the following criteria: full response rate for teams with four respondents; a minimum response rate of 50% for teams with between five and nine respondents; a minimum response rate of 40% for teams with 10 or more respondents. This reduced the number of teams to 101.

3.2 Measuring gender representation and attrition

In the Gender Diversity Index, any gender gap is considered as detrimental. The Gender Diversity Index opts to capture both representation and attrition, and two metrics were developed. The first metric measures representation, i.e. at the horizontal level. It provides information on whether women and men are equally represented within the seven grounds of diversity considered. Representation is calculated in the category that is deemed either more desirable or more inclusive (expressed as level 2, in contrast to level 1). For example, it is desirable to ensure equal access to more senior roles, which means that the metric uses senior roles for level 2 and more junior ones for level 1. As another example, women and men with care responsibilities should take equal part in research compared to those without. In this case, level 2 represents individuals with care responsibilities and level 1 those without. The different levels used are summarised in Table 1.

Table 1 here

Representation is calculated as follows:

$$\alpha_i = \begin{cases} 0, \text{if } w_{2i} = m_{2i} = 0 \\ 2 \times \left(1 - \left(w_{2i}^2 + m_{2i}^2\right)\right), \text{otherwise} \end{cases} \tag{1}$$

where w and m represent the proportions of women and men, respectively, at level 2 within team i. Where there are no women or men at level 2, the metric returns a score of 0, indicating there can be no gender diversity if there are no opportunities for people to realise themselves. The metric returns a score bound between 0 and 1, where the highest score is achieved where there is gender parity. This measure is non-linear and therefore rewards both initial improvements towards more equality as well as scores close to parity.

Secondly, we use a measure of attrition, i.e. at the vertical level. Attrition measures the extent to which there is a reduction in the proportion of women and men, when moving from one level to the other. Women and men should be, for example, equally represented at different levels of seniority without a decrease in proportion as they progress in their careers. Attrition can also be understood as the possibility for both women and men to be equally represented as parents/carers or to have a cohabiting partner, which have been identified as issues for pursuing careers in research (Fox 2005; Wolfinger, Mason, and Goulden 2008). Mathematically, this measure extends She Figures' Glass Ceiling Index (EC 2015) and is expressed as:

$$\delta_i = \begin{cases} 0, \text{if } w_{2i} = m_{2i} = 0 \\ \frac{w_{2i}}{w_{1i}}, if\, w_{2i} < m_{2i} \wedge w_{2i} < w_{1i} \\ \frac{m_{2i}}{m_{1i}}, if\, m_{2i} < w_{2i} \wedge m_{2i} < m_{1i} \\ 1, otherwise \end{cases} \tag{2}$$

with level 1 or 2 in team i, where w and m refer to proportions of women and men respectively. The metric returns a score of 0 where there are no women or men at level 2, since there can be no gender diversity with no possible progression. The metric is bound between 0 and 1, and returns the highest score when there is no attrition between the two levels.

3.3 Calculation of the Gender Diversity Index

These metrics are used to compute indicators to populate the Gender Diversity Index. They are aggregated into pillars to form the composite indicator. To assess statistical coherence and the best aggregation model, a Principal Component Analysis (PCA) was conducted (Nardo et al. 2008). The most suitable option was obtained through a seven-factor solution. A detailed account of the methodological construction of the Gender Diversity Index is available in a technical report (see Humbert and Guenther 2018).

The choice of weights for a composite indicator is not neutral, as different choices can result in different scores (Schlossarek et al. 2019). A multi-modelling approach was adopted for the Gender Diversity Index: different sets of weights were used, and the model producing the most central scores was selected. The method relies on PCA weights at both the indicator and pillar level (Table 2). Basic robustness checks confirmed that with this model, all teams score within 0.05 points of the median, including 80% within 0.01 points. Similarly, 100% of teams rank within five ranks of the median and 75% within one rank.

Table 2 here

In line with best practice recommendations (Nardo et al. 2008), the robustness of the Gender Diversity Index was assessed by examining the correlation structure between the indicators, between the indicators and the pillar/index scores, and between the pillars and the Index itself. This shows some very strong correlations between some indicators within the same pillars, such as senior roles, team tenure and age. This is likely related to the indicators picking up on the same phenomenon. Since there is no evidence of strong collinearity among indicators not grouped together, with correlations not exceeding 0.6 and no negative coefficients, the correlation structure of the indicators is deemed satisfactory. The association of the pillars to underlying indicators shows that all indicators contribute to both the pillars and the overall Gender Diversity Index since all correlation coefficients of interest are above 0.5. This assessment provides evidence that all the indicators contribute to the pillars and the scores. Finally, the robustness checks show strong correlations between each of the pillars and the Gender Diversity Index, confirming that the Gender Diversity Index is statistically coherent and robust.

4 Results and illustrations

We show how the Gender Diversity Index can be used through three examples. These cases illustrate how to interpret its scores, how it can be used by different stakeholders, as well as potential pitfalls.

4.1 Difference between sex composition and gender diversity

Case A illustrates the differences between sex composition and the Gender Diversity Index scores. It shows that the proportion of women is a more limited measure and that having near parity does not automatically indicate a high level of gender diversity. Case A consists of seven team members, three of which identified as women and four as men, giving a sex composition close to parity (57% men, 43% women. NB: Percentages are reported indicatively only. As team size is typically well below 30, the numbers rather than the percentages should be reported while using the Gender Diversity Index.). This would result in a score near 1 if a simple metric looking at gender equality was used, since 1 would represent parity. However, the Gender Diversity Index score for the team is much lower (0.34 out of 1). To understand this difference, we take a closer look at each individual metric. While the overall team composition is close to parity, men in this team are under-represented at level 2 for almost all metrics (Table 3). For example, no men have doctorates, permanent contracts nor senior positions. These low scores pull down the overall score. Case A illustrates that the Gender Diversity Index picks up on any gender inequality, regardless of whether it is women or men who are underrepresented. It shows, moreover, that a sole focus on sex composition covers up the unequal distribution of power and inclusion within the team. By inspecting the different metrics forming the Gender Diversity Index more closely, it is thus possible to unveil potential scope for actions in different areas.

Table 3 here

4.2 The Gender Diversity Index as a diagnostic tool

Case B illustrates further how the scores of the Gender Diversity Index can be used by stakeholders in HEIs and HE policy. Breaking down the score into individual metrics demonstrates the use of the Gender Diversity Index as a diagnostic tool. This breakdown can then be used either in the process of reporting within certification systems, or as a guide to understand how to create more gender diverse teams. Case B consists of a team of nine people, only two of which are women. Not only does this team have a low representation of women, but it also scores low on the Gender Diversity Index with 0.09 out of 1. Looking at the metrics, it is clear why this is the case (Table 4). In all but one area, there are no women at level 2. This suggest that in this team, women are not able to be equally represented among those with a doctorate, permanent/tenured contract, senior position or longer team tenure. Similarly, there are no women with care responsibilities or above average age. The only area where the team achieve a higher score relates to marital status, although in this area too women are less likely to live with a significant other.

Table 4 here

4.3 Interpretation of the Gender Diversity Index across time

Finally, through Case C, we want to illustrate how the scores of the Gender Diversity Index need to be interpreted with care in relation to how they might change over time as the team composition evolves (Table 5). This is because a team might achieve a high score in the Gender Diversity Index, but this high score could mask potential issues in sustaining a gender inclusive team over time. In Case C for example, there are nine people in the team, of which only two are women. Yet the teams achieved a Gender Diversity Index score of 0.86 out of 1. The breakdown shows this is the result of relatively high scores across all pillars. The team achieves the maximum score in education, age or tenure. This indicates a high level of inclusion in that women have potential for self-realisation within this team. However, it is important to note that there are no women represented at level 1 in these pillars, posing a threat to the sustainability of gender diversity within this team over time. For example, while there is parity in team members above average age, there are no women below that threshold. This causes concerns as the team may end-up with a decreased score over time unless they address the pipeline.

Table 5 here

5 Conclusions

This research results from the observation that little research on gender inequalities in academia has been conducted at the team level – as opposed to the individual and organisational levels – particularly in the context of STEM. This is despite the increasing relevance of teams within higher education institutions, since this is the level at which much research takes place particularly in more laboratory-based research. Moreover, a snapshot of the sex-composition within a team can whitewash existing gender inequalities. We therefore need to be able to capture the outcomes of gendered processes within teams and go beyond simply counting heads. Thus far, there has been a tendency to equate 'gender diversity' with 'women's representation'. We see a need for a more sophisticated understanding of gender diversity, and to address this gap, we propose a new measure to operationalise it: the Gender Diversity Index. In this paper, we have outlined the conceptual and theoretical considerations involved in developing this measure. We then described the methodological steps needed to move from our more elaborated conceptual understanding of gender diversity to a composite measure. We concluded with illustrations of how the scores might be interpreted and used as diagnostic tools. Our research contributes to the literature on gender equality in academia by providing an empirical tool that can be used to measure gender diversity within research teams within HEIs. Our hope is that this measure will prove to be useful in monitoring, diagnosing and reporting on gender inequalities within HEIs, for example through certification systems such as Athena SWAN but also more widely within the remit of equality and diversity change efforts.

Further work will involve linking the Gender Diversity Index to performance data gathered through the survey. Future work will also aim at examining how the Gender Diversity Index relates to wider team, organisation or contextual factors such as team climate, gender stereotypes, subject area, type of organisation or national context. The Gender Diversity Index itself should also be broadened out and tested as a measure of gender diversity in teams outside of the STEM context. Further methodological work is needed to assess possibilities to include additional grounds of diversity, as currently it does not include disability, ethnicity or sexuality due to methodological or ethical concerns. From a practical viewpoint, self-monitoring and further data collection will be undertaken through the creation of a web-based self-assessment tool that can allow research teams to self-diagnose or obtain their score for reporting, e.g. on funding applications. Using qualitative follow-up interviews with key informants (e.g. policy-makers and funders) could provide valuable feedback on how this tool can be used to effect gender change in HEIs.

There are limitations to the Gender Diversity Index. First, concerns exist around privacy of information. The use of such a measure raises questions as to how feasible, ethical or even practical it is to obtain data to populate it, as well as who should be responsible for data collection and data protection. Data on functional diversity broken down by sex (e.g. senior positions, type of contract) is relatively straightforward to collect and use, given that team members have a contractual relationship with their HEI either as staff member or student. However, demographic diversity is more problematic due to potential sensitivity and/or visibility. Data about age or education can be routinely collected. Information about sexual orientation or (hidden) disability is more problematic. The collection of such data raises deep ethical questions in addition to practical ones. A second limitation of proposing a measure of gender diversity at the team level is the small numbers involved. Typically, research teams are very small. The majority of research teams in this project had 10 or fewer members. As a result, the scores of the Gender Diversity Index can be very sensitive to a one-unit change (i.e. adding just one woman senior researcher can change the score quite significantly). It is therefore important to rely on the scores of the Gender Diversity Index in conjunction with the actual individual level data when using it as a diagnostic tool. Third, a limitation of the Gender Diversity Index is that, like any other statistical measure, it can be prone to distortion. This is because statistics, despite their aura of objectivity, are in fact highly political. A risk is that this indicator, like any other, can be 'gamed': a higher score can be achieved through unethical means such as making some people redundant or hiring token people. For example, to increase a team score in the short term, it is possible to hire a senior woman. However, the scope for gaming is limited as this would affect other indicators such as team tenure.

In summary, what can we learn from a composite indicator that measures gender diversity within STEM teams? The Gender Diversity Index provides a much more elaborated concept of gender diversity than what is currently available. It goes beyond simply reporting women and men's representation, and instead aggregates scores that measure the representation and attrition of women and men within seven grounds of diversity. The Gender Diversity Index allows for a measure at the team level, and therefore adds to existing perspectives which have traditionally focused on either or both the individual or organizational level. The Gender Diversity Index provides a summary measure that is useful to communicate, monitor and report on gender inequalities in HEIs, whether this is within the remits of certification or award systems such as Athena SWAN or to demonstrate that teams are diverse to funders.

6 References

Acker, J. (1990). Hierarchies, jobs, bodies: A theory of gendered organizations. *Gender & Society, 4*(2), 139-158.

Acker, J. (1992). From sex roles to gendered institutions. *Contemporary Sociology, 21*(5), 565-569.

Armenti, C. (2004). Women faculty seeking tenure and parenthood: lessons from previous generations. *Cambridge Journal of Education, 34*(1), 65-83.

Asmar, C. (1999). Is there a gendered agenda in academia? The research experience of female and male PhD graduates in Australian universities. *Higher Education, 38*(3), 255-273.

Bailyn, L. (2003). Academic careers and gender equity: Lessons learned from MIT. *Gender, Work and Organization, 10*(2), 137-153.

Baker, M. (2016). Women graduates and the workplace: continuing challenges for academic women. *Studies in Higher Education, 41*(5), 887-900.

Barrett, L., & Barrett, P. (2011). Women and academic workloads: career slow lane or Cul-de-Sac? *Higher Education, 61*(2), 141-155.

Beddoes, K., & Pawley, A. L. (2014). 'Different people have different priorities': work–family balance, gender, and the discourse of choice. *Studies in Higher Education, 39*(9), 1573-1585.

Bell, S. T., Villado, A. J., Lukasik, M. A., Belau, L., & Briggs, A. L. (2011). Getting specific about demographic diversity variable and team performance relationships: A meta-analysis. *Journal of Management, 37*(3), 709-743.

Bendersky, C., & Hays, N. A. (2012). Status conflict in groups. *Organization Science, 23*(2), 323-340.

Blickenstaff, J. C. (2005). Women and science careers: leaky pipeline or gender filter? *Gender and Education, 17*(4), 369-386.

Bozeman, B., & Boardman, C. (2014). *Research Collaboration and Team Science* (Springer Briefs in Entrepreneurship and Innovation). Cham: Springer International Publishing.

Bryson, C. (2004). The consequences for women in the academic profession of the widespread use of fixed term contracts. *Gender, Work & Organization, 11*(2), 187-206.
Bunderson, J. S. (2003). Recognizing and utilizing expertise in work groups: A status characteristics perspective. *Administrative Science Quarterly, 48*(4), 557-591.
Bunderson, J. S., & Reagans, R. E. (2011). Power, status, and learning in organizations. *Organization Science, 22*(5), 1182-1194.
Bunderson, J. S., van der Vegt, G. S., Cantimur, Y., & Rink, F. (2016). Different views of hierarchy and why they matter: hierarchy as inequality or as cascading influence. *Academy of Management Journal, 59*(4), 1265-1289.
Campbell, L. G., Mehtani, S., Dozier, M. E., & Rinehart, J. (2013). Gender-heterogeneous working groups produce higher quality science. *PLOS ONE, 8*(10), e79147.
Cervia, S., & Biancheri, R. (2017). Women in science: The persistence of traditional gender roles. A case study on work–life interface. *European Educational Research Journal, 16*(2-3), 215-229.
Cheung, S. Y., Gong, Y., Wang, M., Zhou, L., & Shi, J. (2016). When and how does functional diversity influence team innovation? The mediating role of knowledge sharing and the moderation role of affect-based trust in a team. *Human Relations, 69*(7), 1507-1531.
Chowdhury, S. (2005). Demographic diversity for building an effective entrepreneurial team: is it important? *Journal of Business Venturing, 20*(6), 727-746.
Chung, H. (2018). Gender, Flexibility Stigma and the Perceived Negative Consequences of Flexible Working in the UK. *Social Indicators Research*.
Díaz-García, C., Gonzalez-Moreno, A., & Saez-Martinez, F. J. (2013). Gender diversity within R & D teams: Its impact on radicalness of innovation. *Innovation: Management, Policy and Practice, 15*(2), 149-160.
DiBenigno, J., & Kellogg, K. C. (2014). Beyond occupational differences. *Administrative Science Quarterly, 59*(3), 375-408.
DiTomaso, N., Post, C., Smith, D. R., Farris, G. F., & Cordero, R. (2007). Effects of structural position on allocation and evaluation decisions for scientists and engineers in industrial R&D. *Administrative Science Quarterly, 52*(2), 175-207.
European Commission (2015). She Figures. https://ec.europa.eu/research/swafs/index.cfm?pg=library&lib=gender_equality. Accessed 24 September 2018.
Eurostat (2018). Database. https://ec.europa.eu/eurostat/data/database. Accessed 29/04/2018.
Guarino, C. M., & Borden, V. M. H. (2017). Faculty service loads and gender: Are women taking care of the academic family? *Research in Higher Education, 58*(6), 672-694.
Guenther, E. A., Humbert, A. L., & Kelan, E. K. (2018). Gender vs. Sex. In Oxford Research Encyclopedia of Business and Management. (Vol. 1). Oxford University Press. https://doi.org/10.1093/acrefore/9780190224851.013.58
Haines, E. L., Deaux, K., & Lofaro, N. (2016). The times they are a-Changing … or are they not? A comparison of gender stereotypes, 1983–2014. *Psychology of Women Quarterly, 40*(3), 353-363.
Hall, K. L., Vogel, A. L., Huang, G. C., Serrano, K. J., Rice, E. L., Tsakraklides, S. P., et al. (2018). The science of team science: A review of the empirical evidence and research gaps on collaboration in science. *American Psychologist, 73*(4), 532-548.

Harrison, D. A., & Klein, K. J. (2007). What's the difference? Diversity constructs as separation, variety, or disparity in organizations. *Academy of Management Review, 32*(4), 1199-1228.

Humbert, A. L., & Guenther, E. A. (2018). Measuring gender diversity in research teams: methodological foundations of the Gender Diversity Index. https://doi.org/10.5281/zenodo.1442706

Husu, L. (2001). On metaphors on the position of women in academia and science. *NORA - Nordic Journal of Feminist and Gender Research, 9*(3), 172-181.

Jackson, J. F. L., & O'Callaghan, E. M. (2009). What do we know about glass ceiling effects? A taxonomy and critical review to inform higher education research. *Research in Higher Education, 50*(5), 460-482.

Joshi, A. (2014). By whom and when is women's expertise recognized? The interactive effects of gender and education in science and engineering teams. *Administrative Science Quarterly, 59*(2), 202-239.

Joshi, A., & Knight, A. P. (2015). Who defers to whom and why? Dual pathways linking demographic differences and dyadic deference to team effectiveness. *Academy of Management Journal, 58*(1), 59-84.

Joshi, A., & Roh, H. (2009). The role of context in work team diversity research: A meta-analytic review. *Academy of Management Journal, 52*(3), 599-627.

Kearney, M. L., & Lincoln, D. (2016). Gender research: women, the academy and the workplace. *Studies in Higher Education, 41*(5), 799-800.

Keisu, B.-I., & Carbin, M. (2014). Administrators or critical cynics? A study of gender equality workers in Swedish Higher Education. *NORA - Nordic Journal of Feminist and Gender Research, 22*(3), 204-218.

Kelan, E. K. (2014). From biological clocks to unspeakable inequalities: The intersectional positioning of young professionals. *British Journal of Management, 25*(4), 790-804.

Knights, D., & Clarke, C. A. (2014). It's a bittersweet symphony, this life: Fragile academic selves and insecure identities at work. *Organization Studies, 35*(3), 335-357.

Kulis, S., & Sicotte, D. (2002). Women scientists in academia: Geographically constrained to big cities, college clusters, or the coasts? *Research in Higher Education, 43*(1), 1-30.

Leahey, E. (2016). From sole investigator to team scientist: Trends in the practice and study of research collaboration. *Annual Review of Sociology, 42*(1), 81-100.

Lin, E. S., & Chiu, S.-Y. (2016). Does holding a postdoctoral position bring benefits for advancing to academia? *Research in Higher Education, 57*(3), 335-362.

Magnusson, C., & Nermo, M. (2017). Gender, Parenthood and Wage Differences: The Importance of Time-Consuming Job Characteristics. *Social Indicators Research, 131*(2), 797-816.

Mannix, E. A., & Sauer, S. J. (2006). Status and power in organizational group research: Acknowledging the pervasiveness of hierarchy. *Advances in Group Processes, 23*, 149-182.

Mason, M. A., & Goulden, M. (2004). Marriage and baby blues: Redefining gender equity in the academy. *Annals of the American Academy of Political and Social Science, 596*(November), 86-103.

Morley, L. (2018). Gender in the neo-liberal research economy: An enervating and exclusionary entanglement? In H. Kahlert (Ed.), *Gender Studies and the New Academic Governance: Global Challenges, Glocal Dynamics and Local Impacts* (pp. 15-40). Wiesbaden: Springer Fachmedien Wiesbaden.

Nardo, M., Saisana, M., Saltelli, A., Tarantola, S., Hoffman, A., & Giovannini, E. (2008). *Handbook on constructing composite indicators. Methodology and user guide*. Paris: OECD Publishing.
Netz, N., & Jaksztat, S. (2017). Explaining scientists' plans for international mobility from a life course perspective. *Research in Higher Education, 58*(5), 497-519.
Nielsen, M. W., Andersen, J. P., Schiebinger, L., & Schneider, J. W. (2017). One and a half million medical papers reveal a link between author gender and attention to gender and sex analysis. *Nature Human Behaviour, 1*(11), 791-796.
Ooms, W., Werker, C., & Hopp, C. (2018). Moving up the ladder: heterogeneity influencing academic careers through research orientation, gender, and mentors. *Studies in Higher Education, 0*(0), 1-22.
Østergaard, C. R., Timmermans, B., & Kristinsson, K. (2011). Does a different view create something new? the effect of employee diversity on innovation. *Research Policy, 40*(3), 500-509.
Perna, L., Lundy-Wagner, V., Drezner, N. D., Gasman, M., Yoon, S., Bose, E., et al. (2009). The contribution of HBCUS to the preparation of african american women for STEM careers: A case study. *Research in Higher Education, 50*(1), 1-23.
Reay, D. (2017). Miseducation: Inequality, Education and the Working Classes. Policy Press.
Read, B., & Kehm, B. M. (2016). Women as leaders of higher education institutions: a British–German comparison. *Studies in Higher Education, 41*(5), 815-827.
Riach, K., Rumens, N., & Tyler, M. (2014). Un/doing chrononormativity: Negotiating ageing, gender and sexuality in organizational life. *Organization Studies, 35*(11), 1677-1698.
Ridgeway, C. L. (2009). Framed before we know it. *Gender & Society, 23*(2), 145-160.
Ridgeway, C. L. (2014). Why status matters for inequality. *American Sociological Review, 79*(1), 1-16.
Ridgeway, C. L., & Smith-Lovin, L. (1999). The gender system and interaction. *Annual Review of Sociology, 25*(1), 191-216.
Sallee, M. W. (2012). The ideal worker or the ideal father: Organizational structures and culture in the gendered university. *Research in Higher Education, 53*(7), 782-802.
Sax, L. J., Hagedorn, L. S., Arredondo, M., & Dicrisi, F. A. (2002). Faculty research productivity: Exploring the role of gender and family-related factors. *Research in Higher Education, 43*(4), 423-446.
Schiebinger, L., Klinge, I., Sánchez de Madariaga, I., Paik, H. Y., Schraudner, M., & Stefanick, M. (2018). Gendered innovations in science, health & medicine, engineering and environment. http://genderedinnovations.stanford.edu.
Schlossarek, M., Syrovátka, M., & Vencálek, O. (2019). The Importance of Variables in Composite Indices: A Contribution to the Methodology and Application to Development Indices. *Social Indicators Research*.
Shore, C. (2008). Audit culture and illiberal governance: Universities and the politics of accountability. *Anthropological Theory, 8*(3), 278-298.
Silander, C., Haake, U., & Lindberg, L. (2013). The different worlds of academia: a horizontal analysis of gender equality in Swedish higher education. *Higher Education, 66*(2), 173-188.
Stack, S. (2004). Gender, children and research productivity. *Research in Higher Education, 45*(8), 891-920.
Stanfors, M. (2014). Fertility and the fast-track: Continued childbearing among professionals in Sweden, 1991-2009. *Demographic Research, 31*(1), 421-458.

Su, X. H., Johnson, J., & Bozeman, B. (2015). Gender diversity strategy in academic departments: exploring organizational determinants. *Higher Education, 69*(5), 839-858.
Swan, E., & Fox, S. (2010). Playing the game: Strategies of resistance and co-optation in diversity work. *Gender, Work and Organization, 17*(5), 567-589.
Timmers, T. M., Willemsen, T. M., & Tijdens, K. G. (2010). Gender diversity policies in universities: a multi-perspective framework of policy measures. *Higher Education, 59*(6), 719-735.
Tost, L. P., Gino, F., & Larrick, R. P. (2012). Power, competitiveness, and advice taking: Why the powerful don't listen. *Organizational Behavior and Human Decision Processes, 117*(1), 53-65.
Toutkoushian, R. K., & Bellas, M. L. (2003). The effects of part-time employment and gender on faculty earnings and satisfaction. *The Journal of Higher Education, 74*(2), 172-195.
Van De Werfhorst, H. G. (2017). Gender Segregation across Fields of Study in Post-Secondary Education: Trends and Social Differentials. *European Sociological Review*, 33(3), 449–464.
van den Brink, M., & Benschop, Y. (2012). Gender practices in the construction of academic excellence: Sheep with five legs. *Organization, 19*(4), 507-524.
Webber, K. L., & González Canché, M. (2018). Is there a gendered path to tenure? A multi-state approach to examine the academic trajectories of U.S. doctoral recipients in the sciences. *Research in Higher Education, 59*(7), 897-932.
Wolfinger, N. H., Mason, M. A., & Goulden, M. (2008). Problems in the pipeline: Gender, marriage, and fertility in the Ivory Tower. *The Journal of Higher Education, 79*(4), 388-405.
Wright, M. C., Howery, C. B., Assar, N., McKinney, K., Kain, E. L., Glass, B., et al. (2004). Greedy institutions: The importance of institutional context for teaching in Higher Education. *Teaching Sociology, 32*(2), 144-159.
Wuchty, S., Jones, B. F., & Uzzi, B. (2007). The increasing dominance of teams in production of knowledge. *Science, 316*(5827), 1036-1039.
Ylijoki, O.-H. O. H. (2010). Future orientations in episodic labour: Short-term academics as a case in point. *Time & Society, 19*(3), 365-386.
Zhang, Y. (2016). Functional diversity and group creativity: The role of group longevity. *The Journal of Applied Behavioral Science, 52*(1), 97-123.

Table 1: Levels 1 and 2 used in the Gender Diversity Index

Pillars	Level 1	Level 2
Age	Below average age within the team	Above average age within the team
Education	Without a doctorate	With a doctorate
Care responsibilities	Without current caring responsibilities for children under 16 or dependent adults	With current caring responsibilities for children under 16 or dependent adults
Marital status	Without a cohabiting partner	With a cohabiting partner
Contract type	Without a permanent contract	With a permanent contract
Seniority	Not in a senior role	Having a senior role
Team tenure	Below average team tenure	Above average team tenure

Table 2: Structure and weights of the Gender Diversity Index

	Pillars	Indicators
Demographic diversity (weight = 0.520)	Age (weight = 0.144)	Attrition of the under-represented sex under/above average age in the team (δ) (weight = 0.075)
		Representation of wo/men above average age in the team (α) (weight = 0.069)
	Education (weight = 0.134)	Attrition of the under-represented sex with/out a doctorate (δ) (weight = 0.077)
		Representation of wo/men with a doctorate (α) (weight = 0.057)
	Care responsibilities (weight = 0.143)	Attrition of the under-represented sex with/out current caring responsibilities for children under 16 or dependent adults (δ) (weight = 0.075)
		Representation of wo/men with current caring responsibilities for children under 16 or dependent adults (α) (weight = 0.067)
	Marital status (weight = 0.098)	Attrition of the under-represented sex with/out a cohabiting partner (δ) (weight = 0.061)
		Representation of wo/men with a cohabiting partner (α) (weight = 0.037)
Functional diversity (weight = 0.480)	Contract type (weight = 0.144)	Attrition of the under-represented sex with/out a permanent contract (δ) (weight = 0.075)
		Representation of wo/men with a permanent contract (α) (weight = 0.069)
	Seniority (weight = 0.172)	Attrition of the under-represented sex with/out a senior role (δ) (weight = 0.087)
		Representation of wo/men with a senior role (α) (weight = 0.085)
	Team tenure (weight = 0.164)	Attrition of the under-represented sex under/above average team tenure (δ) (weight = 0.083)
		Representation of wo/men above average team tenure (α) (weight = 0.081)

Table 3: Case A

Metrics	Score Metrics	Score Pillar	Score Index		Variables	Women	Men
Age δ	0.667	0.773	0.339	Level 1	Below team average age	2	2
						50 %	50 %
Age α	0.889			Level 2	Above team average age	1	2
						33.3 %	66.7 %
Education δ	0	0		Level 1	No doctorate	2	4
						33.3 %	66.7 %
Education α	0			Level 2	Doctorate	1	0
						100 %	0 %
Care δ	1	1		Level 1	No current care responsibilities	2	3
						40 %	60 %
Care α	1			Level 2	Current care responsibilities	1	1
						50 %	50 %
Marital status δ	0.800	0.861		Level 1	Not married or cohabiting	1	1
						50 %	50 %
Marital status α	0.960			Level 2	Married or cohabiting	2	3
						40 %	60 %
Contract δ	0	0		Level 1	Temporary / casual	2	4
						33.3 %	66.7 %
Contract α	0			Level 2	Permanent / tenured	1	0
						100 %	0 %
Seniority δ	0	0		Level 1	Junior researcher/Other	1	2
						33.3 %	66.7 %
Seniority α	0			Level 2	Senior researcher/Team leader	1	0
						100 %	0 %
Tenure δ	0	0		Level 1	Below average team tenure	2	4
						33.3 %	66.7 %
Tenure α	0			Level 2	Above average team tenure	1	0
						100 %	0 %

Table 4: Case B

Metrics	Score Metrics	Score Pillar	Score Index		Variables	Women	Men
Age δ	0	0	0.089	Level 1	Below team average age	2	2
						50 %	50 %
Age α	0			Level 2	Above team average age	0	5
						0 %	100 %
Education δ	0	0		Level 1	No doctorate	2	4
						33.3 %	66.7 %
Education α	0			Level 2	Doctorate	0	3
						0 %	100 %
Care δ	0	0		Level 1	No current care responsibilities	2	5
						28.6 %	71.4 %
Care α	0			Level 2	Current care responsibilities	0	1
						0 %	100 %
Marital status δ	1	0.905		Level 1	Not married or cohabiting	1	4
						20 %	80 %
Marital status α	0.75			Level 2	Married or cohabiting	1	3
						25 %	75 %
Contract δ	0	0		Level 1	Temporary / casual	2	6
						25 %	75 %
Contract α	0			Level 2	Permanent / tenured	0	1
						0 %	100 %
Seniority δ	0	0		Level 1	Junior researcher/Other	2	4
						33.3 %	66.7 %
Seniority α	0			Level 2	Senior researcher/Team leader	0	3
						0 %	100 %
Tenure δ	0	0		Level 1	Below average team tenure	2	5
						28.6 %	71.4 %
Tenure α	0			Level 2	Above average team tenure	0	2
						0 %	100 %

Table 5: Case C

Metrics	Score Metrics	Score Pillar	Score Index		Variables	Women	Men
Age δ	1	1	0.863	Level 1	Below team average age	0	5
						0 %	100 %
Age α	1			Level 2	Above team average age	2	2
						50 %	50 %
Education δ	1	1		Level 1	No doctorate	0	5
						0 %	100 %
Education α	1			Level 2	Doctorate	2	2
						50 %	50 %
Care δ	1	0.948		Level 1	No current care responsibilities	0	5
						0 %	100 %
Care α	0.889			Level 2	Current care responsibilities	1	2
						33.3 %	66.7 %
Marital status δ	1	0.958		Level 1	Not married or cohabiting	0	3
						0 %	100 %
Marital status α	0.889			Level 2	Married or cohabiting	2	4
						33.3 %	66.7 %
Contract δ	0.333	0.599		Level 1	Temporary / casual	0	6
						0 %	100 %
Contract α	0.889			Level 2	Permanent / tenured	2	1
						66.7 %	33.3 %
Seniority δ	0.333	0.608		Level 1	Junior researcher/Other	0	6
						0 %	100 %
Seniority α	0.889			Level 2	Senior researcher/Team leader	2	1
						66.7 %	33.3 %
Tenure δ	1	1		Level 1	Below average team tenure	0	5
						0 %	100 %
Tenure α	1			Level 2	Above average team tenure	2	2
						50 %	50 %