Recognising the intersection of gender and occupations when measuring women's social positions

Camilla Barnett

December 2019

University of Stirling

Submitted for the degree of Doctor of Philosophy

Declaration

I declare that I have composed this thesis myself and that it embodies the results of my own research. Where appropriate, I have acknowledged the nature and extent of work carried out in collaboration with others included in the thesis.

Camilla Barnett

Copyright

Acknowledgements

Firstly, I'd like to say a huge thank you to my supervisory team, Prof Paul Lambert and Dr Marina Shapira, your advice, encouragement and support have been invaluable. Thank you for reading many typo-filled drafts and always thinking of something positive to say. To my principal supervisor Paul especially, thank you for putting up with me since my undergraduate dissertation, suggesting I apply for PhD funding in the first place, and seeing it through to the end with me. I would also like to thank the Social Statistics Research Group for all your helpful comments on presentations of this work at various stages. As a University of Stirling 'lifer,' I also owe many of you a thank you for playing a role in my education over the course of my undergraduate and masters studies, alongside all the other amazing staff at Stirling. I am also very grateful to Prof Alasdair Rutherford and Dr Richard Lampard for taking the time to examine this work and providing such constructive comments. Thank you again for going above and beyond to ensure my viva took place despite challenging circumstances. Underlining a valuable lesson from my PhD experience - that all storms can be weathered!

It has been my privilege to toil alongside many brilliant PhD students, thank you all for the many hours you distracted me from the drudgery with morning coffees, long lunches and post-work drinks – no wonder this thing has taken me almost four years! Special thanks are due to my wonderful office mates for office whines and office wines, jumping jacks, afternoon snacks and many, many pep talks. Sinem, thank you for making me feel less like a workaholic by always getting in before me and for your constant supply of strong coffee and chocolate. Jen, I can't think about no longer having you as an office mate without welling up, you are everyday sunshine, and I know I would not have finished this in one piece without you.

I was once told we make a contribution to knowledge by standing on the shoulders of giants; now I know theses are written by leaning on the shoulders of loved ones. Mum, thank you for instilling in me a love of reading, thank you for encouraging me in my passions, for always believing in me, and boasting about me to anyone who would listen. Dad, thank you for teaching me by example to work hard, for the hours you put in to ensure I had every advantage, for pushing me to be an independent thinker, for encouraging me to stick in at school and stay away from boys; at least one of those things worked out. Chris, thank you for your patience, for your encouragement, for never failing to make me laugh. Thank you for forcing me to take holidays, some weekends off, and make it home for dinner at least occasionally. Thank you for loving me through the tougher moments, for supporting me, for every single cup of tea. A big thank you also to all my other friends and family for your love and support and constantly asking when I was going to be finished – it was a real motivator!

Abstract

Social stratification position is a key explanatory variable in the social sciences, as is gender. Social stratification position is often measured using individual occupations. However, the occupational structure and the gender structure of society intertwine in numerous complex ways. The interlock of these structures makes the measurement of women's social positions problematic. This thesis explores approaches to measuring women's positions which aim to account, at least partially, for this complexity.

This thesis begins by providing an overview of the relationship between the gender structure and occupational structure from the 1970s to present, with a focus on the United Kingdom. Then a gendered critique of conventional approaches to the measurement of stratification position in the social sciences is offered. In the remaining part of the thesis, three suggested strategies are tested that might better account for the relationship between gender and occupations; (i) Gender-specific measures, (ii) Household-level approaches, and (iii) Intersectional approaches.

A methodology for the creation of gender-specific 'SEI' and 'CAMSIS' measures using British Household Panel Survey data is described before three analysis chapters are presented that draw on the International Social Survey Programme and British Social Attitudes data. The results suggest that social stratification researchers would benefit from engaging with the ideas of intersectionality, though they should recognise that inequalities are not intersectional in all contexts. A further conclusion is that multilevel models offer a promising analytical approach for intersectional research. The comparison of measures showed varying results, which would have led to some substantial differences in conclusions had only one measure been considered. Thus, a further conclusion is that undertaking a sensitivity analysis is of importance when measuring women's stratification position and that several approaches to using household and individual level, including gender-specific, measures, should be compared.

Contents

List of Tables

List of figures

1 Introduction

This thesis conducts original research in exploring the optimal ways of measuring the social stratification position of women. The critical challenge of measuring this position is the difficulty of recognising the interlocking social systems of gender and social stratification. There is a general sociological consensus that occupations are a central feature of the social stratification structure (Blau and Duncan 1967; Parkin 1971). Occupational titles, commonly provided in social surveys, offer a powerful, reliable and parsimonious indicator of material reward, social standing and life chances (Rose and Pevalin 2003). Occupational indicators of stratification position have been found to have 'construct validity' (Lambert and Griffiths 2018; Weeden et al. 2007) and, when compared with other available options, occupations perform at least as well or better than other indicators (Oesch 2013; Rose and Harrison 2010). Thus, partly because of convention and partly based on empirical evidence, occupations have formed the bases of most stratification measures, which have been central to sociological investigations (Lambert and Griffiths 2018; Rose and Harrison 2010; Weeden et al. 2007). However, at the individual level, the different societal expectations of men and women are likely to influence their career selection and trajectories (Blair-Loy 2003; Correll 2004; Damaske 2011; England 2010; Vespa 2009); and, at the structural level, an occupation's position in the occupational hierarchy may be determined at least in part by the numbers of men and women who are represented in that occupation (England et al. 2007; Levanon et al. 2009).

Early social stratification research was predominantly male-focused (e.g., Blau and Duncan 1967). Historically, if researchers considered women's social position, they conceptualised it at the household level. In most cases, the occupation of the 'household head', typically the oldest working male, would be used to assign the stratification position of everyone in the household (Goldthorpe 1983). The household head approach meant that the majority of women's social stratification positions were a reflection of their husbands' or fathers' occupations rather than their own. Moreover, as the stratification measures were predominantly designed to classify male household heads, they were intended to reflect only the male occupational hierarchy. Some criticised the household head approach as reflecting intellectual sexism (Acker 1973) and proposed an alternative in the form of an individualist model that stratified all individuals based on their occupations, regardless of their family situation (Abbott and Sapsford 1987; Stanworth 1984; Walby 1986). However, frequently this is achieved by applying the same social stratification measures that were designed for men to women.

Women have made significant progress towards equality in the labour market in the last 50 years in the western world; the changes are so dramatic that often they are referred to as 'a revolution' (England 2010). For instance, formal barriers to women's education and employment have been widely removed, first through the Sex Discrimination Act 1975, and, more recently, in the Equalities Act 2010, and businesses and universities routinely express commitment to equal opportunities in recruitment.[1] In EU countries, women made up almost half the workforce in 2018 (45.88% – World Bank figures) and are often represented in positions of power; from prime ministers to supreme court justices, and university vice-chancellors to FTSE Directors and CEOS (though admittedly in smaller numbers than men – Jewell and Bazeley 2018). Despite these developments, many underlying structures of gender inequality persist.

One critical ongoing inequality is the persistent horizontal and vertical gender segregation of the labour market (Charles and Grusky 2004). While women with degree-level educations have increasingly moved into professional occupations, less advantaged jobs are much more segregated (Charles and Grusky 2004; Cotter et al. 2004). Furthermore, those women who have progressed into previously male-dominated professional occupations often become segregated into more female-intensive subfields within them (England 2010). Within several professional jobs that have undergone substantial gender integration, women do not earn as much or progress as well as their male counterparts (Bolton and Muzio 2008; Lyonette and Crompton 2008). When following an individualist approach to assigning social stratification position, in most cases, men and women with the same occupational title would be assigned the same stratification position. This approach assumes that the meaning of an occupational title does not vary by gender and that men and women's occupational structure is the same. While there have been a few calls for gender-specific measures of social stratification position (e.g., Murgatroyd 1984; Dale et al. 1985), to reflect the different occupational distributions of men and women, and the different relationships between occupations, outcomes and lifestyles that men and women have, the use of gender-specific measures in analysis is uncommon.

There may also be a link between the rising number of women in employment and the growing schism between 'work-rich' and 'work-poor' households in wealthy societies (Berthoud 2007). Since the 1970s in the UK, women's employment rates have risen by around 20% (55.5% participation in 1971, 74.2% participation in 2018), the manual sector has been declining, and the service sector has been growing (Office of National Statistics 2019). Ongoing horizontal segregation in the labour market means that many women who are currently in employment and

[1] For example, see the University of Stirling's commitment to equality and diversity here: https://www.stir.ac.uk/about/faculties-and-services/policy-and-planning/equality-and-diversity/

who may not have been in employment in earlier periods are educated women employed in relatively advantaged occupations, often with partners who are also in relatively advantaged positions (Berthoud 2007; McClendon et al. 2014). However, while over time there has been a rise in dual-earner couples, women, and particularly mothers, are still much more likely than men to be employed part-time. For example, in the UK in 2018, around half of mothers worked 30 or more hours a week compared with approximately 70% of women without children and over 90% of fathers (ONS 2018a). The difference in hours worked is likely related to ongoing inequalities in unpaid labour in the home (Glauber 2008; Sanchez and Thomson 1997), suggesting that household-level measurement of stratification position might have continued relevance. Household-level measurement could help account for work-rich and work-poor households and how men and women continue to organise their work and home lives in a way that depends on male occupations. However, the nature of the household approach needed is unclear: the divide between work-rich and work-poor households would suggest a combined approach would be appropriate, taking account of both partners' occupations, whereas the different average employment patterns of men and women would suggest a household head approach should be taken. However, very few studies have compared different approaches to household-level measurement of stratification position (Sorensen 1994). This study will contribute to these gaps in the literature by assessing a range of both gender-specific and household-level measures of women's social stratification position in empirical analyses.

Recently, a considerable literature has grown up around the theme of intersectionality, and a focus on recognising the overlap of inequalities has become more mainstream in the social sciences (Anthias 2013). However, much of the work has been qualitative, and social stratification-based inequality has been relatively neglected (Walby et al. 2012). The methodological divide between those who focus on intersectionality and those who study social stratification has likely led to neither discipline being equipped to fully comprehend the current context of inequality (McCall 2005). This study seeks to address this research gap by reviewing how social stratification researchers might put the ideas of intersectionality into practice and by assessing the benefit of doing so.

1.1 Defining Terms

The term 'social stratification position' refers here to the position of individuals within a structure of social inequality in which some individuals are more advantaged than others. A stratification measure in this context is a map for where an individual should be placed in the hierarchy of advantage, usually based on some occupational information known about them. There is a degree of uncertainty around the terminology used in this area, for example, 'social class' is a term often

used in both academic and popular literature with many competing interpretations, as is 'social status'. Lambert et al. (2005, p4) use the term 'Social Stratification' to refer to all measures that "indicate a structure of inequalities influencing experiences in the society", regardless of whether they denote class, status, or neither. They, and others (e.g., Bottero 2005; Stewart et al. 1980), use this terminology to separate the measures of stratification from conceptual debates concerning class and status. Lambert et al. (2005) argue that reviewing occupation-based measures from the position of one understanding of the concept of class or status is limiting as there is no universally upheld definition. They also argue that, for most users, the crucial factor will be the ability of the measure to reflect social advantage and disadvantage rather than a theoretical commitment to a particular concept. Therefore, while recognising that measures based on specific conceptions of class or status can be useful in some circumstances, this thesis does not align with any one conceptual understanding of class or status. Throughout this document, the term 'Social Stratification measure' will be used to refer to all measures that attempt to place people in terms of their social advantage or disadvantage, regardless of their conceptual basis. Therefore, here there is no commitment to a particular arithmetical form; instead, the social stratification structure can take the form of a continuous scale or discrete classes or otherwise. To further clarify, the focus here is the measurement of social stratification at a micro level – the measurement of individuals or individuals within households – rather than social stratification at an aggregate level (e.g., average profiles of countries).

Bradley (2016, p134) recommends that gender can be understood 'as lived relationships between men and women'. She notes that, while it was common in the 1970s to consider sex and gender as distinct concepts, recently that divide is 'less tenable', as biological and social differences are so tightly intertwined that their separation is near impossible. Bottero (2005, p110) suggests that gender 'refers to a set of relations linking familial and labour market positions, in which women and men have asymmetrical, interdependent, and unequal relations to each other'. Much of the theory related to gender-based labour market inequality is binary, comparing the situations of men and women. While there is some consensus among sociologists that neither sex nor gender is dichotomous, social surveys frequently conflate both concepts and provide a dichotomous male-female variable (Westbrook and Saperstein 2015). Therefore, this thesis will work in binary gender terms of male and female and will use the terms sex and gender interchangeably, while acknowledging that this is limited and that a fuller picture would be useful in the future when more comprehensive data are available for this purpose.

1.2 Thesis overview

The purpose of this thesis is to explore different ways of measuring the social stratification position of women and to assess whether empirical results are contingent on the approach used in cross-national and longitudinal contexts. This thesis is structured around three key themes:

i. Gender-specific measures
ii. Household-level approaches
iii. Intersectional approaches

In different ways, each of these themes attempts to capture the complicated relationship between gender and occupations. This thesis will outline the theoretical rationale for each and will explore the impact of employing this range of approaches in an empirical analysis.

The overall structure of the thesis takes the form of 8 chapters, including the introduction and conclusion. The remaining parts of the thesis proceed as follows:

Chapter 2 offers a review of the literature, outlining the complicated relationship between gender and occupations. This chapter outlines how the social systems of gender and social stratification interlock, discussing how the patriarchal structure of society informs the structure of occupations and, conversely, how the structure of occupations influences gender roles. This chapter concludes that any analysis that uses occupation-based social stratification measures should recognise the complex relationship between gender and occupations.

Chapter 3 offers an overview of approaches to measuring social stratification. This chapter considers several commonly used social stratification measures and discusses how these measures may not be as appropriate for the study of women. This chapter argues that the different structure of occupations for men and women might mean that gender-specific measures are needed.

Chapter 4's contribution is the construction of two gender-specific stratification measures that treat women as individuals operating within a de facto separate female labour market. British Household Panel Survey data are used to derive a gender-specific SEI measure and CAMSIS measure, which are used for analysis in further chapters. This chapter overviews the methodology used to create the gender-specific scales and offers some descriptive analysis of the new measures.

Chapter 5 discusses how ideas drawn from the emerging intersectionality literature can be applied in stratification research to account for the intersectional nature of gender and occupations. Using Weldon's (2006) typology of intersectional research as a guide, this chapter offers a comparison of different approaches to accounting for the relationship between gender and occupations in an analysis of income. The chapter concludes that the 'intersectionality-plus' approach is likely to be the most useful when conducting stratification research.

Chapter 6 explores whether, given the changing nature of women's working lives over time, different approaches to the measurements of stratification position might be more or less appropriate at different time points. This chapter compares a range of household approaches with an individual approach using data from four decades of the International Social Survey Project supplemented with data from the British Social Attitudes survey. This chapter compares data from the United Kingdom and the United States of America over two topics: self-rated stratification position, and political affiliation.

Chapter 7 reflects on how researchers can situate individual-level inequality within a context of macro-level gender equality. Three topics from the International Social Survey Project were chosen to focus the analyses: gender attitudes, working conditions, and sport and leisure activities. This chapter draws together and builds on the previous analysis chapters, testing both gender-specific, and household approaches in different national contexts, and applies an intersectional approach to cross-national data.

Chapter 8 synthesises the conclusions drawn in each chapter and outlines the main findings of the thesis. This chapter also offers recommendations for future work.

2 Women's Employment

> *The problem is that it is not just women's and men's unequal situation in the family which affects their labour-market location, but also, conversely, their unequal labour-market situation which affects their location within the family.* (Bottero 2005, p110)

2.1 Introduction

A principal aim of this thesis is to investigate how women's social stratification position can be best measured in social research. As occupational information forms the core of many stratification measures, understanding the average occupational context of women is an essential first step to contextualise the difficulties in applying social stratification positions equally and individually to men and women. This literature review, therefore, charts the employment and occupational circumstances of women in the UK and how that has changed over time. While the main focus of the discussion is placed on the United Kingdom, the review also considers how the situation of women is the same or different in other national contexts.

The growing discipline of women's studies in the 1970s and '80s was instrumental in recognising the inequalities that women faced, both in the labour market and the home, and how these inequalities overlapped and intersected. As Bottero (2005) notes, one problem when considering the position of women is that inequality in the home can result in inequality in the labour market and, conversely, labour market inequality can result in inequality in the home. Intersectional theory would suggest that the social structure of gender and the social stratification structure should not be considered in isolation. This literature review will, therefore, consider not only women's employment and labour market patterns, but also patterns of gender inequality in the home.

The question of how to best to measures women's social position is not a new one in the stratification literature; as early as 1973, Joan Acker criticised stratification researchers for exhibiting 'intellectual sexism' and argued that more attention to gendered inequalities was needed when conceptualising social stratification. Years of debate on the problematic issue of the intersection of gender and stratification position followed, on both the necessity of including women's occupations in stratification research and, if they were to be included, how best this could be achieved (Abbott 1987; Crompton and Mann 1986; Dale et al. 1985; Erikson 1984; Erikson and Goldthorpe 1992; Goldthorpe 1983; Goldthorpe and Payne 1986; Heath and Britten 1984; Leiulfsrud and Woodward 1988; Stanworth 1984).

Whether researchers should measure social stratification position at the individual level or the household level is one issue that sparked heated debate (see for instance Goldthorpe 1983; Stanworth 1984). Goldthorpe (1983) argued that a household approach was more appropriate, as households share material interests and have similar consumption patterns. More recently, Rose (2008) has also suggested that, when using stratification position as an indication of available resources, life chances and lifestyle, the characteristics of other adults will be influential if they pool resources. Therefore, an individual's own occupation may not be the best indicator of their position in the structure of inequality. Goldthorpe (1983) argued that using the occupation of the eldest working male in the household to assign the stratification position of everyone in his home was defensible, as it was a reflection of unequal gendered practices in society; such as the tendency for women to take on childcare responsibilities, leading to them have more episodic careers and weaker labour market attachments in many instances. Therefore, the apparent gender bias in this approach is not problematic, as it is a reflection of real gender inequality in society. Goldthorpe (1983) suggests that the only 'truly problematic' situation for using a household head approach would be if "the extent and nature of female participation in the labour market is such that in the more 'normal' conjugal family it is increasingly hard to say whether the husband or wife should better be regarded as the family 'head' and that in many cases there are in effect two 'heads' with, quite often, different class positions" (p470). This chapter will consider the 40+ years since he wrote that defence, examining the occupational distribution of women, and unequal gender practices in the home, to consider whether a household level approach is still defensible.

It is increasingly common for researchers to adopt an individualist approach, stratifying all individuals based on their occupations, regardless of their family situation, as opponents of the household approach recommended (e.g., Abbott and Sapsford 1987; Stanworth 1984; Walby 1986). When following an individualist approach to assigning social stratification position, in most cases, men and women with the same occupational title would be assigned the same stratification position. This assumes that the meaning of an occupational title does not vary by gender and that men and women's occupational structure is the same. Sorensen (1994) argues that, just because a man and a woman have the same occupational title, it does not follow that the meaning of being in that occupation will be the same for both genders. While there have been a few calls for gender-specific measures of social stratification position (e.g., Murgatroyd 1984; Dale et al. 1985), to reflect the different occupational distributions of men and women and the different relationships between occupations, outcomes and lifestyles that men and women have, the use of gender-specific measures in analysis is uncommon. In a gender-specific measure, the same occupation (e.g., teacher) would not necessarily be assigned the same position for men and women. This might typically occur if the relative volume of people in teaching, compared to the overall distribution of people to occupations in each gender, was substantially different. It might

also occur if the relative social advantage experienced by men or women in teaching, in comparison to all other men or women in the population, was different. This literature review will, therefore, consider gender equalities in the labour market, considering the gender segregation of the labour market and gender inequalities within occupations over time, to discuss whether there is a continued rationale for gender-specific measures.

In summary, this chapter will consider the main changes in gender equality patterns in the labour market and the home since the major debates about how to measure women's stratification position took place in the 1970s. Three key themes guide this literature review: (i) how the structure of gender and the occupational structure intersect and reinforce each other; (ii) whether the work-life arrangement of women is such that a household level approach to stratification position is appropriate; and (iii) whether the difference between men and women's employment patterns in terms of the jobs they do and/or the rewards they receive are such that gender-specific measures are appropriate.

2.2 Labour market participation rates

Figure 2-1 shows that, between 1971 and 2018, the employment rates of women rose by 18%, while the employment rates of men declined by 16%. Figure 2-2 shows that, between 1975 and 2017, the employment rate of single women without children has remained relatively stable at around 80%, while the employment rates of women in couples without children has increased from approximately 70% in 1975 to about 85% in 2017. Figure 2-2 also shows that the employment rates of mothers both with and without partners have increased over this period. Between 1975 and 2017, the lowest recorded employment rate of mothers with partners was 48% in 1983 and, for lone mothers, it was 42% in 1993; these have increased to 76% and 70% respectively in 2017. The overall share of working-age mothers in employment rose from 50% in 1975 to 72% in 2015 (Roantree and Vira 2018). Thus, much of the increase in women's overall employment rates since the 1970s can be attributed to the increasing employment of wives and mothers. Over time, on average, men and women's employment rates have become more similar, and the employment rates of women in different family situations have also become more similar.

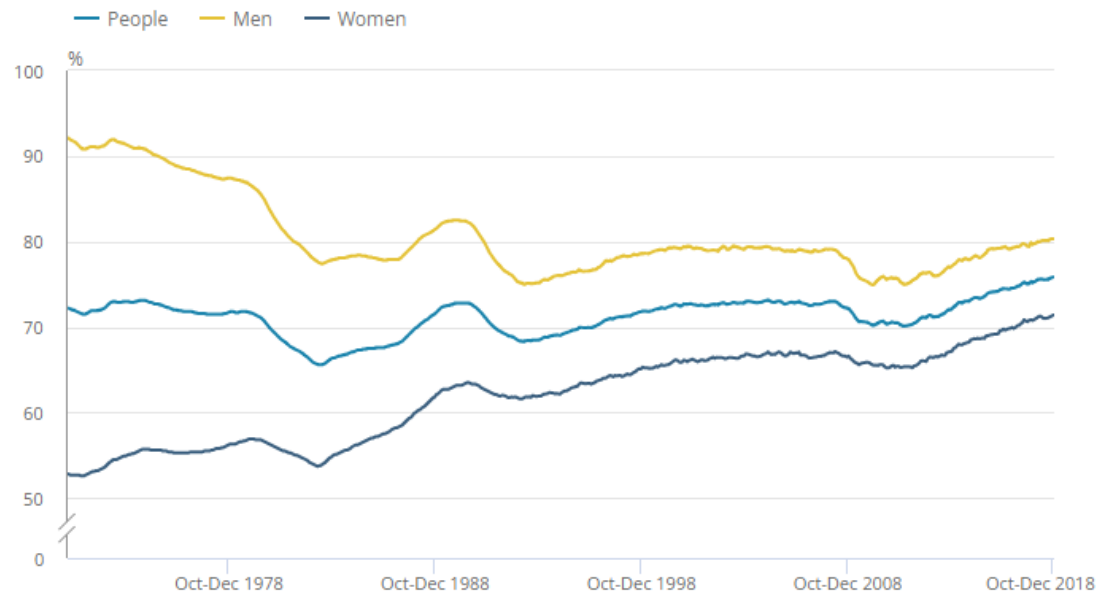

Figure 2-1 Proportion (%) of men and women (aged 16 to 64) in employment in the UK between 1971 and 2018, graph copied from the Office for National Statistics (ONS) (2019, p7) 'UK labour market: December 2018' report, data from the Labour Force Survey (seasonally adjusted).

In 1964 Watson and Barth cited the increasing numbers of women in employment, in the United States, as a key reason why women's occupations should be taken into account when measuring stratification position. At the time they were writing, 1/3 of the US labour force was female. As shown in Figure 2-1 women's employment rates in the UK have risen over time, and the employment rates of men and women are now very similar, which could therefore, be taken as evidence in support of an individualistic approach to assigning stratification position. However in 1983, Goldthorpe posited that increasing numbers of women in the labour market was not a sufficient justification for abandoning the family as the unit of analysis, as many women in employment continued to be dependent on men. He suggested that the only genuinely problematic scenario for a household approach would be if women's employment situation became so similar to men's that it was no longer possible to determine which partner should be considered the head of the household.

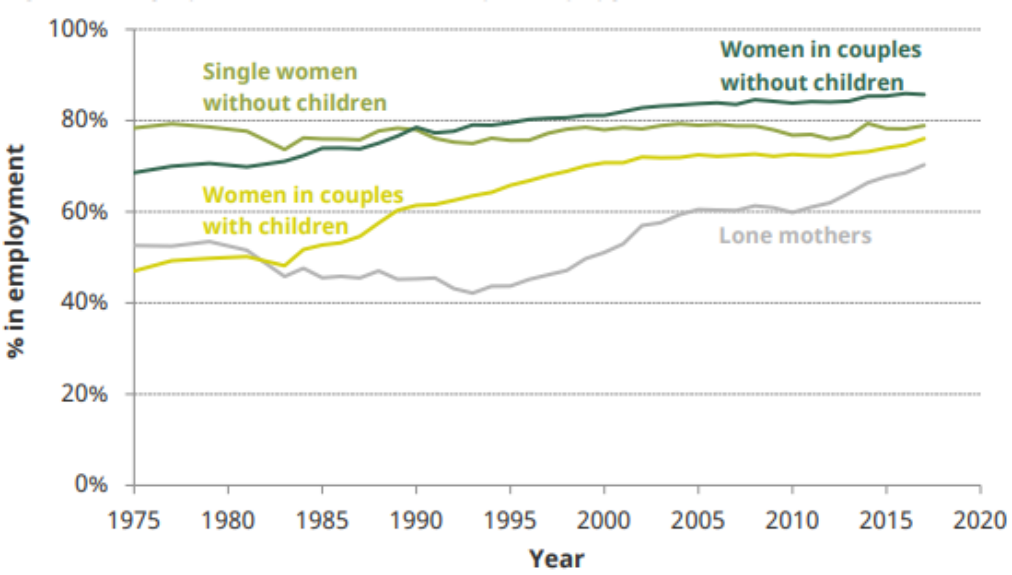

Figure 2-2 Proportion (%) of women (aged 25 to 54) in different family types in employment (employed or self-employed) between 1975 and 2017, graph copied from Roantree and Vira (2018, p8) 'The rise and rise of women's employment in the UK', data from the Labour Force Survey.

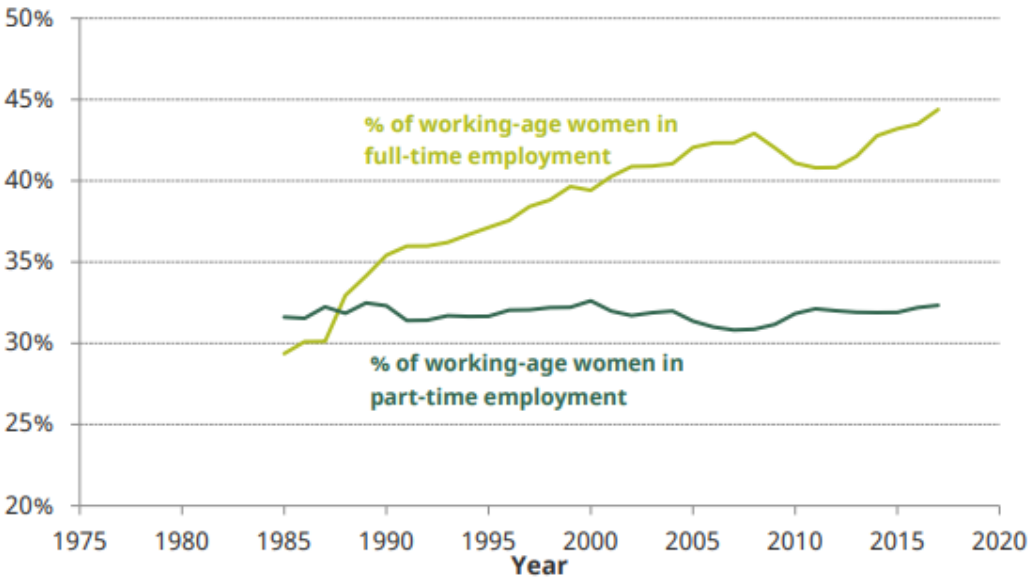

Figure 2-3 Proportion (%) of women (aged 25-54) in full- and part-time employment (full time employment defined as 30+ hours) between 1985 and 2017, graph copied from Roantree and Vira (2018, p4) 'The rise and rise of women's employment in the UK', data from the Labour Force Survey

Figure 2-3 shows that, at the time Goldthorpe was writing, there were more working-age women employed part-time than full-time. However, while the proportion of women working part-time has stayed relatively constant over time, the proportion of women in full-time employment has increased by around 15%. Thus, the majority of the increase in women's overall participation in

the labour market has been due to increasing participation in full-time work. Again, arguably, this lends support to an individualistic approach to measuring stratification position.

Berthoud (2007) suggests that around 2 million adults employed in the UK in 2002 would likely not have had a job in the 1970s. Those whose employment prospects have most improved are highly educated mothers with a working partner. Conversely, Berthoud (2007) suggests that there were around 2 million individuals who would likely have had a job in the 1970s who were not in work in 2002. The most affected were men, particularly those who were uneducated and did not have a working partner. Due to trends in marital homogamy in education level (Mare 1991; McClendon et al. 2014), women who are highly educated are also likely to have partners who are highly educated. Thus, there is a growing schism between 'work-rich' and 'work-poor' families which is intensified by trends of marital homogamy. Rose (2008) argues that this schism between work-rich and work-poor households is an important reason why household level measures might be appropriate.

Therefore, the overall increase in women's employment participation could be taken as evidence in support of an individualist approach to stratification measurement, as women's average employment patterns are now much more similar to men's. However, given that the increases in women's employment have been stratified by education, recognising the occupations of others in the household might be more important to consider now than ever, in order to recognise the polarisation between 'work-rich' and 'work-poor' households that the entrance of more advantaged women to the labour market has created.

2.3 Influences on labour market engagement

Section 2.2 shows how it is the employment rates of women with partners and women with children that have increased over this period, and this change is driven by women's increasing participation in full-time employment. However, this trend is segregated by women's education level, and a significant proportion of women in the UK work on a part-time basis. Women who are living in couples and women with children have several push-and-pull factors that influence both their decision to enter the labour market, and, if they are in employment, the amount of time they spend in the labour market. Hakim's (1998, 2000) 'preference theory' argues that, in modern affluent societies, women have a real choice between working in the home (e.g., unpaid domestic and care work) and working in the labour market, and that their preferences "cut across social class, education, and ability differences" (Hakim 2003, p247). Others have argued that women's 'choices' are constrained by society and that some women will be more or less constrained than others (Crompton and Harris 1998; Ginn et al. 1996; McRae 2003; Procter and Padfield 1999).

McRae (2003) considered the attitudes of mothers with different employment histories and concluded that they could not be 'sharply distinguished' in terms of their preferences; rather, they differed in their ability to act on those preferences. McRae argues that women face both normative and structural constraints that influence their ability to 'choose' to undertake labour market and/or family work.

Goldthorpe (1983, p469) argued that using a household approach when measuring social stratification took account of the fact that, for many women, their employment choices are "part of a family strategy". He argued that, as wives were "required by conventional norms to take major responsibility" for domestic labour in the home (e.g., unpaid housework and care work), they had less opportunity for the level of labour market attachment that men had, resulting in wives having economic dependence on their husbands. Figure 2-4 shows that, at the time this was written, in the UK, more individuals agreed with the statement 'a man's job is to earn money, a woman's job is to look after the home and family' than disagreed but, over the period 1984 to 2017, there has been a substantial change in attitudes, and now the majority disagree with the statement.

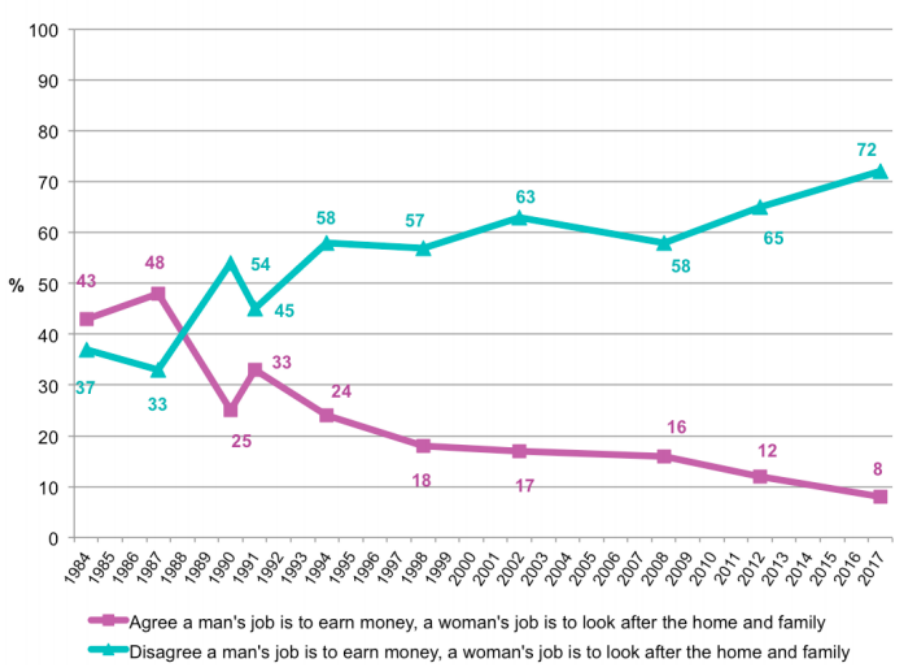

Figure 2-4 Proportion (%) of people in the UK who agree and disagree with the statement "a man's job is to earn money; a woman's job is to look after the home and family" between 1984 and 2017, graph copied from Phillips et al. (2018, p9) 'British Social Attitudes: The 35th Report', data from the British Social Attitudes Survey

More recent cohorts had generally spent more time in formal education than older cohorts, and this can explain much of this change as education is linked to more liberal attitudes across a range of outcomes (Phillips et al. 2018). However, there was also a narrowing of the attitudinal difference between the more and less educated over this period, in particular those with no formal educational qualifications have become more liberal in their attitudes over the last few years (Phillips et al. 2018). Individuals who disagreed with the statement 'a man's job is to earn money a women job is to look after the home' might be endorsing women in the workplace or men taking a greater share of in-home responsibility, or both; it might signal a greater support for gender equality or greater choice for couples in how they organise their work-life arrangements (Phillips et al. 2018). Nevertheless, overall, it does provide some evidence of changing gender norms over time, which suggests that Goldthorpe's (1983) arguments may not have continued relevance. Yet, while overall there appears to have been a shift away from traditional attitudes to gender roles, the belief that mothers are the preferred care provider for young children is still prevalent. In the UK in 2012, around 30% of respondents to the British Social Attitudes Survey agreed that a pre-school child is likely to suffer if his or her mother worked, and fewer than 5% thought a mother should work full-time if they had a child under school age (Taylor and Scott 2018). Thus, while attitudes towards traditional gender roles are changing over time, the employment decisions of women with children may still be influenced by average attitudes toward working mothers.

Crompton and Lyonette (2005) found that the presence of children in the home did not predict women's attitudes to women's employment; however, it was a strong predictor of their working arrangements in practice. In practice, women are still undertaking the majority of unpaid domestic and care work in the home. Women's increased participation in the labour force has not resulted in men taking on an equal share of unpaid labour in the home (Coltrane 2000). Therefore, working women are often required to take on the 'second shift' (Hochschild 1989) of unpaid work at home on top of their paid labour market employment. In 2016, the Office for National Statistics (ONS 2016a) reported that women were, on average, doing 60% more unpaid labour within the home (including cooking, cleaning and childcare) than men. The average weekly total reported by men was 16 hours, whereas women reported undertaking 26 hours a week on average. It has also been found that having children will increase the number of hours that women spend on unpaid house and care work on average (Glauber 2008; Sanchez and Thomson 1997). Thus, an unequal gendered division of labour does still appear to be the norm for many heterosexual couples, particularly those with children. These inequalities in both gender norms and practices have been argued to influence both women's participation in the labour market and also the number of hours they will dedicate to paid work (Blair-Loy 2003; Correll 2004; England 2010).

While societal-level gender norms and practices can be influential, so can the attitudes and time commitments of heterosexual cohabiting women's partners. Cha (2010) found that wives were less likely to be in employment if their husbands worked more than 50 hours a week because their husbands did not undertake at-home unpaid labour. This pattern was stronger among couples with children. Abendroth et al. (2012) also found that mothers spend more time, on average, in the labour market if their male partner contributes more time to childcare. However, it has also been found that the division of labour between men and women is related to the difference in relative earnings between men and women, both as the relative earning power of women has increased over time, and between households at single point in time (Bittman et al. 2003; Evertsson and Nermo 2007; Kitterød and Pettersen 2006; Pailhé and Solaz 2007). Thus, more advantaged women's partners are more likely to spend time on housework and care work.

Partner's income has also been cited as a significant predictor of cohabiting women's labour market participation. It once was argued that having a high-earning male partner resulted in women being less likely to be in employment, as there was less necessity for them to work (Goldin 1990). However, England et al. (2012), found that it was the female partners of 'middle class' men who were the most likely to be in employment. The effect of a male partner's occupation on women's employment status was curved. It has also been argued that the negative effect of having a higher earning male partner is decreasing over time because of the increasing importance of women's education for their employment patterns (Cohen and Bianchi 1999; England et al. 2012; Goldin 1990; Henz and Sundström 2001).

It is argued that the more educated a woman is, the higher the 'opportunity cost' of that woman not participating in the labour market will be, as those with higher educational qualifications have greater earnings power (England et al. 2012) and the 'pay-off' for attending university is higher than it is for men (Belfield et al. 2018). Since the 1970s, there have been expansions in higher education in most countries, and most of this growth is tied to women's increasing participation in higher education (Becker et al. 2010). In the UK, girls are now outperforming boys at secondary school and are more like to stay on for non-compulsory years of study (Bosworth and Kersley 2015). They are also more likely to attend and graduate from university and to obtain postgraduate levels of education. Recent UCAS (2016) figures showed that women were 35% more likely to attend university.

Structural changes in the labour market over this period may also have encouraged women to obtain a degree, as the growing service sector began to offer employment opportunities to a large number of university-educated women. In a cross-national comparison, Olivetti and Petrongolo (2014) found that countries with smaller service sectors also had lower numbers of women in the

labour market. Growing service sectors are also cited as a driver of women's levels of employment, that is to say, a greater demand for 'women's work' may have driven the change rather than a growing desire of women to work (Ngai and Petrongolo 2017).

Further structural differences between countries that may influence patterns in women's employment are different welfare state types and work-family policies. A common starting point for comparative research on state support for women working is Esping-Andersen's (1990, 1999) welfare state typology (e.g., Gerhardt et al. 2005; Stier et al. 2001). Esping-Andersen (1990) defines three types of welfare state for western countries; liberal, conservative, and social-democratic, each of which influence women's employment in different ways. The liberal regime is characterised by means-tested assistance with modest state benefits. This kind of welfare state is based on the principle of the 'liberal work ethic', where individuals are encouraged not to rely on the state for assistance; instead, the market is relied on to fulfil citizen's needs and only when the market fails does the state intervene. The conservative welfare state is concerned with status preservation and upholding the principles of church and family values. The male breadwinner model is dominant and social insurance excludes non-working mothers. Family benefits, coupled with lower state support for childcare, encourages women to have children and mothers to stay home to care for those children. Social democratic welfare states pursue social reform and social equality. Social democratic welfare states do not encourage individuals to rely on their family for support; rather, the state takes responsibility for all citizens, allowing mothers and women in general (who often take on more caring roles in families) more freedom to work. Responding to feminist critiques that the original typology did not fully engage with gender and the importance of unpaid work, Esping-Andersen (1999) discussed the 'defamilising' nature of different welfare states, which refers to the extent to which welfare state policies and provisions reduce the burden on families (frequently women) to provide care. Only social democratic states are argued to have 'defamilising' objectives. Mandel and Semyonov (2006), however, describe a 'welfare state paradox', arguing that "developed welfare states facilitate women's access to the labour markets but not into powerful or desirable positions" (p1910). They argue that developed welfare states with sizeable public service sectors create "sheltered labour markets" with a large amount of gender segregation in which women are concentrated into low-status female-typed occupations (Mandel and Semyonov 2006, p. 1911). Thus, while developed welfare states may result in women's greater participation in the labour market, they do not work the same hours or do the same jobs as men on average (see Section 2.5 for a more detailed discussion of gender segregation in the labour market).

Others (e.g., Abendroth et al. 2012; Korpi 2000) argue that, rather than focusing on welfare states as a whole, the focus should be on particular work-family policies, as specific policies promote

different working arrangements within families and thus influence women's average employment patterns. Child benefits, and tax credits are an example of policies that support a male breadwinner model among families (Abendroth et al. 2012; Korpi 2000). It is argued that providing these monetary benefits will mean that there is less need for mothers to work. Conversely, publicly funded childcare policies are said to support a dual-earner model (Abendroth et al. 2012; Korpi 2000), as it is assumed that, as women will need to spend less time on childcare, they will be able to spend more time in the labour market. The cost and availability of high-quality childcare have been cited as a significant constraint on women's ability to choose to work outside the home and the number of hours they will work, if they have children (Budig et al. 2012; McRae 2003). This is particularly true for mothers who have lower qualifications and lower earnings potential (Borg and Stocks 2013; Cory and Alakeson 2014). If the cost of childcare takes up a significant proportion of a mother's earnings, paid work is often deemed not to be worthwhile (Berger and Black 1992; Blau and Hagy 1998; Connelly 1992).

Different maternity leave policies in different countries have also been linked to women's employment patterns. It is often argued that generous policies that protect women's right to return to work will increase the numbers of women in employment, as more mothers will return to work after having children (e.g., Gornick and Jacobs 1998; Kangas and Rostgaard 2007; Pettit and Hook 2005). However, it has also been found that very long leave policies decrease the probability of women returning once the leave period is over (Gornick and Hegewish 2010). Thévenoni and Solaz (2013) compared 13 OECD countries and found that the availability of maternity leave had a positive effect on women's employment rates and the number of hours worked, but only if that leave did not extend past two years. Maternity leave has also been cited as a driver of the gender pay gap as it reduces human capital by reducing time spent in the labour market, in particular in more prestigious occupations, as they are likely to require a higher level of commitment (Anderson et al. 2002).

Others have argued that long leave periods reinforce the idea of women as the primary carers for children (Rubery et al. 1999). Many countries now offer parental leave for employed parents of either gender. In the UK, leave was once reserved almost exclusively for women, who were entitled to 12 months leave if they became mothers, compared to the new father's entitlement of just two weeks (Chanfreau et al. 2011). The Shared Parental Leave policy, introduced in 2015, attempted to allow parents to share caring responsibilities more equally and to allow both parents the opportunity to retain a strong attachment to the labour market. This policy makes the sharing of leave almost completely flexible, save for an initial two weeks reserved for the mother. However, early figures suggest that the take-up of this sharing among eligible parents could be as low as 2% (UK Government 2018). Nordic countries have had more gender-neutral policies

on parental leave for many years, and research shows that this can play a crucial role in challenging the gendered division of unpaid domestic and care work that may restrict women's access to the labour market. However, it has been found that incentives may be needed to encourage fathers to take this leave, for example, non-transferable 'use it or lose it' leave reserved for fathers (Haas and Rostgaard 2011).

In summary, women's labour market patterns, both in terms of participation rates and hours worked, are influenced by normative gender roles, individual and family circumstances, and structural processes. While a higher proportion of women in the UK are working now than ever before, and much of the increase has been in full-time work, these different influences are still likely to affect both the hours that women spend in the labour market and the types of occupations in which they work.

2.4 Hours worked

As shown in Figure 2-3, women are increasingly working in full-time positions. However, a significant proportion of women (over 30%) are employed part-time. Women are three times as likely as men to work part-time in the UK (ONS 2017). For many, working part-time is a choice they are happy with, and they report they do not want a full-time position (Gregory and Connolly 2008; ONS 2017). Like patterns in participation rates, part-time working patterns are stratified by education, with less advantaged women being more likely work part-time (Percheski 2008). Parenthood also has a significant influence on the numbers of hours worked; women spend fewer hours in paid work on average if they become mothers, while having children does not affect men's average working hours (Boye 2008). In 2018, around half of mothers worked 30 or more hours a week in the UK compared with about 70% of women without children and over 90% of fathers (ONS 2018a). While employment rates for mothers have risen in the last two decades (see Figure 2.2), in two parent households the hours worked by each parent are still markedly different. As shown in Figure 2.5 a typical arrangement is for the father to work full-time while the mother works part-time; it is far less common for the father to work part-time while the mother works full-time. This has implications when considering the level of measurement of social stratification position as it suggests that, at least in family units with children, women are still likely to be at least partly dependent on men, as they pool resources in terms of labour within and outwith the home in an unequal way. Part-time work is also associated with work that is lower-skilled and has lower pay (Blackwell 2001). Thus, if women are more frequently working in part-time roles, this has implications for the types of work women are doing as compared to men on average and the rewards that they get.

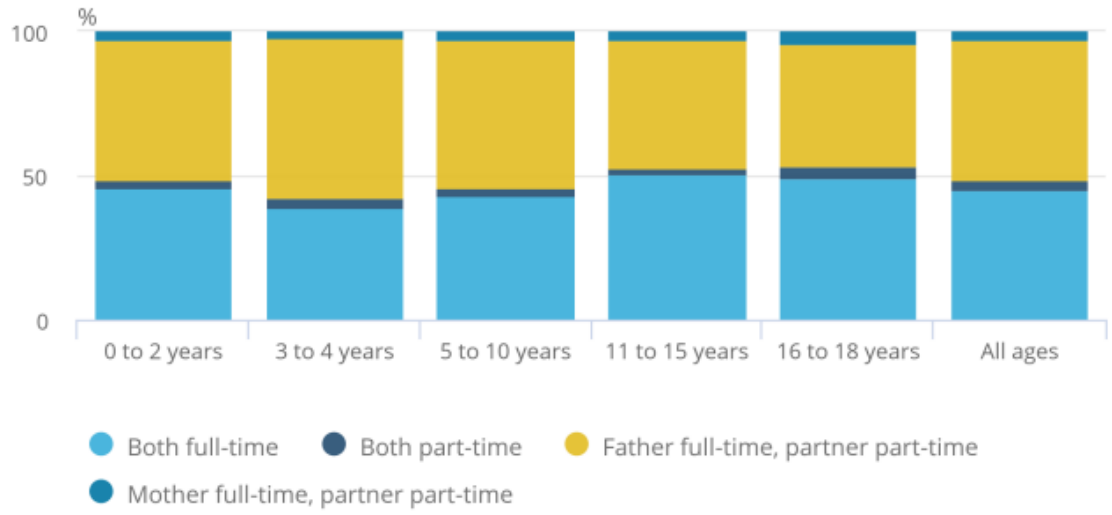

Figure 2-5 Employment composition of couple families in which both parents are working by age of youngest dependent child, graph copied from ONS (2018a, p10) 'Families and the labour market, England: 2018', English data from the Labour Force Survey April to June 2018 (restricted to parents aged 16 to 64).

While women are now more likely to be working full-time hours than they have been in the past, women are still less likely than men to be working additional overtime hours (Cha and Weeden 2014; Goldin 2014). It has been argued women's greater responsibility for unpaid work in the home limits their access to prestigious occupations as these occupations tend to require unpaid overtime and travel, which is challenging to combine with domestic and care responsibilities (Becker 1991; Williams 2001). In Britain, Rutherford (2001) argued that 'time- resource' has also become important in separating men and women in terms of obtaining promotions, as men have fewer family responsibilities on average and therefore have more time available. He suggests that, because of 'the long hours culture', the ability to work overtime is an important determinant when hiring for managerial and prestigious roles. Cha and Weeden (2014) found that, in the USA, the difference in 'overwork' (50 plus hours a week) was responsible for around 10% of the gender wage gap. Presser and Hermsen (1996) argue that business travel is an important and neglected area in gender labour market stratification; they found, in the USA, that men were far more likely to undertake business travel. In Sweden, Gustafson (2006) also found that men, on average, will travel more than women and that having children reduces travel for women but has no effect on men.

Wright et al. (1995) suggest that mothers face discrimination in hiring as employers may view them as being on the 'mummy track' and as having less commitment to work. Correll (2004) found evidence for this in the USA, finding mothers are discriminated against in hiring decisions and that employers will tend to think that mothers will be less committed than non-mothers. Therefore, women, and particularly mothers or prospective mothers, may be less likely to be hired

into occupations that require constant availability, un-agreed/unpaid overtime and travel, which are important characteristics when career-building and gaining higher income. Much like the greater prevalence of part-time work among women, the greater prevalence of overwork among men may contribute to men and women working in different kinds of occupations.

2.5 Labour market segregation

As noted in Sections 2.3 and 2.4, several normative and structural factors are likely to be influencing women's labour market participation and the hours they will spend in paid work; this also affects the types of occupation women are likely to apply for and be hired into. It has been argued that the unequal division of labour within the home restricts women's access to high-powered positions that require overtime and travel (Becker 1991; Cha and Weeden 2014; Goldin 2014; Presser and Hermsen 1996; Williams 2001). The prevalence of part-time working among women also results in women being crowded into sectors which offer this kind of employment (Blackwell 2001). Labour market segregation is further compounded by women more commonly being employed in occupations that require stereotypical female traits and men being concentrated into occupations that require stereotypically male traits (Charles and Grusky 2004; Levanon and Grusky 2016). According to Bradley (1989), across all cultures, labour markets have always had some level of gender segregation, and the work done by men has consistently been considered to be of the higher standing.

Labour markets are segregated both vertically and horizontally (Charles and Grusky 2004). Vertical segregation is a measure of inequality; it refers to women being lower down the occupational hierarchy and having less advantaged positions. Horizontal segregation is a measure of difference, but not necessarily inequality, measuring the tendency of men and women to have different occupations, for example, in the UK in 2017, women were drastically underrepresented in skilled trades but over-represented in administrative and secretarial work (see Figure 2-6). This horizontal segregation is found even in more gender-equal Nordic countries (European Commission 2014; World Economic Forum 2014), indeed, while these countries have less vertical segregation, they have greater horizontal segregation, possibly as women and men are in less competition (Jarman et al. 2012).

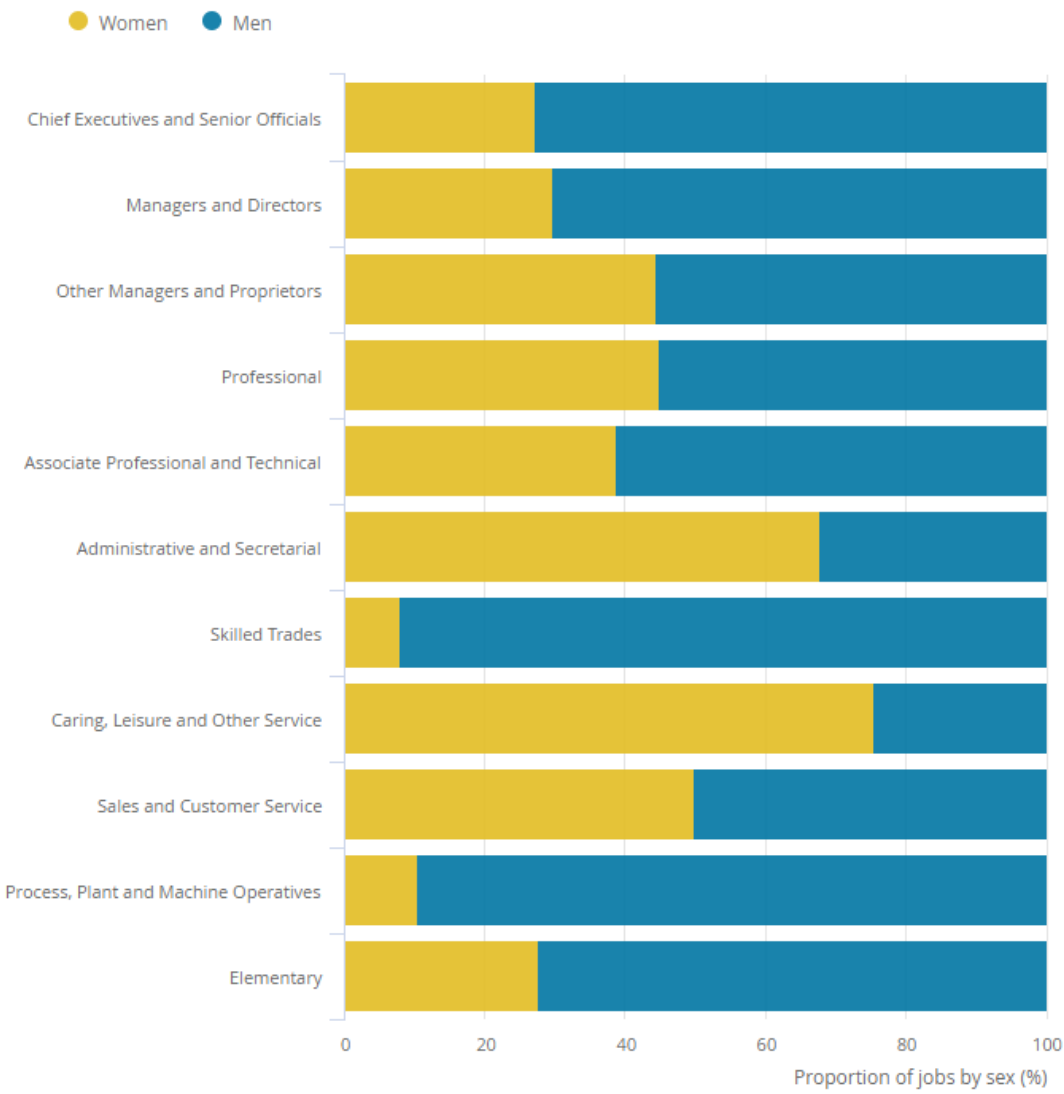

Figure 2-6 Proportion (%) of male and female full-time employees (30+ hours per week) in different occupation sectors in the UK, graph copied from ONS (2018b, p7) 'Understanding the gender pay gap in the UK', data from the Annual Survey of Hours and Earnings 2017.

Charles and Grusky (2004) distinguish between two types of unequal gendered belief systems; male primacy, and gender essentialism, each of which support this segregation of the labour market. Male primacy refers to the belief that men are superior to women and more deserving of status and positions of authority. Gender essentialism refers to the belief that men and women are essentially different and, therefore, are suited to different kinds of work. This gender essentialism results in men and women both applying for and being hired into differing types of occupations (Charles and Grusky 2004). From a gender essentialist perspective, women are seen as being naturally superior at roles that involve care work, emotional labour, and interpersonal relationships, whereas men are naturally superior at roles that require strength, logic and authoritativeness (Levanon and Grusky 2016). Thus, on the supply side, gender essentialism encourages men and women to believe they are better suited to different careers and consequently

make different choices around educational prerequisites and applications. On the demand side, essentialist beliefs encourage employers to hire men and women into different types of jobs and assign them different work within the same occupation (Levanon and Grusky 2016).

For example, Reuben et al. (2014) found evidence that both gender essentialism and male primacy were factors in explaining the under-representation of women in STEM (Science, Technology, Engineering and Mathematics) occupations. They found that both men and women were more likely to hire a man to complete mathematical problems, both based on looks alone (where the candidate's gender was apparent) and when they were also given self-reported proficiency at solving the mathematics problems in question, they were still more likely to hire a male candidate. They also found that male candidates were more likely to 'boast' about their proficiency and women were more likely to underreport their ability, and interviewers did not take this into account. When a full performance history was provided, bias against females was reduced but not eradicated. They conclude that employers in STEM fields are likely to be sub-optimally hiring in favour of men due to a combination of ingrained gender stereotypes and men being more likely to oversell their ability in interviews, which are examples of gender essentialism and male primacy, respectively.

It is argued that males and females are socialised differently from an early age to conform to gender stereotypes that affect their educational and occupational decisions (Alksnis et al. 2008; Kalantari 2012; McDaniel 2016; Ochsenfeld 2014). While, on average, across Europe, girls are now outperforming boys in schools and more women than men are graduating university, at the highest levels of education, men are still obtaining more doctorate degrees (European Commission 2016). There are still marked differences between the sexes in the subjects chosen, and, consequently, the occupations pursued (Alksnis et al. 2008; Gundert and Mayer 2010). Thus, horizontal segregation in education, defined as gendered differences in fields of study, is persistent. Women are over-represented in 'female' subjects; those associated with origins of 'serving' and 'caring' that have a functional or symbolic closeness to domestic work (Gundert and Mayer 2010). Figure 2-7 shows that, in the UK, fewer girls than boys are studying STEM subjects and instead they are over-represented in the humanities and social sciences (e.g., education, languages, social studies, arts, and healthcare). This horizontal segregation in education manifests as a horizontally segregated labour market (Macpherson 2008).

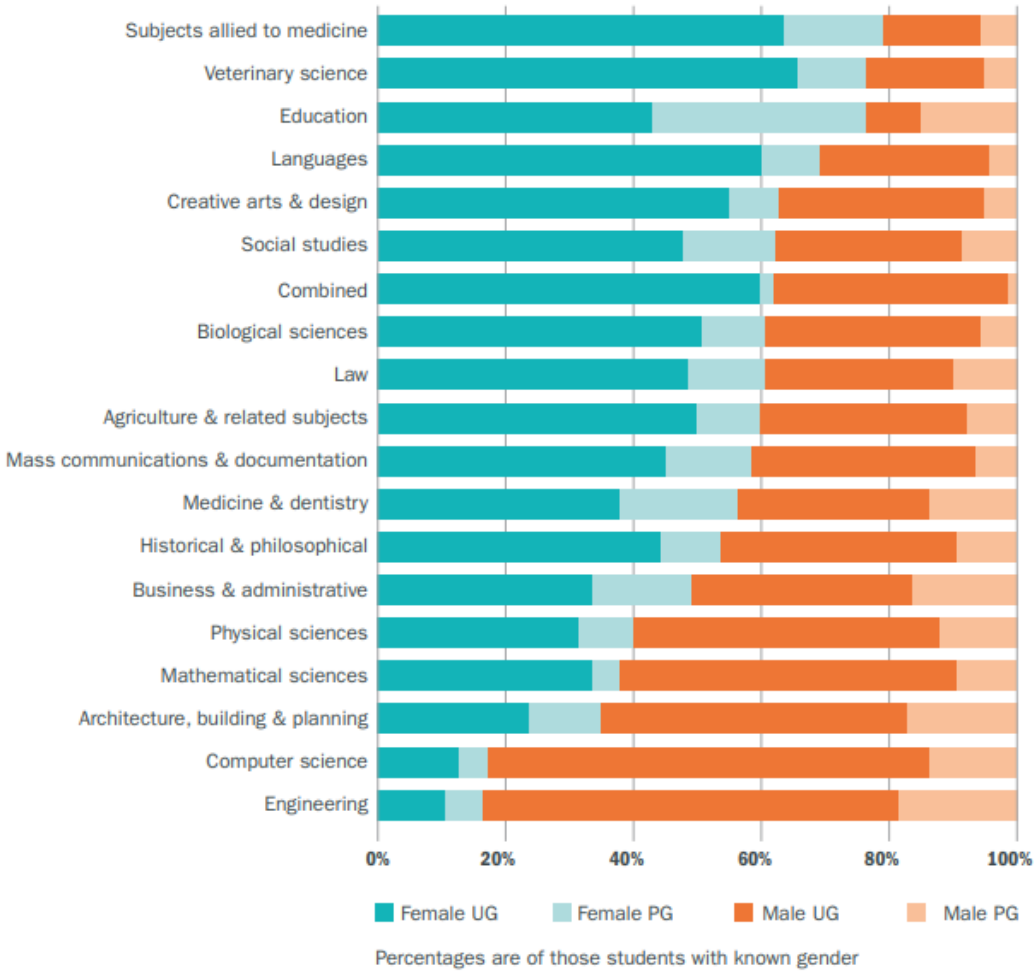

Figure 2-7 Proportion (%) of male and female university students in the UK in different subjects of study, by level in 2013-14, graph copied from Universities UK (2015, p23) 'Patterns and trends in UK higher education 2015', data from HESA Student record 2013–14

Becker (1967) argued that men and women have a rationale for making different levels of human capital investment to make the most of family life and income. Human capital refers to the amount of knowledge and skills a person has accumulated through education, training or experience. Becker's (1985) rational choice theory argues that, because women bear children, men have more incentive to gain more human capital than women do. The rapid growth in numbers of women with university degrees has undermined this argument somewhat; however, the differences in the subjects studied by men and women may reflect different kinds of human capital investments. It is argued that women will avoid fields in which specialised human capital (occupation, firm, or industry-specific training that has little value outside of the setting in which it was gained) is important, because many women anticipate career breaks to raise children (Polachek 1981).

England (2010) argues that, if women can have upward social mobility without breaking gender norms, they will choose this route. Thus, women with more advantaged family backgrounds are

more likely to push into previously male-dominated advantaged occupations as there is no path to social mobility in a gender-typical occupation (England 2010). While many women with mothers in service occupations could be upwardly mobile by entering skilled manual occupations, they will instead choose to move up into gender-normative skilled non-manual work. By contrast, men seeking upward mobility almost always have the opportunity to be upwardly-mobile in gender-typical fields and therefore have limited inclination to move into typically female occupations (England 2010). This offers an explanation for why more advantaged professional occupations have experienced a more considerable amount of integration since the 1970s (Blau et al. 2013).

Hakim (1998, 2002) argues that there are three distinct sections of the labour market when considering occupational segregation and inequality: male-dominated occupations (less than 30% female), female-dominated occupations (50+% female), and integrated occupations (30%-50% female). In her study of 1991 British census data, in general, the occupations most dominated by women were skilled non-manual occupations, whereas the occupations dominated by men were skilled manual occupations. There was only a small group of integrated occupations, but these were the most highly skilled and the most advantaged. The majority of integrated occupations are those which would be classified as professional (Hakim 1998; Magnusson 2013). However, it is also important to note that, while, overall, numerous women are employed in professional occupations, many highly powered and privileged occupations remain overwhelmingly male in their composition. Statistics from the Fawcett Society (Jewell and Bazeley 2018) show that, in the UK in 2018, women account for just 32% of the House of Commons, 26% of the House of Lords, 33% of Local Councillors, 17% of Supreme Court Justices, 26% of University Vice-Chancellors, and 18% of National Newspaper editors. Just 6% of CEOs of FTSE 100 companies were women, 28% of Charity CEOs, and 15% of Sport Governing Body Chairs.

On average, occupations that are dominated by women are not as highly paid as those dominated by men, thus horizontal segregation results in vertical segregation, and several theories have been put forward to explain this. Devaluation theory (England 2010) argues that gender essentialism results in the kind of work done by many women in the labour market being similar to the type of unpaid labour done in the home, such as care work and emotional labour. It is argued that society undervalues work associated with women, and therefore it is underpaid relative to the skill it requires, as employers will perceive a lower value of the work done in occupations with high numbers of women and assign lower pay to it (England 1992, 2010; Levanon et al. 2009; McGrath and DeFilippis 2009). Others argue that, due to a culture of male primacy, men are more likely to think themselves capable of high-status roles and are therefore more likely to apply for and be hired into them (Charles and Grusky 2004). Women, on the other hand, are likely to

believe they will be rejected if applying for these roles and so may not apply, and women are also more likely to accept positions that are less desirable, even when they have invested in education and training (Charles and Grusky 2004; Reuben et al. 2014). It has been suggested that male-dominated manual occupations traditionally have strong union activity, resulting in high pay without the necessity of a university degree (Cockburn 1991; Cotter et al. 2004; Hartmann 1976). It has also been argued that, because of both employees' and employer's assumptions about women taking career breaks to have children, men acquire more specialised human capital which is associated with higher rewards (Grönlund and Magnusson 2013; Polavieja 2005, 2007). As noted in Section 2.2, average difference in responsibilities for domestic work, including childcare, may lead to both women not applying for occupations that require lots of hours and travel, and employers being less likely to employ women in these roles (Blackwell 2001; Correll 2004; Goldin 2014; Tam 1997; Wright et al. 1995).

Thus, the occupational distributions of men and women is quite different, with men and women working in different types of jobs that have different average rewards. Furthermore, in addition to the segregation between occupations, it has also be argued that those women who have progressed into previously male-dominated professions often become segregated into more female-intensive subfields within them (England 2010). For example, the majority of female lawyers practise family law and far fewer practise corporate law (Bolton and Muzio 2008). It has been found that, due to this within-occupation segregation, women in many professional occupations do not earn as much or progress as well as their male counterparts (e.g., Bolton and Muzio 2008; Lyonette and Crompton 2008). The feminised sections of the occupation have worse career prospects, working conditions and rewards, although they require comparable skill. They are also often the sections of a profession that require the least amount of time availability. So, the horizontal segregation within an occupation such as lawyer becomes vertical inequality, as women are concentrated into those sections that offer fewer rewards and advantage.

The gender-segregated nature of the labour market provides a continuing rationale for the use of gender-specific measures (c.f. Murgatroyd 1984; Dale et al. 1985); firstly, because the distribution of occupations for men and women are quite different, and secondly, because even men and women in the same occupation often do different work and get different rewards. Additionally, because of the lower pay of women on average, access to a partner's resources is likely to be particularly relevant for women. For example, research has found that families with a single woman are much more likely to be beneath the household poverty line than couples or single male families, partly due to women's lower wages on average (England 2001). Thus, on average, considering the household situation of women might be important for understanding their relative position in the social hierarchy.

2.6 Conclusions

To summarise, the average employment situation for women has changed quite dramatically in the last 50 years in the UK. Women have increased their participation in employment, particularly women with young children. Therefore, women's employment over their life course has become, on average, more similar to men's. Women have also experienced much greater access to higher education and over time have overtaken men's participation rates. Many more women are now employed full-time and work in advantaged professional jobs.

However, overall, the social structure of gender and the stratification structure intersect in several complex ways. For example, there is still substantial gender segregation in the labour market, as, while women have moved into previously male professions, they have not made the same moves into more manual work. Men have also not moved in to traditionally female, lower-skilled or lower-paid, occupations to any great extent. Furthermore, due to a prevailing culture of gender essentialism, women are still responsible for the majority of unpaid labour within the home and are more likely to work fewer hours, particularly if they have children. While it is now common for both parents to be in employment, often this means that the father is working full-time and the mother is working part-time, as far fewer families have a father working part-time and the mother working full-time. Thus, while there is a group of advantaged women in full-time advantaged occupations who can afford to pay for childcare, there are many more women who still adopt more traditional female patterns of employment in lower-paid low-status work. There is, therefore, evidence that families are still pooling and sharing resources and thus measuring at an individual level is likely not representing many women's positions as accurately as men's.

There is also evidence that, when measuring at the individual level, the different occupational structures of men and women should be taken into account to more accurately reflect women's positions. Occupations are still horizontally and vertically segregated, and, therefore, the overall distribution of occupations for men and women is very different. Furthermore, although men and women in professional occupations may share the same occupational title, women are often condensed into feminised sections of the occupation that do not have the same rewards or prospects for progression. Education is a separating feature of the female labour market in a more extreme way than for men, because, for men, blue-collar manual work that does not require a university degree is relative highly paid, but, for women, due to gender essentialism, they do not tend to enter these occupations.

3 Measurement of social stratification position

It is not 'social actors' that are distributed … [by social stratification measures]… it is men and women. Their different experiences are interdependent, so that the distribution and situations of men are powerfully influenced by those of women as well as vice versa. (Marshall et al. 1988, p84)

3.1 Introduction

Having considered the relationship between gender and the labour market structure, this chapter turns to explore the more technical elements of measuring women's social stratification position in quantitative research using occupational information. Given the complex relationship between gender and occupations outlined in Chapter 2, this chapter firstly sets forth the case for using occupations to assign social stratification positions and considers some other alternative measures. A selection of occupation-based stratification measures will then be discussed. Many stratification measures were initially designed to measure male social positions and were later also applied to women. However, this has led to problems in "fitting women into" measures that "seem poorly designed to address the specificity of women's experience" (Bottero 2005, p106). As described in Chapter 2, the labour market structure of men and women is markedly different; thus, male-orientated stratification measures have been criticised for not representing women's positions (e.g., Dale et al. 1985; Murgatroyd 1982). This chapter will contribute a critical assessment of a selection of stratification measures, focusing on their usefulness for measuring women's social positions. The ways in which more established stratification measures have been argued to have male bias will be outlined, and an assessment of how far these critiques can be applied to more modern approaches will be offered.

3.2 Using occupations to assign social positions

Occupations have been considered central to the distribution of inequality for decades (e.g., Parkin 1971). Some have argued that occupations are giving way to consumption and individual differences (e.g., Bauman 1982; Beck and Beck-Gernsheim 2002; Giddens 1991), however, these arguments have been widely rebuffed (e.g., Doogan 2009; Penn 2006; Scott 2002). While there have been substantial changes to the occupational structure over time linked, for example, to educational expansions and greater numbers of women in the labour force, it has been found that occupations are still of central importance (Rose and Harrison 2010; Weeden et al. 2007). Occupations are central to resource distribution (e.g., through wage allocation, among other

things – Wright 2005) which makes them an indicator of material resources. Occupations also reflect social standing and privileges (e.g., access to education, healthcare, and better housing), are relatively stable across an individual's life course (Goldthorpe and McKnight 2006; Rose and Pevalin 2003), and, empirically, they correlate as expected with variables that theoretically should/should not be related to stratification position (Weeden et al. 2007).

Occupations also have several practical features that make them attractive for measure construction. Occupations are easy to record, for example, they are not usually considered to be sensitive, and most individuals can accurately report their occupation title and those of others they are connected to (Hauser and Warren 1997). As Lambert and Griffiths (2018) note, this is in part due to the frequency with which people report to one another what they do for a living in everyday life. People are used to giving the title of their occupation, which, in and of itself, is a mark of how integral occupations are to the social structure. Occupational titles are commonly detailed enough so that they give quite fine-grained information suitable for analysis, though other details regarding employment situations, such as self-employed/employee status or supervisory capacity, are often also collected (Lambert and Griffiths 2018). This kind of data on occupational information are widely available from secondary data sources (including routine data sources such as the census and death certificates), making occupations an appealing choice for measure construction, as comparisons over time and cross-nationally are generally available.

One key argument against the use of occupations is that not everyone in society will be in employment. This critique is perhaps particularly relevant when considering the measurement of women's social positions as women are less likely to be in employment than men, particularly in earlier periods (see Chapter 2, Section 2.2). Women's work in the home is not captured by occupation-based measures, which has been a common objection to measuring stratification in this way (e.g., Abbott and Sapsford 1987). However, in most cases, those without a current occupation can be assigned a position in an occupational measure by using another occupation which is 'socially significant' to them, for example, using a previous occupation or the occupation of a parent or spouse (Hauser and Warren 1997; Lambert and Griffiths 2018). For those who are economically dependent on another adult with whom they share resources, assigning a position at the household level may be a more accurate representation of their position in any case (see Chapter 6).

While other information can and has been used to assign individuals a position in the social structure, they also have significant limitations. Thus, one argument in support of using occupations is the lack of a better alternative. Occupations are argued by some to give a more encompassing picture of our social structure and social relations than other characteristics, such

as income, which is considered secondary to, and reliant on, occupations (Rose and Pevalin 2003). But, for example, educational information and information on income and wealth can also be argued to represent an individual's position in the social hierarchy.

Information on education is also available in many large-scale surveys; it can be measured in a relatively simplistic fashion, and everybody can give a valid response, as having no years of schooling or not having any formal qualification is still an illuminating response. Theoretically, education can be viewed as a marker of both cognitive and non-cognitive resources, and, as education is closely linked with parental characteristics, it can be used as an indicator of childhood resources and environment but is also a predictor of future outcomes, such as occupation and income (Galobardes et al. 2007). Education is also, therefore, perhaps a particularly useful indicator for younger people, who may not yet have their own income or occupation. However, education systems and norms vary substantially, both cross-nationally and longitudinally, and achieving different educational milestones may have very different meanings in different contexts (Connelly et al. 2016a; Galobardes et al. 2007). For example, over time in the UK, the proportion of people who go to university has increased dramatically; therefore, in an analysis, those in older birth cohorts will be over-represented in the less educated categories (Glennerster 2002). While this trend is true for both men and women, it is particularly acute for women as, over the last 100 years, women have increased their participation in university more dramatically, catching up and then quickly outperforming men (Becker et al. 2010; Bosworth and Kersley 2015). Furthermore, as noted in Chapter 2 (Section 2.5), there are gendered differences in the subjects studied at university and in the difference in outcomes they may afford their graduates once pursued (e.g., Alksnis et al. 2008; Gundert and Mayer 2010; McDaniel 2016; Ochsenfeld 2014), and thus the meaning of holding a university degree might be different for men and women.

Indicators of economic advantage (e.g., income/wealth) are arguably the most direct indicators of an individual's material resources and indicate an individual's ability to consume material characteristics relevant to participation in society (Galobardes et al. 2007). While it is implausible that money itself affects many social outcomes, the exchange of money for access to services and resources (such as schools, health services and leisure activities) enhances an individual's social position (Galobardes et al. 2007). The most straightforward income measures are the current income of individuals, though even these measures can be challenging to collect accurately, and respondents may find questions on wealth and income quite invasive (Warner and Hoffmeyer-Zlotnik 2003). In high-quality surveys, more sophisticated measures to collect accurate income data have been developed, and some will also include data on disposable and gross income and wealth, assets, and investments (Warner and Hoffmeyer-Zlotnik 2003). Many surveys also or only collect household income, which may be a useful indicator for women (Galobardes et al.

2006), who are more likely to be unemployed, work part-time, and have lower incomes (see Chapter 2), but who may have access to joint resources through a partner. As an indicator, income is particularly dynamic and will have a lot of variation, which makes it an unreliable indicator if there are not several data points. Income is also closely associated with age, and the meaning of current income may be most relevant for those in their prime working years, whereas wealth may be more important for retired people (Galobardes et al. 2007). When looking at the extremes of the social hierarchy, those referred to as 'elites' or the 'precariat' individuals may not be captured well by occupation-based measures; thus, measures based on economic capital may be useful when examining those groups (Savage et al. 2013). From a gender perspective, however, income-based measures will be influenced by inequalities in income between men and women related to the different hours they work and different occupations they do on average (Cha 2013; England et al. 2012).

Thus, while occupations are associated with and complicated by gender, similar critiques can be applied to other available indicators of social position. In previous analyses, occupations have been found to perform at least as well as other indicators (Lambert and Griffiths 2018; Oesch 2013; Rose and Harrison 2010). Therefore, partly due to convenience, partly due to availability and partly due to empirical relevance, occupations are the cornerstone of most stratification measures commonly employed by sociologists. Thus, this thesis focuses on measuring women's positions using occupational information.

3.3 Overview of occupation-based social stratification measures

Providing an overview of all stratification measures available goes beyond the scope of this chapter or this thesis as it is estimated that upwards of ten thousand measures exist to attempt to capture an individual's social position (Lambert and Bihagen, 2014). Instead, this section aims to offer an overview of a handful of selected measures that have been chosen to illustrate the different properties stratification measures can have and how this may affect gendered interpretations.

Stratification measures commonly take one of two forms; scale measures, or categorical measures (Rose and Harrison 2007). Scale measures rank occupations on a single continuous scale. The positions on this scale represent relative social advantage or disadvantage. Social stratification scales assign occupations a numeric value that is meaningful when compared with values of other occupations on the same scale (Gayle et al. 2015). Categorical measures group occupations into social classes; it is assumed that the occupations that make up these classes will have similar circumstances and that the boundaries between them will be important (Gayle et al. 2015). It is

worth noting that other authors may use the term 'social class' to refer to the structure of social inequality more broadly, here its use is limited to theories and measures based on a categorical understanding of social inequality.

Stratification measures can be designed to be specific to context (e.g., different countries or time periods), or to be applied universally. The argument in support of universal measures has been referred to as 'the Trieman constant' (Hout and DiPrete 2006), based on the work of Treiman (1977), who argued that the position of occupations in social structures of inequality has similar meanings across time and over countries. By contrast, others have argued that specific approaches are preferable, as they can more effectively engage with theories suggesting that the effect of occupations on individual's social circumstance are reliant on context (Lambert et al. 2005; Martin and Roberts, 1984). Social stratification measures are also based on a range of theoretical ideas about inequality, but, despite theoretical differences, stratification measures tend to be highly correlated with each other, and different measures based on occupations have broadly similar associations with other factors. Nevertheless, considering which stratification measure to choose for a particular analysis is still worthwhile. As Rose (2008, p4) argues, it is not a matter of personal preference; rather, it is a theoretical choice, as "each approach is saying something different about crucial social and economic processes and the way they operate – they are theoretically based and thus have consequences for the causal narratives we can construct". Furthermore, one area in which differences in results based on measure selection are most pronounced is when studying occupational groups with high levels of gender segregation. Indeed, Lambert et al. (2008) argue that the gender differences in occupational distributions are so distinct that they should be considered of central importance when choosing a measure of social stratification position.

3.3.1 Social class schemes

'Big' social class schemes are those that group a largish number of occupations into a smallish number of class categories. Many such schemes exist, and they can be conceptualised on multiple theoretical grounds. Two useful examples for this chapter are the Erikson-Goldthorpe-Portocarero (EGP) scheme (see Erikson et al. 1979) and the Registrar General's Social Class (RGSC) scheme (see Rose 1995). John Goldthorpe and colleagues have developed several variants of a class scheme based on employment regulations and conditions. In the EGP scheme, classes are theorised based on Weber's idea of dual market and work situations; classes should share a similar level of autonomy at work and individuals are also split up with regards to their employment situation, that is to say, employed or self-employed. Though, it is worth noting that Tahlin (2007) found that the EGP scheme is actually more closely related to the concept of 'skill'

than it is to employment relations and conditions. This scheme does not rank classes in a simple hierarchical order, though it does have a hierarchical dimension. The RGSC scheme explicitly prescribes classes based on the perceived skill of an occupation. Occupations in the same class ought to have a similar skill level and classes are ranked hierarchically from most to least skilled (except for IIIa and IIIb).

The EGP and RGSC were both originally designed to measure the occupational distribution of men. Dale et al. (1985, p385) argues that it is "not sufficient to add women into a classification system developed for men, for this uncritically accepts that the criteria used to classify men have the same meanings when applied to women". She posits that most classifications rest on male-oriented assumptions. Using the Registrar General Social Class scheme as an example, she argues that men in occupations that have strong union activity may be in an entirely different market situation than women in otherwise similar occupations. She also argues that the way skill is conceptualised is highly gendered: within the Registrar General classification, skill tends to be based on whether employees have undertaken apprenticeships, and as apprenticeships are uncommon in more female-dominated occupations (with the exception of hairdressing), many female occupations that require considerable skill and expertise are classified as semi-skilled or unskilled (Dale et al. 1985). The EGP class scheme has also been criticised for male-oriented assumptions in its design (Heath and Britten 1984; Stanworth 1984).

Big social class schemes (such as the EGP and RGSC) have been criticised for not showing sufficient distinctions between women's occupations. Women on average are frequently crowded into intermediate non-manual jobs in caring, catering and clerical areas or semi-skilled and unskilled jobs in catering, cleaning, domestic service, and child-care (Bottero 2005). Therefore, in most big social class schemes, disproportionate numbers of women are often grouped into a single social class. Dale et al. (1985) argue that big class schemes show a high degree of differentiation between male-dominated occupations but are insensitive to distinctions (e.g., superiority and skill level) between occupations dominated by females. They argued this made traditional schemes sex-specific, as they were only useful for classifying men. For example, in the RGSC scheme, a large proportion of women fell into category III, which makes that scheme suboptimal to study women, as differences between women cannot adequately be distinguished (Dale et al.1985). The EGP scheme has also been found to show a higher degree of differentiation in the more male-dominated occupations, for example, Evans (1996) found that the EGP explained more of the variation in occupational characteristics for men than for women, though he argued that the difference was not extreme.

It has been argued that the crowding of women into a relatively small number of occupational categories is merely a reflection of exclusionary practices and occupational sex-typing which has resulted in horizontal and vertical segregation in the labour market (Marshall et al. 1995). However, Oesch (2003, p9) argues that the critiques of the EGP's structure cannot be dismissed. He suggests that class III is a 'black box' of mostly female occupations; it is, he argues, "A blurred grouping that comprises a wide range of office, sales, and service tasks" in comparison to the precise distinctions between classes V, VI and VII, which contain mostly male-dominated occupations. This problem was exacerbated by emerging occupations that are female-dominated, such as those in the expanding service sector, which are difficult to fit into stratification measures that were designed for men (Oesch 2003). The changing structure of the labour market is problematic for all stratification measures based on occupations, however, this is particularly true for social class measures, as a key feature of their design is homogeneity of the occupations within each class. New occupations are often distinct in terms of their market and work situations and do not easily fit into many class schemes. As a solution to this type of critique, Erikson and Goldthorpe (1992) suggested subdividing class III into IIIa and IIIb, but only in analyses that involved women. This implies that female workers have a different employment relationship than male workers (Oesh 2003) and, to some extent, this practice results in the scheme moving from being a gender-universal scheme to a gender-specific scheme.

As described in the literature review, the labour market is segregated in terms of gender, both horizontally and vertically, and both between and within occupations (Bolton and Muzio 2008; Charles and Grusky 2004; England 2010; Lyonette and Crompton 2008). The boundaries between classes have thus been criticised for not being as appropriate for women as they are for men. Indeed, Marshall et al. (1988) suggest that the market and work situations of women in many occupations (particularly office and sales jobs) are inferior to those of similarly placed men. They argue that women's jobs "are sufficiently distinct in their market, work, and typical career trajectory terms as to cast doubts on all occupational classifications that were originally devised with men in mind" (Marshall et al. 1988, p65). One solution is to create new class schemes specific to women which recognise that class processes work differently for women than men. Gender-specific measures have occasionally been called for, and some gender-specific class schemes have been developed; however, their use is rare. For example, Murgatroyd (1984) suggested that any ranking of occupations that included both men and women would be likely to be ambiguous and uninterpretable due to the different relationships between occupations and outcomes and lifestyles that men and women have. Instead, she argued for separate parallel measures to be constructed for men and women which could be analysed in combination or even amalgamated using appropriate weighting for gender distributions in occupations. Dale et al.

(1985) further argue that the occupational distribution and outcomes of women working part-time are sufficiently different from those working full-time to warrant further separate stratification measures for part-time and full-time women and thus developed separate class schemes for full-time and part-time women. Despite convincing theoretical and empirical arguments, gender-specific social class schemes have not received the same widespread usage as class schemes developed for men and then later applied to women.

3.3.2 Microclass approach

Grusky and Sørensen (1998) argue that traditional classification schemes which have only a smallish number of categories (e.g., usually nine in EPG) cannot represent the detailed social structures within these 'big class' categories. In response, Grusky and colleges developed the 'microclass' approach (Grusky and Sørensen 1998, 2001; Grusky and Weeden 2006). This approach defines a large number of stratification categories containing fewer occupations, in contrast to more traditional schemes, which generally have a smallish number of classes that contain a larger number of occupations. Microclass schemes (Grusky and Sørensen 1998, 2001; Grusky and Weeden 2006) typically have about 100 different occupation-based microclasses. Gayle et al. (2015, p17) advise that "a major attraction of the microclass approach is that it facilitates the investigation of potentially important substantive differences at the detailed occupational level that may be hidden within the large categories of 'big' social class schemes". As microclasses contain fewer occupations within each class, this will likely alleviate some of the problems of women being clustered in one class.

Jonsson et al. (2009) argue that the microclass approach can better reflect social closure in the stratification structure than more traditional approaches. When conceptualising classes as large groups containing many occupations, the suggestion is that children have 'generic skills' that give access to other occupations in their parents' class group. The microclass approach posits a greater degree of occupation-specific capital and a higher degree of social closure at the occupational level. Jonsson et al. (2009) suggest mobility chances are determined at the occupation level rather than the class level with different occupations having different tendencies for mobility or immobility. The occupations in each microclass should, therefore, be very similar in terms of their access to resources, and the related circumstances and classes should exhibit a large amount of social closure (Jonsson et al. 2009).

However, Jonsson et al. (2009) found these claims of occupational closure to be much stronger for men (father to son) than for women (father to daughter). Indeed, they refer to the diagonal clustering between the father and son microclasses as a "palisade protecting occupational positions from intruders" (p1004), whereas for father-daughter occupational relations it was more

of a "dilapidated picket fence" (pp1013–14). They suggest that sex segregation was likely the cause, as both fathers and daughters may not see the father's occupation as a viable option for the daughter to pursue. Erikson et al. (2012) submit that any approach for analysing social mobility must be able to account for sex segregation in occupations as it is a persistent feature of the occupational structure. Jonsson et al. (2009) suggest that microclass patterns may be stronger between mother and daughter, but did not have sufficient data to test this hypothesis. Erikson et al. (2012) addressed this hypothesis using Swedish data and found that the patterns were similar to those between father and daughter, concluding that, at least for Swedish women, there was little truth to Jonsson et al.'s (2009) claim that social mobility/immobility would be driven by occupations rather than class. Therefore, arguably, the microclass approach and the assumptions on which it is founded then have an underlying male bias.

3.3.3 Prestige scales

Modern prestige scales such as the Standard International Occupational Prestige Scale (SIOPS) have their roots in a pioneering study by the National Opinion Research Centre lead by Cecil North and Paul Hatt (Reiss 1961). The founding idea of this approach is that the social order is known to the individuals within it, therefore their opinions can be used to map the social stratification of occupations, "prestige measures assume that objective measures of stratification can be derived from subjective perceptions of those at different levels" (Bottero 2005, p73). Based on functionalist ideas, it is assumed that there will be a high degree of agreement between members of the population as to which occupations are ranked most highly; those with the most functional importance at the top and those with the least towards the bottom (Rose 2008).

Murgatroyd (1984) argues that the level of prestige attributed to an individual in an occupation varies depending on whether that individual is male or female, and men and women will assign prestige differently. The North Hatt study purposefully did not include 22 female-dominated occupations. Furthermore, the question wording implied that the fictional occupational incumbent was male, but the respondents were not explicitly told that only male workers should be considered. This adds ambiguity as to whether respondents "knowledge of the gender of workers in particular occupations should be overridden by the implication of masculinity, as well as whether it is the occupation or the person that is being ranked" (Murgatroyd 1984, p476). Murgatroyd (1984) argues that this not only limits its ability to represent the occupation structure as a whole, but also may influence the relative prestige attributed to the other occupations that were included. So, while it may appear to be more appropriate for use when studying males, even for male's occupational structure, its use is dubious. This critique applies not only to the North

Hatt study, but also to many other prestige scales that have often been based either explicitly or implicitly on ratings of male workers (e.g., Hope and Goldthorpe 1974).

A further critique of prestige scales is that they do not, in fact, measure the social esteem of occupations; instead, they capture subjective understandings of advantage (Featherman and Hauser 1976; Rose 2008). Freeland and Hoey (2018) developed a new social status scale that they posit more accurately captures Weber's definition of status. They draw on relational theories from economic and organisational sociology, suggesting that status can be thought of as a "network of deference relationships" (p245). Freeland and Hoey (2018) compute the likelihood that one occupational actor will defer to another based on the extent to which this violates the cultural expectations of a chosen sample. They find that these deference scores are better predictors of subjective prestige than those based on social standing and that they are significant predictors of things expected to be related to status such as job satisfaction, general happiness and perceived respect at work, net of other demographics. This, they argue, gives their deference measure both construct and criterion validity.

This new scale is intriguing in that the occupations that receive the highest score in the deference approach vary quite dramatically from those at the top of the prestige scale, and from other stratification measures. In the prestige score, which is based on social standing, those who score most highly fall into professional occupations. By contrast, in the deference scale, a mix of professional and non-professional occupations are ranked the highest, suggesting this scale may not be tapping into the same stratification structure that all other measures are. Occupations which provide a public service rank more highly in the deference approach (teachers, firefighters, and nurses) but only if that service features some element of physical activity; accountants and bankers who deal more in the abstract are not ranked as highly. However, the gender-biased critiques that have been levelled at older prestige scores are still to some extent relevant. Freeland and Hoey (2018) argue that deference scores should vary with cultural beliefs and over time, citing cultural events such as 9/11 and the financial crash of 2008. Therefore, deference scales are context-specific. However, they are not gender-specific. The gender of the occupation's hypothetical incumbent is not made clear to the studies' participants, leaving open ambiguities, as, depending on what gender the participant associates with the occupation in question, their ratings may be different. Furthermore, while Freeland and Hoey (2018) remark on the social background of their participants and how it may affect their responses, they do not discuss gender in the same regard, though it is entirely plausible that men and women may have different internalised norms with regard to deference as they have been found to have with prestige.

3.3.4 Socio-Economic Indexes

Socio-Economic indexes (SEI's) are composite measures that rank occupations on a scale based on the average income and educational qualifications of those within that occupation. The original socioeconomic index, developed by Duncan (1961), was based solely on male occupational data and was designed as a proxy for prestige scores. Not all occupational titles in the American census had been assigned a prestige score by The North-Hatt Prestige Study, and Duncan aimed to fill in the blanks. As Nakao and Treas (1992, pp3-4) write "Using 45 occupational titles in the 1947 North-Hatt prestige study, prestige scores were regressed on education and income indicators to yield weights that would predict prestige". It was later argued that the prestige ratings and socioeconomic scales were functionally different, and Featherman and Hauser (1976) argued that the SEI score was a more accurate measure of the social hierarchy. Since then, many different SEI measures have been created using data from different time points and places, not as a proxy for a measure of prestige, but as a measure of social stratification in their own right. several versions of the measure were created using US data to reflect changes in the US census occupational codes (Blau and Duncan 1967; Featherman and Hauser 1976; Nakao and Treas 1992; Stevens and Featherman 1981).

In the 1980s, SEI scales began to be created using information from men and women. For comparability, often a male-only scale would be created alongside a scale that used data from both genders (e.g., Stevens and Cho 1985; Stevens and Featherman 1981). Stevens and Featherman (1981) argued that it was appropriate to use information on all incumbents, regardless of their characteristics (gender, race, age, etc.) as the score is designed to reflect the position of occupations. Stevens and Cho (1985) posited that the increased numbers of women in the labour markets from the 1950s to '80s was further justification for including women in the scale. It was found that education had greater importance in the model based on data from men and women compared to the model just using men's data (Stevens and Cho 1985; Stevens and Featherman 1981), suggesting that the relationship between education, income and prestige may be different for men than women.

An international version of an SEI scale has also been developed: the International Socio-economic index (ISEI) (Ganzeboom et al. 1992). Originally, this international scale was also based only on the average profile of male occupational incumbents who worked full-time. However, because of high levels of gender segregation in some occupations, the exclusion of women resulted in female-dominated occupations (e.g., nurses) being given positions based on the relatively few men in the occupation who may be atypical for the occupation as a whole (Ganzeboom 2010). Male and female employees may receive different rewards for the same

occupational title, a difference which may be exasperated in highly feminised occupations (Cohen and Huffman 2003). Assigning positions based on male averages could, therefore, lead to women being given an inflated social position that does not reflect their relative disadvantage. In later versions of the ISEI, data on both male and female employees were used to rank occupations (Ganzeboom 2010).

However, combining data on men and women may still lead to measures that do not represent the disadvantage of women in the labour market. Conflating men and women into one scale means conflating different socioeconomic outcomes in the same occupation that may exist by gender. Women are far more likely to work part-time than men, and, because of this and other structural differences, their average annual earnings are lower than men's (Blackwell 2001; England 2010; ONS 2017). Some have argued that this results in scales based only on male data having greater external validity because the problem of part-time working is much less pronounced among males and therefore, they suggest, these scales are more appropriate to use for both genders (Ganzeboom et al. 1992; Ganzeboom and Treiman 1996). A different approach could be to create separate SEI scales for men and women.

One example in which female- and male-specific SEI's were created is in the work of Hauser and Warren (1997). They created separate and mixed scales, which adjusted for hours worked, to account for the prevalence of part-time working among women. They found that the male and female indexes had a correlation of 0.91. Like earlier mixed and male-only scale comparisons, they found that education was a much bigger predictor in the female-only and mixed scales, whereas income was a bigger predictor in the male-only scale. Conclusions about gender equality varied depending upon which scale was used. Using pseudo indexes, they found that almost all of the difference between the models was due to differences in the education and earnings profiles of the male and female occupational incumbents. They argued that it was therefore unlikely that a single socioeconomic index would be equally valid for men and women. However, they did not recommend the use of these gender-specific scales for most research, as the scales did not have direct comparability (Warren et al. 1998). Instead, they suggested that, if a composite measure were to be used, then it should be based on mixed-gender data. However, they also argued that "composite indexes of occupational socioeconomic status are scientifically obsolete" (Hauser and Warren 1997, p177); instead they posit that "It would be more accurate to describe women's and men's occupational standing directly and separately in terms of occupational education and occupational wage rates, rather than to rely on any composite of those two characteristics" (Hauser and Warren 1997, p222).

Lambert et al. (2005) suggest that the distinction between universal and specific approaches can also be thought of as the difference between relative and absolute comparability. Universal measures have absolute comparability between contexts as, regardless of social context, the position of the occupation is expected to have the same attributes for the individual. Specific measures do have comparability between contexts, but only in the sense that they represent relative locations of disadvantage within the given distribution. In terms of gender, this means that universal measures might support absolute comparisons against all individuals, while specific measures might support comparisons against the distribution of all other men or women as relevant. This thesis would argue that composite measures with relative comparability could still offer important insights into the position of women, as the goal of a stratification measure is to tap into individuals' social stratification positions, not to disentangle the different aspects that may result in their being in that position.

3.3.5 Interaction and distance

Laumann and Guttman (1966) were the first to identify a stratified social structure from interaction patterns in which occupations were ordered by their patterns of social association. The most comprehensive approach to social distance measures is the work of the Cambridge stratification group (Bottero and Prandy 2003), now known as the CAMSIS approach. This approach is based on the examination of differing patterns of social interaction between occupations, using aggregated measures of the social ties (typically marriage/cohabitation or friendships) between individuals within occupations. The key informing idea behind this approach is that socially similar groups of people will be more likely to interact with each other. It is argued that "members of society have a sense of 'people like themselves' that is reflected in different lifestyles and that they tend to interact, in certain socially significant ways, with those who share similar lifestyles" (Prandy and Lambert 2003, p399). A distinguishing feature of the CAMISIS approach is that scales are designed to be context-specific with different comparable scales available for different time points, countries and genders.

In the original Cambridge scale, data on an individual's friendship patterns were used (Stewart et al. 1980). The question used denoted 'people with whom you are friendly outside work', to deliberately prompt responses about social interactions that could be relatively temporary rather than even the concept of a friend which would imply a closer more long-term association. Therefore, the responses were more likely to reflect the individual's current situation and so were thought to be more meaningful in determining social positions. Though the original scales (Stewart et al. 1980) were differentiated by gender, male occupations were given more weight by design. This is because of the relatively small numbers of women in the study. The respondents

were all male, but, although male pronouns were used, the sexes of the friends were not prescribed, so some female friends' occupations were included. This led Murgatroyd (1984) to assert that the scale was flawed and inappropriate for the study of both male and female stratification positions, as they had not accounted for having both male and females in the design. A few occupations, mainly secretarial and nursing, were mainly represented by females. Murgatroyd (1984) argues that because gender was not especially considered, but some women were left in the analysis 'for interest', the value of the scale concerning men is diminished. She further argues that, as the scale was clearly intended to study male friendship patterns, it is not appropriate to use for women or occupations as a whole. Prandy (1990) published an updated scale in which he responded to these and other critiques.[2] However, although women were given much greater attention in the updated scale, they were mainly included as the wives of respondents, meaning that the "basis for locating women's occupations in social space, marriage, was different from that for locating those of men, mainly friendship" (Prandy and Lambert 2003, p398).

Prandy and Lambert (2003) developed scales using marriage patterns for both men and women. Scales based on marriage are by design symmetric – wives' occupations influence husbands' positions to the same extent that husbands' occupation influence wives' positions. Therefore, much of Murgatroyd's critique is no longer relevant. However, because marriage is, in most cases, a long-term arrangement, it is likely that either or both partners will change occupations during a marriage; therefore, it cannot act as proxy for the more transient social interaction that friendship patterns aimed to capture. Occupations are likely to change throughout or perhaps as a result of marriage; it is, therefore, likely that the occupational pairings collected from married couples would not reflect the social hierarchy as strongly as less permanent relationships. For example, if, at the age of 21, a sales assistant marries an electrician, on their 15th anniversary, the sales assistant may still be a sales assistant, or they may have been promoted to regional manager, or they may have changed jobs and now work as a part-time cleaner. As marriage is a reasonably stable relationship, it is unlikely that the sales assistant would change partner to reflect a change in occupation, but it is much more likely their friendship patterns would evolve over time. However, Prandy and Lambert (2003) found that using marriage patterns rather than friendship patterns made no tangible difference to the resulting stratification scales. Because of the readily available data on occupational marriage patterns, this has allowed for the updating of the original scales and its expansion into numerous other countries and time points. However, because no female scale based on friendship patterns existed this comparison could not be made accurately

[2] Mainly that the sample used by Stewart et al. (1980) was not geographically representative.

for women. In their study, Prandy and Lambert (2003) were really comparing a scale based overwhelmingly on women's marriage patterns with a scale based solely on women's marriage patterns. Thus, while the finding that using marriage or friendship patterns made no difference to the scales is compelling for men, the same is not necessarily true for women.

3.4 Conclusion

As an indicator of social position occupations are associated with, and therefore complicated by gender. However, so are other available indicators of social position, and occupations have been found to perform at least as well as, if not better than, the available alternatives. Thus, occupations are the corner stone of many commonly used measures of social stratification position. However, these measures have not handled the different occupational patterns of men and women in consistent ways. Many measures were designed either explicitly or implicitly for men, which resulted in them not being so useful for measuring women. For example, many big class schemes do not show such fine gradations for occupations commonly held by women as they do for men, making these measures unhelpful for considering variation in women's positions. Although many measures have tried to correct for their male bias over time, by combining men and women into one measure, they cannot recognise the differences in the occupational structure of men and women. Therefore, gender-specific measures may more accurately reflect the position of women. This thesis will compare gender-specific measures and gender-universal measures to test this hypothesis.

4 Operationalising gender-specific stratification measures

As described in Chapter 3, stratification measures have often ranked or categorised occupations in a gender-neutral way, based upon all incumbents of the occupations, whether male or female. However, as argued in Chapter 3, this could be misrepresenting women's positions, as the experience of being employed in an occupation may, on average, be different for the different sexes, and therefore specific stratification measures for women might be needed. A major contribution of this chapter is the construction of two gender-specific stratification measures that treat women as individuals operating within a de facto separate female labour market. This chapter uses the British Household Panel Survey data to create a gender-specific SEI measure and CAMSIS measure. While gender-specific SEI measures have been created before (e.g., Hauser and Warren 1997), these tend to be created using US data, while this chapter contributes gender-specific SEI scales based on contemporary data from Great Britain. CAMSIS scores are traditionally gender-specific; however, women's scores have so far only been created using data on marital patterns. Studies have argued that data on marital patterns work just as well as data on friendship patterns for men; however, there is no evidence that this is the case for women. Therefore, this study contributes a female friendship CAMSIS score based on contemporary British data, which is contrasted with a CAMSIS score based on marriage patterns.

4.1 Creating a gender-specific Socio-Economic Index

As discussed in Chapter 3, the originally socio-economic indexes were constructed from the average education and income profile of males within occupations, and later scales were developed that used information from both men and women (e.g., Ganzeboom 2010; Stevens and Cho 1985; Stevens and Featherman 1981). But this is problematic, as it means conflating different socioeconomic outcomes, in the same occupation, that may exist by gender, as, on average, men have higher incomes than women, but more women hold higher education qualifications. Therefore, some have argued that using a scale based only on male data for men and women would be more parsimonious, however, this results in women who work in female-dominated occupations being classified by the few men in that occupations, who may be atypical (Cohen and Huffman 2003; Ganzeboom 2010) (see Chapter 3, Section 3.3.4 for more details). As concluded in Chapter 3, a different approach to this problem would be to create separate SEI scales for men and women.

4.1.1 Data and variables

To construct gender-specific SEI scales, data from the British Household Panel Survey (BHPS, University of Essex 2018) were used. The data from employed respondents from waves 11 (year 2001/2002) through 18 (year 2008/2009) were used. The BHPS is a panel data with each respondent having one record per year; however, for this project, the temporal aspect of the data was not the reason for its selection. Therefore, rather than preserving the individual-year structure of the data, the data were restructured so that every individual had one record per occupation change. Hence, individuals who hold more than one occupation during the eight years under consideration have several records, corresponding to the number of different occupations held. This has been done to maximise the representation of occupations in the dataset, as aggregate occupational patterns are of interest for the scale creation, not individual patterns. It would be preferable to have a large cross-sectional sample such as the census; however, few secondary data sources provide enough detailed income data needed to create SEI scales in the UK. Therefore, it is argued that using pooled BHPS data in this manner is a viable alternative. Once any records missing occupational, income or education information were removed, this left a sample of 10,440 occupational records with male incumbents, and 11,248 occupational records with female incumbents. Separate aggregate data sets for men and women at the occupation level were created from the individual-occupation level data. This aggregate data file represented the proportion of observations for each occupation group that was over the education and income thresholds described below.

Occupations: The BHPS codes an individual's occupation code using the UK Standard occupational classification (SOC). From waves 10 – 18, SOC2000 codes are used. SOC2000 has 9 major groups, 25 sub-major groups, 81 minor groups, and 353 unit groups. In order to make the scale more reliable and prevent it being based on the information of very few individuals, SOC codes represented by few respondents were merged with similar occupations, usually from the nearest available minor group, until 170 female and 228 male amalgamated unit groups, which each had at least 10 observations, were analysed. Firstly, any observations without a valid occupation (variable JBSOC00) were dropped from the data.[3] The numbers of men and women in each occupation were then counted, and, through manual inspection, SOC codes with fewer than 10 men or women were merged with a more populous SOC code.[4] The SEI score produced

3 The BHPS has several 4-digit Codes in its JBSOC00 variable which are not present in the official SOC 2000 scheme. These were dropped along with missing responses for this variable.

4 Commonly sparsely populated codes were merged with the most populated code within the same minor unit group. Though this was not always judged to be the best fit, and, in some cases, occupations from different minor or major unit groups were merged as they were judged to be more similar. In some, particularly sex segregated occupations, multiple SOC codes had to be merged together.

for the amalgamated SOC group was then given to all SOC codes in the merged group. For those occupations which had no men or no women, a gender-specific SEI could not be calculated directly, though, for completeness, it is possible to assign a score based on the average score of their minor or, if necessary, major unit group.

Education[5]: Duncan's measure of education was the proportion of men within each occupation with 4+ years of high school (in 1950s USA). Later scores adjusted for the changing levels of education by using 1+ years of college (Nakao and Treas 1992; Stevens and Featherman 1981). Because of the rising numbers of individuals attending university, the education variable chosen here was the proportion of incumbents who had a university degree. A dummy variable for having a university degree was created from the highest educational qualification variable (QFEDHI).[6] This dummy variable was used to calculate the proportion of each SOC unit group that had a university degree.

Income: Duncan's income measure was the proportion of men with incomes of $3,500+ (in 1949). Later scales adjusted for rising incomes and inflation; Stevens and Featherman (1981) used the cut off of $10,000, and Nakao and Treas (1992) used $15,000. Hauser and Warren (1997) operationalise income in three ways. Firstly, the per cent of workers earning $25,000+. Secondly, per cent of workers earning $14.30+ per hour (25,000 divided by 50 weeks per year divided by 35 hours per week = $14.30). Thirdly they selected only those who worked full-time (35+ hours and 50+ weeks) then, per cent of workers earning $25,000+. The other cited scales worked out the cut-off point in income by trying to follow Duncan's original study and each other, however, in each study, the cut-off chosen is similar to the median income of the period for full-time, year-round workers.[7] Nakao and Treas (1992) note that there is no evidence that SEIs are particularly sensitive to the cut-off point of income. The median UK incomes over the sampled period were between 15,800 in 2000 and 20,800 in 2008.[8] Within the combined BHPS data sample of full-

5 Age is closely related to income and education, and occupations dominated by younger people may have lower income but higher education on average and the reverse may be true for occupations dominated by older people. Due to the small sample size, it was not possible to standardise for age. As the SEI is predicted using both education and income, these differences may to some extent cancel each other out. Nevertheless, caution should be used when interpreting the scale.

6 Those with a first/higher or teaching degree were coded as 1, and those with any other qualification level were coded as 0.

7 Data from United States Census Bureau https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-people.html – table p43 all races

8 Data from Office for National Statistics https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/agegroupashetable6

time men and women, the median income was just over £18,000; therefore, this was the chosen cut-off for scale creation. Two dummy variables were created for income. This first was whether the occupation record had an income of over £18,000 a year. The second was whether the record made £9.90 per hour[9] (18,000 divided by 52 weeks per year divided by 35 hours per week =£9.90). These two dummy variables were used to calculate, firstly, the per cent of workers earning £18,000+ in each SOC unit group, and, secondly, to account for part-time working, the proportion of workers earning £9.90+ per hour in each SOC unit group.

Prestige: In Duncan's original model, the dependent variable was constructed from the percentage of respondents rating an occupation 'good' or 'excellent' from the North Hatt Prestige Study. Later versions of SEI scales have tried to approximate this measure using more recent prestige scales (e.g., Nakao and Treas 1992; Stevens and Featherman 1981). A difficulty with selecting a prestige measure to create a female-specific SEI scale is that many measures of prestige have an explicit or implicit male bias (see Section 3.2.4). To predict a female-specific SEI scale, the female CAMSIS scale was therefore selected. There has been some debate on whether the Cambridge social interaction and stratification score (CAMSIS) should be considered a measure of prestige. It is certainly not a traditional prestige scale such as those used in the studies cited above, in which respondents are asked to rate occupations. Rather, occupations are given their scale position based on their incumbent's average social networks. CAMSIS has been chosen as it offers separate scales for men and women, which may be more accurate for predicting the different genders' socioeconomic position. As Hauser and Warren (1997, p195) note, "the fact is that the SEI is simply a weighted average of occupational education and income. Once the weights have been applied, prestige plays no part in the index". It has also been suggested that prestige scores do not in fact measure prestige; rather, they give subjective understandings of advantage (Featherman and Hauser 1976; Freeland and Hoey 2018; Rose 2008). Therefore, whether one considers the CAMSIS approach a measure of prestige, it is still a feasible measure for predicting an SEI score. Male and female CAMSIS scores (JBCSSM and JBCSSF) are already available in the BHPS data, and these were used as the dependent variable. For those where multiple SOC codes had to be grouped together, the average CAMSIS score was used.

4.1.2 Method

To predict the SEI scores from the aggregate male and male occupation group data sets, four regressions were run: the CAMSIS scores were regressed on the education threshold variable with each income threshold level variable separately, for both male and female occupations. The

9 In order to create a per-year pay variable, the monthly pay variable (PAYGU) was multiplied by 12. Hourly pay was created by dividing the monthly pay (PAYGU) by the number of hours worked per week (JBHRS) times 4.

predict function (in STATA) was used to predict SEI scores for each occupation based on the models shown in Table 4-1.

Table 4-1 Regressions models used to predict four gender-specific SEI scales

	male		female	
Coefficients	pay year	pay hour	pay year	pay hour
Education (b)	57.29***	54.00***	36.77***	30.82***
Standardized beta	*0.729***	*0.687***	*0.540***	*0.453***
(SE)	(17.32)	(15.19)	(9.34)	(7.14)
Income (b)	12.07***	14.50***	23.69***	26.87***
Standardized beta	*0.190***	*0.229***	*0.382***	*0.462***
(SE)	(4.52)	(5.06)	(6.61)	(7.29)
N	228	228	170	170
R2	0.719	0.725	0.738	0.749
Root MSE	9.598	9.498	9.017	8.822
Legend: * p<.05; ** p<.01; *** p<0.001				

Note: Data BHPS waves 10 to 18 combined. Separate models for male and female aggregate occupation level data sets. Education represents the proportion of observations for each occupation that had a degree. Income represents proportion of observations for each occupation over the income threshold. Two models are run on each aggregate data set using different operationalisations of income: yearly income threshold £18,000; hourly income threshold £9.90. Dependent variable is male CAMSIS score for male occupation level data and female CAMSIS score for female occupation level data.

For both men and women, the *R*-Squared, and Root Mean Square Error favour the models in which pay is measured as the proportion over the median hourly rate, though, as expected, the difference is bigger for women who more commonly work part-time. The *R*-squared value gives the proportion of variance explained, which is around 70% for all models. The Root Mean Square Error shows the amount of error in the predicted values compared to the CAMSIS score. The Standardised beta coefficients have standard deviations as their units, meaning that the variables can be easily compared to each other; these results show that education is a far bigger predictor than income for men. For women, however, education and income have a more similar weighting,

with income being a slightly bigger predictor in the model where pay is measured as per hour. This is in contrast to the earlier US studies discussed above, which have found that income is a bigger predictor for male-specific scores than total population scores or female-specific scores (Duncan 1961; Hauser and Warren 1997; Nakao and Treas 1992; Stevens and Featherman 1981). This smaller effect of income could be due to a range of factors. Firstly, it could be that, over time, education has become more important for defining positions in the social hierarchy for men. It could also be due to education having more impact on the hierarchy of occupations in the United Kingdom than it does in the USA. It is also likely that the CAMSIS measure is more closely related to education than traditional prestige scores. As discussed in Chapter 2, Section 2.6, it is more common for women to go to university in recent decades than men. This may explain why having a degree is more impactful for men's scores than for those of women, as when women with degrees are present at all levels of the occupational hierarchy it is less stratifying for women than men. Many male-dominated occupations are well-paid and do not require a university degree, as they are generally skilled manual occupations. While these occupations are well-paid, they are not usually considered to be at the top of the social hierarchy and, therefore, this may decrease the relevance of income as a predictor for men.

Table 4-2 describes the four predicted scores, 2 female-specific and 2 male-specific, based on the different operationalisations of income (e.g., proportion over hourly pay and proportion over yearly pay thresholds). The female scores have a smaller range and a higher mean at around 43 compared to the male scores' mean of around 36. Correlations were also run on the equivalent male and female scores. The male and female hourly scales have a correlation of 0.89, and the yearly scores also have a correlation of 0.89. For comparison, the male and female CAMSIS scores on which the scales were predicted have a correlation of 0.99. Both the male scores have a correlation with the male CAMSIS scores on which they were predicted of 0.84. The female score based on hourly income has a correlation with the female CAMSIS score on which it was predicted of 0.84, and the female score based on yearly income has a correlation with the female CAMSIS score of 0.83. The four predicted scales are listed in Appendix A.

Table 4-2 Measures of central tendency for Gender specific SEI scores

SEI	Education	Income	Mean	Std. Dev.	Min	Max
MALE	% degree	% over median hourly pay	36.28	15.75	16.57	80.15
MALE	% degree	% over median yearly pay	36.23	15.73	16.1	81.17
FEMALE	% degree	% over median hourly pay	42.75	15.0	23	76.04
FEMALE	% degree	% over median yearly pay	42.92	15.09	24.48	76.64

Note: Data BHPS waves 10 to 18 combined, Table 4-2 compares the 4 SEI scales predicted from the models described in Table 4-1. Two male scales and two female scales based on different operationalisations of income.

Figure 4-1 shows the SEI scores by the CAMSIS scores, which were used for prediction. These show that the predicted scores do not vary greatly by which measure of income was used. The scatter points are colour coded by SOC2000 major group. This shows that Professional occupations dominate the higher end of the scale, and Process, plant and machine operatives and Elementary occupations dominate the lower end of the scale. Though there are no big differences between the scales based on hourly and annual income, those based on hourly income do seem to be a better fit, particularly for women. Theoretically, they are also more compelling as they better account for part-time work. Therefore, the scores based on hourly income will be used for future analysis.

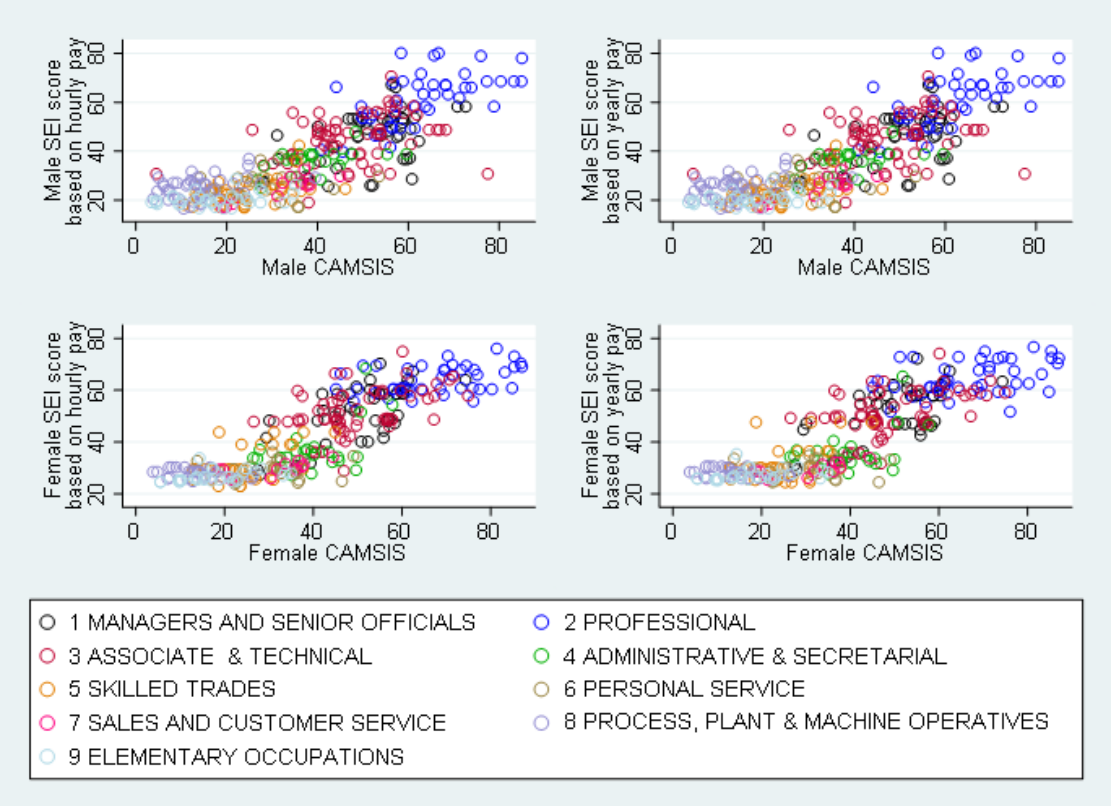

Figure 4-1 Comparison of Gender specific SEI Scales and Gender specific CAMSIS scales. Shown are two male and two female gender specific SEI scores by gender specific CAMSIS scores for SOC2000 unit groups, colour coded by SOC2000 major groups.

4.1.3 Discussion

Figure 4-2 and Figure 4-3 compare the Predicted SEI scale with the CAMSIS scores, focusing only on the outlying (greater one standard deviation difference on standardised scales) occupations for men and women, respectively. For men, several managerial occupations in the SOC major group 1 (1152 Office managers, 1174 Security managers, 1221 Hotel and accommodation managers, 1222 Conference and exhibition managers, 1226 Travel agency managers, 1231 Property, housing and land managers) are given a lower SEI score than CAMSIS score, suggesting that their average social connections are more advantaged than their average income and education would predict these occupations to be.

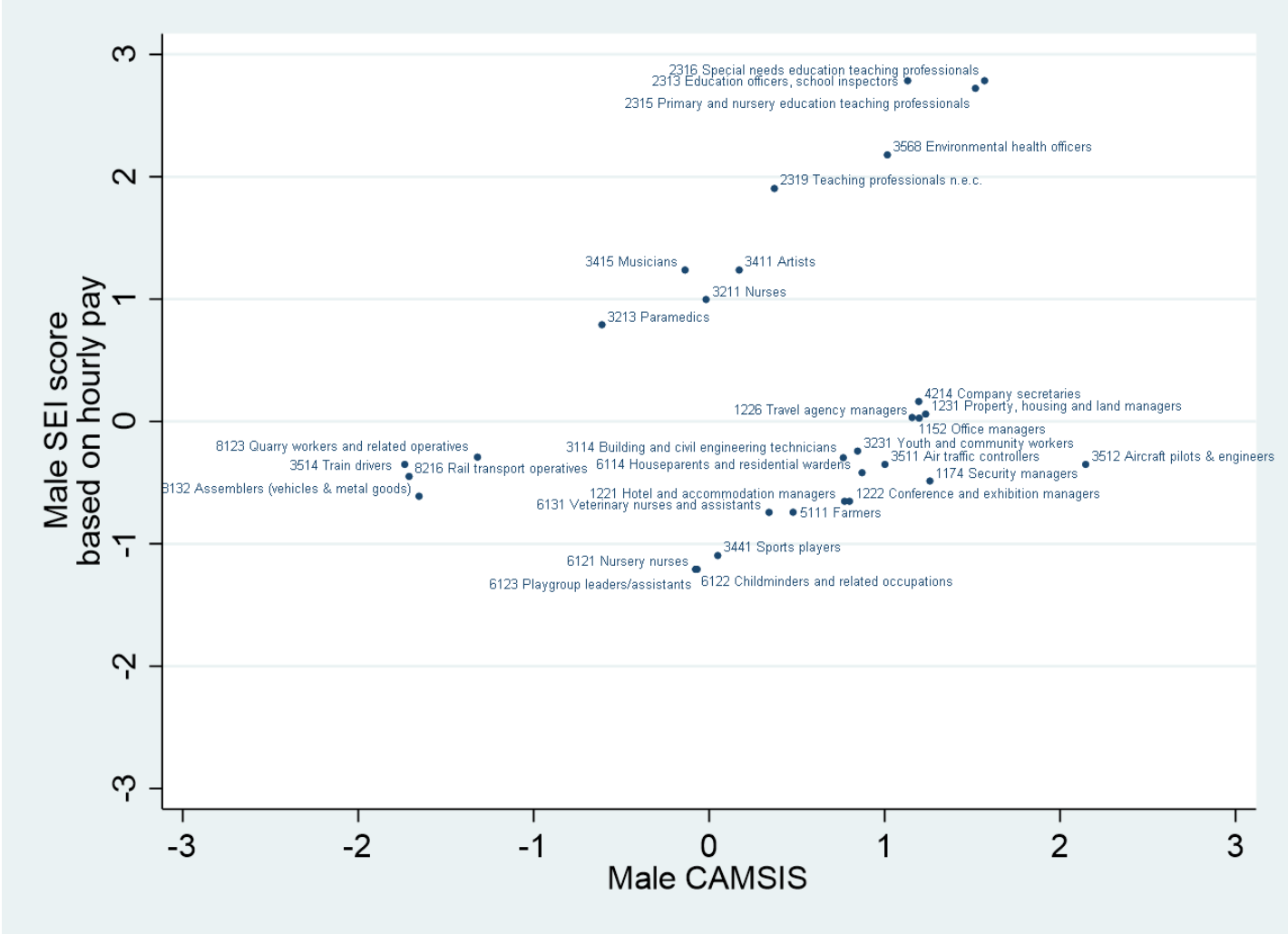

Figure 4-2 Inspecting Male outlying SOC codes. Shown are SOC2000 unit groups that's male CAMSIS and SEI scores have a difference of at least one standard deviation when standardised.

Table 4-3 shows that these outlying male occupations do not have a high proportion of degree holders working in them, and, while some do have a high proportion over the income thresholds (£9.90 per hour or £18,000 per year), the male SEI score is more related to education. Conversely, several education-related occupations in SOC major group 2 are given higher scores on the SEI score than CAMSIS (2313 Education officers, school inspectors, 2315 Primary and nursery education teaching professionals, 2316 Special needs education teaching professionals, 2319 Teaching professionals n.e.c.), suggesting their average social connections are less advantaged than their average income and education level would predict. Table 4-3 shows these occupations have a very high proportion of degree holders and also have high average incomes.

In SOC major group 3, nurses, paramedics and environmental health officers are given higher SEI Scores than CAMSIS scores. Table 4-3 shows that the majority of employees who worked in these occupations were over the income thresholds, and less than half of nurses and paramedics had degrees, but the majority of environmental health officers did. Musicians and artists' predicted SEI scores were also higher than their CAMSIS scores, and over 50% of their incumbents had degrees and were over the income thresholds. Building and civil engineering technicians tended not to have degrees, although the majority had high incomes. As the male SEI scores are mostly predicted on education, this occupation has a lower SEI Score. Similarly, air traffic controllers, aircraft pilots and flight engineers, and train drivers are given lower SEI Scores as, despite high-income levels, the majority of incumbents did not have degrees. None of the sports players, in the sample, had degrees, and very few were over the income thresholds, thus this occupation is given a lower SEI score. However, as it is well known that some professional sports players have very high incomes, this score is perhaps misleading, due to there being a small number of sport players in the data.

In SOC major group 4, Company secretaries are given a lower SEI score, as this occupation has a relatively high education level compared to its income. Farmers are given a lower score, as few are degree holders and only around a fifth made over the income thresholds. Child-care-related occupations in SOC major group 6 are given lower SEI scores on average the occupation had low incomes, and none of the incumbents in the sample held degrees. In SOC major group 8, Quarry workers, Assemblers (vehicles and metal goods) and Rail transport operatives are given higher SEI than CAMSIS scores, as these occupations had high average incomes, but very few employees had degrees in these occupations.

Notably, many of the outlying occupations are in fields that would traditionally be associated with women, such as teaching, nursing, secretarial, youth workers and child-care-related occupations. It is also notable that, in some occupations, the proportion over the hourly income

and the annual income thresholds are quite different, likely as a result of part-time work and or overtime hours. For example, 3.33% of Veterinary nurses and assistants made over £18,000 a year, but 23.33% made over £9.90 per hour. Conversely, 90.91% of Security managers made over £18,000 per year ,but only 54.55% made over £9.90 per hour worked.

Table 4-3 Average income and education level of occupations that's male CAMSIS and SEI scores have a difference of at least one standard deviation when standardised

SOC 2000 code	% with degree	% over hourly income threshold	% over yearly income threshold
1152 Office managers	18.92%	74.32%	68.92%
1174 Security managers	9.09%	54.55%	90.91%
1221 Hotel and accommodation managers	16.67%	8.33%	33.33%
1222 Conference and exhibition managers	16.67%	8.33%	33.33%
1226 Travel agency managers	20.83%	66.67%	62.50%
1231 Property, housing and land managers	16.67%	85.71%	83.33%
2313 Education officers, school inspectors	92.31%	100.00%	100.00%
2315 Primary and nursery education teaching professionals	94.74%	84.21%	89.47%
2316 Special needs education teaching professionals	92.31%	100.00%	100.00%
2319 Teaching professionals n.e.c.	75.00%	68.75%	56.25%
3114 Building and civil engineering technicians	12.50%	62.50%	56.25%
3211 Nurses	46.88%	75.00%	68.75%
3213 Paramedics	37.50%	87.50%	81.25%
3231 Youth and community workers	20.69%	37.93%	37.93%
3411 Artists	56.52%	65.22%	52.17%
3415 Musicians	56.52%	65.22%	52.17%
3441 Sports players	0.00%	22.22%	0.00%
3511 Air traffic controllers	4.35%	86.96%	95.65%
3512 Aircraft pilots and flight engineers	4.35%	86.96%	95.65%
3514 Train drivers	4.35%	86.96%	95.65%
3568 Environmental health officers	80.00%	80.00%	70.00%
4214 Company secretaries	32.14%	39.29%	21.43%
5111 Farmers	12.00%	16.00%	20.00%
6114 Houseparents and residential wardens	15.38%	38.46%	46.15%
6121 Nursery nurses	0.00%	10.00%	0.00%
6122 Childminders and related occupations	0.00%	10.00%	0.00%
6123 Playgroup leaders/assistants	0.00%	10.00%	0.00%
6131 Veterinary nurses and assistants	10.00%	23.33%	3.33%
8123 Quarry workers and related operatives	5.56%	88.89%	94.44%
8132 Assemblers (vehicles and metal goods)	5.88%	52.94%	58.82%
8216 Rail transport operatives	5.88%	70.59%	82.35%

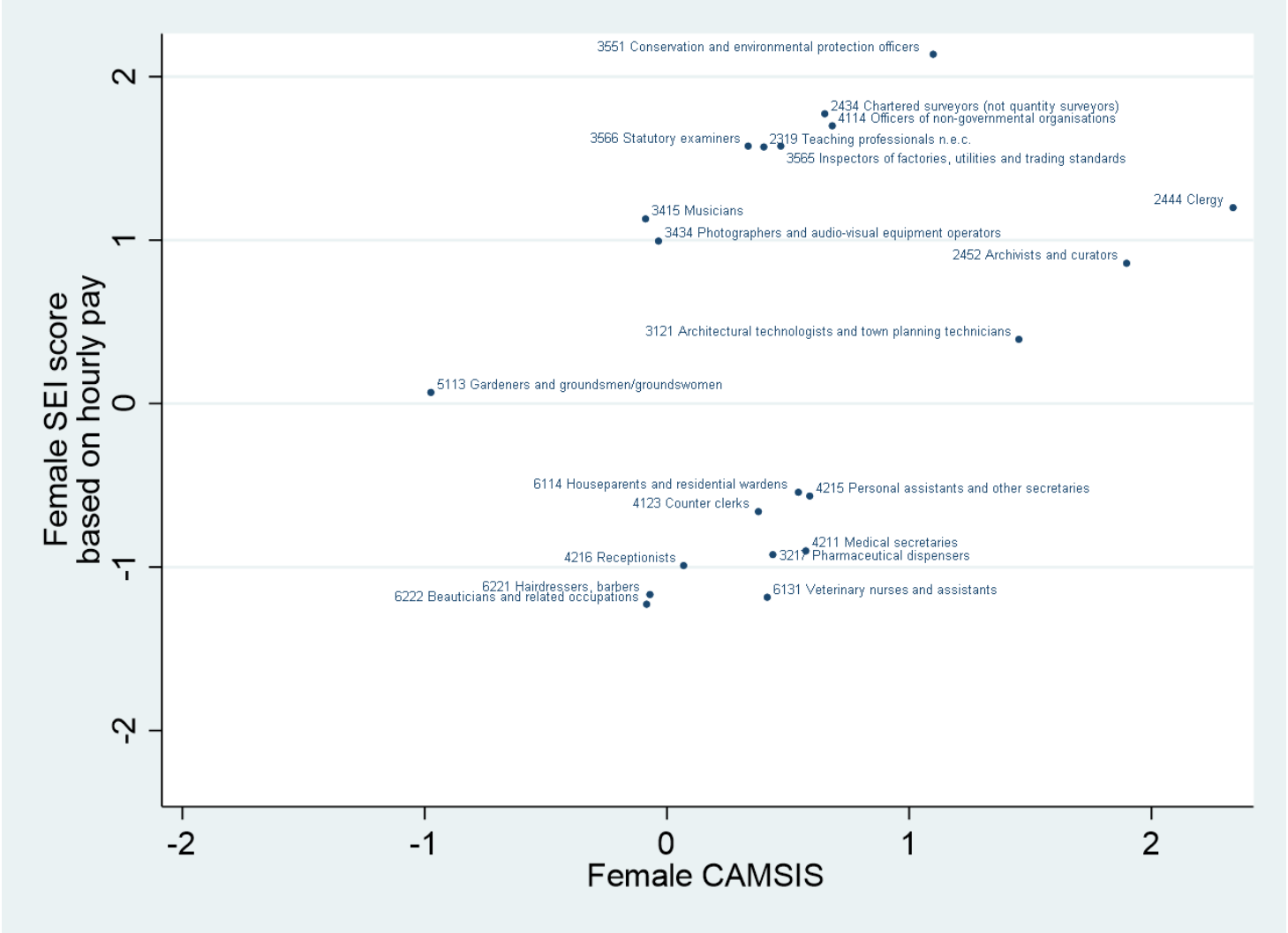

Figure 4-3 Inspecting Female outlying SOC codes. Shown are SOC2000 unit groups that's female CAMSIS and SEI scores have a difference of at least one standard deviation when standardised.

When comparing the female SEI scores with the female CAMSIS scores , again, several female-dominated occupations, including Beauticians, Hairdressers, Veterinary nurses, Receptionists, Personal assistants, Medical secretaries, Counter clerks and Pharmaceutical dispensers receive lower SEI scores than CAMSIS scores (see Figure 4-3). Table 4-4 shows that these occupations have low average incomes, and few employees in these occupations have degrees. Similar to male musicians, female musicians are given a higher SEI Score than CAMSIS score, and male and female musicians have a similar proportion of incumbents over the education and income thresholds. Female houseparents and Residential wardens are given a lower SEI than CAMSIS score similarly to males in that occupation group, though women in this occupation group seem to have lower pay and education levels on average. In SOC major group 3, Architectural technologists and Town planning technicians, Photographers and audio-visual equipment operators, Conservation and environmental protection officers, Inspectors of factories, utilities and trading standards, and Statutory examiners all receive higher SEI than CAMSIS scores. Table 4-4 shows, in general, that these occupations have quite a high proportion of degree holders and the majority of employees are paid over the income thresholds. In SOC major group 2, Teaching professionals n.e.c., and Chartered surveyors receive higher SEI scores than CAMSIS scores, and employees in these occupations tend to have degrees and be paid over the income thresholds. Whereas Clergy and Archivists and curators receive lower SEI scores than CAMSIS scores, these occupations have a similar proportion of employees over the income thresholds as the others in SOC 2, but fewer incumbents hold degrees.

Table 4-4 Average income and education level of occupations that's female CAMSIS and SEI scores have a difference of at least one standard deviation when standardised

SOC 2000 code	% with degree	% over hourly income threshold	% over yearly income threshold
2319 Teaching professionals n.e.c.	78.13%	71.88%	43.75%
2434 Chartered surveyors (not quantity surveyors)	76.92%	84.62%	84.62%
2444 Clergy	55.06%	77.53%	61.80%
2452 Archivists and curators	45.00%	70.00%	45.00%
3121 Architectural technologists and town planning technicians	48.08%	40.38%	32.69%
3217 Pharmaceutical dispensers	12.00%	8.00%	12.00%
3415 Musicians	60.00%	68.00%	56.00%
3434 Photographers and audio-visual equipment operators	50.00%	71.88%	65.63%
3551 Conservation and environmental protection officers	90.00%	90.00%	70.00%
3565 Inspectors of factories, utilities and trading standards	80.00%	70.00%	40.00%
3566 Statutory examiners	80.00%	70.00%	40.00%
4114 Officers of non-governmental organisations	73.68%	84.21%	57.89%
4123 Counter clerks	12.11%	22.63%	11.58%
4211 Medical secretaries	5.56%	16.67%	11.11%
4215 Personal assistants and other secretaries	11.42%	28.77%	19.63%
4216 Receptionists	7.46%	9.45%	2.99%
5113 Gardeners and groundsmen/groundswomen	50.00%	20.00%	20.00%
6114 Houseparents and residential wardens	8.06%	33.87%	24.19%
6131 Veterinary nurses and assistants	0.00%	7.14%	0.00%
6221 Hairdressers, barbers	1.32%	6.58%	1.32%
6222 Beauticians and related occupations	0.00%	4.76%	4.76%

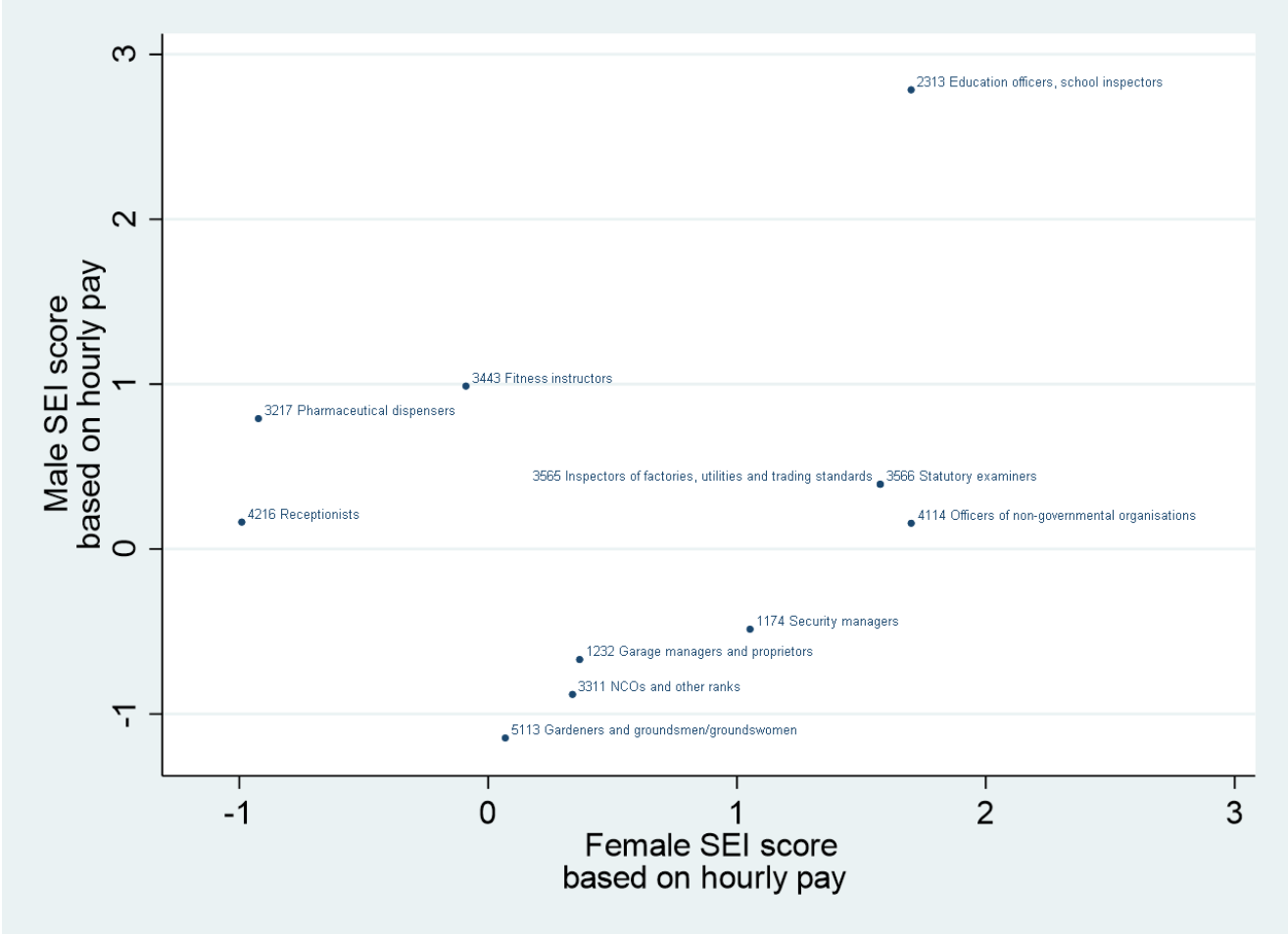

Figure 4-4 Inspecting outlying male-female SOC codes. Shown are SOC2000 unit groups that's male SEI and female SEI scores have a difference of at least one standard deviation when standardised.

Figure 4-4 shows the outlying (greater than one standard deviation difference on standardised scales) occupations when the male and female SEI scores based on hourly income are compared. Notably, 2313 Education officers, school inspectors, 3217 Pharmaceutical dispensers, 3443 Fitness instructors and 4216 Receptionists score more highly on the male score. Table 4-5 shows that, in the sample, men in these occupations are more like to have a degree and are more likely to earn more than the income thresholds. Security managers, Garage managers and proprietors, NCOs and other ranks, Inspectors of factories, utilities and trading standards, Statutory examiners, Officers of non-governmental organisations, and Gardeners and groundswomen receive higher scores on the female scale than on the male SEI scale. Table 4-5 shows that these occupations have large differences in the average education level of the men and women within them, with women being far more likely to have degrees. In some cases, such as Garage managers, this difference is possibly an artefact of the occupation having under ten male or female incumbents and so it being merged with another occupation that might have slightly different advantage levels, for example, there were only 3 female garage managers in the sample, so this occupation was merged with 1239 Managers and proprietors in other services n.e.c to be given a position in the female scale. However, some of the occupations with the biggest difference between the male and female scales are useful examples of the dangers of assigning women's position based on men's average situations and/or conflating men and women into one scale.

For example, Pharmacy is a female-dominated sector, however, men hold the majority of more senior roles (Royal Pharmaceutical Society 2018), therefore, assigning women in Pharmacy a position in the social hierarchy based on the relatively few men in that sector could be problematic, as the males in that occupation may be more advantaged and will progress faster. Women also dominate the occupation 4216 Receptionist; indeed, over 80% of receptionists in the UK are female (ONS 2017), thus assigning women on the basis of the relatively few men in the occupation, who may be atypical for the occupation as a whole, would again be misleading. These occupations also highlight how conflating men and women into one SEI scale might be inappropriate because of the different average incomes and education levels of men and women in the same occupation. By contrast, the security industry is dominated by men; however, the number of women working in this field is growing, particularly in the emerging area of cybersecurity (Davies 2017). From a gender essentialist perspective, traditional security roles may have been considered more appropriate for men because they require physical strength and involve an element of danger, however, while physical security roles still exist in the industry, it also now involves fraud prevention and detection, information security, security technology, business continuity, and loss prevention. In these emerging areas, physical strength is not a requirement of employment, but employees do often require a higher level of education. These less physical jobs may also often come with higher rewards (Davies 2017), which may explain

why female security managers get a higher SEI score. This occupation offers a further example of why gender-specific scales might be more appropriate, as men and women with the same title might be working quite different jobs with different average educational requirements and rewards. The occupations listed in Table 4-5 are those with the most difference between the male and female scales, but, to a lesser extent, the same issues may be present in other occupations in the scale that have been given higher or lower positions in the different scales by gender. Thus, these gender-specific scales may better capture the different average situations of men and women in the same occupation. In subsequent chapters, these gender-specific scales will be compared in analysis with an SEI scale based on occupational information from men and women (the International Socio-Economic Index) to see whether this gender specificity impacts the results.

Table 4-5 Average income and education level, by gender, of occupations that's male SEI and female SEI scores have a difference of at least one standard deviation when standardised

SOC 2000 code	Female		Male	
	% with degree	% over hourly income threshold	% with degree	% over hourly income threshold
1174 Security managers	45.16%	80.65%	9.09%	54.55%
1232 Garage managers and proprietors	29.90%	59.79%	0.00%	68.42%
2313 Education officers, school inspectors	75.76%	81.82%	92.31%	100.00%
3217 Pharmaceutical dispensers	12.00%	8.00%	37.50%	87.50%
3311 NCOs and other ranks	24.44%	64.44%	0.00%	45.45%
3443 Fitness instructors	28.57%	35.71%	54.55%	45.45%
3565 Inspectors of factories, utilities and trading standards	80.00%	70.00%	23.81%	95.24%
3566 Statutory examiners	80.00%	70.00%	23.81%	95.24%
4114 Officers of non-governmental organisations	73.68%	84.21%	27.14%	57.14%
4216 Receptionists	7.46%	9.45%	32.14%	39.29%
5113 Gardeners and groundsmen/groundswomen	50.00%	20.00%	1.72%	10.34%

4.2 Creating a Female Friendship CAMSIS scale

As discussed in Chapter 3 (Section 3.2.5), the majority of CAMSIS scores available[10] are based on marriage and/or cohabitation patterns. However, in the original Cambridge approach (Stewart et al., 1980), male respondents' friendship patterns were used. Prandy and Lambert (2003) subsequently argued that the use of marriage patterns rather than friendship data did not substantially alter the resulting scores and that scores based on marriage patterns were at least as good a predictor, and in some cases a better predictor, of things that would be expected to correlate with social stratification (social reproduction, mortality and political attitudes). However, Prandy and Lambert (2003) acknowledged that the original scales based on friendship (Prandy 1990; Stewart et al. 1980) were somewhat flawed as an indicator for women due to the much smaller sample size of women in the original scale construction, resulting in women mainly being classified based on their marriage patterns with men. Therefore, the marriage pattern scale (Prandy and Lambert 2003) matching or outperforming the 'flawed' friendship scale (Stewart et al. 1980) for women does not mean it would outmatch or outperform scale based on female friendship patterns. Also reviewing CAMSIS scales, Lambert and Griffiths (2018) conclude that, when comparing multiple kinds of social connection, only small variation in scales can be observed and this could amount to measurement error, however, again, this is based on data for males. There has been no detailed investigation of how a scale based on female friendship patterns compares with those based on marriage patterns. This thesis explores the extent to which a scale based on female friendship patterns differs from published CAMSIS scales that use marriage patterns and whether those differences make non-trivial differences when employed in an analysis. This section begins by describing the methods used to create a CAMSIS scale which treats women as individuals operating within a de facto separate female labour market. It will then go on to offer a comparison between this new Female Friendships CAMSIS (hereafter FFCAMSIS) scale with the published version of the CAMSIS scale for Females (hereafter CAMSISF) based on their marriage patterns.

4.2.1 Data

Lambert and Griffiths (2018) suggest there is a degree of autonomy available to analysts when constructing CAMSIS Scales. Tools are available to create CAMSIS scores via the CAMSIS webpage,[11] however, it is noted that these should be used with some caution as the resulting scales will vary with subjective decisions made by the analyst, and, although code is available to fully

[10] See the CAMSIS webpage for list of available scales. http://www.camsis.stir.ac.uk/versions.html

[11] See http://www.camsis.stir.ac.uk/make_camsis/

automate the process, its use may result in suboptimal scales. Therefore, for this section, the Stata code available on the CAMSIS website was used as a guide for creating a new scale based on women's friendship patterns – FFCAMSIS.

In order to create a CAMSIS scale, data on the occupations of pairs of individuals with a social connection are needed. One compelling argument for the use of marriage patterns is the availability of data on the occupations of spouses. Data on friendship patterns are less common and are often more ambiguous. People often have multiple individuals who they would call friends but usually have only one spouse; thus, friendships can take many forms and therefore can be difficult to compare, as the frequency of interaction and depth of feeling in a friendship can vary considerably (Lambert and Griffiths 2018). In the original Cambridge Scale, the social interaction variable was operationalised with the terminology 'people with whom you are friendly outside work'. This wording was used in order that the responses could signify more temporary than long-term friendships. There are few large data sets which have variables for friends' occupations; one which does is the British Household Panel Survey (BHPS, University of Essex 2018). However, the question wording does differ significantly from the more transient relationship denoted in the original Cambridge scale question. The BHPS question is 'Thinking now of your best friend or the friend you feel closest to, What is the name or title of your friend's current job? If this friend is not working, please give details of his/her last job'. This definition of a best friend rather that than someone which the respondent is 'friendly with outside work' is an important difference in the depth of the friendship and likely would denote a more long-term relationship. A further issue when measuring friendship patterns is that it is often measured in a one-sided way, as is the case with the BHPS, that is to say, that the respondent may feel the person is their friend, but the other person does not necessarily reciprocate that feeling. However, the original Cambridge scale used this one-sided approach, as have subsequent examples (e.g., Lambert and Griffiths (2018), who also used the BHPS in an example for male friendship), so, despite these issues, this question is not considered to be so problematic as to consider it unusable; instead, these issues should just be kept in mind when comparing the resulting scales.

The BHPS is a panel data set which asks some different questions in different years. A question on best friend's occupation was asked in 1992, 1994, 1998, 2000, and 2004.[12] Following Lambert and Griffiths (2018), these waves are merged in order to maximise the number of occupations that are represented. Many occupations had no women or very few women in them in each wave,

[12] Friend's occupation is also measured in waves 2002, 2006 and 2008, but in 2002, all friend's SOC codes were 2 digits and so this was dropped. In 2006 and 2008, SOC was measured at 4 digits, so these were also dropped.

so, by combining several waves, more occupations can be used in the analysis. The BHPS is a longitudinal panel data set with each respondent having one record per year, however, similarly to the approach taken when constructing the SEI Scales, rather than preserving the individual-year structure of the data, the data were restructured so that every individual is given one record per occupation change and/or friend's occupation change, hence individuals who hold more than one occupation or whose best friend/best friend's occupation changes in the waves used have a number of records, corresponding to the number of different occupations held by them and their best friend. This has been done to maximise the representation of occupations in the data set, as aggregate occupational patterns are of interest for the scale creation, not individual patterns. This is the same approach that was taken by Lambert and Griffiths (2018) to compare a scale based on male friendship patterns with those based on other relationships. Therefore, there is a precedent for this approach; however, it does mean that any differences over time will be lost.

The tradition in the CAMSIS approach is to create time- and place-specific scales using as fine-grained a measure of occupations as is possible. While other interaction and distance-based approaches have used more aggregated occupational categories (e.g., Chan 2010), there is the possibility that particular occupations would be given quite different scores if analysed separately than when grouped together (Lambert and Griffiths 2018). A drawback of this approach is that using fine-grained occupational categories naturally leads to a degree of sparsity within some categories, as occupational distributions are 'clumpy' in that some occupations will have far more employees than others (Lambert and Griffiths 2018). This is particularly true when working with only female occupational incumbents, as the distribution of women through the labour market tends to be more 'clumpy' due to sex segregation in the labour market. Therefore, despite issues of longitudinal changes in the meaning of occupations, the decision was made to merge the relevant BHPS waves to create a larger sample of occupation pairs for analysis.

The occupations of the friends in the BHPS are coded to the SOC 90 framework (variable name: NETSOC). SOC 90 [13]codes are also available for the respondents' occupations (variable name: JBSOC). Only data for those with 3-digit SOC codes were kept.[14] Records for female respondents

[13] It is perhaps worth noting that the gender specific SEI scales created in this chapter were created using the SOC2000 framework. Thus any differences in a comparison between the two could be in part related to this difference. However, this would be a feature of most measure comparisons as in general different stratification measures are created using different occupation frameworks and are then applied more broadly.

[14] A handful of SOC codes that do not exist were also in the data in the friend's occupation variable; these cases were also dropped – codes 237, 407, 426, 456, 726 and 992.

(SEX = 2) who reported their closest friends to be female (NETSX1 = 2) were selected for the analysis. Previous scales have been criticised for including a small number of females in scales mainly drawing on males and their male friends as this adds ambiguity for applying the scale to both men and women.[15] To avoid this ambiguity, females with a male best friend (1893 observations) were not included. This gave a sample size of 12,363 pairs of female-female friendships. In a CAMSIS approach based on marriage patterns, separate scales are created for husband's and wife's occupation, as it is assumed that the occupational marriage patterns of men and women will be different. However, here we can assume that, if a female teacher has a female friend who is a social worker, then, by proxy, that female social worker has a friend who is a female teacher. Therefore, theoretically constructing different scales for the respondents and their friends does not make sense. Thus, the data set is duplicated to ensure equal scores for both friends. This led to a data set of 24,726 occupational pairs of female friendship.

In the sample, 299 out of a possible 371 SOC codes had at least one observation. This left 72 occupations that had no observations. This is largely due to sex segregation in the labour market. A FFCAMSIS score could not be calculated for these 72 occupations; however, proxy codes are given to them based on average FFCAMSIS scores in their SOC 90 group. The occupations not covered and therefore given proxy scores are shown in Table 4-6. These mainly fall in major groups 5, 8, and 9, and are generally manual occupations. Table 4-6 also shows the combined number of male respondents and male friends in the sample for each occupation for comparison; it shows that several of these occupations also have no male incumbents in the sample.

[15] See chapter 3 section 3.2.5

Table 4-6 List of occupations in the sample that have no female incumbents, showing number of male incumbents for comparison

SOC Code with no females in sample	No. males	SOC Code with no females in sample	No. males	SOC Code with no females in sample	No. males
112 Clerks of works	0	543 Auto electricians	0	883 Rail signal operatives and crossing keepers	2
113 Managers in mining and energy industries	1	544 Tyre and exhaust fitters	1	884 Shunters and point operatives	0
153 Fire service officers (station officer and above)	3	571 Cabinet makers	10	885 Mechanical plant drivers and operatives (earth moving and civil engineering)	3
154 Prison officers (principal officer and above)	0	572 Case and box makers	0	890 Washers, screeners and crushers in mines and quarries	0
213 Electronic engineers	1	593 Musical instrument makers, piano tuners	1	892 Water sewerage plant attendants	1
500 Bricklayers, masons fixer	18	597 Face trained coalmining workers, shotfirers and deputies	0	894 Oilers, greasers, lubricators	0
501 Roofers, slaters, tilers, sheeters, cladders	8	702 Importers and exporters	1	895 Mains and service pipe layers, pipe joiners	2
502 Plasterers	7	733 Scrap dealers, scrap metal merchants	0	898 Mine (excluding coal) and quarry workers	4
503 Glaziers	1	802 Tobacco process operatives	0	901 Agricultural machinery drivers and operatives	0
505 Scaffolders, stagers, steeplejacks, riggers	3	812 Spinners, doublers, twisters	2	903 Fishing and related workers	1
506 Floorers, floor coverers, carpet fitters and planners, floor and wall tile fitters	6	823 Glass and ceramics furnace operatives, kilnsetters	0	910 Coal mine labourers	1
511 Boring and drilling machine setters and setter-operators	1	826 Synthetic fibre makers	0	911 Labourers in foundries	0
512 Grinding machine setters and setter-operators	0	829 Other chemicals, paper, plastics and related operatives n.e.c.	1	913 Mates to metal/electrical and related fitters	2
513 Milling machine setters and setter-operators	0	830 Furnace operatives (metal)	0	920 Mates to woodworking trades workers	0
514 Press setters and setter-operators	2	831 Metal drawers	0	921 Mates to building trades workers	0
519 Other machine tool setters & setter-operators nec	2	832 Rollers	0	923 Road construction and maintenance workers	8
524 Cable jointers, lines repairers	1	833 Annealers, hardeners, temperers (metal)	0	924 Paviors, kerb layers	1
525 Radio, TV and video engineers	2	834 Electroplaters, galvanisers, colour coaters	2	932 Slingers	0
530 Smiths and forge workers farrier	0	842 Metal polishers	1	933 Refuse and salvage collectors	2
531 Moulders, core makers, die casters	1	844 Shot blasters	0	934 Driver's mates	2
534 Metal plate workers, shipwrights, riveters	4	870 Bus inspectors	2	950 Hospital porters	5
535 Steel erectors	0	871 Road transport depot inspectors and related occupations	0	951 Hotel porters	2
536 Barbenders, steel fixers	0	880 Seafarers (merchant navy); barge, lighter and boat operatives	0	956 Window cleaners	4
542 Vehicle body repairers, panel beaters	2	882 Rail drivers railways second	1	957 Road sweepers	0

4.2.2 Method

The first stage of scale creation includes reorganising the data from the individual level to the level of occupations and presenting these in table format with each cell showing the counts for each occupational pair. As there are 299 occupations represented, theoretically, there could be as many as 89,401 occupational pairs. However, friendship patterns are not that diverse, and this data set has 7516 different pairs of occupations connected through friendship. Of these, 4,284 occupational pairs have only one observation, while others have over 100 observations. This is largely due to the 'clumpy' distribution of women in the occupational structure.

Table 4-7 shows the 20 most common occupational pairs. These occupations include sales assistants, nurses, cleaners, teachers, carers, clerks and secretaries – all occupations in which a large number of women are concentrated. Table 4-7 also shows that many of the most common occupational pairs are what are referred to as 'diagonals' or 'pseudo diagonals'. 'Diagonals' is the name given to occupational pairs which are both in the same occupation (e.g., 440 sales assistants' best friends are also sales assistants). 'Pseudo diagonals' is the name given to pairs of occupations that, although not exactly the same, are considered by the analyst to have occurred more often than would otherwise be expected for some reason other than the influence of social stratification (Lambert and Griffiths 2018). In scales based on marriage patterns, occupations which seem to suggest a joint venture (e.g., farmer and farm labourer, shop keeper and shop assistant) are often labelled as pseudo diagonals. When analysing female friendship patterns, diagonals are somewhat more problematic, as there is such a large volume of female workers concentrated in a smallish number of occupations, so, judging whether a combination of occupations occurs 'more often than would otherwise be expected' is difficult. An example of occupations that may be considered a pseudo diagonal here would be the friendship of 'Clerks (n.o.s)' and 'Accounts and wages clerks, book-keepers, other financial clerks'. Because these occupational titles are similar, though not the same, it is very plausible that some of these friendships have occurred because of the individuals working together. Conversely, as so many females work in clerical occupations, it is also possible that they do not work together, and this high volume of friendship should be expected. The convention is to remove diagonals and pseudo diagonals from the analysis so as not to inadvertently 'pollute' the scale with separate social mechanisms (Lambert and Griffiths 2018). There is a trade-off between excluding diagonals and pseudo diagonals and introducing more sparsity into the occupational categories. At this stage, it was decided to remove diagonals but to leave possible pseudo diagonals in the analysis. Lambert and Griffiths (2018) suggest that pseudo diagonals are often recognisable in the resulting first

dimension scale and there can be an iterative process of removing them and rerunning the analysis as necessary.

Table 4-7: List of most frequent occupation pairs linked by female friendship in the sample

SOC	Occupation 1	SOC	Occupation 2	frequency
958	Cleaners, domestics	644	Care assistants and attendants	74
644	Care assistants and attendants	958	Cleaners, domestics	74
234	Primary (and middle school deemed primary) and nursery education teaching professionals	234	Primary (and middle school deemed primary) and nursery education teaching professionals	76
430	Clerks (n.o.s.)	410	Accounts and wages clerks, book-keepers, other financial clerks	83
410	Accounts and wages clerks, book-keepers, other financial clerks	430	Clerks (n.o.s.)	83
179	Managers and proprietors in service industries n.e.c.	720	Sales assistants	84
720	Sales assistants	179	Managers and proprietors in service industries n.e.c.	84
720	Sales assistants	430	Clerks (n.o.s.)	91
430	Clerks (n.o.s.)	720	Sales assistants	91
659	Other childcare and related occupations n.e.c.	659	Other childcare and related occupations n.e.c.	96
958	Cleaners, domestics	720	Sales assistants	102
720	Sales assistants	958	Cleaners, domestics	102
411	Counter clerks and cashiers	411	Counter clerks and cashiers	106
459	Other secretaries, personal assistants, typists, word processor operators n.e.c.	459	Other secretaries, personal assistants, typists, word processor operators n.e.c.	134
410	Accounts and wages clerks, book-keepers, other financial clerks	410	Accounts and wages clerks, book-keepers, other financial clerks	150
644	Care assistants and attendants	644	Care assistants and attendants	180
430	Clerks (n.o.s.)	430	Clerks (n.o.s.)	190
958	Cleaners, domestics	958	Cleaners, domestics	264
340	Nurses	340	Nurses	392
720	Sales assistants	720	Sales assistants	440

Once the diagonals were removed from the data, the next stage was to recode any sparse categories. The convention in CAMSIS analysis is to merge occupations with less than 30 records with other similar occupations so that all occupations in the analysis have 30+ records (Lambert and Griffiths 2018). The number 30 was decided on through the experience of researchers as it is an effective minimum but it retains quite fine-grained occupational detail; however, other

thresholds are also plausible (Lambert and Griffiths 2018). In this data set, 181 SOC codes out of 299 have less than 30 records. Because there are so many sparsely populated SOC codes, for this analysis the minimum number of records per occupation has been trialled at 10, 15, 20 and 30. Although this breaks with CAMSIS convention, it allows for more fine-grained differences between occupations to be kept in the analysis. The version where the minimum number of records per occupation was set to ten was chosen to go forward with because the merging made the most theoretical sense as fewer occupations had to be merged together. When the minimum number of occupations was set to 30, a substantial number of occupations (in group 5 in particular) were merged together.

After the data preparation, the CAMSIS scale was generated using correspondence analyses. The first dimension of the scale is usually thought of as the CAMSIS scale. This scale is then standardised to have a mean of 50 and a standard deviation of 15 and cropped to fall between 1 and 99. A score of 99 is an extremely high score, and 1 is an extremely low score. As Lambert and Griffiths (2018) note, the first scale produced is usually not the most appropriate scale and there is some substantial subjective work for the analyst in changing the merged categories and removing pseudo diagonals until they are satisfied with the resulting scale. After standardising, several occupations in the FFCAMSIS score had been cropped at the 99 end of the range, suggesting that these have social interactions with other high-scoring occupations and a few had very low scores (under 10). This warranted some further investigation and an iterative process of checking and changing the occupation merges and finding and removing pseudo diagonals in any occupation which seemed like it could be out of place as a result of a data problem. In particular, any occupation which was given an FFCAMSIS of score 15 points higher or lower (one standard deviation) than the CAMSISF score for that occupation was checked for pseudo diagonals and inappropriate merges, as were any occupations that were given scores at the very top (90+) and very bottom (10 or less) of the distribution. A list of which occupational pairs were considered pseudo diagonals is attached in Appendix B. The settled-upon scale, after multiple iterations, is shown in Figure 4-5, weighted by the number of cases used, while the full scale can be found in Appendix C. Occupations with a larger number of females in them tend to fall in the middle of the scale. Those female-dominated occupations that are higher on the scale are those in education professions, such as teachers. The highest score occupation code is Barristers and advocates, and the lowest-scoring is Machine tool operatives.

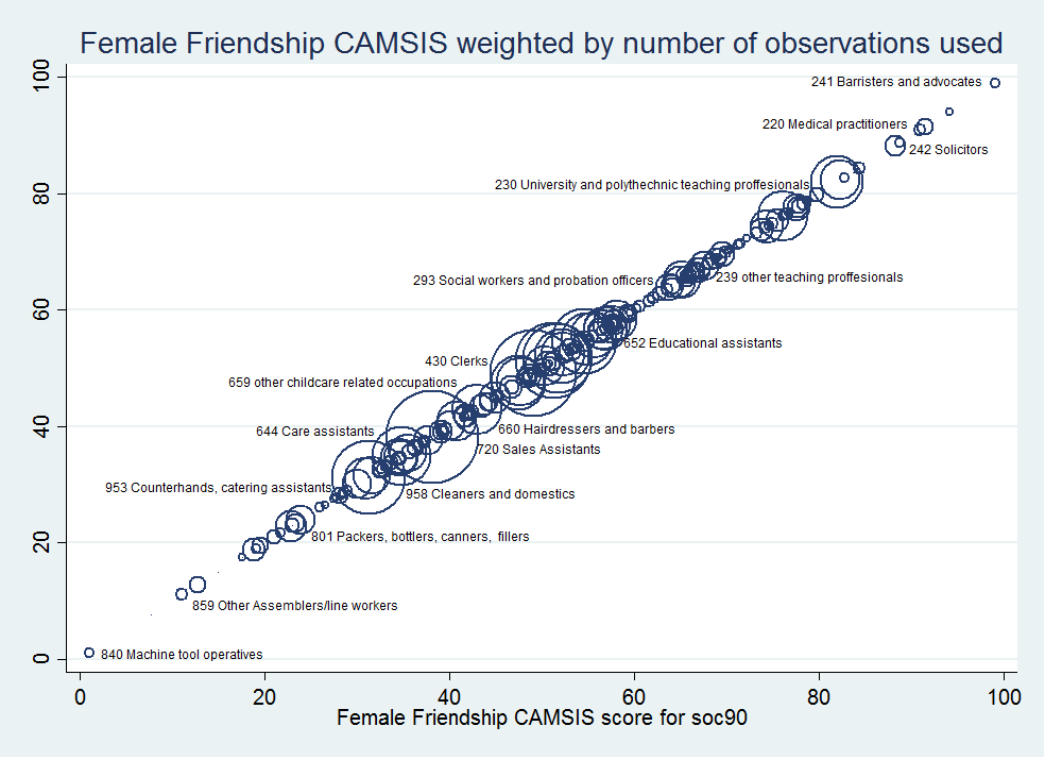

Figure 4-5 Exploring female friendship CAMSIS Scale. Shown are female friendship CAMSIS Scores for SOC90 unit groups, weighted by the number of observations used in its creation. For visualisation x=y.

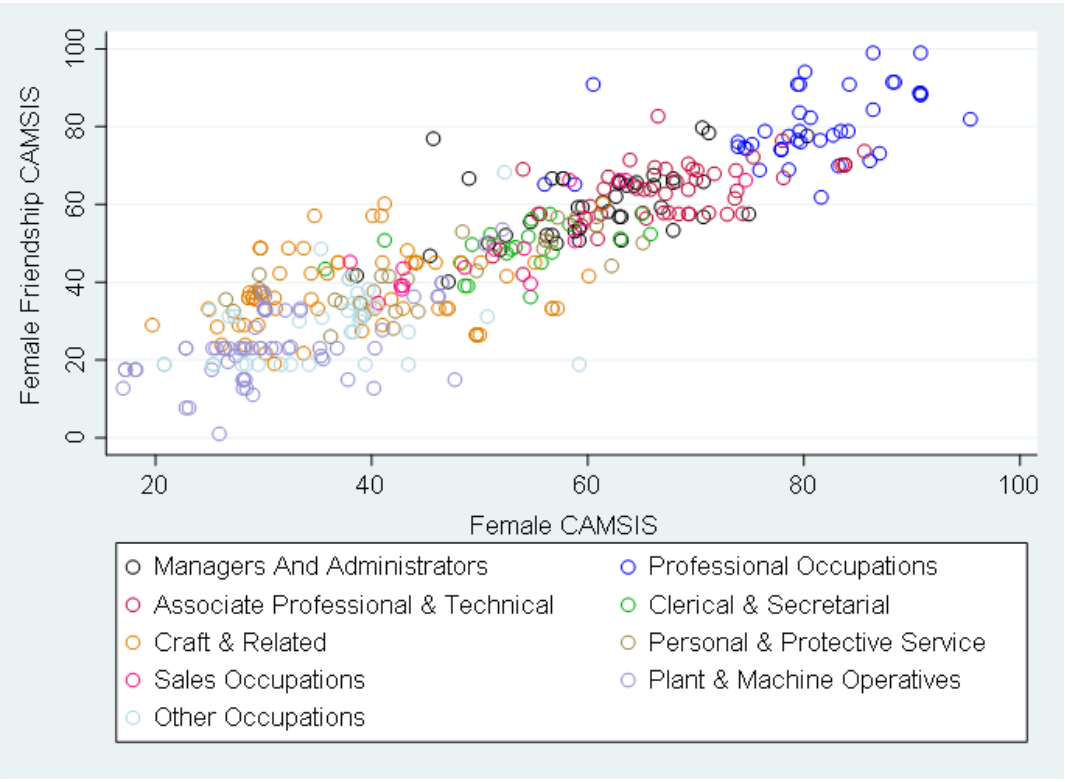

Figure 4-6 Comparison of CAMSIS scales for women based on female friendship patterns and marriage patterns. Shown are the FFCAMSIS score and CAMISF Score scores for SOC2000 unit groups, colour coded by SOC90 major groups

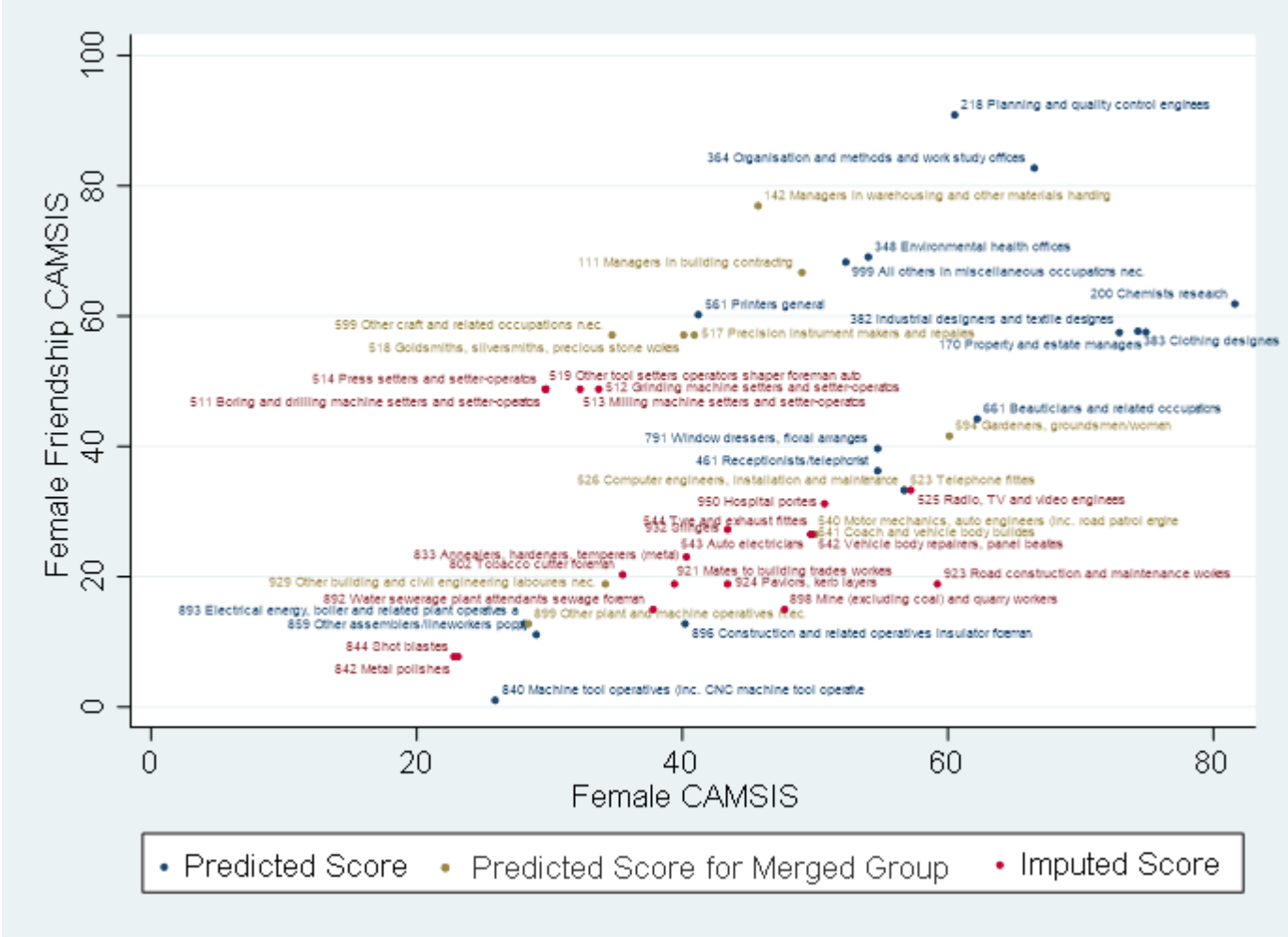

Figure 4-7 Inspecting Outlying SOC90 codes. Shown are SOC90 unit groups that's female CAMSIS score based on friendship patterns and female CAMSIS score based on marriage patterns have a difference of at least one standard deviation when standardised. Colour coded by whether female friendship score was based on the singular unit group, a merger of two or more unit groups, or was imputed using the minor or sub major unit group average.

4.2.3 Discussion

Figure 4-6 shows the FFCAMSIS score plotted against its position in the CAMSISF score, colour-coded by SOC major group, showing that, in general, on both scales, professional occupations obtain the highest scores, followed by managerial occupations, whereas Plant operatives and Machine operatives and Other occupations are concentrated toward the bottom of both scales. Figure 4-6 shows the scores are quite strongly correlated; however, there are some outlying occupations. Figure 4-7 shows the 48 occupations that have at least a 15-point difference (one standard deviation in the CAMSIS scale) between the FFCAMSIS score and the CAMSISF score. This would suggest that their occupations' average marital and friendship patterns differ in terms of their level of advantage. Some of these occupations had no female incumbents, so scores were imputed for them based on minor group averages, and some had only a few incumbents and so were merged with other similar occupations. While care was taken to ensure merges were appropriate, it is possible this has contributed to higher or lower scores. It is also likely that these occupations had few observations in the sample used to make up the CAMSIS scores based on marriage patterns (see Prandy and Lambert 2003) and may have been merged in a slightly different way or imputed slightly differently for that scale, also resulting in different scores.

In SOC major group 1, 111 Managers in building contracting and 142 Managers in warehousing and other materials handling receive higher FFCAMSIS scores than CAMSISF scores, both of these occupations were merged with other occupations in their SOC minor group. Managers in building contracting (SOC 111) were merged with Production, works & maintenance managers (SOC 110) for scale construction, and Managers in warehousing and other materials handling (SOC 142) were merged with Transport managers n.e.c. (SOC 140) and Stores controllers (SOC 141). These managerial occupations are all male-dominated and have a gender pay gap in favour of males (ONS 2016b). The other occupations used in the merging also obtained higher scores on FFCAMSIS than CAMSISF, though the gap between the scores was not as large. This suggests that these occupations have more advantaged friendship than marriage patterns. The BHPS data also contain occupational information on respondents' partners. While the data set is not large enough to support an in-depth analysis of different female friendship and marriage patterns, basic comparisons between them can be made. Table 4-8 shows the SOC major groups of the friends and partners of those in the outlying occupations in SOC major group one, after dropping diagonals. Occupations in SOC major group 2 score the most highly on the CAMSIS measures and the women in occupations 110, 111, 140, 141, and 142 have a higher proportion of female friends in major group 2 than partners. They also have more friends in major group 3, but more partners in major group 5. This difference in marriage and friendship patterns is likely leading to the higher scores of these occupations on the FFCAMSIS score. By contrast, SOC 170

Property & estate managers receive a lower FFCAMSIS score than CAMSISF score; in part, this could be a result of this occupation being merged with SOC 171 Garage managers and proprietors. However, when the comparison between friends and partners' SOC major groups were run with just those in SOC 170, the proportions were very similar to those of the merged group shown in Table 4-8, showing that women in these occupations have more partners than friends in SOC major groups 1 and 2, which are the more advantaged SOC major groups in the CAMSIS scores.

Table 4-8 Propartion of friends and partners in each SOC Major group of SOC major group one occupations that's FFCAMSIS and CAMSISF scores have a difference of at least one standard deviation when standardised

	110 & 111		140, 141 & 142		170 & 171	
	Friends	Partners	Friends	Partners	Friends	Partners
SOC major 1	22%	32%	14%	5%	8%	18%
SOC major 2	22%	9%	11%	5%	15%	24%
SOC major 3	15%	9%	25%	16%	10%	11%
SOC major 4	20%	3%	39%	32%	38%	3%
SOC major 5	4%	24%	4%	21%	-	24%
SOC major 6	4%	-	-	5%	15%	5%
SOC major 7	9%	6%	-	5%	6%	5%
SOC major 8	2%	3%	4%	11%	-	5%
SOC major 9	2%	15%	4%	-	8%	5%
	100%	100%	100%	100%	100%	100%

In SOC major group 2, SOC 200 Chemists research received a lower FFCAMSIS score than CAMSISF score, and SOC 218 Planning & quality control engineers receives a higher score FFCAMSIS score than CAMSISF. Neither of these SOC codes were merged for scale creation. Jobs in engineering are persistently male-dominated, whereas the number of women in chemistry is increasing (Cheryan et al. 2017). However, both of these occupations have a gender pay gap in favour of males (ONS 2016b). When considering the average friendship and marriage patterns of the women in these occupations in the BHPS sample, female Chemists' friends were concentrated in SOC major group 4 (approx. 40%), partners were commonly in SOC major group 3 (approx. 40%), and 20% of female Chemists' partners were in the most advantaged group 2, compared to 7% of their friends. In comparison, female Planning & quality control engineers had more partners in major group 2 (57%) than friends (41%). So, it does appear there are some differences in the advantage level of the women in these occupations' friends compared to their partners, which explains their different scores.

A handful of female-dominated occupations obtained a lower FFCAMSIS than CAMSISF score (383 Clothing designers, 461 Receptionists/telephonist, 661 Beauticians and related occupations,

and 791 Window dressers, floral arrangers). Some basic analysis shows, in general, that these occupations do tend to be associated with more advantaged partners than friends (see Table 4-9). These occupations tend to have a higher proportion of male partners in SOCs 1 and 2, which are generally the most advantaged SOCs in the CAMSIS approach. As the occupations have quite high numbers of female incumbents, these occupations may be the most compelling example of the differences between the two scales, and are more likely to reflect genuine differences.

Table 4-9 Propartion of friends and partners in each SOC Major group of female dominated occupations that's FFCAMSIS and CAMSISF scores have a difference of at least one standard deviation when standardised

	383 Clothing designers		461 Receptionists /telephonist		661 Beauticians and related occupations		791 Window dressers, floral arrangers	
	Friends	Partners	Friends	Partners	Friends	Partners	Friends	Partners
SOC major 1	25%	33%	4%	25%	6%	16%	3%	31%
SOC major 2	13%	22%	4%	13%	2%	11%	6%	12%
SOC major 3	19%	11%	4%	4%	11%	19%	11%	12%
SOC major 4	19%	-	49%	-	35%	8%	28%	8%
SOC major 5	-	22%	-	25%	-	16%	3%	8%
SOC major 6	6%	11%	16%	8%	29%	11%	17%	-
SOC major 7	19%	-	9%	8%	11%	8%	17%	-
SOC major 8	-	-	4%	17%	-	5%	8%	15%
SOC major 9	-	-	9%	-	6%	5%	8%	15%
	100%	100%	100%	100%	100%	100%	100%	100%

Several occupations in SOC major groups 5 and 8 show up as outliers; however, as there are few women employed across these SOC groups, many of these results may be artificial difference as a result of imputation or merges of several occupation unit groups. Thus, while this might be related to these occupations being male-dominated, it is also likely this difference is due to measurement error. Overall, the occupations that seem to have the most difference between the FFCAMSIS and CAMSISF scores tend to be those with either few men or few women in them. This means that it is certainly plausible, particularly in the case of the male-dominated occupations, that much of the difference in the scores artificial due to measurement error, as suggested by Prandy and Lambert (2003) and Lambert and Griffiths (2018), when comparing male marriage and friendship scores.

However, the lower scores of the more stereotypically female occupations are interesting. These differences are the starkest examples of the lower position of female-dominated occupations on the female friendship scale. However, a similar trend is found in other female-dominated occupations, for example; Nurses, Counter clerks & cashiers, and Playgroup leaders all also receive lower scores in the female friendship approach than in the marriage approach. The question of whether these lower positions more accurately reflect the advantage level of these

occupations is an open one. From the literature review, it is clear that female-dominated occupations tend to be less advantaged in term of income than their male counterparts (e.g., Levanon et al. 2009). However, the CAMSIS approach is based on the idea that socially similar groups of people will be more likely to interact with each other. Women in these typically female occupations seem, on average, to have less advantaged friends but have more advantaged male partners. Friendship and marriage are both significant social interactions. Originally, only male friendship patterns were considered, as these were thought to better reflect an individual's current situation, which was argued to be more meaningful in determining social positions. So, from that perspective, the female friendship scale might be more accurate. However, if, on average, women in these occupations have relatively advantaged partners, ignoring that information might be less accurate when trying to represent the social position of partnered women.

Prandy and Lambert (2003) claim that (for men) scores based on marriage patterns perform at least as well or better than those based on friendship patterns. In subsequent chapters (see Chapters 5 and 7), analysis using both the FFCAMIS and CAMSISF score will be compared when modelling outcomes that should be related to stratification, in order to test this claim for women. Further analysis will also be conducted that aims to consider how the occupational information of women's partners can be considered when measuring stratification positions (See Chapter 6).

4.3 Conclusions

Sex segregation in the labour market means that the distributions of occupations for men and women are quite different, and gender-specific measures offer a way to account for this when measuring stratification position. This chapter contributes two gender-specific stratification measures for the UK that treat women as individuals operating within a de facto separate female labour market. Overall as many of the outlying occupations on both new gender specific measures are occupations with small numbers of men or women it is not possible to be fully confident in the differences here described. Thus, further research with much larger datasets would be valuable, to better explore the sparsely represented occupations by gender. Nevertheless, the chapter did find some interesting patterns.

Socio-economic indexes rank occupations based on their average educational and income profiles. This is problematic because, within occupations, segregation means men and women with the same occupation title often do different work and get different rewards. Creating

separate scales for men and women allows for these differences to be visible. It was found that several occupations had male and female scores that were at least one standard deviation apart. These outliers included several occupations that had few men or women in them. This highlights the dangers of creating scales for women in mostly female occupations that are based on the male employees of those occupations, who may be atypical for the occupation as a whole, and the problematic nature of scales based on combined male and female data, as men and women's average education level and income can be quite drastically different. Thus, these gender-specific scales might better capture the different average situations of men and women in the same occupation.

CAMSIS scores are traditionally gender-specific; however, an original contribution of this thesis is a CAMSIS scale based on women's friendship patterns, rather than marriage patterns. Previous studies have argued that data on marital patterns work as well as data on friendship patterns for men; however, there is no evidence this is the case for women. It had been argued that, for men, much of the difference between scores based on marriage and friendship patterns is just due to measurement error (Lambert and Griffiths 2018; Prandy and Lambert 2003); therefore, marriage can be substituted for friendship to create CAMSIS scores. This chapter found that many of the outlying occupations when comparing female scores based on friendship and marriage patterns were those which were either male- or female-dominated. For those that were male-dominated, the small number of women in the occupation meant that the difference between the two scales might just be measurement error due to different merging and imputations. However, there were also some outlying female-dominated occupations. As these have more women incumbents on which to base the scores, the difference between these occupations is less likely to be measurement error. Women in these occupations tended to have more advantaged husbands than friends. This means that their position in the CAMISIS score based on marriage patterns might be inappropriately inflated. Conversely, as the women in these stereotypically female occupations do tend to have more advantaged partners, ignoring that information for married incumbents might not represent their advantage level if they share resources with those partners.

In Chapters 5 and 7, these gender-specific scales will be compared with their more traditional counterparts to determine whether this gender specificity impacts the results in analysis outcomes that ought to be related to stratification position. Chapter 6 focuses on how the occupational information of partners can be utilised when measuring stratification position.

5 Intersectionality in stratification measures

> *The social stratification literature is dominated by older, established scholars for whom the intersectionality revolution occurred late in their careers. Given their past research programs and the commitments they have made to current and future ones, these scholars are not likely to steer their research ship in a completely new direction any time soon. The quantitative literature will have to be taken up by younger scholars who are exposed both to the classic theoretical and methodological currents in the social sciences and the new directions charted by an emergent group of intersectionality scholars.* (Dubrow 2013, p174)

5.1 Introduction

Here, the term 'intersectionality' will be used in its broadest sense to refer to recognition of the multiple simultaneous positions of advantage or disadvantage that individuals hold in the social structure. While a variety of terms to describe what it is that is intersects have been suggested, this thesis will use the term 'inequalities' or 'inequality categories', following the advice of Walby et al. (2012, p231) to "focus on the inequalities within each of the intersecting sets of social relations". The term 'intersectionality' was coined by civil rights activist and legal scholar Kimberle Crenshaw (1989) in relation to the invisibility and marginalisation of black women. However, as Walby (2007) notes, scholars had grappled with the overlap of inequalities years before it was named intersectionality (as were and are many non-English-speaking individuals and groups who use different words for the same concept, see Hill Collins and Bilge 2016). As noted in Chapters 2 and 3, sexist assumptions and practices in social stratification research were the subject of widespread debate in the 1970s and '80s, with many arguing that greater attention was needed to the position of women in the stratification structure (e.g., Abbott 1987; Crompton and Mann 1986; Dale et al. 1985; Erikson 1984; Erikson and Goldthorpe 1992; Goldthorpe 1983; Goldthorpe and Payne 1986; Heath and Britten 1984; Leiulfsrud and Woodward 1988; Stanworth 1984). Dubrow's (2013, p174) suggestion that intersectionality is a "completely new direction" for stratification scholars, therefore, seems rather unfair. However, the intersection of gender and class is relatively neglected in current debates (Walby et al. 2012). US writings have often (though not always) focused on ethnicity and race, while European research tends to focus on the inequalities that are the subject of legislation, such as, for example, those covered by 1997 EU Treaty of Amsterdam (gender, ethnicity, disability, age, religion/belief and sexual orientation) (Walby et al. 2012). There also is some uncertainty about how stratification research can or should

fit into an intersectional research framework, although Walby et al. (2012, p232) conclude that "class should be systematically included" in intersectional considerations, and Anthias (2013, p133) argues that:

> the analysis of social stratification would benefit from greater attention to the ways ethnicity and gender and other social divisions and locations coalesce to produce forms of inequality. Intersectionality approaches would also benefit by integrating class more robustly into the analysis.

However, few studies offer practical advice on how best to implement an analytical intersectional approach in empirical research. As Choo and Ferree (2010, p129) note, "Feminist scholarship has embraced the call for an intersectional analysis but largely left the specifics of what it means indistinct". Furthermore, while many thousands of quantitative research papers incorporate gender and social stratification position, the majority take a fairly simplistic approach that is not likely to represent the complexity of these intersecting inequalities. This chapter reflects on how the intersectionality of gender and social stratification can be recognised in empirical analyses. It contributes an illustrative research example using contemporary British data that simultaneously addresses the 'why to' and, crucially, the 'how to' arguments of intersectional social stratification research. It is worth noting here that intersectional work tends to talk in terms of the intersection of social categories. Consequently, when discussing social stratification position, it is predisposed to talk in the language of social class. However, there is no obvious theoretical reason why a gradational stratification scheme should not be used within an intersectional analysis. Accordingly, this chapter discusses the intersection of gender and social stratification, which can be conceptualised and measured as a class scheme or a scale.

5.2 Intersectionality

The concept of intersectionality has had cross-disciplinary success and has been applied with multiple theoretical perspectives; however, there is no consensus about how it should be considered, conceptualised and applied. It has been argued that "There cannot be a singular definition of an intersectionality framework as there is a great deal of diversity in the way it is theorized and applied" (Anthias 2013, p125) and that "paradoxically, precisely the vagueness and open-endedness of 'intersectionality' may be the very secret to its success" (Davis 2008, p67). Intersectionality has been variously described as a 'buzzword' (Davis 2008), a 'heuristic device' (Anthias 2012) and an 'empirical paradigm' (Hancock 2007). It has been conceptualised as a 'crossroad' (Crenshaw 1991), 'axes' of difference (Yuval-Davis 2006) and as a 'dynamic process' (Staunæs 2003). There is also debate on whether intersectionality can be applied only to

individual experiences and identities, or whether it is a feature of social structures and cultural discourses (Davis 2008). Indeed, there is even dispute about what it is that intersects – categories, inequalities, or groups (Walby 2007). It is not the aim of this thesis to answer the many debates surrounding intersectionality (for a good overview see Walby et al. 2012), rather, the focus here is how the ideas of intersectional work can inform social stratification research.

Despite its opaque nature, intersectionality is a useful lens through which to consider how stratification researchers can best incorporate gender and other inequalities into their analyses. Yet, despite its long history in women's studies, only recently have the ideas of intersectionality become a prominent area of interest for empirical sociological research. McCall (2005) submits that neither the field of women's studies nor that of stratification is equipped to fully comprehend the current context of inequality alone. She suggests that the lack of interdisciplinary work has been largely due to the methodology needed for such a project, that is to say, large-scale quantitative research, a methodology which is not readily accepted in the field of women's studies. Dubrow (2013) posits that stratification researchers have not taken on board the ideas of intersectionality for three reasons. Firstly, the difficulty in moving ideas from one discipline to another, secondly, the inadaptability of stratification scholars, and thirdly, that stratification researchers do not appreciate the value of intersectionality and therefore do not engage with it. This work contributes to knowledge by providing an illustrative research example that applies intersectional approaches in a large-scale quantitatively oriented stratification research topic.

A much-debated question is whether this kind of epistemology is appropriate to understand the position of women in society. Feminist writers have often been critical of quantitative methodologies because they associate these methods with the ideas of positivism, which are disliked because of the primacy given to empirical observation (McCall 2005). Therefore, explicitly feminist work rarely uses quantitative methods (Cohen et al. 2011). However, this project would agree with the assessment of McCall (2005) and others (e.g., Delamont 2003); that to consider feminist research as solely qualitative is extremely limiting and feminist quantitative research is important to expose the inequalities women face and to provide evidence to influence policies to overcome those inequalities. Quantitative research is an important instrument to understand, record and overcome gender inequality (Harnois 2013), and some feminist questions require quantitative answers (Risman et al. 1993; Stanley and Wise 1983). Large-scale survey research conducted by government bodies, cross-national organisations and individual researchers have been instrumental in the fight for gender equality by refining knowledge on many key feminist topics, including inequalities in education, income, cultural beliefs, and domestic violence, among others (Bolzendahl and Myers 2004). McCall (2005) urges researchers to overcome methodological boundaries and engage with multiple approaches to intersectional

work. A variety of methods are needed to understand the position of women and recognising the value of quantitative methods does not mean diminishing the value of qualitative approaches.

A further point of contention when using a quantitative intersectional approach is the necessity to recognise stable categories for analysis. In Hancock's (2007) typology of intersectionality research, work that treats categories as stable rather than fluid is not considered intersectional at all, as she argues that, upon intersection, neither of the two original categories are recognisable. On the debate of fluidity versus stability, Walby et al. (2012) offer a useful perspective. They suggest that to overcome this dichotomy, researchers should appreciate that the historically constructed nature of inequalities between groups are embedded within institutions. This means at any point in time these relationships of inequality do have some stability, although, as institutions change over time (e.g., as more women move into the labour market), so will these relationships. Therefore, categories can be stabilised for analysis as long as they are contextualised within their historical trends. Weldon (2006) argues that it is important to investigate the intersections of social structures, not just individual groups. She argues that, "While attributing a shared gender identity to women is problematic, seeing 'women' as sharing a structurally defined social position is not" (p239).

McCall (2005) offers a useful typology of intersectional research[16] and the different methodological approaches that are used. She describes three distinct approaches to dealing with the complexity of intersectionality, broadly defined by how they respond to analytical categories: Anti-categorical, Intra-categorical, and Inter-categorical, as described below:

- The Anti-categorical approach is "based on a methodology that deconstructs analytical categories" (p1773). This approach considers social life to be too complex to be reduced to categories. Social categories are thought to be fictions that create differences in order to produce inequalities. It is argued that language creates categories rather than categories being a social reality. The stabilisation of categories is argued to be problematic in "essentialising and reifying" the social relations that the analyst may be seeking to change (Walby et al 2012, p227). It therefore prioritises fluidity over the stability of categories – which makes practical analysis difficult.
- The Intra-categorical approach is the foundation upon which intersectionality emerged, critiquing white feminism for claiming to represent all women's experiences. In this approach, traditionally constructed categories are treated with caution as it is recognised

[16] Other typologies by Hancock 2007, Choo and Ferree 2010, and Anthias 2012 are also available, but the ideas of McCall 2005 have been found to be most helpful here.

that they do not represent homogeneous groups. This approach gives attention to those who occupy the space at overlooked points of intersection between categories "in order to reveal the complexity of lived experience within such groups"(McCall 2005, 1774). Research in this approach considers groups, often small ones, previously ignored in analysis. Typically, this is achieved through qualitative research methods such as narratives or case studies. Traditional categories are used to define and name the group, but the researcher will also focus on differences within the group.

- The Inter-categorical approach recognises that there are structural relationships of inequality between established categories, therefore traditional analytical categories must be provisionally adopted (though it is recognised that they are imperfect and unstable). McCall (2005, p1785) writes how "this perspective leaves open the possibility that broad social categories more or less reflect the empirical realities of more detailed groups". Rather than focus on a single disadvantaged group at a point of intersect (e.g., black women) as with the intra-categorical approach, the inter-categorical approach is concerned with comparisons between and within multiple groups, examining both the disadvantaged and advantaged. This kind of multi-group comparative study can be done qualitatively, but it is also well suited to a quantitative methodology.

McCall (2005) argues that these different approaches produce different kinds of knowledge. Quantitative methods are best suited to the inter-categorical approach because of its focus on multi-group comparisons. Furthermore, the interests of social stratification scholars are also well aligned with this approach because it engages with the larger structures that generate inequalities.

5.3 How to do intersectional analysis

Dubrow (2013) suggests that, both theoretically and methodologically, there is great potential for the incorporation of intersectionality into quantitative social stratification research. However, on the question of how to move forward and undertake intersectional analysis, there are few clear examples. McCall (2005, p1771) notes that "There has been little discussion of how to study intersectionality, that is, of its methodology". The methodology used is likely to reflect a particular conceptualisation of intersectionality. One discussion which is particularly useful for quantitative researchers is Weldon's (2006) work on the politics of gender. One key area of difference in how intersectionality is conceptualised is the degree to which inequalities that

intersect can be separated from each other. Weldon (2006)[17] suggests four ways in which intersectionality might be conceptualised empirically: an 'additive' approach, suggesting a 'double jeopardy' conceptualisation; a 'multiplicative' approach, suggesting a 'mutually reinforcing' conceptualisation; an 'intersectional only' approach, where intersectionality is conceptualised as something 'qualitatively different'; and an 'intersectionality-plus' approach, which allows for the analysis of multiple conceptualisations that vary over time and place.

5.3.1 Additive approach

Dubrow (2013) posits that most social stratification researchers believe that inequalities can just be added up and then ignored. It is certainly true that the additive approach to intersecting inequalities is the most common in empirical research, for example, in the social sciences, gender is frequently controlled for in models with a dummy variable, as it is recognised to be a central feature in an individual's life with wide-range implications for their tastes, behaviours, outcomes, etc. In some instances, this might be sufficient for a researcher's needs and preferable to ignoring the phenomenon of gender altogether. For Weldon (2006),[18] in the language of statistics, this approach would be captured in a model through separate indicators for each social inequality category of interest (typically a series of dummy variables). These social inequality categories invariably advantage some and disadvantage others and the effects are added up as shown in equation (1).

$$Y_i = a + b_1 x_{1i} + b_2 x_{2i} + e_i \quad (1)$$

Y is the outcome of interest, for example, income. The slope of the line is b, and the intercept is a, and x_1 and x_2 are the independent variables which, in this example, let us say are gender (male =0 and female = 1) and social position (low position = 0 and high position = 1). For example, if the average income of men in a low social position was £100 then a = 100. Being a woman might drop your income by £25 pounds on average (b_1 = -25), and being in a higher stratification position might increase the number of pounds you make by £50 on average (b_2 =50). To predict the situation of the average woman in a higher stratification position, you subtract the amount of money they lose on average for being female, then add on the amount of money gained on average for being in a higher stratification position in this example £100 – £25 + £50 = £125. This

[17] Though this section draws heavily on the proposed methodologies of Weldon (2006) for capturing intersectionality in quantitative work, the regression equations given in that article appear to be incorrect, each including an extra c term. For example the equation given for a regression analysis is 'Y=a+b1x1+b2x2+c+e' the equations presented here have been corrected here to remove this.

[18] Dubrow (2013) measures cumulative disadvantage using a count variable, counting the number of disadvantaged categories an individual is a part of. Recognising that being in a particular social category may advantage an individual in some circumstance and disadvantage them in others Weldon's approach is found to be superior.

approach would suggest a cumulative disadvantage of intersecting inequalities, also referred to as a "double burden" or "double jeopardy conceptualisation of intersectionality" (Weldon 2006, p242).

Several theorists have pushed back against this additive conceptualisation of inequalities (e.g., Anthias 2012; Walby 2007). It is argued that intersecting inequalities amount to more than just the sum of their parts. For example, given the way in which gender is entwined with occupations through discrimination, socialisation, and segregation, it has been argued that, in the case of social stratification, at least, gender is "more than just a dummy variable" as it is inseparable from the labour market experiences of individuals (Figart 1997, p529). It is proposed that the labour market structure is shaped by gender in a way that cannot be recognised by simply controlling for gender with a dummy variable.

5.3.2 Multiplicative approach

It is also possible to think of intersectionality as systems of disadvantage that mutually reinforce each other (Weldon 2006). From this perspective, gender and stratification position are separate systems that can 'magnify' each other. Simply recognising that an individual is a woman and that she is in a less advantaged stratification position is therefore not enough. Given the complex relationship between gender and the hierarchy of occupations (outlined in Chapter 2), there is reason to believe the effect of social stratification on a given dependent variable may be influenced by an individual's gender. It may, therefore, be desirable to control for the effect of gender on occupational position by fitting interaction terms between the selected stratification measure and gender (c.f. Jaccard 2001; Jaccard and Turrisi 2003). While it is not often labelled intersectional research, quantitative researchers do commonly account for multiple inequalities in models and fit interaction terms between those inequalities. Indeed, increasingly, stratification scholars advocate for the appropriate use of interaction terms (Brambor et al. 2006; Braumoeller 2004). Dubrow (2013) recognises that there is not too great a leap from interactions to accounting for intersectionality, however, notes that sympathy for the approach does not translate into action. The regression equation for this approach would be:

$$Y_i = a + b_1x_{1i} + b_2x_{2i} + b_3x_{1i} * x_{2i} + e_i \qquad (2))$$

The difference between this equation and the (2) and the additive regression equation (1) is the inclusion of a multiplication term of both the independent variables ($b_3x_1 * x_{2)}$, called an interaction term. This allows for the effect of social position (x_2) on income (Y) to vary by gender (x_1). Figure 5-1 offers schematic examples of how the relationship between gender and

stratification position might look when allowing for an interaction between the main effects. The four images in the top panel of Figure 5-1 represent various scenarios where there is no appreciable interaction between the effects of stratification position and those of gender (the different scenarios allow for different permutations of the main effects of both). The four images in the lower panel, by contrast, all represent situations in which there is a notable interaction pattern between the effects of gender and stratification position, again across different permutations for the main effects of both.

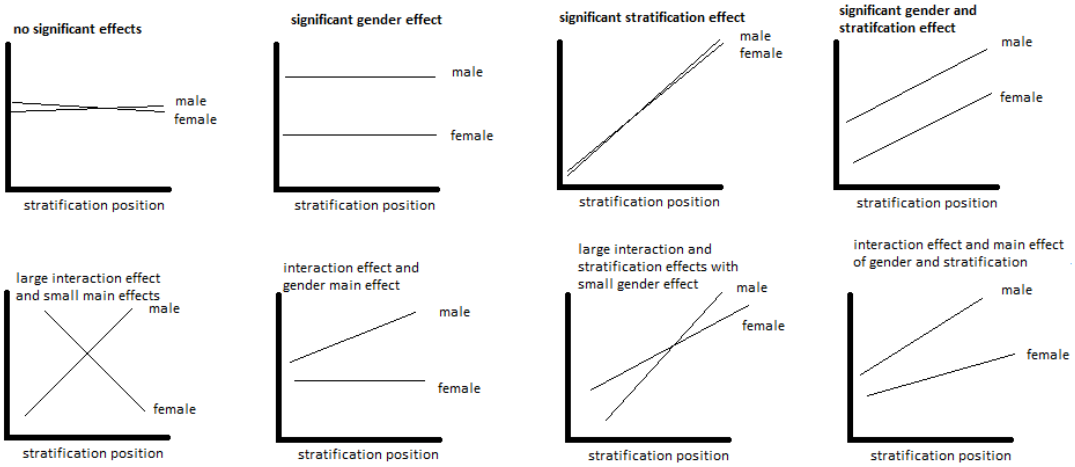

Figure 5-1 Illustrating potential results of a model including an interaction effect, shows Author's own illustration of interaction effects

For the income example, if we allow for interactions between the effect of stratification and gender, it could be that no significant interaction is found (e.g. any top row graph). Conversely, it could be that stratification position positively affects men's incomes but negatively affects women's incomes, potentially to the extent that the isolated main effects of gender or stratification position might seem to be zero (e.g., lower left graph). Equally, it could also be the case that men always earn more than women (significant main effect of gender), but male wages are positively affected by stratification position, whereas women's are not (significant interaction effect) (e.g., lower row, second left). By contrast, it could be that stratification position always positively affects income (significant main effect of stratification), but the effect of gender varies by stratification position (lower row, second right and furthest right).

McCall (2005) introduces the inter-categorical or categorical approach, which can be seen as an extended version of the multiplicative approach. This approach is designed to capture the complexity of relationships between inequality categories. The approach is based on the same

interaction effects described above, but the complexity of the approach is that, for each social category added to the model, the researcher must account for the subcategories that make up the category. For example, if one includes the category of gender in the model, there is an assumption that two subcategories, men and women, will be compared. If one then includes social class in the model which, for ease of explanation say has three groups, working, middle and upper, there are then six groups which must be compared – working-class men, working-class women, middle-class men, middle-class women, upper-class men and upper-class women. If one further includes a two-category ethnicity variable, white and non-white, this also intersects with gender and class, so twelve groups must be compared. It is not the intersection of race, gender and class for a single group that is of interest (i.e., not just non-white, female, middle class), as might be the case in a case study approach, rather, the analysis covers all the different groups and allows for the study of advantage and disadvantage between groups simultaneously. Thus, a model fully saturated with interaction effects is fitted. Though the categorical approach to intersectionality has become more common in recent years, scholars have pointed out some methodological difficulties of implementing this approach. The interpretation and communication of these often large and complex models, and the small sample sizes that often represent each specific combination of inequalities, have both be cited as difficulties with the categorical approach (Evans et al. 2018; McCall 2005). It's also unlikely that including every possible interaction term will lead to the most parsimonious model.

5.3.3 Multi-level models

$$Y_{ij} = a + b_i x_{1ij} + u_i + e_{ij} \tag{3}$$

It is also possible to consider the use of random effects models to account for intersectionality as shown in equation (3). The difference between this and the additive regression equation (1) is that the regression now has two levels. Individual records (i) are conceived of as being clustered into category of units (j), and an additional random intercept term (u_j) has also been added to allow for patterns associated with the cluster unit. Traditionally, multi-level models have been used to account for the clustering of individuals into observable groups, for example, to account for the clustering of pupils (i) within classrooms (j) or to account for sampling methods that are clustered by area. But it is also possible to cluster individuals by their membership of inequality categories, for example, it is possible to fit occupations or social classes as the level-two variable. The depiction in (3) represents a 'random intercepts' formulation, in which the model allows for a single adjustment up or down for each inequality category. However, random slopes models could also be exploited in this framework to combine the influence of categories (see equation 4 as an example) – we could for instance control for one higher-level inequality with random effects

for its categories (e.g., occupations) and allow the effect of another inequality category to vary across it (e.g., gender).

$$Yij = a + bix_I + ui + u1jx1j + eij \quad (4)$$

Accordingly, Multi-level model have been proposed for some approaches to modelling intersectionality, in which individual records (i) are clustered into inequality categories (j) which are defined as each unique permutation of the relevant social characteristics (e.g. gender, ethnicity and religion). As an extension to McCall's (2005) categorical approach, Evans et al. (2018) suggest the use of multi-level random effects models in order to overcome some of the difficulties of partitioning the variance between inequality categories and within inequality categories. Merlo (2018) has described this new method as the 'gold standard' in intersectional health research. In the approach outlined by Evans et al. (2018), a single variable which has a distinct category for each combination of inequalities is created. Evans et al. (2018) call these combined categories of inequality 'strata'. A strata variable can be created in Stata by using the 'group' command on the inequality categories you wish to combine into strata. If this variable was fitted in a single-level regression it would have the same effect as fitting a model fully saturated with interaction effects; for example, instead of including dummy variables for being female (1 female, 0 male) and white (1 white, 0 non-white) and an interaction between them, using the strata variable four, dummy variables would be included for being in strata one (white and female), strata two (non-white and female), strata three (white and male) and strata four (non-white and male). However, this strata variable can also be fitted as the higher-level (level 2) variable in a random effects or random slopes model. It is suggested by Evans et al. (2018) that the inequalities that make up the strata should also be included as main effects in the model, Bell et al. (2019) further suggest that interactions between those main effects should be included. It is argued that this kind of multi-level model can be used both to determine whether there are intersectional effects and to determine specific intersectional groups that are more or less advantaged.

The level-two variance and its associated variance partitioning coefficient, the Intra-cluster correlation statistic, can be thought of as the variance that exists at the intersectional level (Bell et al. 2019). If level-two variance remains after including the main effects, there is evidence of intersectionality; that is, the joint effect of multiple inequalities is greater than their discrete effects (Evans et al. 2018). It is suggested that even a modest proportion of variance at the higher (strata) level, such as 5%, is important to recognise (Merlo 2018).

It is also argued that the higher-level residuals can then be used to look at 'specific' intersectionality (Bell et al. 2019). A benefit of a multi-level model approach is that these residuals are automatically shrunk to account for the reliability of the residual. For example, if

between-strata (level two) variance is low or within-strata (level one) variance is high, there will be substantial shrinkage for all strata. Furthermore, if a strata group has a low number of cases, it would also have more shrinkage. This means it is less likely that a type-one error will be made in the reporting of intersectional effects. In Stata, this involves plotting the empirical Bayes residual. This allows for multiple group comparisons simultaneously rather than comparing each presumed disadvantaged subgroup (e.g., female; black) with a presumed privileged reference category (e.g., male; white), as would be the norm when interactions are fitted in a single-level regression.

5.3.4 Intersectionality only

The focus on an intersection suggests that there are points where categories meet, and inequalities are produced. However, realistically, inequalities do not neatly intersect but are often formed by or shape each other. For example, gender influences employment outcomes through socialisation and discrimination and the unequal distribution of unpaid labour. Some interpret intersectionality as an analysis of social inequalities (e.g., gender class, race) where no single inequality is conceived as having an autonomous effect (Weldon 2006). From this perspective, there is one social structure of advantage/disadvantage within which individuals have a singular social position. Therefore, it would not make sense to ask questions such as 'Does gender or stratification position have a greater effect on health?' as they are one inseparable structure. Weldon (2006, 244) calls this the "intersectionality-only" approach. From this perspective, you cannot separate the social structure of gender from the structure of occupations as they 'mutually constitute' each other (Walby 2007). Weldon (2006, p243) notes that some would argue that fitting interactions is not truly intersectional work as true intersectional effects cannot be captured by any function of the separate categories; no mathematical solution will truly capture the way they intersect and mutually shape each other: "Interaction effects are qualitatively different from independent or additive effects".

Weldon suggests that if we want to write an equation for this approach, it would be:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_1 * x_2 + b_4x_3 + e \quad (5)$$

where $x1$ is gender, $x2$ is social stratification position, and $x3$ represents the intersectional effect of a particular gender and stratification position combination that is not a function of $x1$ and x2. Weldon suggests that, if the intersectionality only approach was correct when the $x3$ intersectional effect was added to the model, the first part of the model would drop out as the only effects are intersectional effects, as follows:

$$Y = a + b_4x_3 + e \quad (6)$$

How one would measure this $x3$ intersectional effect is not explained, and perhaps, from this perspective, only a qualitative approach to intersectional analysis is considered feasible. Though this thesis would suggest that one way to capture the intersectionality only approach in an analysis might be to use measures that are 'mutually constituted'. Here that would mean using social stratification measures that are designed to recognise the different contexts in which men and women work. Rather than mathematically adding together the separate measures in a model, instead we could choose a measure that is designed to reveal social positions based on gender, such as those developed in Chapter 4. Therefore, $x3$ would become a gender-specific stratification measure, and there would be no need to include $x1$ (gender) or $x2$ (stratification position), because they are accounted for by the gender-specific stratification measure.

5.3.5 Intersectionality-plus

Weldon (2006) argues that assuming there can only be intersectional effects is limiting and that it is possible that all of these relationships between social categories might be happening at once, that is, there could be additive, multiplicative and 'intersectional' effects. She calls this the "intersectionality-plus" approach (244). Weldon argues that, although everyone will experience effects based on their gender, social position, etc., that does not mean that every experience will be equally a result of these social categories. She also suggests that the relationship between these social inequalities can vary over time and space. Sometimes gender and stratification position might reinforce each other, but in other circumstances, they can mask each other. Therefore, a commitment should not be made to a particular conceptualisation of intersectionality, instead, the different ways in which it might manifest itself should be tested. The intersectionality-plus approach is therefore very similar to the ideas of a 'sensitivity analysis'. Connelly et al. (2016b) describe a sensitivity analysis as the process of investigating the impact that alterations on the analysis have on the results. Such an approach could be used to explore the range of scenarios conceived of as 'intersectionality-plus' – for instance, testing both single-level and multi-level models with different combinations of interaction effects and different operationalisations of social stratification measures, including gender-specific measures.

5.4 An empirical example

Dubrow (2013) sought to provide answers to not only why researchers should engage with intersectionality, but also to provide guidance on how to capture it empirically. His analysis is based on data gathered in Germany and France. Work extending this to other countries is beneficial because a key point of intersectionality-plus is that the way the social categories are constructed and construct each other can vary over time and space (Weldon 2006). Secondly, Dubrow (2013) focuses only on comparing a cumulative disadvantage approach with McCall's

(2005) categorical approach, and a comparison of a wider range of intersectional approaches would be beneficial. Furthermore, the way Dubrow (2013) defines a cumulative disadvantage approach is to count the number of disadvantaged categories an individual belongs to. This thesis would argue that Weldon's (2006) approach to accounting for cumulative disadvantage - including the main effects of each inequality in a regression model (what she calls 'double jeopardy/double burden'), is more appropriate, as adding up the effects of being in each category allows for different social categories to give advantage or disadvantage, depending on how it relates to the outcome (i.e., being female will not always have a negative outcome compared to a male). In Dubrow's (2013) illustrative example, a very simplistic measure of social stratification position is used (a dummy variable for being lower class based on an amalgamation of the lower end[19] of the EGP class scheme, see Chapter 3, Section 3.3.1 for more details on this scheme. Here it is suggested that more careful consideration of the measurement of social stratification position is necessary. Finally, the outcome model in his example is socio-economic resources measured by the International Socio-Economic Index; some stratification researchers would argue that this is not a measure of social resources but rather a measure of social stratification position in its own right, therefore, a different outcome measure might be more appropriate.

Thus, an original contribution of this chapter is an empirical example of implementing intersectionality approaches, based on British data, exploring a wider range of intersectional approaches than have previously been compared. In this example, the Intersectionality-plus approach is followed, which suggests that researchers need not, and perhaps should not, commit to one interpretation of intersectionality. Instead, additive, interaction (multiplicative), and mutually constituting relationships between categories are tested.

5.4.1 Data

This illustrative example will use data from the British Household Panel Survey (BHPS, University of Essex 2018). The BHPS is a panel survey that ran from 1991 to 2008 and followed a representative sample of adults living in Great Britain. For this analysis, the 2008 wave was used.[20]

[19] Unskilled workers, agricultural labourers and self-employed farmers

[20] The BHPS includes a cross-sectional weight (xrwght). The analysis shown in the results section is unweighted, however, it was subsequently rerun using the cross-sectional weight. Weighting did not change the patterns described.

Dependent variable: Dubrow's (2013) approach uses socio-economic resources measured by the International Socio-Economic Index. Estimating one social stratification measure based on another seems dubious, so here Pay is used as a measure of economic resources. The sample is restricted to those of working age (aged 16–65 years), who are employees working at least 5 hours per week. This approach is common in much research concerning pay (e.g., Olsen et al. 2018). The measure is usual gross pay per week (original BHPS variable 'paygu'). Cases below the bottom 1 percentile or above the top 99 percentile are omitted as extreme outliers can skew the data, and are often also reasoned to be inaccurate reporting from respondents (Olsen et al. 2018). This limits the sample to those who earn between £40 and £13,500 per week. The weekly pay variable is then logged.

Stratification position: When choosing a social stratification measure for analysis, Connelly et al. (2016b) recommend that researchers construct a number of measures and evaluate them through a 'sensitivity analysis'. For this example, it is also important that the range of measures chosen includes universal measures and specific measures designed for different genders. ICAM (added using Ganzeboom and Treiman's International Stratification and Mobility File: Conversion Tools) and CAMSIS (jbcssm jbcssf in the BHPS) will be used along with the female friendship CAMSIS created in Chapter 3. The scale measures are all standardised for comparison. A class measure is also included for comparison; the RGSC scheme (jbrgsc in the BHPS). There are many more stratification measures that could be compared here, but, for the benefit of clarity in this illustrative example, the sensitivity analysis has been limited to these four. The gender-specific SEI measure created in Chapter 4 is not used in this example as the outcome variable is income, and education is also controlled for in the model.

Gender: Gender is measured in the BHPS as male and female. This has been recoded into a dummy variable for being female (fem 1=female; 0=male).

Race/ethnicity: Dubrow (2013) accounts for race and ethnicity with a dichotomous variable of self-reported minority group status. This is not available in the BHPS, but information on ethnicity is. Given the low numbers of non-white respondents in the BHPS, a dummy variable for minority group status is created, where white British respondents, white Welsh, white Scottish, white Irish, and white other are coded as 0 (the majority group) and respondents of any other background are coded as 1 (minority group).

Education: As income is also associated with education, a dummy variable is also added for having an education level of degree or higher.

Age: Age is measured in years and partitioned to three categories for some analyses: 16–34, 35–44, and 45–65. These categories were derived, balancing the need to construct meaningful age categories with the benefit of having the sample roughly equally distributed across categories.

Hours worked: Hours worked per week was also included as a metric variable in some analyses and also as a dummy variable for full-time working, with those working 35 hours or over per week being considered full-time.

5.4.2 Method

A series of regression models were run that aim to capture the different approaches to intersectionality described, including regression models (additive approach), regression models with additional interactions (multiplicative approach), and random effects and random slopes models (multi-level model approach). Example Stata syntax for each approach can be found in Appendix D. In order that the models can be better compared, the scale measures are all standardised and centred using Stata's 'egen z2' command. The number of cases is also restricted across all models to include only those who have valid data for all indicators so that the number of people in each model is the same, otherwise known as nested models. The nesting of models allows for the model fit statistics to be compared. Models are compared using *R*-squared, which shows the proportion of variance explained, and the Bayesian Information Criterion (BIC) (Schwarz 1978) that takes into account both model fit and parsimony. A higher *R*-squared suggests that more of the variance is explained; however, the BIC is penalized for each parameter added to the model. The model with the lowest BIC may not explain the most variance, but it is the most parsimonious.

5.5 Results

5.5.1 Additive and Multiplicative approaches

Firstly, a series of single-level regressions with and without interactions were fitted for a handful of social stratification measures. Table 5-1 and Table 5-2 show the results for the ICAM measures and the RGSC measure, respectively. The comprehension of the models becomes more challenging the more interaction terms are fitted, and this is particularly true in the case of the categorical RGSC model, as a separate interaction must be fitted for each value of a categorical variable and then compared with the contrast category, in this case, those in professional occupations. The literature on quantitative intersectionality approaches tends to be interested in intersecting categories; thus, categorical approaches to social stratification are usually selected. For example, McCall (2000) used a ten-category industry indicator, Dubrow (2013) uses a

(simplified two-category) version of the EGP class scheme, and Evans et al. (2018) use a 4-category income variable. Using stratification scales would allow for more parsimonious models as, because of their numeric form, fewer additional interaction terms need to be added to the model to account for intersectionality. However, when the BIC between Tables 5-1 and 5-2 are compared, the additional complexity of using a categorical class model is supported, as the BIC statistics are lower in the RGSC models. Thus, while the interpretation of these models is more difficult, at least when modelling income, it is warranted.

Table 5-1 Modelling income using additive and multiplicative approaches with a social stratification scale

	Model: A Ignoring inequalities	Model B: Main Effects	Model C: Single Interaction	Model D: Female interactions	Model E: Stratification interactions	Model F: Categorical Approach
Hours Worked	0.05***	0.04***	0.04***	0.03***	0.04***	0.04***
Age	-	0.01***	0.01***	0.01***	0.01***	0.02***
Degree	-	0.25***	0.24***	0.17***	0.24***	0.44***
Female	-	-0.22***	-0.23***	-0.40***	-0.22***	-0.39***
Minority group	-	-0.03	-0.02	-0.02	-0.02	0.25*
ICAM (standardised)	-	0.22***	0.18***	0.19***	0.21***	0.19***
Female*ICAM	-	-	0.09***	0.06***	0.08***	0.04**
Female*Degree	-	-	-	0.12***	-	0.08*
Female*Age	-	-	-	-0.00***	-	-0.01***
Female* Hours Worked	-	-	-	0.01***	-	0.01***
Female*Minority Group	-	-	-	0	-	-0.03
ICAM*Degree	-	-	-	-	-0.01	0.01
ICAM*Age	-	-	-	-	0	0.00*
ICAM* Hours worked	-	-	-	-	-0.00*	0
ICAM*Minority Group	-	-	-	-	0.04	0.05*
Minority Group*Degree	-	-	-	-	-	-0.03
Minority Group*Age	-	-	-	-	-	-0.00*
Minority Group*Hours	-	-	-	-	-	0
Degree*Age	-	-	-	-	-	0
Degree* Hours Worked	-	-	-	-	-	-0.01***
Age*Hours Worked	-	-	-	-	-	0
Constant	5.69***	5.58***	5.61***	5.74***	5.62***	5.59***
Observations	5642	5642	5642	5642	5642	5642
R-squared	0.459	0.644	0.648	0.654	0.648	0.657
BIC	8773.1	6459.1	6409.9	6341.7	6435	6371.9

Note: Table 5-1 shows a series of single level regression models with different intersectional analytical approaches. Data from wave 18 of the BHPS are used, the outcome variable usual gross pay per week (paygu). The bottom 1 percentile and above the top 99 percentile are omitted, as are those out with the working-age range of 16 to 65. Model A does not account for any inequality categories. Model B is a main effects model representing the additive approach. Models C, D and E include additional interaction terms representing variations of the multiplicative approach. Model F contains interactions between all inequality categories as represents the categorical approach

Table 5-2 Modelling income using additive and multiplicative approaches with a social class scheme

	Model: A Ignoring inequalities	Model B: Main Effects	Model C: Single Interaction	Model D: Female interactions	Model E: Stratification interactions	Model F: Categorical Approach
Hours Worked	0.05***	0.04***	0.04***	0.03***	0.02***	0.02***
Age	-	0.01***	0.01***	0.01***	0.01***	0.01***
Degree	-	0.24***	0.24***	0.20***	0.14*	0.25*
Female	-	-0.17***	0.03	-0.29***	-0.04	-0.25**
Minority group	-	-0.03	-0.02	0	0.01	0.35*
2.jbrgsc	-	-0.05	0.01	0.01	-0.35	-0.2
3.jbrgsc	-	-0.44***	-0.36***	-0.38***	-1.33***	-1.18***
4.jbrgsc	-	-0.45***	-0.34***	-0.34***	-0.59**	-0.49*
5.jbrgsc	-	-0.61***	-0.56***	-0.58***	-1.24***	-1.14***
6.jbrgsc	-	-0.69***	-0.54***	-0.57***	-1.02***	-0.87***
RGSC2*Female	-	-	-0.17**	-0.16**	-0.15*	-0.15**
RGSC3*Female	-	-	-0.21***	-0.14*	-0.07	-0.06
RGSC4*Female	-	-	-0.37***	-0.32***	-0.37***	-0.32***
RGSC5*Female	-	-	-0.16**	-0.08	-0.07	-0.02
RGSC6*Female	-	-	-0.35***	-0.23**	-0.23*	-0.12
Female*Degree	-	-	-	0.06*	-	0.04
Female*Age	-	-	-	-0.00***	-	-0.00***
Female* Hours Worked	-	-	-	0.01***	-	0.01***
Female*Minority	-	-	-	-0.04	-	-0.06
RGSC2*Minority	-	-	-	-	0.01	0.02
RGSC3*Minority	-	-	-	-	-0.07	-0.08
RGSC4*Minority	-	-	-	-	-0.12	-0.1
RGSC5*Minority	-	-	-	-	-0.02	-0.06
RGSC6*Minority	-	-	-	-	-0.33	-0.37
RGSC2*Degree	-	-	-	-	0.15**	0.13*
RGSC3*Degree	-	-	-	-	0.01	-0.01
RGSC4*Degree	-	-	-	-	0.03	0.01
RGSC5*Degree	-	-	-	-	-0.01	-0.04
RGSC6*Degree	-	-	-	-	-0.07	-0.14
RGSC2*Age	-	-	-	-	0	0
RGSC3*Age	-	-	-	-	0	0
RGSC4*Age	-	-	-	-	0	0
RGSC5*Age	-	-	-	-	0	0
RGSC6*Age	-	-	-	-	-0.01*	-0.01*
RGSC2*Work Hours	-	-	-	-	0.01**	0.01
RGSC3*Work Hours	-	-	-	-	0.03***	0.02***
RGSC4*Work Hours	-	-	-	-	0.01**	0.01*
RGSC5*Work Hours	-	-	-	-	0.02***	0.02***
RGSC6*Work Hours	-	-		-	0.02***	0.02**
Minority Group*Degree	-	-	-	-	-	-0.04
Minority Group*Age	-	-	-	-	-	-0.00*
Minority Group*Hours	-	-	-	-	-	0
Degree*Age	-	-	-	-	-	0
Degree* Hours Worked	-	-	-	-	-	-0.00*
Age*Hours Worked	-	-	-	-	-	0
Constant	5.69***	5.95***	5.89***	6.09***	6.53***	6.51***
Observations	5642	5642	5642	5642	5642	5642
R-squared	0.459	0.654	0.656	0.663	0.67	0.675
BIC	8773.1	6338.5	6335.9	6265.7	6283.8	6279.4

Note: Table 5-2 shows the same data and series of models as 5.1 using a categorical social stratification measure.

Model B allows for a cumulative disadvantage conceptualisation of intersectionality. We can 'add up' the cumulative advantage/disadvantage of being in particular groups. From the results here we could say that women are disadvantaged in that they have less income than men, and those who are in lower social classes/have a lower stratification score are disadvantaged compared to those in higher classes/higher stratification positions. Thus, women in a lower stratification position are doubly disadvantaged. When we compare model B with model A, we see that the inclusion of the social inequalities improves the model fit (Higher *R*-squared and lower BIC). Thus, simply accounting for multiple inequalities improves the analysis. However, intersectionality theory would suggest that the effect of being in multiple inequality groups can be greater than the sum of its parts. That is, the effect of being in one disadvantaged category can magnify the effect of being in another category of disadvantage. To test for this, we can include interaction effects.

McCall (2005) suggested that interaction terms should be included between every social inequality in the model. Model F shows the results from taking her categorical approach and fully saturating the model with interactions. Compared to Model B, the proportion of variance explained has increased, while the BIC has lowered when allowing for the effect of each inequality to vary across each other inequality. However, the interpretation of this model is challenging. The intersectionality-plus approach suggests that not every outcome will be equally a result of the intersection of all social categories (Weldon 2006). Thus, a more sensible approach might be to build up the number of interactions fitted in the model. Models C, D and E show different numbers and combinations of interactions to illustrate this. The BIC statistic favours Model D, both when ICAM and the RGSC are used to represent social position. Model D includes interaction terms for being female with each of the other inequalities. Thus, while the categorical approach taken in model F explains the most variance (highest *R*-squared), the BIC statistic suggests that it is overly complex.

As noted by McCall (2005) and Dubrow (2013), there are only so many interaction terms than can be fitted in a model, both in terms of its comprehension and practically in terms of the number of cases needed. For example, in this sample, there is only one non-white woman without a degree in the professional occupations category. Therefore, cation must be taken when considering the results of an analysis based on multiple interactions. Furthermore, including all possible interaction in the model, as in the categorical approach, is not likely to ever lead to the most parsimonious models. So, while data analysis software (such as Stata) makes the inclusion of interaction terms reasonably simple, blindly fitting as many interactions as possible is unlikely to be the most sensible approach to analysis. However, considering many different models with different numbers of interactions in a sensitivity analysis is a sensible and perhaps important

approach when considering multiple inequalities, as it is shown here that considering only the main effects leads to a poorer model.

5.5.2 Intersectionality only

This thesis has suggested that gender-specific measures could be used to account for the intersectionality of gender and stratification position a priori, rather than fitting interaction terms. The CAMSIS measure of social stratification position is similar to the International CAMSIS measure (used in Table 5-1) in terms of its theoretical bases as both measures are based on patterns of social interaction and distance between occupations. A key difference between them is that the CAMSIS approach is designed to be context-specific, where different stratification scales are developed for different countries, time periods and genders, reflecting the different occupational distributions of men and women. In Chapter 4, a further variation of the CAMSIS approach was developed which ordered occupations based on the patterns of women's female friends rather than through marriage patterns which most CAMSIS scales are based on.

Table 5-3 shows the results of models on female data using the male CAMSIS scale based on marriage patterns (CAMSISM), the female CAMSIS scales based on marriage patterns (CAMSISF), and the scale developed in Chapter 4 based on female friendship patterns (FFCAMSIS). This also has the effect of removing one set of interactions to create a fully saturated model, which makes the interpretation of the model easier.

Considering the models based on the main effects only (model i), there is very little difference between the models based on different CAMSIS scores, but the model fit and parsimony statistic suggests that the CAMSIS scores based on female friendship patterns are the best fit and most parsimonious. The effect of having a degree is slightly smaller in the FFCAMSIS models, and the effect of the CAMSIS score is slightly larger. When interaction effects are added, the FFCAMSIS models are still the best fit and are more parsimonious. In the models based on different CAMSIS scores, different interactions appear significant. This again shows the importance of conducting sensitivity analysis as, if only one CAMSIS score was tested, it is possible that a different intersectional story would be told.

Table 5-3 Modelling income using gender-specific CAMSIS measures

	CAMSISM		CAMSISF		FFCAMSIS	
	(i)	(ii)	(i)	(ii)	(i)	(ii)
Hours worked	0.04***	0.04***	0.04***	0.04***	0.04***	0.04***
Age	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
Degree	0.27***	0.27***	0.25***	0.26***	0.23***	0.24***
Minority group	-0.02	-0.03	-0.03	-0.03	-0.02	-0.01
CAMSIS	0.23***	0.28***	0.25***	0.31***	0.26***	0.30***
CAMSIS*Minority Group	-	0.06*	-	0.06	-	0.04
CAMSIS*Age	-	0	-	0	-	0.00*
CAMSIS*Degree	-	0.01	-	-0.02	-	-0.01
CAMSIS* Hours worked	-	-0.00***	-	-0.00***	-	-0.00***
Constant	5.31***	5.32***	5.33***	5.35***	5.36***	5.37***
Observations	2985	2985	2985	2985	2985	2985
R-squared	0.688	0.69	0.696	0.699	0.698	0.7
BIC	3026.3	3033.1	2950	2952.4	2926.6	2934.4

Note: Table 5-3 includes only female respondents from the same sample as Tables 5-1 and 5-2; the outcome variable is also the same. Three different gender-specific stratification measures are used in single-level regressions. The (i) model includes only the main effects. The (ii) model is a model fully saturated with interactions.

5.5.3 Multi-level models

It is also possible to account for intersectionality with social stratification measures using multi-level models. One option is to include one inequality category at the higher level. Table 5-4 shows a series of multi-level models with social class (RGSC) controlled for at the higher-level, thus controlling for the clustering of individuals into social classes. Individuals within social classes are thought to share a similar set of circumstances to each other, which are distinct from those in the other social classes (see Chapter 3, Section 3.3.1). Thus, the incomes of those in the same social class may be more alike, on average, than those between classes. This clustering of individuals in classes is accounted for at the higher level (e.g., model i), and then other individual-level variables can be added at level one (e.g., model ii). In a multi-level model it is also possible to add interactions between the level one variables (e.g., model iii), but it is also possible to allow for the effect of an inequality to vary across the higher level variable by fitting a random slope (e.g., model iv includes a random slope for gender which shows that the effect of gender varies across social classes), and interactions between this variable and the other lower-level variables can also be fitted alongside the random slope (e.g., model v). Multiple random slopes can also be fitted in the same model (e.g., models vi and vii). Multi-level models allow for Intercluster correlation (ICC) statistics to be computed, which shows the proportion of the variance that is attributed to the higher-level variable. Here the ICC shows that a large amount of variation in income is attributed to the higher-level variable social class (over 20% in all model variations).

However, as the RGSC contains only 6 classes, the use of multi-level models may be suboptimal, and fitting a dummy variable for each class (as in Table 5-2) is likely more appropriate. Multi-level models are typically used when the number of clusters is too high to support an independent analysis of each.

Table 5-4 Multi-level models of income with RGSC at level two

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Hours worked		0.04***	0.03***	0.04***	0.03***	0.04***	0.03***
Female		-0.17***	-0.43***	-0.18***	-0.45***	-0.18***	-0.45***
Minority group		-0.03	-0.01	-0.02	-0.01	-0.02	-0.01
Degree		0.24***	0.19***	0.24***	0.20***	0.19***	0.16***
Age		0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
Female*Degree			0.09***		0.07*		0.07*
Female*Age			-0.00***		-0.00***		-0.00***
Female*Hours Worked			0.01***		0.01***		0.01***
Female*Minority Group			-0.04		-0.04		-0.04
Constant	7.16***	5.58***	5.77***	5.59***	5.77***	5.60***	5.78***
var(_cons)	0.188462	0.067928	0.063835	0.055264	0.05898	0.05777	0.060703
var(Residual)	0.371503	0.177248	0.17379	0.176005	0.172766	0.175452	0.17228
var(fem)				0.012411	0.008403	0.012729	0.008611
var(degree)						0.003558	0.003197
Observations	5642	5642	5642	5642	5642	5642	5642
BIC	10485.5	6351.8	6275	6334.4	6262.7	6331.5	6261.4
ICC	.3365599	.2770595	.2686378	.2389592	.2545009	.2477048	.260548

Note: Table 5-4 shows a series of Multi level regression models with RGSC at level two. Data from wave 18 of the BHPS are used, the outcome variable is usual gross pay per week (paygu). The bottom 1 percentile and above the top 99 percentile are omitted, as are those out with the working-age range of 16 to 65. Model (i) is a random intercepts model with no level one predictors. Model (ii) is a random intercepts model with level one main effects. Model (iii) is a random intercepts model with level one main effects and interactions. Model (iv) is a random slopes model with level one main effects and a random slope for the effect of being female. Model (v) is a random slopes model with level one main effects and interactions and a random slope for the effect of being female Model (vi) is a random slopes model with level one main effects and random slopes for the effect of being female and the effect of having a degree. Model (vii) is a random slopes model with level one main effects and interactions and random slopes for the effect of being female and the effect of having a degree.

One example of how Multi-level models could be useful would be if we wanted to know whether intersectional effects were taking place at the level of occupations rather than social classes. Chapter 3, Section 3.3, described how social class measures might be less appropriate for the study of women because lots of women were concentrated into one class, meaning comparisons between women's positions could not be made, and several female-dominated non-manual occupations may have been misclassified, as they do not have the same advantage level as other non-manual occupations in the same class. Conducting an analysis at the occupation level would overcome these problems, but including a dummy variable for each occupation would mean fitting hundreds of additional parameters in the model. Using a multi-level model with occupations at the higher level means only one additional parameter is needed.

Table 5-5 shows the same models as Table 5-4, but this time the higher-level variable is occupation (SOC codes). The ICC shows that a substantial proportion of the variance (over 30% in all models, see Table 5-5) is at the occupation level, and more variance is attributed to occupations than social classes (Table 5-4). Model ii shows that, after accounting for the clustering of individuals into occupations, women still earn less than men on average, suggesting that the gender pay gap is not simply a product of men and women working in different occupations. Fitting interactions between gender and other inequalities (model iii) improves the model further (lower BIC and LR test shows that the models with the interaction terms are a significant improvement) and the best fitting model is that which included interaction between gender and all other inequalities and includes a random slope for being female (model v has the lowest BIC and LR tests show the additional slope term is a significant improvement). From model v, we can conclude that there are intersectional effects on income between gender and other inequalities after controlling for occupations and that the effect of being female on income varies across occupations.

Table 5-5 Multi-level models of income with occupations at level two

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Hours Worked		0.04***	0.03***	0.04***	0.03***	0.04***	0.03***
Female		-0.12***	-0.35***	-0.11***	-0.39***	-0.11***	-0.39***
Minority group		-0.01	0.01	-0.01	0.01	-0.01	0.01
Degree		0.20***	0.18***	0.20***	0.18***	0.20***	0.18***
Age		0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
Female*Degree			0.04		0.03		0.05
Female*Age			-0.00***		-0.00***		-0.00***
Female*Hours Worked			0.01***		0.01***		0.01***
Female*Minority Group			-0.03		-0.04		-0.04
Constant	7.37***	5.83***	5.99***	5.83***	6.01***	5.82***	6.01***
var(_cons)	0.192146	0.088541	0.085987	0.088393	0.087013	0.087198	0.085712
var(Residual)	0.255951	0.147354	0.144883	0.146502	0.143396	0.14575	0.142532
var(fem)				0.004926	0.007481	0.004868	0.007354
var(degree)						0.006631	0.007581
Observations	5642	5642	5642	5642	5642	5642	5642
BIC	8977.4	5851.5	5787.7	5854.3	5781	5857.4	5782.3
ICC	.4288044	.3753395	.3724473	.3763095	.3776474	.3743218	.3755285

Note: Table 5-5 uses the same data as Table 5-4 and shows the same model variations. However here the Level two variable is occupations measured using SOC Codes

Evans et al. (2018) suggest that multi-level models can be used to improve McCall's categorical approach. As noted in Section 5.5.1, the categorical approach did explain the most variance when compared with models that had fewer interaction terms; however, it lacked parsimony. Rather than fitting just one inequality at the higher-level, Evans et al. (2018) suggest creating a grouped variable of all overlapping inequalities of interest and fitting this at the higher level. This reduces the number of parameters in the model, as multiple interaction terms do not need to be fitted. Evans et al. (2018) call each of the overlapping inequality groups 'strata'. This approach only works using inequalities that are categorical; thus, the RGSC social class variable (6 categories) is used, and a three-category age variable is created to be used along with dummy variables for being female, having a degree, being in an ethnic minority group. This means there is a possibility of 144 (6 x 2 x 2 x 2 x 3) inequality combination groups or 'strata'. In this sample, 123 strata had at least 1 observation, 64% had over 10 observations, and 42% over 20. A further benefit of using multi-level models is that they automatically weight small intersectional groups toward the mean, thus minimising the problem of small sample sizes in intersectional analysis.

It is argued that when a multi-level model is run with strata at level two, the ICC can be thought of as showing the variance that exists at the intersectional level (Bell et al. 2019). Evans et al. (2018) suggest fitting main effects for each of the inequalities that make up the strata at level one

to account for their non-intersectional effects. Bell et al. (2019) further suggest that interactions between those main effects should be included at level one; however, this does add more parameters to the model. Table 5-6 shows the ICC statistics for both approaches, between 2% (interaction model) and 7% (main effects) of the variance in income is at the strata level. Merlo (2018) suggests that even a modest proportion of variance at the higher (strata) level, (e.g., 5%), is important to recognise and therefore intersectional equalities are argued to be important in income inequality.

Table 5-6 Variance partition and ICC of Multi-level models of income with Strata at Level two

	Evans et al. (2018) Main effects	Bell et al. (2019) Interactions
Variance strata level	0.0232375	0.0078252
Variance individual level	0.2912576	0.2856047
ICC	0.0738883	0.0266681

By estimating the residuals for each strata, we can see which are associated with higher or lower income, and thus compare 'specific' intersectional effects (Bell et al. 2019). Figure 5-2 shows the plotted empirical Bayes residuals for the main effects model, with 95% confidence intervals. Most of the confidence intervals for each strata cross zero; thus, an intersectional effect for that combination of inequalities is often not found. However, there are a number of strata which are found to be significantly higher or lower, which are listed in Table 5-7.

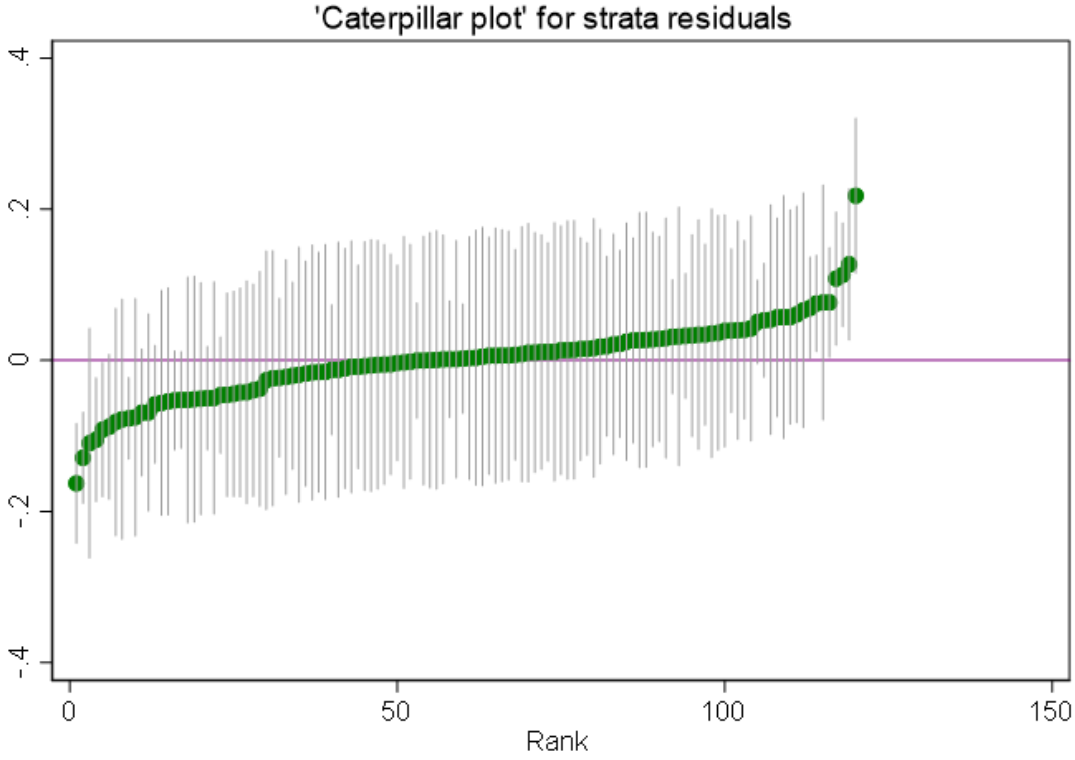

Figure 5-2 Examining strata residuals, shows the empirical Bayes residuals for each stratum with 95% confidence intervals, based on a main effects multi-level model of income controlling for each inequality variable that makes up the strata variable at level one .

Table 5-7 shows that slightly different strata are found to be significantly different in the main effects model compared to the model with interaction between the main effects. Evans et al. (2018) suggest the former are those which have true intersectional effects. Bell et al. (2019) suggest that we can be more confident about those from the latter. The first thing to note is that that the inequalities are not always combining in the same ways. Being female/in a minority group/ having no degree/ being young does not always result in being disadvantaged. Sometimes these inequalities combine to produce a more advantaged situation rather than a less-advantaged situation. For example, young unskilled women, without a degree, who are not white are predicted to have higher income on average than the main effects alone would suggest. By contrast, young white men with a degree in managerial technical occupations are predicted to have lower income on average than the main effects of these variables would suggest. This is evidence that taking an intersectionality-plus approach is important. This approach accepts that the relationship between these social inequalities can vary over time and space. That is, in some scenarios, inequalities, such as gender and stratification position, might reinforce each other but, in other circumstances, they can mask each other. Multi-level modelling in this way seems a promising approach to recognising that membership of a particular social group will not always lead to advantage or

disadvantage, as multiple groups are compared simultaneously by design rather than with a presumably privileged reference category (Evans et al. 2018).

Table 5-7 List of Strata with significantly higher or lower empirical Bayes residuals

strata	RGSC	Gender	Ethnicity	Education	Age
Significantly higher					
14	1. professional	female	white	no degree	45+
15	1. professional	female	white	degree	16-33
18	***1. professional***	***female***	***minority***	***no degree***	***34-44***
23	*2.managerial & technical*	*male*	*white*	*no degree*	*34-44*
26	*2.managerial & technical*	*male*	*white*	*degree*	*34-44*
35	*2.managerial & technical*	*female*	*white*	*no degree*	*34-44*
37	2.managerial & technical	female	white	degree	16-33
39	2.managerial & technical	female	white	degree	45+
47	***3. skilled non-manual***	***male***	***white***	***no degree***	***34-44***
48	3. skilled non-manual	male	white	no degree	45+
58	3. skilled non-manual	female	white	no degree	34-44
59	3. skilled non-manual	female	white	no degree	45+
68	***4. skilled manual***	***male***	***white***	***no degree***	***34-44***
69	4. skilled manual	male	white	no degree	45+
90	***5. partly skilled***	***male***	***white***	***no degree***	***34-44***
91	5. partly skilled	male	white	no degree	45+
110	6. unskilled	male	white	no degree	16-33
117	***6. unskilled***	***male***	***minority***	***no degree***	***45+***
122	***6. unskilled***	***female***	***minority***	***no degree***	***16-33***
Significantly lower					
22	2.managerial & technical	male	white	no degree	16-33
25	***2.managerial & technical***	***male***	***white***	***degree***	***16-33***
46	***3. skilled non-manual***	***male***	***white***	***no degree***	***16-33***
59	*3. skilled non-manual*	*female*	*white*	*no degree*	*45+*
64	3. skilled non-manual	female	minority	no degree	34-44
69	*4. skilled manual*	*male*	*white*	*no degree*	*45+*
87	4. skilled manual	female	minority	no degree	45+
89	5. partly skilled	male	white	no degree	16-33
91	*5. partly skilled*	*male*	*white*	*no degree*	*45+*
99	5. partly skilled	female	white	no degree	16-33
120	6. unskilled	female	white	no degree	45+

Note: Plain text denotes that the stratum was significantly different from what the main effects alone would suggest in the main effects model (suggested by Evans et al 2018). Italics denotes that the stratum was significantly different from what the main effects alone would suggest in the main effects model with interactions (suggested by Bell et al. 2019). Bold denotes that the stratum was significantly different from what the main effects alone would suggest in both models.

5.6 Conclusion

This chapter has reviewed how social stratification researchers might benefit by engaging with the ideas of intersectionality. There has been some disconnect between intersectional theory and the methods used by mainstream stratification researchers. However, a small but increasing body of literature is trying to bridge this divide (Dubrow 2013; Hancock 2007; McCall 2005; Walby 2007; Weldon 2006) as it is argued that both stratification research and intersectional research could benefit from knowledge of the other's discipline. Building on the work of Dubrow (2013), this chapter has offered an empirical example of the potential insights of applying intersectional ideas to quantitative stratification research. It is argued that adopting the intersectionality-plus approach is likely to be the most sensible for stratification researchers. This approach is similar to that of a sensitivity analysis and advocates that researchers test multiple different conceptualisations of intersectional relationships. Until recently, the most commonly used quantitative intersectional approach was the inter-categorical approach suggested by McCall (2005), which advocates for fully saturated regression models to account for multiple intersecting inequalities. However, it is argued here that this likely leads to models which are not parsimonious and that, while it is important to test for interaction effects between inequalities, this should be built up more gradually through a sensitivity analysis. Testing multiple interactions and main effects models is also more akin to the ideas of the intersectionality-plus approach, which recognises that there may not always be intersectional effect between all inequalities in all scenarios.

Multi-level modelling has emerged recently as an important extension to McCall's (2005) inter-categorical approach in the literature surrounding health inequality (see Bell et al. 2019; Evans et al. 2018). This chapter applied these approaches to a social science application of income inequality. It is argued here that these new approaches to intersectionality are an important step forward and are well aligned with the ideas in an intersectional plus approach, as both between- and within-group effects are tested and all intersectional groups are tested simultaneously for evidence of intersectional effects. The multi-level approach also allows for more parsimonious models, as fewer parameters need to be added to account for intersectional effects. Practically, this approach is also beneficial for working with social science data as, frequently, only a small number of individuals will have a specific combination of intersecting inequalities. Multi-level models are more robust for sparse groups due to the shrinkage property of the higher-level residuals.

Moreover, this thesis would argue that it is also sensible to test several different measures of stratification position, including class measures, scale measures and measures designed to be specific to context. In this analysis of income, it was found that class models outperformed scale

measures in terms of model fit and parsimony. This chapter also argued that using stratification measures which are designed to reflect interesting inequalities could be considered an intersectional approach. It was found that the CAMSIS score based on female friendship patterns led to a slightly better model, both with and without interaction effects, explaining more variance and being more parsimonious, suggesting that the design and use of gender-specific measures could be an important way forward when considering the intersection of gender and social position.

6 Longitudinal analysis of household-level measures

Gender relations have been based on the asymmetrical, and unequal, interdependence of women and men; with the separation of key aspects of women's and men's lives organised around the assumption of their connection within (heterosexual) family relations. Bottero (2005, p106)

6.1 Introduction

Bottero (2005) argues that men and women, on average, have very different occupational profiles and although not all men and women live in heterosexual units, they are all affected by the structures that surround these norms. One approach to dealing with the "asymmetrical, and unequal, interdependence" (Bottero 2005, p106) of men and women at home and in the labour market is to measure social stratification position at the family level. One key argument cited in the 1980s in support of using a male household approach was that women on average had a weaker attachment to the labour market (Goldthorpe 1983). Given the changing nature of women's working lives over time, this chapter compares a range of household approaches in a longitudinal context, discussing whether different measurements might be more or less appropriate at different time points.

Until around 1970 it was the norm to measure social stratification in this way, typically using the oldest working male's (household head's) occupation to assign positions to the rest of the family unit (Albright 2008; Sorensen 1994). The position of married and cohabiting women was therefore centred on their role within the home, and their stratification position was derived from their relationships to men. From the 1970s, it became increasingly common to assign positions to individuals rather than the family, with many scholars arguing that discounting women's own occupations was both sexist and imprecise (Sorensen 1994). However, given the ongoing inequalities between men and women on average, both in the labour market and in the home (see Chapter 2), this chapter will explore whether measuring social stratification position at a household level may lead to more accurate reflections of both men and women's social position if attention is paid to the occupations of both genders. Previous approaches to family/household level measurement will be reviewed with a view to understanding which, if any, previous approaches might be most appropriate for modern work-family patterns. There are very few studies which compare the explanatory power of different operationalisations of different household level approaches to measuring social stratification (Sorensen 1994); thus, this is an original contribution of this thesis.

In this chapter data from four decades (1980, 1990, 2000, and 2010), from the UK and the USA, will be used. Thus, the period from when the major debates about the appropriateness of household-level measurement took place (e.g., Abbott 1987; Crompton and Mann 1986; Dale et al. 1985; Erikson 1984b; Goldthorpe 1983; Goldthorpe and Payne 1986b; Heath and Britten 1984; Leiulfsrud and Woodward 1988; Stanworth 1984) will be covered through to the most recent available waves of the data. The UK and USA were chosen as they represented countries with different norms surrounding women's attachment to the labour market. While both countries are classified as liberal welfare states under Esping-Andersen's (1990) typology (see Section 2.3) and the proportion of women working is similar, women's attachment to the labour market might be quite different as a bigger proportion of women work part-time in the UK than in the USA (Tomlinson 2007). According to OECD data, 24.1% of employees in the UK work part-time, a percentage that has increased steadily since the1980s (Tomlinson 2007). Conversely, in the USA, the proportion of part-time workers declined slightly between 1990 (14.1%) and 2004 (13.2%) (Tomlinson 2007). When considering employed mothers, 62% work part-time in the UK compared to 26% in the USA (Tomlinson 2007).

6.2 Household approaches

One argument for a household approach is that typically spouses will combine their resources to give the family a shared lifestyle (e.g., housing, holidays, hobbies, and school fees) (Rose 2008). While resources are not always divided equally, and men are like to take the 'lion's share', this inequality takes place within an overall shared standard of living (Bottero 2005). Even in less egalitarian partnerships, the majority of income is commonly spent on things that benefit the whole household, such as food and shelter (Blackburn 1999). It has also been found that children's occupational outcomes are related to the occupations of both parents, which arguably suggests that women's occupations influence their families' social position (Lampard 1995). Though there are some convincing arguments for measuring stratification position at a household level, there is no consensus on how this should be achieved. There are three main approaches to household level stratification using occupational information; the conventional approach, the dominance approach, and the combined approach, each of which will be discussed in turn.

6.2.1 Conventional approach

The 'conventional approach' (e.g., Blau and Duncan 1967; Erikson and Goldthorpe 1992; Featherman and Hauser 1976; Ganzeboom et al. 1992) maintains that it is the family as a unit that holds a particular position in the structure of inequality, not the individual, and that a family unit's position can be measured by the occupation of its male household head (Goldthorpe 1983). For women, this meant that married or cohabiting women were assigned their stratification position

on the basis of their husband's occupation, and, for unmarried women, the occupation of their father or another male relative within the household would typically be used. Women who did not live in a household with a male would either be left out of the analysis or, in some variations of the conventional approach, be assigned a position based on a female household head.

In the conventional approach, whether a woman in a household is a housewife, a cleaner or a doctor makes no difference to the position the family is assigned within the stratification structure. Though the most widely criticised of the household approaches discussed here, it is also the easiest to operationalise. While the ease of operationalisation does not excuse sexist assumptions, it is still worth noting. All that is required to use this approach is the occupational circumstance of one male family member, and this allows for it to be operationalised with more data sets, especially more historical data sets that perhaps did not collect information on women.

Some have argued that the growing participation of women in the labour market, the growing number of female-headed lone parent households, and the rising number of women holding more advantaged occupations than the males in their household rendered this approach outdated (De Graaf and Heath 1992; Hayes and Miller 1993). A popular reaction was to take an individualist approach and assign positions to women based on their own occupations (Abbott and Sapsford 1987; Acker 1973; Stanworth 1984; Walby 1986). While this approach is very useful in some kinds of research, and, in particular, it has greatly improved understanding of gender inequality in the labour market and the mechanisms that support it, it still true that adults living in the same household will often pool resources, regardless of whether one or both of them are in employment.

6.2.2 Dominance approach

The dominance approach (Erikson 1984) is similar to the conventional approach in that it uses the occupation of one household member to assign the social stratification position of the family unit. The major difference is that who that household head should be is decided empirically rather than in the conventional approach where it is always the male. Sorensen (1994) describes this as the difference between a patriarchal approach and an empirical approach. In the dominance approach, it is argued that the individual within the unit who has the strongest attachment to the labour market is the household head. From this approach, if a women's occupation is considered to dominate over their partner's, in terms of influence on the family circumstances, then her occupation should be used for the family (Erikson 1984; Goldthorpe and Payne 1986). This empirical approach to deciding the household head was later endorsed by Goldthorpe, perhaps the most vocal supporter of the conventional approach (Erikson and Goldthorpe 1992).

The criteria for choosing the dominant occupation in Erikson's (1984) original methodology was designed to decide which individual had the greater labour market attachment. In households where more than one person worked full-time (full-time occupations were thought to dominate part-time occupations), deciding on occupational dominance was a three-stage process. The first stage was education level; the partner with the occupation requiring the highest level of education was considered to be dominant. The second stage was employment status; self-employed partners were though to dominate partners that were employees. The third stage was employment type, partners in non-manual occupations were thought to dominant partners in manual occupations. The approach was designed for use with a class scheme, where the classes in order of dominance were, self-employed professionals, employed professionals, farmers, smallholders, large-scale proprietors, small-scale proprietors, self-employed with no employees, intermediate non-manual, routine non-manual higher level, skilled manual workers, routine non-manual lower level, unskilled manual workers, students, and those with no occupation. However, it is also possible to take a dominance approach with a scale measure of stratification position by using additional variables to give information on hours worked, education, self-employment and manual or non-manual occupations

It is also common to see researchers operationalising a 'dominance approach' by using the more advantaged partner on a specified stratification measure as the household head (e.g., Korupp et al. 2002; Meraviglia and Buis 2015). This is a simpler way to operationalise than the dominance approach outlined by Erikson. However, it would likely lead to a different partner being considered to have the dominant occupation in many households, due to the number of women working part-time in mid-range non-manual occupations that do not require post-school qualifications (e.g., secretaries) and men in full-time manual work that requires an apprenticeship (e.g., welder). If we take the UK CAMSIS scale as an example, the secretary would obtain a score of 63, whereas a welder would obtain a score of 33. Therefore, in this partnership, if we used the higher partner's score, the couple would obtain a score of 63. But, under the dominance approach, because the secretary works part-time and has a lower qualification level, they would not be thought of as the dominant partner. For couples who work in stereotypically male and female occupations and have a more traditional work-life arrangement, with the female partner working fewer hours, using the female partner's job to classify the family might be less appropriate.

The dominance approach has a clear advantage over the conventional approach in that women's occupations are considered to have the ability to influence the overall family position. It does not, therefore, make any overtly sexist assumptions about family dynamics and circumstances. But the dominance approach, at least in its originally conceived form, has not had widespread use. Sorensen (1994) suggests that is perhaps because, in dual-earner couples, the empirical approach

to assigning household head usually results in the male occupation being used, rendering it very similar to the conventional approach. This could be argued to be an accurate reflection of family circumstances, and, as gender equality changes over time in the labour market and the home, more women would be assigned the household head position.

6.2.3 Combined approach

The combined approach differs from the conventional and dominance approaches in that it does not select one individual's stratification position to define the household position (Bartley 1999). Leiulfsrud and Woodward (1988, p555) argue that "Analyses that ignore one partner are based on assumptions that are difficult to defend either theoretically or empirically". Stanworth (1984) also suggest that taking a family approach to assigning social position does not mean that a household head must be defined. Rather the combined approach attempts to combine the individual stratification positions within the household into one household position. However, there has been little agreement over the most appropriate way to achieve this. Much of the discussion on how to combine the occupational information of households has focused on how to combine the class positions of individuals. There has therefore been much discussion on how to handle 'cross-class' couples, that is, couples whose occupations do not fall within the same class category (e.g., Graetz 1991; Leiulfsrud and Woodward 1989; McRae 1986). Couples where only one individual is economically active or where both partners fall into the same class category are not usually considered problematic; they are assigned the class category into which one or both of them fall (Sorensen 1994). Erikson (1984) suggests that trying to find the average positions of individuals within a family might be possible. However, he argued that, when using class approaches, this would be problematic, due to the different dimensions of the classes. However, he does not consider the use of scale measures, and, if using a scale measure, it is relatively simple to take the average of the two scales and it is also likely more meaningful than taking a class average. Erikson (1984) also suggests that taking an average would be dubious as this would suggest that the class position of a manager married to a shop assistant would be similar to that of an unmarried teacher. However, using scale approaches, it would also be possible to add the two partners' scales together. The key difference being the distance between the score of single people and people within couples.

6.3 Data and variables

Data from the International Social Survey Project (ISSP) and the British Social Attitudes Survey (BSA) were used for this chapter. ISSP data were used for the US results and more recent British results; however, in the earlier time points, the occupational coding scheme used for the UK was

not available at a detailed enough level. Therefore, the source survey for the UK data in the ISSP was used, the BSA, as the BSA data are collected for use in the ISSP and comparable questions were asked.

Sorensen (1994) argued that, while for some kinds of stratification analysis the unit of analysis should be the individual (e.g., mapping the social stratification structure; or accounting for the level of gender inequality in the labour market), in other types of analysis the family is the more appropriate unit. Rose (2008, p16) suggests that for "non-work aspects of life chances and behaviour" the stratification position of the family should be measured. While hardly any studies compare different household approaches, several studies have compared the influences of male and female partners' stratification position on outcomes. Commonly used outcome variables include subjective stratification position and political affiliation (e.g., Abbott 1987; Erikson and Goldthorpe 1992; Felson and Knoke 1973; Hayes and Miller 1993). These topics both theoretically make sense as outcomes that would vary with household-level stratification position and thus have been selected here.

As shown in Table 6-1, there are some differences in how subjective social stratification position is measured, both across years and across countries. Thus, results are not directly comparable, and conclusions thus cannot be said to be directly a result of time and country differences, although they will offer proof of concept. There was also no self-rated stratification position variable available for the 2000s in the UK. Table 6-2 shows the measurement of political affiliation for each year and country. While the measurement of political affiliation is much more similar across years, obviously, political parties are different in the UK, and the USA, and party affiliation may be more or less closely related to social stratification position over time and across countries. Thus, again, results here can only offer proof of concept. More testing of any findings with more comparable data would be desirable in future studies.

Table 6-1 Measurement of subjective social stratification position

	Year	Source	Original code	Recode
UK	1980s	BSA 1985	1.upper 2.middle 3.upperworking 4.working 5.poor	1.poor 2.working 3.upperworking 4.middle 5.upper middle
	1990s	BSA 1996	,,	,,
	2000s	-	-	-
	2010s	ISSP 2016	Lowest, Bottom, 01 2 3 4 5 6 7 8 9 10. Highest, Top,	Lowest, Bottom, 01 2 3 4 5 6 7 8 9 10. Highest, Top,
USA	1980s	ISSP 1988	1.lower 2.working 4.middle 6.upper	1.lower 2.working 4.middle 6.upper
	1990s	ISSP 1994	,,	,,
	2000s	ISSP 2005	Lowest, Bottom, 01 2 3 4 5 6 7 8 9 10. Highest, Top,	Lowest, Bottom, 01 2 3 4 5 6 7 8 9 10. Highest, Top,
	2010s	ISSP 2016	,,	,,

Table 6-2 Measurement of political affiliation

	Year	Source	Original code	Recode
UK	1980s	BSA 1985	1.Conservative 2.Labour 3 – 7 other political parties	1.Labour 0.Conservative .
	1990s	BSA 1996	’’	’’
	2000s	ISSP 2005	’’	’’
	2010s	ISSP 2012	’’	’’
USA	1980s	ISSP 1988	1 Strong Democrat 2 Not strong Democrat 3 Independent, near Democrat	1.Democrat
			4 Independent	.
			5 Independent, near Republican 6 Not strong Republican 7 Strong Republican	0.Rebublican
	1990s	ISSP 1994	’’	’’
	2000s	ISSP 2005	’’	’’
	2010s	ISSP 2012	2. Democrat 6. Republican 96. invalid ballot	1.Democrat 0.Rebulican .

Information on respondents’ present, or former if not currently employed, occupation is asked in the ISSP. However, the occupational coding scheme varied by year and country, and, in earlier years of the ISSP, national coding frames were used instead of international ISCO88 codes. The BSA survey also used national coding schemes. These national schemes were translated into the ISCO88 coding scheme using crosswalks that were developed by other researchers and available online. Then, further code available online was used to convert the ISCO88 codes into International CAMSIS (ICAM), the Standard International Prestige Scale (SIOPS) and the International Socio-Economic Index (ISEI). Table 6-3 outlines the process.

Table 6-3 Conversion of occupational codes into stratification measures

Data set	Occupational classification code	Step one	Step two	Step three
BSA 1985	OUG88	Converted to SOC90 By hand using translation available on CAMSIS webpage[21]	Converted from SOC90 to ISCO88 using syntax available on the CAMSIS webpage[22]	RGSC, ICAM, SIOP, ISEI added to ISCO88 using Ganzeboom's tools[23]
BSA 1996	SOC90 UK	-	''	
ISSP 1988 (American data)	SOC70 US	-	Converted from SOC70 to ISCO88 using code available through the IMSF project pages[24]	
ISSP 1994	ISCO68 US	-	Convert to ISCO88 using Ganzeboom's tools[25]	
ISSP 2005, 2012, 2016	ISCO88	-	-	

As well as being operationalized at the individual level, the three selected stratification measures (ICAM, ISEI and SIOPS) were also operationalized at the household level. The rules followed to create the household approaches are shown in Table 6-4 and example Stata code for this operationalization can be found in Appendix E. One problematic feature of the ISSP data is that it does not give the gender of the respondent's partner. This does not make a difference for the dominance and combined approaches, as the occupations are assessed regardless of the incumbent's gender. However, when using the conventional approach, the male partner's occupation should be chosen. Here, if the respondent is male, their occupation is used, and if they are female, their partner's occupation is used, though it is entirely possible that some respondents are in same-sex partnerships. As the conventional approach does not provide guidance on how

[21] See table at http://www.camsis.stir.ac.uk/Data/Britain91.html

[22] See http://www.camsis.stir.ac.uk/occunits/uksoc90toisco88v1.sps

[23] See http://www.harryganzeboom.nl/isco88/index.htm

[24] See http://www.harryganzeboom.nl/ismf/ismf.htm

[25] See http://www.harryganzeboom.nl/isco68/index.htm

same-sex couples would be assigned positions, it is argued that, even if the sex of partners was available, one would likely default to individual's occupation, or they would have to be dropped from the data. To maximise the number of respondents, and not ignore single women in the analysis, in this version of the conventional approach, women who do not have a partner are assigned based on their own occupation so the assignment would not be fully male-based anyway. Thus, it is argued this is not too problematic, especially as analyses of other similar surveys have found that only around 1% of respondents are in same-sex couples (Black et al. 2000; Fischer 2016; Jaspers and Verbakel 2013). Spouse's level of education is also not available in the ISSP, and this is problematic when following the dominance approach, as those with higher education should dominate when deciding stratification position. Therefore, here, the dominance approach has been followed as far as possible given the data limitations. If neither partner is found to be dominant (e.g., both work full-time and are self-employed and have non-manual occupations) then the respondent's own occupation is used. In each case, if the respondent does not have a partner or no occupation is given for the partner, then their own score is used.

Table 6-4 Rules followed to create household-level measures

Household approach	Rule
Conventional approach	Own score if male and partners' score if female
Dominance approach	Full-time dominates part-time Self-employment dominates employment Non-manual occupations dominate manual ones
Most advantaged approach	The highest score is used
Combined scale (means)	Take the average of each partner's score
Combined scale (addition)	Add partners scores together
Individual approach	Respondent's own occupation is used

Further variables used in the models were whether an individual was female (1 female, 0 male), whether an individual had a degree (1 degree, 0 no degree), whether an individual was married or cohabiting (1 married or cohabiting, 0 not married or cohabiting), and an individual's age in years.

6.4 Method

The first stage of the analysis was to compare the different household approaches over time to see how many households are classified by a female in the dominance and most advantaged approaches. Then, a series of regression models were run for each country for each selected topic

and year, using each different approach for each stratification measure (ICAM, SIOPS, and ISEI), and the models were nested for comparison. The models were run firstly as null models containing only the stratification position measure and then again with the control variables. This was then repeated separately for men and women. Due to the large volume of outputs produced, only a selection of results can be presented here. The models run for subjective stratification position were linear regression models; those for political affiliation were logistic regression models.

6.5 Results

Table 6-5 compares the number of female-headed households over time using three approaches to defining the household head. This is done for the total sample (including single men and women and couples in which only one partner works) and for just those in dual-earner couples. In the conventional approach, only single women and women whose partner has no occupational information are considered the household head. Thus, no women in dual-earner couples are considered to be the household head. In the UK the proportion of female-headed households under the conventional approach doubles across the 4 decades, whereas in the USA it remains stable. This suggests that in the UK there is a growing number of single women in the sample and/or a growing number of single-earner couples in which only the woman is working. From the literature review, it is likely the former.

Under the dominance approach, single women and women whose partner has no occupation are considered the household head as are women who are considered to have a greater labour market attachment than their partners. In the US, this leads to around 50% of the sample overall having a female household head, and it also results in around 50% of dual-earner couples having a female household head. In the UK, there is more evidence of an over time trend, both in the total sample and in dual-earning couples. However, by 2010, over 50% of the sample overall and dual-earners are considered to have a female household head. This likely reflects the increasing prevalence of full-time work among women in the UK (see Chapter 2, Section 2.2), as, under the dominance approach, full-time workers are considered to be the household head if their partner works part-time. Thus, as the number of female full-time workers grows, the number of female household heads in the UK is also likely to grow, whereas in the USA, part-time work is less common, even in earlier periods (Tomlinson 2007). In both the US and the UK, a substantially higher proportion of women are considered to be a household head in each year under the dominance approach than were under the conventional approach. In the UK, under the dominance approach, around 15% more women in the total sample are considered the head each year; in the US, the change is around 20% each year. This suggests that there could be quite substantial differences between

the results of an analysis based on the conventional or dominance approach, even in the earlier periods, as a substantial proportion of households would be classified based on different occupational information. In 1983, Goldthorpe was arguing in defence of the conventional approach due to women's weaker labour market attachment. These figures suggest that, in fact, at that time in the UK, a substantial proportion of women (28.02%) with working male partners had a greater attachment to the labour market than their partner, and, in America, it was as high as 47.28%. It had been argued that take-up of the dominance approach was uncommon because few women were classified as the household head under this approach and thus it was very similar to the conventional approach (Sorensen 1994). However, these findings do not support this assumption, particularly in America and in later periods in the UK.

In the highest position approach, women's occupations are used to define the family unit's position if they are single, their partner has no occupation, or their stratification position is higher than that of their partner. Because different stratification measures will have different orderings of occupations, the higher position approach is shown with three measures. In nearly all examples, the proportion of women who define the classification is higher under the highest position approach than under the dominance approach. Indeed, under the higher position approach, using the ICAM measure in all years, more than 50% of the total sample and the sample of dual-earners are classified by the occupation of a female. This difference tends to be biggest in the UK. The more advantaged approach is often used as a simplified version of a dominance approach; however, as it does not account for the prevalence of part-time work, many more women's occupations define the family position, particularly in the UK, where part-time working is more common.

Overall, there are some major differences in the number of family units who would be classified by a woman's occupations, depending on which approach to classification was taken. Thus, a comparison between the approaches seems warranted. Women in the USA are more frequently designated the household head under all approaches in which that is possible, indeed, in most cases, at least 50% of the total sample and the dual-earner couple sample is assigned a position based on a woman's occupation. In the UK, there is greater evidence of an over time trend with women's occupations representing more household heads over time in each approach where this is possible. It could be hypothesised that the conventional approach would, therefore, have less relevance in the USA than the UK and that it would have more relevance for women in the earlier period in the UK than in the later period.

Table 6-5 Comparing the proportion of female household heads over time using different approaches to classification

		The proportion of female-headed households									
		Conventional		Dominant		Higher (ICAM)		Higher (ISEI)		Higher (SIOPS)	
		UK	USA	UK	USA	UK	USA	UK	USA	UK	USA
1980	Total	20.19	28.01	36.55	51.54	52.39	59.23	49.10	55.80	43.07	52.19
	Dual earners	*0*	*0*	*28.02*	*47.28*	*54.87*	*60.52*	*49.05*	*55.84*	*38.26*	*48.36*
1990	Total	25.95	29.46	48.41	54.12	56.77	59.51	53.25	54.16	48.53	53.80
	Dual earners	*0*	*0*	*40.37*	*50.00*	*55.25*	*57.25*	*48.35*	*48.86*	*39.25*	*48.15*
2000	Total	35.60	28.85	48.50	51.58	55.24	58.62	50.92	54.82	50.92	53.67
	Dual earners	*0*	*0*	*36.14*	*49.33*	*55.00*	*63.59*	*42.18*	*55.22*	*42.12*	*52.56*
2010	Total	38.43	25.06	54.95	52.52	55.41	58.14	53.56	55.44	52.12	55.05
	Dual earners	*0*	*0*	*53.46*	*51.10*	*54.56*	*61.59*	*48.07*	*55.95*	*43.01*	*55.09*

Note: Table 6-5 shows the proportion of total household and dual-earner households (both partners in employment) that would be considered to have a female household head under different approaches in the UK and the USA using data from the 80s, 90s, 00s and 10s

6.5.1 Self-rated social position

The analysis was run both for the total population and separately for men and women. Table 6-6 shows the null models for all approaches for the women in the UK and USA in each year using the ICAM stratification measure for illustration. For women, there are four conceptual approaches to their stratification position in the table. Firstly, in the individual approach, they are conceptualised as having a stratification position that is solely dependent on their own occupations and not influenced by any other person. Secondly, in the conventional approach, they are conceptualised as having a stratification position that is solely dependent on another occupation and not their own occupation. Thirdly, in the dominance and higher scores approach, they are conceptualised as having the potential to define their own and others' stratification position but may also receive their position through another's occupation. Finally, they are conceptualised as defining their own position in combination with another person.

The first comparison that can be made in the table is to compare whether women's subjective social position is more related to their own or to their partner's occupations. This is achieved by comparing the individual and conventional approach. In a similar analysis of data from the 1980s, Erikson and Goldthorpe (1992) found that women's subjective position was more related to their husband's objective position than their own in the UK and the USA. Based on those findings, they argued, "It is not just 'sexist' sociologists but married women themselves who are inclined to see their class as being 'derived' from that of their husbands" (Erikson and Goldthorpe 1992,

p99). They suggested that this finding was consistent with the premises underlying the conventional approach and thus lent support to its use. In the 1980s, the results here support that finding in both the UK and the USA. In the UK, this is still the case in the 1990s, but in the 2010s, the individual approach is a better predictor than the conventional approach. For the USA, in the 1990s' and 2000s' the individual approach is a better predictor than the conventional approach, but the conventional approach is a better predictor in the 2010s. By the same logic as that of Erikson and Goldthorpe (1992), at least in the UK, this can be taken as evidence against the use of the conventional approach with more recent data and in support of the individual approach. Erikson and Goldthorpe (1992) do note that if men and women's workforce patterns became more similar over time then it was possible an individual approach would be more appropriate, and, from the literature review, it can be argued that this is the case (see Chapter 2, Section 2.2), which may explain the changing pattern over time.

In a different paper, Erikson (1984) had argued that one way to account for the changing nature of women's work was to keep the family as the unit by which stratification position was assigned within a dominance approach. Using Swedish data from the 1970s, he found that the dominance approach marginally outperformed the conventional approach in predicting a family's standard of living. When comparing the dominance and conventional approaches in predicting a women's subjective social position in the UK, the conventional approach is a better predictor in each year. However, in the USA, there is evidence of the dominance approach becoming a better predictor than the conventional approach over time. Thus, in the USA, allowing women's own occupation to define their objective social position might be more important than in the UK. When comparing the dominance approach, and what might be considered the pseudo-dominance approach of selecting the highest scoring occupation, in the 1980s, the dominance approach is a better predictor of women's subjective understanding of their position. However, in the later periods, taking the highest score is a better predictor.

Table 6-6 Comparing individual and household level measures predicting women's subjective social positions

		Individual	Conventional	Dominance	Higher	Mean	Sum
				UK			
1980s	ICAM	0.35***	0.40***	0.37***	0.37***	0.41***	0.27***
	N	836	836	836	836	836	836
	R-sq	0.124	0.166	0.152	0.145	0.173	0.080
	BIC	2174.8	2133.7	2147.6	2154.1	2125.9	2215.5
1990s	ICAM	0.37***	0.36***	0.35***	0.43***	0.42***	0.27***
	N	608	608	608	608	608	608
	R-sq	0.103	0.134	0.115	0.144	0.151	0.074
	BIC	1608.2	1586.3	1599.7	1579.6	1574.1	1626.9
2010s	ICAM	0.42***	0.37***	0.37***	0.43***	0.42***	0.33***
	N	781	781	781	781	781	781
	R-sq	0.053	0.045	0.043	0.060	0.055	0.037
	BIC	2956.4	2962.8	2964.6	2950.7	2954.8	2969.6
				USA			
1980s	ICAM	0.34***	0.43***	0.38***	0.38***	0.42***	0.31***
	N	715	715	715	715	715	715
	R-sq	0.075	0.130	0.097	0.094	0.122	0.068
	BIC	2190.8	2147.3	2174.3	2176.3	2154.2	2196.6
1990s	ICAM	0.39***	0.36***	0.38***	0.42***	0.40***	0.41***
	N	764	764	764	764	764	764
	R-sq	0.084	0.079	0.087	0.104	0.097	0.109
	BIC	2413.1	2417.3	2411.0	2396.3	2402.5	2392.3
2000s	ICAM	0.27***	0.08	0.19**	0.22**	0.18*	0.11
	N	702	702	702	702	702	702
	R-sq	0.020	0.002	0.010	0.013	0.009	0.003
	BIC	2782.0	2794.5	2789.1	2786.6	2789.3	2793.6
2010s	ICAM	0.42***	0.39***	0.41***	0.42***	0.45***	0.28***
	N	757	757	757	757	757	757
	R-sq	0.045	0.046	0.045	0.048	0.055	0.023
	BIC	2979.3	2978.7	2979.8	2977.3	2971.9	2996.8

Note: Table 6-6 shows the result of a series of regression models predicting subjective social position using different approaches to measuring stratification position at a household level and at the individual level. The household approaches are described in Table 6-4. The data source for each country and year are described in Table 6-1 along with the operationalisation of Subjective Social position.

However, in the UK and the USA, when considering all models (including those based on different measurements of stratification position, on just men, and the total sample), the overwhelming trend was for the model in which social stratification position was measured as a mean of both partners' scores to be the best fitting model. This was true in each year, and the

patterns held when the other demographic variables and interactions were added. Individuals seem to see their class as being 'derived' from both their own and their partner's occupations, even in the 1980s. This is in contrast to the findings of Erikson and Goldthorpe (1992). Thus, this analysis in general offers support for taking a combined approach. It is worth noting that the approach based on summing the male and female scores together, which is also a combined approach, was commonly one of the worst predictors. This suggests that the distance between single and coupled individual's subjective positions is not as great as the addition approach would suggest.

While the differences between models are often compared in this way and can lead to some interesting theoretical reflections, it is worth noting that regression coefficients are estimates subject to sampling error. When the regression coefficients are plotted with 95% confidence intervals (see Figure 6-1), it is clear that they all overlap in each year. Therefore, while there is a plausible suggested trend, it is not possible to conclude that these differences would be found in the population.

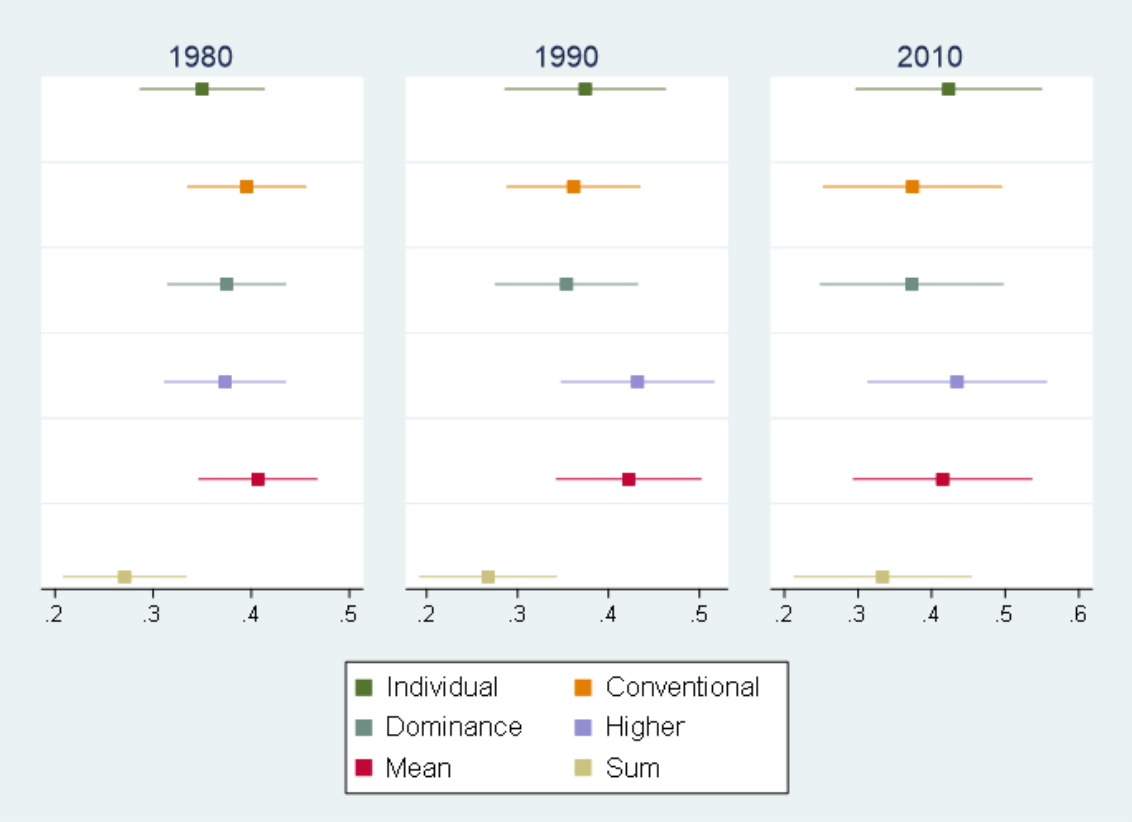

Figure 6-1 UK coefficients from Table 6-6 plotted with 95% confidence intervals

6.5.2 Political outlook

When the outcome variable was political affiliation (see Table 6-7), just as with subjective social position, the conventional approach outperforms the individual approach for women in the early periods in the UK, corresponding with Erikson and Goldthorpe's (1992) study. But, in later years, the individual approach is a better predictor. In the USA, for political affiliation, the individual approach is a better predictor than the conventional approach for each year except the 1990s'. When we compare the dominance and conventional approach in predicting a woman's political affiliation in the UK, the conventional approach is a better predictor in each year, just as it was when predicting subjective social position. In the USA, however, there is evidence of the dominance approach being a better predictor. Again, these results suggest that allowing women to be the household head in analyses might be more important in the US than in the UK. When comparing the dominance approach and the pseudo-dominance approach of selecting the highest scoring occupation, taking the highest score is a better predictor overall. As this approach requires less information to implement in an analysis, it might be particularly useful for some less comprehensive data sets. Again, overall, there is support for a combined approach. In the UK, the model which takes the mean of both partners' scores is generally one of the best fitting, whereas, in the USA, the addition approach is often favoured. However, again, it worth noting that when plotted the confidence intervals around the models' estimates overlapped (not shown) and, therefore, it cannot be concluded that these findings would hold in the general population.

Table 6-7 Comparing individual and household level measures predicting political affiliation

		Individual	Conventional	Dominance	Higher	Mean	Sum
				UK			
1980s	ICAM	-0.68***	-0.81***	-0.68***	-0.74***	-0.83***	-0.54***
	N	575	575	575	575	575	575
	pseudo *R*-sq	0.068	0.094	0.071	0.078	0.097	0.044
	BIC	753.9	732.9	751.6	745.6	730.5	773.1
1990s	ICAM	-0.12	-0.05	0.02	-0.09	-0.09	-0.04
	N	603	603	603	603	603	603
	pseudo *R*-sq	0.002	0.000	0.000	0.001	0.001	0.000
	BIC	843.3	844.5	844.7	844.0	843.9	844.5
2000s	ICAM	-0.29*	-0.28*	-0.23*	-0.27*	-0.31**	-0.12
	N	330	330	330	330	330	330
	pseudo *R*-sq	0.012	0.014	0.010	0.012	0.016	0.003
	BIC	448.7	447.9	449.8	448.9	447.3	453.0
2010s	ICAM	-0.40**	-0.34*	-0.32*	-0.33*	-0.38**	-0.18
	N	279	279	279	279	279	279
	pseudo *R*-sq	0.021	0.018	0.015	0.016	0.022	0.004
	BIC	388.0	389.4	390.3	390.1	387.8	394.4
				USA			
1980s	ICAM	-0.35***	-0.18*	-0.27**	-0.31***	-0.28**	-0.29***
	N	631	631	631	631	631	631
	pseudo *R*-sq	0.018	0.005	0.012	0.015	0.012	0.013
	BIC	849.0	860.0	854.2	851.9	853.9	853.0
1990s	ICAM	-0.22*	-0.25**	-0.24**	-0.30***	-0.26**	-0.34***
	N	667	667	667	667	667	667
	pseudo *R*-sq	0.007	0.010	0.009	0.013	0.010	0.019
	BIC	916.4	913.9	914.9	910.7	913.7	905.2
2000s	ICAM	-0.32**	-0.21*	-0.27**	-0.34**	-0.28**	-0.35***
	N	536	536	536	536	536	536
	pseudo *R*-sq	0.014	0.007	0.010	0.016	0.011	0.020
	BIC	713.8	718.9	716.5	712.6	715.6	709.4
2010s	ICAM	-0.09	0.03	-0.00	-0.11	-0.02	-0.32**
	N	422	422	422	422	422	422
	pseudo *R*-sq	0.001	0.000	0.000	0.002	0.000	0.018
	BIC	559.6	560.1	560.1	559.3	560.1	550.5

Note: Table 6-7 shows the result of a series of regression models predicting Political affiliation using different approaches to measuring stratification position at a household level and at the individual level. The household approaches are described in Table 6-4. The data source for each country and year are described in Table 6-2 along with the operationalisation of Political affiliation.

6.6 Conclusions

This chapter has contributed a longitudinal cross-national comparison of a range of household approaches to measuring social stratification. When comparing the number of female-headed households over time using different approaches, it was found that there were some major differences between the classifications of couples, depending on what household head approach is taken. Therefore, a comparison between the approaches in analysis seems justified. It had been argued that the number of women designated as the household head did not vary dramatically between the uses of the conventional and dominance approach (Sorensen 1994). However, the findings of this chapter do not support this, particularly in the USA and in later periods in the UK. Commonly in analysis, a kind of pseudo-dominance approach is used, taking the more advantaged partner to be the household head (e.g., Korupp et al. 2002; Meraviglia and Buis 2015). It was found that there were substantial differences between the numbers of female-headed households between the two approaches, particularly in the UK. The extent of the difference varied depending on which stratification measure was used, reflecting the different position of women as compared to men in different measures. This also suggests that the two approaches are not interchangeable. There were also some noticeable cross-national differences, which are thought to be related to the different prevalence of part-time work. Women in the USA are more frequently designated as the household head, and, in most cases, at least 50% of the total sample and the dual-earner couple sample is assigned a position based on the woman's occupation. Conversely, in the UK, women's occupations represent more households over time.

For both political affiliation and subjective social position, the conventional approach outperforms the individual approach for women in the early periods in the UK, supporting Erikson and Goldthorpe's (1992) study, but, in later years, the individual approach is a better predictor. However, in the USA, the individual approach is a better predictor than the conventional approach for the 1990's and 2000's for self-rated position and in all years except the 1990's for political affiliation. By Erikson and Goldthorpe's logic, this can be taken as evidence against the use of the conventional approach with more recent data and in support of the individual approach. Erikson and Goldthorpe (1992) hypothesized that, if women's workforce patterns became more similar to men's over time, an individual approach might then become preferable. The findings here seem to support that hypothesis; from the literature review it can be argued that women's workforce patterns in the UK are becoming more similar to men's. Chapter 2, Section 2.2 suggests this is the case, which may explain the changing pattern over time in the UK. In the USA, where part-time working is less common (Tomlinson 2007), it could be argued that men and women's work patterns have been more similar across the time frame, possibly explaining why in general in the USA the individual approach is the better predictor.

However, the conventional approach is not the only way in which household stratification position can be measured. This analysis built on the work of Erikson and Goldthorpe (1992) by also comparing multiple approaches to household level measurement, something that has very rarely been done before (Sorensen 1994). The dominance approach was suggested by Erikson (1984) as a more gender-neutral way of defining the household head, and some researchers have also used the most advantaged partner's occupation to assign a position to the whole household (e.g., Korupp et al. 2002; Meraviglia and Buis 2015). In both the UK and the USA, the higher approach outperformed the dominance and conventional approach in predicting self-rated position, apart from in the 1980s. For political affiliation, the conventional approach was a better predictor than either the dominance or higher approach in the UK, but not in the USA. This suggests that, in the USA, it might be more important to allow women to be the household head, which is possibly related to the lower prevalence of part-time work among American women.

It is also possible to define a household position based on more than one occupation, and this was achieved here by taking the mean stratification score of couples and adding a couple's scores together. Overall, there is more support for a combined approach than a household head approach or individual approach. In the UK, taking the mean of both partner's scores generally results in one of the best fitting models for both topics in all time points, whereas, in the USA, the addition approach is often favoured when predicting political affiliation.

Most analyses that compare using women's own occupational information (individual approach) with that of her husband's (conventional approach) make claims from just the model fit (e.g., Abbott 1987; Erikson and Goldthorpe 1992). However, it is worth noting the results here cannot be generalised as the confidence intervals around the point estimates for all approaches overlap. Furthermore, due to the different way in which the dependent variables questions were phrased over time, the results between times points and countries are not directly comparable. Yet, this chapter can be taken as proof of concept that different household approaches might be more or less appropriate in different contexts, both internationally and over time, in relation to the working patterns of women, and that the individual approach might not be the best approach, even in more recent time points. Further analysis with larger and more directly comparable data sets would be desirable in future work. Additionally, it would be desirable to test a variety of household and individual measures on a wider range of outcome variables, for instance in research on health outcomes or children's educational or occupational outcomes.

7 Women's social stratification position in a cross-national context

Comparative analysis is key to illuminating the range of variation in structures of gender, race, class, and other axes of domination, the ways in which these structures interact, and the wide array of strategies for resistance and reform. (Weldon 2006, p235)

7.1 Introduction

Bose (2012) proposes that we must recognise the diversity that exists between countries in terms of their national-level gender equality, just as we recognise the diversity between individual women. This chapter now turns to consider how women's social stratification position may be more accurately reflected by different measures, given the different contexts in which women live. From the literature review, it is evident that there are several differences in cross-national contexts that could impact the relationship between gender and social stratification position, including different cultural norms about women in work, differences in the proliferation of part-time work, and differences between welfare states and social policies, such as maternity and paternity leave.

Weldon (2006) argues that the intersections of different structures of inequality are also likely to vary over time and space, so it is important to consider individual characteristics within context, as different groups are disadvantaged to different extents in different places. For example, gender, race and class might be more intertwined in the USA than in other countries (Weldon 2006). Weldon (2006) argues that her intersectional plus approach is particularly useful for comparative analysis as it does not assume that there are always intersectional effects or that those effects are fixed, as the intersectionality-plus approach advocates testing different types of effects, not purely intersectional ones. Weldon (2006) suggests comparing how structures interact in many countries or using country-specific studies to detect this variation, which would be useful in developing theories of intersectional effects and which in turn allows for new solutions to overcome intersectional inequality. This chapter offers a worked example of an intersectionality-plus approach to accounting for gender and social stratification position in cross-national analysis. It is hypothesised that intersectional effects will be found more commonly in countries with greater gender inequality.

Different measures of social stratification position may also be more or less appropriate in different contexts. As discussed in Chapter 3, there has been some debate as to whether measures

of social stratification position can be universal (e.g., the same measures can be used in all contexts) or whether specific measures are needed for different places and times to account for different labour market structures (Hout and DiPrete 2006; Lambert et al. 2005). Likewise, as discussed in Chapter 6, a different unit (individual/household) of measurement might be more or less appropriate in different contexts, given the difference between men and women's working patterns in different countries (Tomlinson 2007). This thesis would suggest that, in order to accurately reflect on the social position of women cross-nationally, researchers should give attention to the different labour market structures in different countries and the varying levels of gender inequality. For example, it would be expected that household-level measurements would be more appropriate in countries where fewer women are working and where more women are working part-time rather than full-time, as, on average, women might be more dependent on men (Erikson and Goldthrope 1992). The appropriateness of gender-specific measures of stratification position is also likely to vary cross-nationally. The use of gender-specific measures is seen as being more important in contexts in which the average working profiles of men and women are most different in terms of both horizontal and vertical segregation (Charles and Grusky 2004). This chapter will undertake a sensitivity analysis using several stratification measures, operationalised at different levels and taking an intersectionality-plus approach. This allows for a test of whether the way in which gender and stratification position are found to influence outcome varies by the way in which stratification position is measured and the way in which gender is allowed to intersect with stratification position.

The relationship between gender and stratification position is also likely to vary depending on the outcome variable. For example, for some outcomes, there may be strong intersectional effects, but, for others, class and gender may show only main effects or no effects at all. It is also hypothesised that the most appropriate level of measurement at which stratification position is measured will vary by outcome variable, with household-level approaches being more appropriate when the outcome is an attitude or a preference that can be influenced by others than an outcome that is directly related to an individual (Rose 2008; Sorensen 1994). For this chapter, three topics were chosen to illustrate this; gender attitudes, working conditions, and sport and leisure activities. Those topics were chosen as each has been found to have a relationship with social stratification position and gender (e.g., McGinn and Oh 2017; Stier and Yaish 2014; Tomlinson 2003).

This chapter employs three distinct analytical frameworks, labelled as 'macro', 'selected micro' and 'pooled micro'. Together, these three approaches allow for an understanding of the difference in the outcome variables, both between and within countries. As shown in Chapter 5, a multi-level modelling approach has also been suggested to account for intersectionality between

inequalities, as a hierarchical approach allows for the variance to be partitioned between individual-level and strata (or intersectional) level (Evans et al. 2018). This chapter offers an important extension to this approach by partitioning variance between individuals, countries and strata, using cross-classified and saturated cross-classified models.

7.2 Data and variables

The micro-level data for this chapter comes from the International Social Survey Programme (ISSP), an annual programme of cross-national collaboration addressing a number of topics of importance to the social sciences. The modules used for this chapter are the 2002 Family and Changing Gender Roles module, the 2005 Work Orientations module and the 2007 Leisure Time and Sports module. More recent and more historical modules are available for the topics of Family and Changing Gender Roles and Work Orientations; however, only one module is available on the topic of Leisure Time and Sports. The modules that were closest in time point to the 2007 Sport and Leisure model were therefore selected for the other two topics so as to be more comparable.

The macro-level variables came from three sources: the World Bank (2019), United Nations Development Programme (2019), and OECD (2019) data. The majority of indicators came from the World Bank, which provides open access data on global development. The World Bank development indicators are high-quality internationally comparable statistics. One of the topics covered by the World Bank is gender equality, which provides sex-disaggregated data on a number of topics. Data from the World Bank were merged with the ISSP to provide country-level indicators of gender equality. The GDP of each country was also taken from the World Bank in order to allow for this to be controlled for in some analysis. Data on the prevalence of part-time working was also added as a country-level variable. These data came from the OECD database, which provides statistics for making comparisons between OECD countries. The United Nations Development Programme (2018) has also developed a gender inequality index that was added as a macro level variable. This index uses country-level measures of women's reproductive health, and men and women's empowerment and economic status to compute an index of inequality (higher scores indicates greater inequality). The macro-level indicators were not all available in each country in each year, therefore, the year 2004 was selected if available because it is the midpoint of the selected ISSP waves (2002–2007). If data were not available for 2004, the closest available data point within the range of 2000–2010 was chosen. If no data were available in the 2000s, this was considered to be missing. Table 7-1 shows the selected macro-level indicators and a list of ISSP countries for which data were available.

Table 7-1 Macro-level indicators merged with the ISSP data

Indicator	Source	Year measured	Countries missing
Labour force participation rate, female (% of female population ages 15+)	World Bank	All countries in 2004	Taiwan, Northern Ireland
The proportion of seats held by women in national parliaments (%)	World Bank	All countries in 2004	Taiwan, Northern Ireland
Female share of employment in senior and middle management (%)	World Bank	Philippines 2002 Chile 2003 Japan 2009 Else 2004	Taiwan, Northern Ireland
The proportion of employed women working part-time	OECD	South Africa 2008 Else 2004	Argentina, Dominican Republic, Philippines, USA Uruguay, Taiwan, Northern Ireland
Gender inequality index	UN development reports	All countries 2005	Taiwan, Northern Ireland
Gross Domestic Product	World Bank	All countries 2004	Taiwan, Northern Ireland

Labour force participation rate is harmonised by the International Labour Organization in order to be comparable cross-nationally. The total number of seats held by women is the number of female-held seats divided by the total number of seats in parliament. Seats refer to the number of parliamentary mandates or the number of members of parliament. Senior and middle management refers to Major group 1 in both ISCO08 and ISCO88 minus category 14 in ISCO08 (hospitality, retail and other services managers) and minus category 13 in ISCO88 (general managers). Part-time employment is defined as people in employment (aged 15 and over who report that they have worked in gainful employment for at least one hour in the previous week or who had a job but were absent from work during the reference week, includes both employees and self-employed) who usually work less than 30 hours per week in their main job. The gender inequality index was developed by The United Nations Development Program.

Table 7-2 Countries in International Social Survey Project waves

2002 Family & Changing Gender Roles	2007 Leisure Time & Sports	2005 Work Orientations
-	Argentina (AR)	-
Austria (AT)	Austria (AT)	-
Australia (AU)	Australia (AU)	Australia (AU)
Belgium (BE), Flanders	Belgium (BE)	Vlaams Gewest (BE-VLG)
Bulgaria (BG)	Bulgaria (BG)	Bulgaria (BG)
Brazil (BR)	-	-
-	-	Canada (CA)
Switzerland (CH)	Switzerland (CH)	Switzerland (CH)
Chile (CL)	Chile (CL)	-
Cyprus (CY)	Cyprus (CY)	Cyprus (CY)
Czech Republic (CZ)	Czech Republic (CZ)	Czech Republic (CZ)
Germany (DE)	Germany (DE)	Germany (DE)
Denmark (DK)	-	Denmark (DK)
-	Dominican Republic (DO)	Dominican Republic (DO)
Spain (ES)	-	Spain (ES)
Finland (FI)	Finland (FI)	Finland (FI)
France (FR)	France (FR)	France (FR)
United Kingdom (GB-GBN)	United Kingdom (GB)	United Kingdom (GB)
Northern Ireland (GB-NIR)	-	-
-	Croatia (HR)	-
Hungary (HU)	Hungary (HU)	Hungary (HU)
Ireland (IE)	Ireland (IE)	Ireland (IE)
Israel (IL)	Israel (IL)	Israel (IL)
Japan (JP)	Japan (JP)	Japan (JP)
-	Korea, Republic of (KR)	Korea, Republic of (KR)
Latvia (LV)	Latvia (LV)	Latvia (LV)
Mexico (MX)	Mexico (MX)	Mexico (MX)
Netherlands (NL)	-	Netherlands (NL)
Norway (NO)	Norway (NO)	Norway (NO)
New Zealand (NZ)	New Zealand (NZ)	New Zealand (NZ)
Philippines (PH)	Philippines (PH)	Philippines (PH)
Poland (PL)	Poland (PL)	-
Portugal (PT)	-	Portugal (PT)
Russian Federation (RU)	Russian Federation (RU)	Russian Federation (RU)
Sweden (SE)	Sweden (SE)	Sweden (SE)
Slovenia (SI)	Slovenia (SI)	Slovenia (SI)
Slovakia (SK)	Slovakia (SK)	-
Taiwan, Province of China (TW)	Taiwan, Province of China (TW)	Taiwan, Province of China (TW)
United States (US)	United States (US)	United States (US)
-	Uruguay (UY)	-
-	South Africa (ZA)	South Africa (ZA)

Table 7-2 shows countries represented in 3 waves of the International Social Survey Project

Table 7-2 lists the countries included in each of the ISSP waves used in this analysis. In the macro-level comparison, all countries that had available macro-level data (see Table 7-1) were used. For the micro-macro analysis, all countries that were available in all waves were selected; 20 countries in total. Three countries were selected for analysis at the micro-level, the UK, France and Sweden. These three countries were available in all three waves and data for all the selected World Bank indicators was available.

A selection of dependent variables was chosen from each selected topic of the ISSP. These variables were all categorical, however as the Micro-Macro approach described in section 7.3.3 requires a metric outcome variable this was also created using factor analysis. As each topic of the ISSP data has a 'battery' of questions on the same theme, factor analysis was suitable. Factor analysis allows for the number of variables to be reduced and for common variables to be collated into meaningful groups, that is to say, factors that reveal an underlying concept (Rummel 1970). In factor analysis, it is assumed that observed variables can be condensed into a smaller number of unobserved concepts, known as latent variables. This is referred to as reducing dimensionality (Bartholomew et al. 2011). These latent variables are unobservable and cannot be directly measured, but they are thought to share a common variance with the measurable observed variables. Therefore, they are hypothetical constructs (Cattell 1973). Exploratory factor analysis is used to determine what number of factors there are and to find out which variables 'go-with' which other variables (DeCoster 1998). Exploratory factor analysis assumes that there are a set number of latent variables within each data set and the goal of this analysis is to determine this number. Exploratory factor analysis aims to have the smallest number of factors that account for the correlations between variables (McDonald 1985).

For gender attitudes, 21 Likert scale variables were considered, using Polychoric correlations (Kolenikov and Angeles 2004) and the 'factormat' command (Milan and Whittaker 1995) in Stata. This resulted in 3 factors being found. Variables that had a factor loading of below 0.4 were excluded and then factor analysis was used to create the three factors. The first factor was interpreted as one related to attitudes around working women, the second was around the division of unpaid labour and government support for families, and the third was attitudes to marriage. The first factor was chosen for inclusion in this analysis. The variables that made up the factor were also recoded into dummy variables so they could be included separately in the analysis (see Table 7-3).

Table 7-3 Gender and family attitude variables

Factor 1		Variable	Original code	Dummy code
1. Attitudes to working women	V4	A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.	1= Strongly agree 2= Agree 3= Neither agree nor disagree 4= Disagree 5=Strongly disagree	1 & 2 = 1 (agree) 3 = missing 4 & 5 = 0 (disagree)
	V5	A pre-school child is likely to suffer if his or her mother works.		
	V6	All in all, family life suffers when the woman has a full-time job.		
	V7	A job is all right, but what most women really want is a home and children.		
	V11	A man's job is to earn money; a woman's job is to look after the home and family		

The same process was followed using 16 work orientation variables. Two factors were found; the first related to job quality, and the second related to autonomy at work. The first factor was chosen for inclusion in this analysis, and the attitudinal variables that created the factor were also included as dummy variables (see Table 7-4).

Table 7-4 Work Orientation variables

Factor		Variable	Original code	Dummy code
1. Job quality (low value higher quality)	V29	My job is secure	1= Strongly agree 2= Agree 3= Neither agree nor disagree 4= Disagree 5= Strongly disagree	1 & 2 = 1 (agree) 3 = missing 4 & 5 = 0 (disagree)
	V30	My income is high		
	V31	My opportunities for advancement are high		
	V32	My job is interesting		
	V33	I can work independently		
	V51	How satisfied are you in your job	1= Completely satisfied 2= Very satisfied 3= Fairly satisfied 4= Neither satisfied nor dissatisfied 5= Fairly dissatisfied 6= Very dissatisfied 7= Completely dissatisfied	1, 2 & 3 = 1 (satisfied) 4 = missing 5, 6 & 7 = 0 (dissatisfied)

No intelligible underlying factors were found using the sport and leisure variables, so a few were selected for inclusion as dummy variables (see Table 7-5).

Table 7-5 Leisure time and Sport variables

Name	Variable	Original code	Dummy code
V21	Enjoyment from reading books	1= No enjoyment 2= Not so much enjoyment 3= Some enjoyment 4= A fair amount of enjoyment 5= A great amount of enjoyment 6= I never do that	1, 2, 3 & 6 = 0 (dislike) 4 & 5 = 1 (like)
V22	Enjoyment from getting together with friends		
V23	Enjoyment from taking part in physical activities		
V24	Enjoyment from watching TV, videos		

Occupation is measured using the 1988 version of the International Standard Classification of Occupations (ISCO88) in the ISSP. ISCO88 codes are provided for respondents and their partners. These ISCO88 codes were transformed into four social stratification measures.[26] Conversion tools on Harry Ganzeboom's website[27] were used to convert the ISCO88 codes into International CAMSIS (ICAM), the International Socio-Economic Index (ISEI), and the Standard International Occupational Prestige Scale (SIOPS). Tools available on the CAMSIS webpage[28] were used to convert the ISCO88 codes into CAMSIS scores for the UK and Sweden; these were not available for France. The gender-specific measures created in Chapter 4 using the BHPS were also added to the data for the UK. As these were created for SOC scores, firstly a translation from SOC codes to ISCO88 was performed.[29] Some ISCO88 codes contained multiple SOC codes, but often these SOC codes had the same score anyway, due to merging during scale creation. In cases where the scores were not the same, the average score for the SOC codes making up the ISCO codes was taken. The vast majority had no change in score after taking the average. Those that did change generally had a very small change (e.g., 3 points or less) of a change in score. However, about 5% of occupations had more substantial change due to the merging of SOC codes in ISCO88. This suggests that some occupations that have quite different levels of occupational advantage are contained within those same ISCO Codes. It also means that there are several

[26] Only scale approaches are presented in this chapter as the required information to make a many class-based measure was not available for partners. For example, supervisory capacity of occupation was available for respondent but not their partners. Additionally, the small sample sizes within countries meant that many class categories had few women in them, making interactions tenuous.

[27] De Luca, Deborah, Cinzia Meraviglia & Harry B.G. Ganzeboom, "ICAM: The International CAMSIS Scale". Software available at: http://www.harry.ganzeboom.nl; Ganzeboom, Harry B.G.; Treiman, Donald J., "International Stratification and Mobility File: Conversion Tools." Amsterdam: Department of Social Research Methodology, http://www.harryganzeboom.nl/ismf/index.htm

[28] http://www.camsis.stir.ac.uk/versions.html

[29] Code to translate soc90 and soc00 to ISCO88 is available on the CAMSIS webpage: (http://www.camsis.stir.ac.uk/occunits/uksoc2000toisco88v3.sps http://www.camsis.stir.ac.uk/occunits/uksoc90toisco88v1.sps)

ISCO88 codes for which no gender-specific code is available as an equivalent SOC code does not exist. Therefore, the sample size is reduced in analysis using the gender-specific measures. The conversion of one occupational coding scheme to another is relatively common in stratification research, as given the level of work involved in creating a stratification scale, it is not always possible or practical to create a new version for every occupational coding scheme. It is recognised, however, that this kind of 'cross-walking' is imperfect and does result in loss of nuance.

The same 5 household approaches were used as in Chapter 6. Table 7-6 shows the rules that were followed to create the household measures, and Appendix D shows the Stata code.

Table 7-6 Rules for creating Household approaches

Household approach	Rule
Conventional approach	Own score if male and partner's score if female
Dominance approach	Full-time dominates part-time Self-employment dominates employment Non-manual occupations dominate manual ones
Most advantaged approach	The highest score is used
Combined scale (means)	Take the average of each partner's score
Combined scale (addition)	Add partners' scores together

Further variables used in models are whether an individual is female (female 1, male 0) whether an individual is married or cohabiting (married/cohabiting 1, other 0), age in years, and years of schooling.

7.3 Method

Three methodological approaches are taken to studying women's social stratification position, as outlined by van der Lippe and van Dijk (2002); the 'Macro approach', the 'Micro approach', and the 'Micro-Macro approach'.

7.3.1 Macro approach

The macro-level approach allows for consideration of the country-level context that may influence micro-level outcomes. Countries differ in regard to their social context, including having laws, policies, labour market structures and cultural norms that result in different levels

of gender inequality. As suggested by van der Lippe and van Dijk (2002 p226), "It is therefore useful to specify the societal context that systematically influences the perceptions and actions of individual women in a given period of time". One way to achieve this is to correlate country-level contextual measures with outcomes, for example, proportion of women working reduced hours (see Rosenfeld and Birkelund, 1995), or gender pay gaps (see Rosenfeld and Kalleberg 1991). This approach requires a large number of countries for comparison, and the ISSP has over 30 countries in each wave, making this type of comparison possible, however, only for a descriptive analysis, as a total of 30 cases does not support more inferential techniques. An aggregate country-level file was created for each data set, and the categorical dependent variables were dichotomised in order that they could be included in percentage form, the scale variables created using factor analysis were also included. The macro-level data from other sources (Table 7-1) were then merged with this file. This allowed for a macro-level country-level comparison to assess how differences in the country level gender equality indicators were related to differences in the dependent variables using correlations. Partial correlations were run which controlled for the country's GDP. Trappe and Rosenfeld (2001) criticise macro-level approaches for ignoring other important differences between countries, such as the distribution of women and men across age groups and educational levels. To partially account for this, correlations were also run on different subgroups of the population, disaggregating data by gender and age group, and gender and education level.

A second macro-level approach commonly used is comparing groups of countries according to a predetermined typology. One of the best known and most widely used typologies is Esping-Andersen's (1990, 1999) welfare state typology (see Chapter 2, Section 2.3). An aggregate welfare state-level file was created based on this typology; the dependent variables were dichotomised in order that they could be included in percentage form for each welfare state type. Table 7-7 shows a breakdown of countries assigned to each welfare state type.

Table 7-7 Welfare state types and countries based on the work of Esping-Andersen

Welfare state type	Countries
Liberal	Australia United Kingdom New Zealand United States of America
Conservative	Germany France Austria
Social democratic	Denmark Sweden Finland

7.3.2 Selected Micro approach

van der Lippe and van Dijk (2002) encourage the micro approach as a compromise between a case study and a multi-level analysis, as they argue it allows for a detailed overview in different contexts. Social policies can vary considerably between contexts, and a macro-level approach cannot account for this level of detail because there are too many countries included in the analysis. Grouping countries according to a typology, such as welfare state regimes, also requires a lack of detail for particular countries. A possible solution is to select only a few countries for comparison, for example, one from each welfare state regime, and to provide much more detail about the specific context within each country (van der Lippe and van Dijk 2002). This type of design has been used by Trappe and Rosenfeld (2001) in their study of gender earnings inequalities, and Baxter and Kane (1995) in their study of cross-national gender attitudes. The selected countries are analysed separately, allowing for the comparison of difference both between and within countries.

The selected countries for micro-level analysis were the UK, France, and Sweden. The selected countries were chosen to represent different types of welfare state and work-family policies which are known to influence attitudes and norms around women working (see Chapter 2 for more on this point). Based on Esping-Anderson's (1991) welfare state typology, France would represent a conservative welfare state, the UK would represent a liberal welfare state, and Sweden would represent a social-democratic welfare state.

Different measures of stratification position were compared within each country (see Chapter 3 for an overview of measures), including two new gender-specific measures that were constructed for this thesis (see Chapter 4). This allows for a comparison of whether different stratification measures were more or less appropriate within each country and for a comparison of the most appropriate measures between countries. The same models were also run using different

approaches to measuring stratification, including household head, dominance, combined and individual approaches (see Chapter 4 for more details) for each country selected. This allows for a comparison of whether different approaches are more or less suitable in different contexts, e.g., the dominance approach might be more appropriate in a conservative welfare state country, but an individual approach might be the most appropriate in a social-democratic country because of different policies affecting women's working patterns (Abendroth et al. 2012; Esping-Andersen 1999; Gornick and Hegewish 2010; Korpi 2000). The dependent variables used were the factor variables for attitudes to working mothers and job quality, and a dummy variable for enjoying physical activity.

7.3.3 Micro-Macro approach

This approach combines macro-level data with micro-level data in one analysis. Multi-level analysis can be used to identify the effects of contextual societal factors on individual-level outcomes and to explore theories about individuals and their societies (e.g., DiPrete and Forristal 1994). Thus, multi-level models are a useful tool when interested in relationships between variables in a hierarchical system (Goldstein 1987), as in this project, which is interested in the relationship between individual micro-level variables and macro country-level variables. Multi-level models with countries at the higher-level are used to control for social context, and further higher-level contextual variables are added to the model along with the lower-lever microdata.

It is worth noting that there is an ongoing debate about the usefulness of countries as level-two variables in multi-level models. It is argued that having only a small number of countries as the higher-level variable can result in standard errors being underestimated, but there is not yet consensus on how many level-two groups are needed in order to avoid this, with recommendations anywhere between 10 (e.g., Stegmueller 2013) and 50 (e.g., Moineddin et al. 2007) as a minimum. Bryan and Jenkins (2016) recommend at least 25 countries for linear models and 30 countries for logit models, although they stress that there is no 'magic number' especially with more complicated models (e.g., cross-level interactions or cross-level effects). In order to avoid overcomplicating the model, only two country-level variables (and interactions) were tested in these models. Variables, interactions and random slopes that were not statistically significant were dropped from the model. Each multi-level model had over 30 countries included; however, results should still be interpreted with some caution.

Both random intercepts and random slopes models are fitted. The dependent variables used were the factor variables for working mothers and job quality, and a dummy variable for enjoying physical activity. Random intercepts models are a type of multi-level model that accounts for the clustering of individuals into countries and overcomes the problem of related error terms that

arise in the linear models. Random intercepts models allow for a single set difference in the errors for each cluster (e.g., country). 'Random slopes' models allow the error variances at different levels to be modelled as a function of explanatory variable values. This allows the regression coefficient for a given explanatory variable (e.g. gender) to be different for different clusters, here, countries.

It was argued in Chapter 5 that multi-level models could also be used to capture intersectionality by using multi-level models that control for particular groupings of inequality (strata) at the higher-level (Evans et al. 2018). This approach is only recommended for use with metric outcome variables (Evans et al. 2018); thus, it is only used with the dependent factor variables for attitudes to working mothers and job quality. This chapter offers an extension to that approach by also controlling for cross-national differences at level two by using a cross-classified model that recognises that individuals are clustered within strata within countries, as is recognised by Weldon's (2006) 'intersectionality-plus' conceptualisation of intersectionality. This is possible through adding an additional layer of hierarchy to the model, recognising the grouping of individuals within strata within countries, and recognising that the same strata are identifiable in different countries. To achieve this, a cross-classified model is used. In cross-classified data, individuals belong to pairs or combinations of higher-level units (e.g., Rabe-Hesketh and Skrondal 2012). It is also possible to add an interaction term to a cross-classified model by adding a grouping term for the higher-level units which would recognise that there might be particular effects of being in certain strata-country combinations. Appendix F shows example Stata syntax for the different types of multi-level models run in this chapter.

7.4 Results

7.4.1 Macro

For this section of the analysis, an aggregate data file was created that took the country-level average for each dependent variable. Prior to aggregation, each dependent variable was recoded to a dichotomous 0-1 variable. Therefore, the average gives a score of between 0 and 1 for each country; a score close to one indicated a more positive response, and a score closer to 0 indicated a more negative response. Data from the World Bank on the average situation of women in each country was added to the data. These indicators are proportional and therefore have a score of between 0 and 100. Figure 7-1 shows the countries' positions on the macro-level indicators, colour-coded by Esping-Anderson's (1990, 1999) welfare state typology.

Table 7-8 Correlation between GDP and macro-level indicators

Macro-level indicator	Correlation with Log GDP
Female labour force participation rate	0.0181
Proportion of women working part-time	0.5639
Female share of employment in senior and middle management	-0.5176
Proportion of seats held by women in national parliaments	0.0389
Maternity leave benefits (% of wages paid)	-0.1341
Gender Inequality Index	-0.0666

Countries that would be defined as social democratic and 'defamilising' under Esping-Andersen's (1990, 1999) typology tend to have a high proportion of women participating in the labour market, they also have higher proportions of women in parliament,[30] and have the lowest scores on the gender inequality index. However, these countries have lower proportions of women employed in senior or middle management (perhaps related to their work-family policies – see Mandel and Semyonov 2005; Pettit and Hook 2009). The only country with a score above 50% of women in senior or middle management is the Philippines, followed by Latvia and Chile; however, these three countries all score among the highest in terms of the gender inequality index and they have lower numbers of women in employment overall. It has been argued that in developing nations women are more likely to hold managerial positions because they are able to reach the top jobs in local companies rather than in multinational larger corporations (International Labour Organization 2015). The proportion of female managers and the proportion of women in part-time work was quite strongly correlated with GDP (see Table 7-8). It was therefore decided to control for Log GDP in the correlations between the macro and micro-level variables. Furthermore, because of the gendered nature of the country-level indicators, it was thought that they might affect men and women's average differently; therefore, the process was repeated separately for men and women.

[30] This is also likely related to these countries having proportional representation voting systems, which have been associated with more women being elected.

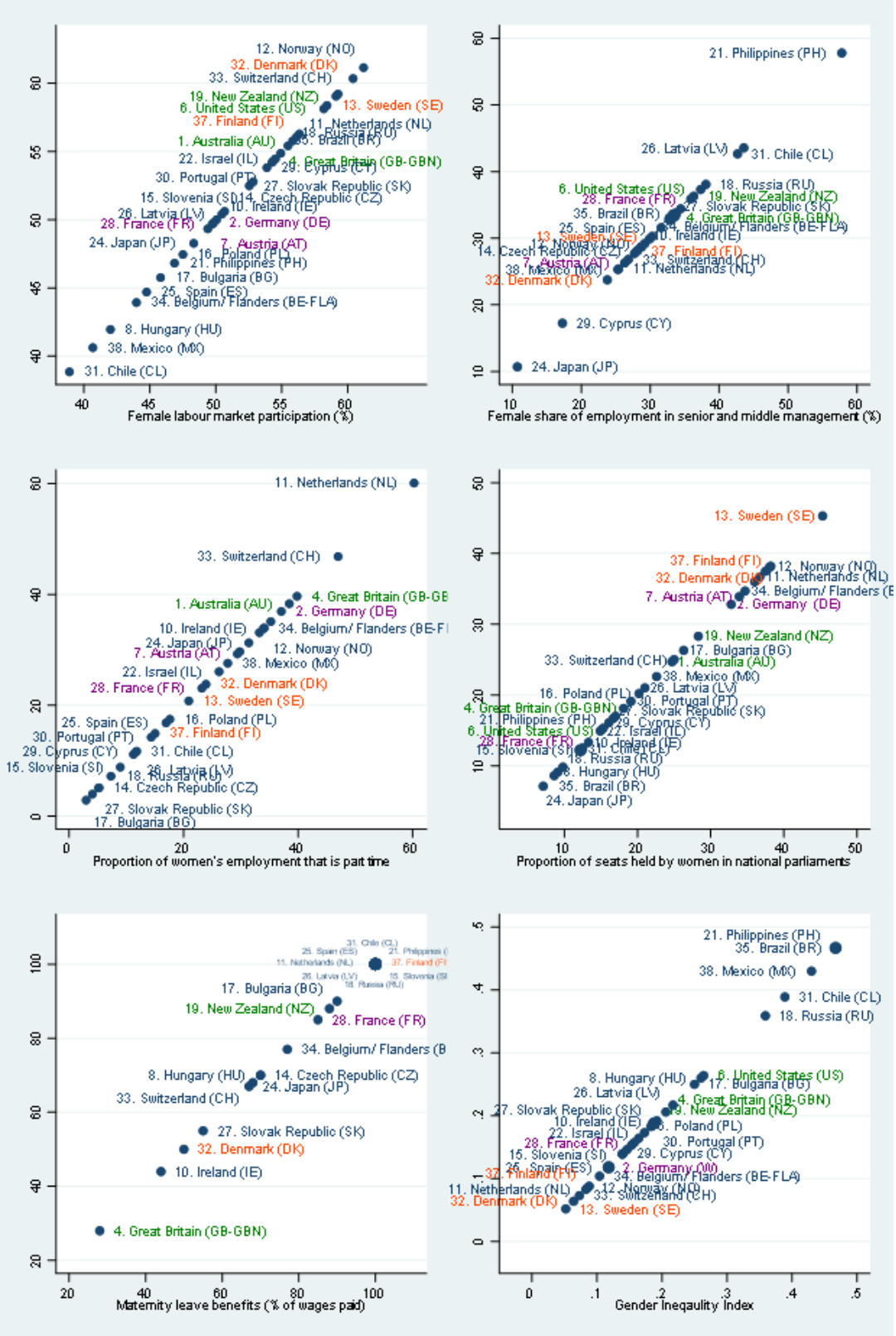

Figure 7-1 Exploring country positions on macro-level indicators. Shown is each country's position on each macro level indicator colour-coded by Esping-Andersen's (1990, 1999) welfare state typology (Green = Liberal, Orange = Social Democratic, Purple = Conservative, Navy = not classified)

	Female labour force participation rate			Proportion of women working part time			Female share of employment in senior and middle management			Proportion of seats held by women in national parliaments			Maternity leave benefits (% of wages paid)			Gender Inequality Index		
	t	m	f	t	m	f	t	m	f	t	m	f	t	m	f	t	m	f
A working mother can establish just as warm and secure a relationship with her	↑	▲	↑	–	–	–	▼	▼	▼	–	–	–	▼	–	▼	↓	▼	↓
A pre-school child is likely to suffer if his or her mother works.	↓	▼	↓	–	–	▼	↑	↑	↑	▼	▼	▼	↑	↑	↑	↑	↑	↑
All in all, family life suffers when the woman has a full-time job.	↓	↓	↓	–	–	–	↑	↑	↑	▼	▼	▼	▲	▲	▲	↑	↑	↑
A job is all right, but what most women really want is a home and children.	↓	↓	↓	↓	↓	↓	–	–	–	↓	↓	↓	–	–	–	↑	↑	↑
A man's job is to earn money; a woman's job is to look after the home and family	↓	↓	↓	↓	↓	↓	▲	▲	▲	↓	↓	↓	–	–	–	↑	↑	↑
Working women factor	↑	↑	↑	▲	▲	▲	▼	↓	▼	↑	↑	↑	▼	▼	▼	↓	↓	↓
My Job is secure	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	–	▼	▼	▼	–	▼	–
My income is high	↑	↑	▲	▲	▲	▲	–	–	–	▲	▲	–	–	▼	–	▼	▼	–
My opportunities for advancement are high	–	–	–	▲	↑	▲	–	–	–	▲	▲	▲	–	–	–	▲	▲	▲
My job is interesting	↑	↑	↑	↑	↑	↑	▲	▲	▲	▲	▲	▲	▼	▼	▼	▼	▼	▼
I can work independently	▲	▲	↑	↑	↑	↑	–	–	–	▲	▲	▲	▼	▼	▼	↓	↓	↓
How satisfied are you in your job	–	–	–	↑	↑	▲	–	▲	–	▲	▲	▲	–	–	–	▼	▼	–
Job quality factor	↓	↓	▼	↓	↓	↓	–	–	–	▼	▼	▼	▲	▲	▲	–	▲	–
Enjoyment from reading books	↑	↑	↑	↑	↑	↑	↑	↑	↑	▲	▲	▲	↓	▼	▼	▼	–	↓
Enjoyment from getting together with friends	↑	↑	↑	↑	↑	↑	–	–	–	↑	↑	↑	–	–	–	↓	▼	↓
Enjoyment from taking part in physical activities	↑	↑	↑	↑	↑	↑	▲	–	▲	▲	▲	▲	–	–	–	↓	↓	↓
Enjoyment from watching TV, videos	–	–	–	▲	▲	▲	–	–	–	▲	▲	▲	↓	↓	↓	–	–	–
	↑	=	>0.4	▲	=	>0.2	–	=	<=0.2 & >=-0.2	▼	=	<-0.2	↓	=	<-0.4			

Figure 7-2 Partial correlations between macro level and micro level indicators (controlling for GDP)

Figure 7-2 shows partial correlations between the macro-level gender equality indicators and the outcome level variables, controlling for GDP. Partial correlations, like correlations, show the strength and direction of a linear relationship, but, unlike simple correlation, partial correlations control for one or more other covariates. The analysis shown was also run different on sub-samples (different age groups and education levels), but for gender attitudes, there was very little change in the results. Generally, the macro-level indicators correlate quite strongly with average gender attitudes. Countries with higher proportions of women in work are generally more positive about working women and countries which score more highly on the gender inequality index (e.g., have more gender inequality) generally have more negative attitudes about working women. Baxter and Kane (1995) argued that women's dependence on men at a society level influenced gender attitudes. This suggests that, in societies with more gender inequality, in employment, family relations and social policies, women are more dependent on men and are pulled towards men's less egalitarian views. However, this relationship could equally work in the opposite direction, with more positive attitudes facilitating more women into employment (Cotter et al. 2011). As the macro-level gender equality indicators seem to affect men and women's gendered attitudes similarly, there is perhaps more support for the latter.

While the overall proportion of women working correlates with favourable attitudes to women working and mothers working, the proportion of women working part-time has very weak correlations with attitudes surrounding working mothers but is more strongly correlated with attitudes about working women more broadly. It has been argued that women tend to work part-time in order to combine work and family responsibilities (Gregory and Connolly 2008). It has also been argued that state policy around part-time work (e.g., ensuring the same benefits and security as for full-time work) encourages the combination of work and care (Abendroth et al. 2012). This view of women's combined responsibilities might encourage a more episodic career and a situation where women do not work continually across their life course if they have children (Treas and Widmer 2000), which might explain this finding.

Maternity leave benefits were included as an indicator of social policies. The proportion of maternity pay paid also correlated with more negative attitudes about mothers working. This indicator is quite mixed with countries at both ends of the gender inequality index paying 100% of wages. Generous maternity pay could be indicative of a country which is supportive of women working (e.g., Gornick and Jacobs 1998; Kangas and Rostgaard 2007; Pettit and Hook 2005). Equally, generous maternity leave can be viewed as reinforcing the traditional attitudes of women as the primary carers (Rubery et al. 1999). The results here support the latter, with higher benefits having a strong correlation with agreement with the statement 'a preschool child is likely to suffer if their mother works'.

A higher proportion of seats held by women in parliament also generally has a positive correlation with egalitarian attitudes, corroborating the common argument that traditional gender attitudes are a barrier to women's entry into politics (e.g., Paxton and Kunovich 2003). The effects of the proportion of women managers were more unexpected. This indicator was intended to act as a proxy for segregation in the labour market, for example, more women in middle and senior management would represent a less vertically segregated country. However, this correlated with a more traditional view of gender roles. This is can probably be explained by the fact the countries which score the highest on this indicator sore much lower on other indicators (e.g., fewer women are working overall, fewer women hold parliamentary seats, and low scores on the GII).

Overall greater gender equality (high proportion of women in the labour market and parliament and lower gender inequality scores) in a country seems to correlate with better average working conditions, for men and women.[31] Having more women working part-time also correlated positively with working conditions. For the younger population (under 35 and under), the positive effects of a greater proportion of women in the labour market and a greater proportion of women in part-time employment were stronger. Different labour market structures may account for this correlation, as smaller manual sectors and larger public and service sectors, which tend to have favourable conditions, are associated with more women in employment (Berthoud 2007; Olivetti and Petrongolo 2014). Countries that score higher (are more unequal) on the gender inequality index on average report better opportunities for advancement for both men and women. Some have argued that women have better opportunities for advancement in more segregated labour markets as they face less competition from men (Jarman et al. 2012); this might partially explain this finding. Interestingly for the younger population, a higher proportion of female managers correlated negatively with women's average perception of their opportunity for advancement. This is likely related to countries scoring highly on this indicator having low scores on other gender equality indicators. Overall, the effect of the macro-level variables was smaller for those who held a degree, suggesting that holding a degree may be important in mitigating the effects of macro-level gender inequality on working conditions. Typically, those employed in more advantaged professional occupations that have favourable working conditions are more likely to have a degree, which likely explains this finding.

Countries with a higher proportion of women in the labour market, and in parliament, have greater average enjoyment across leisure activities, as do countries that have a greater proportion of women working part-time and countries with lower scores (more equal) on the gender inequality

[31] A lower score on the job quality factor variable represents higher job quality

index. A country's gender inequality index negatively correlates quite strongly with women's average enjoyment of reading but does not have an effect for men. Countries that have more female managers on average enjoy reading more and women enjoy physical activity more in these countries. These patterns were similar across the different age groups tested. For those who had a university degree, country-level indicators had smaller correlations with the enjoyment of reading and getting together with friends, and larger correlations with physical activity, suggesting that the macro-level indicators are perhaps in part a proxy for a country's average education level.

7.4.2 Welfare states

Countries were also grouped according to Esping-Andersen's (1999, 1990) welfare state typology to see whether patterns between welfare state type and the micro-level indicators could be discerned. Cross tabulations were run for the dichotomous outcome variables and means tables were run for the two factor variables (see Table 7-9). There is a trend in the gender attitudes variables of countries with conservative welfare states on average having more traditional attitudes, while social democratic welfare states are found to be the least traditional, with those in liberal welfare states falling somewhere in the middle. Esping-Andersen (1999, 1990) argues that social democratic welfare states are 'defamilising' which removes the burden from families, mainly women, from having to provide unpaid care work, and which might partially explain this trend. From the literature review, it is clear that gender role attitudes are linked to the horizontal and vertical segregation of the labour market. Thus, this finding is important when considering how best to measure women's social stratification position. As the different welfare state typologies are likely to affect women's labour market outcomes, different intersectional effects may be found in countries with different welfare state systems. The job-related variables follow a similar linear pattern, with social democratic countries, on average, reporting better quality jobs, conservative countries reporting worse quality jobs, and liberal states falling somewhere in the middle. One exception is that liberal welfare states, on average, feel that their opportunities for advancement are higher, followed by social democratic and then conservative welfare states. Liberal welfare states on average also find their jobs less interesting than those in conservative and social democratic welfare states, but there is little difference overall. In terms of leisure activities, social democratic welfare states, on average, report the highest level of enjoyment of physical activities. Liberal welfare states report more enjoyment from reading, getting together with friends and from watching tv/videos. Thus, there are some macro-level differences between the welfare state types; in particular, gendered attitudes are quite different, on average, across the three types.

Table 7-9 Outcome variables correlations with welfare state type

Indicator	Conservative		Liberal		Social Democratic		Inference	
	Disagree	Agree	Disagree	Agree	Disagree	Agree	V	*p*
A pre-school child is likely to suffer if his or her mother works.	38.35	61.65	49.20	50.80	62.63	37.37	0.19	0.00
All in all, family life suffers when the woman has a full-time job.	40.16	59.84	50.03	49.97	70.18	29.82	0.24	0.00
A job is all right, but what most women really want is a home and children.	61.01	38.99	58.85	41.15	54.53	45.47	0.05	0.00
A man's job is to earn money; a woman's job is to look after the home and family	72.09	27.91	73.59	26.41	86.80	13.20	0.15	0.00
Working women factor	3.02		3.13		3.53		-	0.00
My job is secure	28.94	71.06	20.05	79.95	18.81	81.19	0.10	0.00
My income is high	74.24	25.76	65.78	34.22	57.34	42.66	0.13	0.00
My opportunities for advancement are high	75.33	24.67	59.76	40.24	67.92	32.08	0.13	0.00
My job is interesting	9.89	90.11	10.66	89.34	8.56	91.44	0.03	0.03
I can work independently	13.84	86.16	10.51	89.49	5.88	94.12	0.10	0.00
How satisfied are you in your job	9.47	90.53	8.69	91.31	7.14	92.86	0.03	0.02
Job quality factor	3.48		3.30		3.24		-	0.00
Enjoyment from reading books	43.41	56.59	31.61	68.39	42.77	57.23	0.12	0.00
Enjoyment from getting together with friends	17.59	82.41	11.90	88.10	18.74	81.26	0.09	0.00
Enjoyment from taking part in physical activities	40.26	59.74	33.56	66.44	31.30	68.70	0.08	0.00
Enjoyment from watching TV, videos	53.02	46.98	36.06	63.94	39.97	60.03	0.16	0.00

Data from the 2002 Family and Changing Gender Roles module, the 2005 Work Orientations module and the 2007 Leisure Time and Sports module of the International Social Survey Project. Individual split by country into welfare state membership based on Esping-Andersen's (1999) typology. Liberal countries: Australia, United Kingdom, New Zealand and the United States of America. Conservative countries: Germany, France and Austria. Social democratic countries: Denmark, Sweden and Finland. Cross-tabulation results between each attitudinal variable and welfare state membership showing Cramér's V (V) and significance (*p*) and mean factor score by welfare state and significance (*p*).

7.4.3 Selected Micro

The next stage of the analysis is to look at micro-level predictors of the dependent variables within a selected number of countries. The selected countries are chosen so as to represent different welfare state types and were also based on the available data across the three waves of the ISSP data and across all World Bank indicators. The selected countries are the UK (liberal welfare state), France (conservative welfare state) and Sweden (social democratic welfare state). The three countries have also been cited as representing different levels of the male breadwinner model (Lewis 1992). The UK is said to be historically strongly tied to the male breadwinner model, France is said to have a modified version of the male breadwinner model, with women historically having a stronger position in the labour market than women in the UK. Sweden is argued to have a dual-breadwinner model. Figure 7-1 shows that Sweden has among the highest proportions of women working, whereas France has around a 50% participation rate. The UK has about a 55% participation rate; however, it has a much higher proportion of women working part-time than Sweden or France. Sweden has the highest proportion of parliamentary seats held by women, over double that held by women in the UK or France. It also is the lowest scoring country on the gender inequality index (higher scores = more gender inequality). Of the three countries considered, France falls roughly in the middle, and the UK is the highest scoring in the gender inequality index.

In countries with a higher level of gender inequality, where fewer women are working, and where more women are working part-time rather than full-time, it is expected that household-level approaches will be more appropriate, as women in those countries may be more dependent on men overall (Baxter and Kane 1995; Erikson and Goldthrope 1992). Different welfare state types might also influence whether a household or individual approach better fits the data, for example, the dominance approach might be more appropriate in a conservative welfare state country, but an individual approach might be the most appropriate in a social-democratic country because of different policies affecting women's working patterns (Abendroth et al. 2012; Esping-Andersen 1999; Gornick and Hegewish 2010; Korpi 2000). Thus, it is also expected that individual measures of stratification position will be more appropriate in Sweden, but that a household approach will be more appropriate in the UK, which is characterised by a higher number of women working part-time and a higher score on the gender inequality index.

The appropriateness of gender-specific measures of stratification position is also likely to vary cross-nationally. The use of gender-specific measures is potentially more important in contexts

in which the average working profiles of men and women are most different in terms of both horizontal and vertical segregation (Charles and Grusky 2004). Sweden seems to have greater vertical segregation with a smaller proportion of female managers than France or the UK. Thus, it is expected that a gender-specific measure will be more appropriate in Sweden. It is also hypothesised that the impact of the level of measurement at which stratification position is measured will vary by outcome variable, with household-level approaches being more appropriate when the outcome is an attitude or a preference that might be more influenced by others that an outcome that is directly related to an individual (Rose 2008; Sorensen 1994). Thus, it is expected that the analysis for the outcome variables of attitudes to working mothers and enjoyment of physical activity will be more appropriate for study with household-level measures than that of job quality, which is thought to be a more individual outcome of stratification position.

For each outcome variable in each country, two universal stratification measures (ICAM and ISEI) were tested; in the UK and Sweden, national CAMSIS measures were also tested.[32] These measures were constructed both at the individual level and at the household level using the information on partners' occupations for those with partners (own occupation is used for those without partners). Five variations of a household approach were tested, as described in Table 7-6. The results for the better fitting stratification measure (determined by BIC statistic) are shown for each country for each outcome variable. For the UK and Sweden, a further comparison for females is run, comparing gender-specific and gender-universal measures. The ICAM measure is compared with the gender-specific national version of CAMSIS, and the CAMSIS score, based on female friendship patterns created in Chapter 4, and the gender-specific SEI score created in Chapter 4, is compared with the ISEI measure. All measures were standardised in order to be comparable. First, the outcomes were regressed on just the social stratification measures before additional demographic variables and interactions were added.

For gender attitudes in the UK, the simple stratification-only models showed that the household approach of taking the mean of partners' scores was the best fit to the data for all three stratification measures. This corroborates findings for the UK in Chapter 6, which also found the mean approach to be the best fitting in the UK when predicting self-rated social position and political affiliation. The ICAM models were better fitting than the ISEI and CAMSIS models and thus were selected to show in further analysis with additional variables, and interactions. When control variables for gender, age and marriage were added, the mean approach was still the best

[32] National CAMSIS measure is not available for France.

fitting. However, when interactions between gender and marriage and gender and age were added (see Table 7-10), the individual approach was as good a fit as the mean approach. In Sweden, in the stratification-only models, the mean approach was also the best fit, and again the ICAM models were the better fit overall. When main effects, and interactions were added, the mean approach was still the best fitting. It was expected that, given the higher levels of part-time working (Tomlinson 2007), and thus assumed dependence of women on men in the UK (Baxter and Kane 1995; Goldthorpe 1983), a household-level measure would outperform the individual model in the UK. In Sweden, because it is a social-democratic country (Esping-Andersen 1990, 1999) with a high proportion of women in work, it was hypothesised than an individual approach would be a better fit. Support for these hypotheses were not found with the UK and Sweden having similar patterns despite different gender norms. In France, in the stratification-only models, the individual level approach was the best fit, both when ICAM and ISEI were used, but the ICAM models were a better fit overall and thus were used for further analysis. When main effects were added, the individual approach was still the best fitting and, as shown in Table 7-10, when interactions were added it was still the best fit. It was hypothesised that, as a conservative welfare state type (Esping-Andersen 1990, 1999), social stratification position in France would be better captured by a household head approach, but no support for this was found.

Interestingly, in the UK and France, the story told by the results varies depending on which version of the stratification measure is used. In the UK in the additive approach model, there is a positive significant effect of social stratification position but no significant interaction effect with gender, but the reverse is true in the other models. In France, the effect of gender is only significant in the individual approach. Thus, if only one model was chosen compared to another, the story told about how stratification position affects attitudes could be quite different, highlighting the importance of this kind of sensitivity analysis (Connelly et al. 2016b).

Table 7-10 Comparing individual and household measures - Attitudes to working mothers factor

UK	Individual	Traditional	Dominant	Higher	Mean	Add
Female	0.26	0.26	0.28	0.29*	0.26	0.34*
Age	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
Married	0.13	0.13	0.13	0.13	0.13	0.11
Female*Married	-0.21*	-0.21*	-0.21*	-0.22*	-0.21*	-0.21*
Female*Age	0	0	0	0	0	0
ICAM	0.03	0.03	0.04	0.04	0.03	0.14*
Female*ICAM	0.17***	0.16***	0.15**	0.14**	0.15***	-0.04
N	1713	1713	1713	1713	1713	1713
R-squared	0.151	0.149	0.150	0.148	0.151	0.137
BIC	4605	4608	4607	4610	4605	4632
France	Individual	Traditional	Dominant	Higher	Mean	Add
Female	-0.43*	-0.24	-0.29	-0.27	-0.25	-0.16
Age	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***
Married	-0.19	-0.19	-0.22*	-0.25*	-0.19	-0.48***
Female*Married	-0.06	-0.08	-0.03	-0.04	-0.05	0.01
Female*Age	0.01**	0.01*	0.01*	0.01*	0.01*	0.01*
ICAM	0.20***	0.20***	0.26***	0.32***	0.29***	0.33***
Female* ICAM	0.17**	-0.07	0.03	-0.00	-0.01	-0.10
N	1535	1535	1535	1535	1535	1535
R-squared	0.198	0.163	0.190	0.194	0.188	0.188
BIC	4617	4684	4634	4626	4637	4637
Sweden	Individual	Traditional	Dominant	Higher	Mean	Add
Female	0.32	0.37	0.39	0.38	0.36	0.37
Age	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***
Married	0.23	0.23	0.17	0.10	0.21	-0.29
Female*Married	-0.46**	-0.41*	-0.39*	-0.41*	-0.40*	-0.46*
Female*Age	0.01	0.01	0.01	0.01	0.01	0.01
ICAM	0.30***	0.31***	0.29***	0.32***	0.34***	0.37***
Female*ICAM	-0.02	-0.06	-0.03	-0.01	-0.03	-0.01
N	741	741	741	741	741	741
R-squared	0.196	0.195	0.188	0.196	0.207	0.200
BIC	2052	2053	2059	2052	2042	2049

Note: Data from ISSP 2002 Family and Changing Gender Roles module. Outcome factor variable from factor analyses of gender role attitudes variables. Higher score = positive view of working mothers. Table shows the result of a series of regression models using different approaches to measuring stratification position at a household level and at the individual level. The household approaches are described in Table 7-6.

Table 7-11 Comparing gender-specific measures - Attitudes to working mothers factor

UK	FFCAMSIS	CAMSIS	ICAM	ISEI	FSEI
Age	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
Married	-0.11	-0.11	-0.13	-0.08	-0.07
Stratification measure	0.19***	0.17***	0.25***	0.20***	0.20***
N	752	752	752	967	967
R-squared	0.135	0.136	0.156	0.152	0.151
BIC	2065.1	2064.3	2046.5	2620.7	2621.7
Sweden	FFCAMSIS	CAMSIS	ICAM	ISEI	FSEI
Age	-0.02***	-0.02***	-0.02***	-0.02***	-0.03***
Married	-0.18	-0.18	-0.18	-0.10	-0.14
Stratification measure	0.18**	0.15**	0.24***	0.25***	0.17**
N	272	272	272	259	259
R-squared	0.157	0.154	0.175	0.198	0.170
BIC	761.0	761.9	755.1	707.8	716.6

Note: Same data and outcome variable as Table 7-10. Table shows the result of a series of regression models using different approaches to measuring stratification position in a gender specific and gender universal way.

Table 7-11 shows the results of a comparison of gender-specific and gender-universal measures for women in Sweden and the UK. On this sub-sample of women, the table shows that, in the UK and Sweden, while each stratification measure shows a similar significant positive effect, the universal measures (ICAM and ISEI) explain the most variance and are more parsimonious than the gender-specific equivalents. It was hypothesised that a gender-specific measure would be more appropriate in Sweden because it has more gender segregation in the labour market; however, support for this hypothesis was not found.

Table 7-12 Comparing individual and household level measures - job quality factor

UK	Individual	Traditional	Dominant	Higher	Mean	Add
Female	0.33	0.23	0.30	0.33	0.28	0.33
Age	0	0	0	0	0	0
Married	-0.11	-0.11	-0.08	-0.02	-0.11	0.14
Female*Married	-0.02	-0.04	-0.06	-0.04	-0.04	0.05
Female*Age	-0.01	-0.00	-0.01	-0.01	-0.01	-0.01
ICAM	-0.26***	-0.27***	-0.22***	-0.24***	-0.26***	-0.19**
Female* ICAM	0.02	0.18*	0.03	0.03	0.08	-0.06
N	452	452	452	452	452	452
R-squared	0.093	0.068	0.066	0.068	0.073	0.051
BIC	1141	1154	1155	1154	1151	1162
France	Individual	Traditional	Dominant	Higher	Mean	Add
Female	0.23	0.02	0.13	0.14	0.02	0.25
Age	0.01*	0.01*	0.01*	0.01	0.01	0.01
Married	-0.28**	-0.28**	-0.24*	-0.20*	-0.27**	-0.03
Female*Married	0.22	0.23	0.19	0.21	0.21	0.19
Female*Age	-0.01	-0.00	-0.00	-0.00	-0.00	-0.01
ICAM	-0.32***	-0.32***	-0.33***	-0.34***	-0.34***	-0.26***
Female*ICAM	-0.06	0.19**	0.03	0.02	0.07	0.03
N	969	969	969	969	969	969
R-squared	0.117	0.071	0.095	0.092	0.091	0.065
BIC	2550	2560	2574	2578	2578	2606
Sweden	Individual	Traditional	Dominant	Higher	Mean	Add
Female	0.24	0.21	0.18	0.22	0.24	0.16
Age	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Married	-0.27**	-0.27**	-0.23*	-0.16	-0.25**	0.03
Female*Married	0.15	0.05	0.06	0.10	0.07	0.14
Female*Age	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
ICAM	-0.19***	-0.20***	-0.22***	-0.25***	-0.25***	-0.25***
Female* ICAM	-0.18**	0.01	-0.06	-0.09	-0.05	-0.04
N	746	746	746	746	746	746
R-squared	0.132	0.090	0.114	0.131	0.124	0.103
BIC	1793	1828	1807	1794	1799	1817

Note: Data from ISSP 2005 Work Orientations module, outcome factor variable from factor analyses of job quality variables. Higher score = poorer job quality. Table shows the result of a series of regression models using different approaches to measuring stratification position at a household level and at the individual level. The household approaches are described in Table 7-6

Table 7-13 Comparing gender-specific measures - job quality factor

UK	FFCAMSIS	CAMSIS	ICAM	ISEI	FSEI
Age	-0.01	-0.01	-0.01	-0.01	-0.01
Married	-0.35**	-0.34**	-0.33**	-0.16	-0.15
Stratification measure	-0.25***	-0.25***	-0.29***	-0.17**	-0.13*
N	192	192	192	244	244
R-squared	0.112	0.117	0.126	0.052	0.035
BIC	494	493	491	643	647
Sweden	FFCAMSIS	CAMSIS	ICAM	ISEI	FSEI
Age	-0.00	-0.01	-0.01	-0.01	-0.01
Married	-0.03	-0.05	-0.02	-0.13	-0.10
Stratification measure	-0.27***	-0.21***	-0.34***	-0.26***	-0.24***
N	229	229	229	210	210
R-squared	0.113	0.087	0.160	0.136	0.123
BIC	542.2	548.8	529.7	491.2	494.4

Note: Same data and outcome variable as Table 7-12. Table shows the result of a series of regression models using different approaches to measuring stratification position in a gender specific and gender universal way

It was hypothesised that the job quality factor indicator would be more appropriate for modelling with an individual level stratification measure as it is more likely to be influenced by an individual's own stratification position (Rose 2008; Sorensen 1994). As expected, in each country, the individual measure explained the most variance and was the most parsimonious for each stage of model building. Table 7-12 shows the results of the model for each country, which include the interaction effects. In the UK, the only significant predictor of job quality was stratification position; those with a higher stratification position had a lower job quality score, which indicates they have a better job. In France and Sweden, there is again some evidence that the story told about social stratification position's effect on job quality varies depending on the way stratification position is measured, again showing the importance of this kind of sensitivity analysis. For example, in Sweden at the individual level, there is a significant gender and stratification positions interaction that is not significant in the other models. When comparing gender-specific measures (see

Table 7-13) in the UK and Sweden, the universal measures (ICAM and ISEI) explain the most variance and are the most parsimonious. Thus, again, no evidence was found for the hypothesis that gender-specific measures would be more appropriate in Sweden.

It was hypothesised that the enjoyment of physical activity would be appropriate for modelling with a household approach as individuals' partners may influence their leisure activities (Rose 2008; Sorensen 1994), and this hypothesis was supported. In the UK, for the stratification-only model for each measure, the higher approach is the best fit to the data, and the ICAM approach is the better fit overall. These patterns hold when main effects are added and when interaction effects are added (see Table 7-14). In France, the ICAM measure is again the best fit, and the higher approach is the best fitting in the stratification only model, but when main effects and interactions were added (see Table 7-14), the mean approach was the best fit. In Sweden, the individual approach was the best fit to the stratification only model, but in the main effects and interaction effects models, the addition approach was the best fit. In all three countries, there is evidence that the way in which stratification position is measured affects the story told about the results. Table 7-15 shows the comparison between gender-specific measures and equivalent measures that are not gender-specific. In the UK, the gender-specific measures created in Chapter 4 are a better fit to the data, but, in Sweden, the universal measures are a better fit, which is in contrast to what was hypothesised.

When measuring social stratification position at the household level, it is very uncommon to see researchers test multiple approaches to household level measurement (Sorensen 1994). These results have provided evidence for why such a sensitivity analysis could be important, as, throughout the section, different stories about the results would have been told if only one approach to measuring stratification position was taken. It was hypothesised that, because of different levels of gender inequality, different approaches might be more appropriate in different contexts. It was thought that countries with a higher level of gender inequality, where fewer women are working and where more women are working part-time rather than full-time, would be more appropriate for study with household-level approaches. However, no support was found for this hypothesis. Instead, it appears that the topic studied will have the most influence on whether a household level or individual level approach is more appropriate. It was further hypothesised that gender-specific measures might be more appropriate in countries with more gender segregation in the labour market; however, again, there is no evidence to support this hypothesis.

Table 7-14 Comparing individual and household level measures - physical activity enjoyment

UK	Individual	Traditional	Dominant	Higher	Mean	Add
Female	-0.27	-0.23	-0.17	-0.19	-0.22	-0.17
Age	-0.02***	-0.02***	-0.02**	-0.02**	-0.02**	-0.02*
Married	0.10	0.10	0.04	0.00	0.07	-0.15
Female*Married	0.01	0.08	0.11	0.06	0.07	0.16
Female*Age	0.00	0.00	0.00	0.00	0.00	0.00
ICAM	0.24*	0.24*	0.35**	0.38**	0.34**	0.39**
Female*ICAM	0.13	0.04	-0.08	-0.02	0	-0.18
N	834	834	834	834	834	834
pseudo *R*-sq	0.045	0.042	0.045	0.05	0.048	0.04
BIC	1089	1092	1089	1083	1085	1094
France	Individual	Traditional	Dominant	Higher	Mean	Add
Female	-0.75*	-0.61	-0.61	-0.62	-0.63	-0.55
Age	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***
Married	0.47**	0.47**	0.38*	0.34	0.47**	0.10
Female*Married	-0.25	-0.22	-0.17	-0.19	-0.23	-0.19
Female*Age	0.02*	0.01*	0.01*	0.01*	0.01*	0.01
ICAM	0.48***	0.49***	0.52***	0.55***	0.53***	0.40***
Female*ICAM	-0.10	-0.20	-0.18	-0.18	-0.16	-0.09
N	1717	1717	1717	1717	1717	1717
pseudo *R*-sq	0.053	0.050	0.052	0.053	0.054	0.042
BIC	2159	2167	2163	2160	2156	2183
Sweden	Individual	Traditional	Dominant	Higher	Mean	Add
Female	0.39	0.41	0.43	0.45	0.40	0.68
Age	-0.01*	-0.01*	-0.01*	-0.01*	-0.01*	-0.01*
Married	0.23	0.23	0.22	0.23	0.21	0.08
Female*Married	-0.40	-0.35	-0.39	-0.52	-0.36	-0.92*
Female*Age	0.01	0.01	0.00	0.01	0.00	0.01
ICAM	0.14	0.14	0.08	0.04	0.13	0.11
Female*ICAM	0.17	0.10	0.12	0.36*	0.20	0.38*
N	1054	1054	1054	1054	1054	1054
pseudo *R*-sq	0.020	0.019	0.017	0.022	0.020	0.023
BIC	1339	1341	1344	1337	1339	1336

Note: Data from ISSP 2007 Leisure Time and Sports module. Outcome dummy variable for agreement with the statement 'I enjoy taking part in physical activities' 1= agreement 0 = disagreement. Table shows the result of a series of logistic regression models using different approaches to measuring stratification position at a household level and at the individual level. The household approaches are described in Table 7-6

Table 7-15 Comparing gender-specific measures - physical activity enjoyment

UK	FFCAMSIS	CAMSIS	ICAM	ISEI	FSEI
Age	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
Married	0.16	0.16	0.17	0.15	0.19
Stratification measure	0.47**	0.39*	0.41**	0.25*	0.37**
N	352	352	352	415	415
pseudo *R*-squared	0.046	0.043	0.045	0.043	0.052
BIC	466	467	466	543	538
Sweden	FFCAMSIS	CAMSIS	ICAM	ISEI	FSEI
Age	-0.01	-0.01	-0.01	-0.01	-0.01
Married	-0.15	-0.15	-0.16	-0.11	-0.12
Stratification measure	0.19	0.15	0.30*	0.25*	0.23
N	378	378	378	348	348
pseudo *R*-squared	0.01	0.008	0.017	0.015	0.014
BIC	464	465	461	431	432

Note: Same data and outcome variable as Table 7-14. Table shows the result of a series of regression models using different approaches to measuring stratification position in a gender specific and gender universal way

7.4.4 Micro-Macro

In this section, all countries are pooled, and macro-level country data are added to the micro-level data file. This allows for both micro and macro-level variables to be modelled. Because the data structure has people nested into countries and variables at different levels, a multi-level approach will be taken. Firstly, random intercepts models are run which control for the clustering of individuals within countries and allow for both macro and micro-level variables to be included in the model. Then, random slopes are tested for lower level variables; this allows the effect of a lower level variable (e.g., gender) to vary between countries. Finally, a cross-classified model is tested, where individuals are clustered within countries and also within strata. In this section, social stratification position is measured using the ICAM variable at the individual level.

Firstly, random intercepts models with no parameters are run in order to calculate the intracluster correlation coefficient (ICC). The ICC indicates the proportion of variance in the outcome variable explained by between country difference; if this is 0 or near zero, country-level effects are likely not important, and multi-level models by country would not be necessary (Killip et al. 2004).

Table 7-16 ICC of simple multi-level model with country at level two for each outcome variable

	Observations (*N*)	Countries (K)	Interclass correlation coefficient (ICC)
Attitudes to working women factor	41,742	34	0.16
Job quality factor	24,025	32	0.07
Enjoyment physical activities	49,020	34	0.12

Table 7-16 shows a non-trivial amount of variance at the country level (between 7% and 16%). Thus, random intercepts models are appropriate to account for the clustering of individuals into countries. The next test is whether there is significant variation in the effect of the lower level variables between countries; if so, random slopes models would be appropriate. To test this, random intercepts models are run that contain the lower level variables (social stratification position and demographics), the higher-level variables (gender equality index and Gross Domestic Product), and interactions between the lower level variables (an interaction term between being female and each other inequality was included[33]). This is then compared with a series of the same models, but which additionally contain a random slope term. The random slopes tested are the lower level variables which have an effect that could theoretically vary between countries. The models with and without the slope are compared using likelihood-ratio (LR) tests to determine whether the inclusion of the random slope significantly improves the model fit.[34] If it does not, there is reason to exclude this random slope from the final model in order to avoid over-parametrisation. It is further possible to allow covariance between the random slope coefficient and the intercept. To test whether this is necessary, a further set of models including random slopes allowing covariance were run and LR tests were used to compare these models with the random slopes models that did not allow covariance.

The results of both sets of LR tests are shown in Table 7-17. Based on the LR tests comparing the model with and without random slopes, in the gender attitudes model all slopes were included, in the work orientations model slopes for all but gender were included, and in the sport and leisure slopes all but marriage were included. Based on the LR tests comparing the random slopes model that did not allow covariance, and the random slopes model which did allow covariance, it was decided not to allow for covariance in the final models as in most cases it did not improve the

[33] For clarity in the discussion it was decided to only focus on intersections between gender and other inequalities; other interactions may be significant, but with only 30 cases at the higher country level, it is argued that it is better to avoid over-complicating the model.

[34] In random slopes models it is useful to have a meaningful zero for metric variables, thus all metric variables in the models were standardised.

model. Also, because of the number of slopes in the model, the models often could not converge when covariance was allowed for. In this next set of models, along with the lower level variables, lower level interactions, higher level variables, and selected random slopes interaction terms between the higher and lower level variables were also included. Then, in order to minimise over-parametrisation, a final set of models (one for each dependent variable) were run in which the non-significant interactions terms and slopes were dropped. Results are presented in Table 7-18, Table 7-19 and Table 7-20.

Table 7-17 Testing the random slopes

Outcome variable	Slope tested	Comparing model without slope to model with slope (not allowing covariance)		Comparing model with slope that did not allow covariance to model with slope allowing covariance	
		LR chi^2	p	LR chi^2	*p*
Gender attitudes factor one	Female	30.56	0.0000	1.28	0.2586
	Married	177.07	0.0000	1.86	0.1731
	Age	24.59	0.0000	1.64	0.2002
	Years of school	154.17	0.0000	0.47	0.4925
	ICAM	54.57	0.0000	0.01	0.9203
Job quality factor one	Female	0.75	0.3869	0.87	0.3516
	Married	44.75	0.0000	4.00	0.0454
	Age	9.25	0.0024	1.86	0.1723
	Years of school	24.69	0.0000	8.59	0.0034
	ICAM	60.11	0.0000	8.32	0.0039
Enjoyment from taking part in physical activities	Female	41.64	0.0000	10.14	0.0015
	Married[35]	-3.22	1.0000	0.54	0.4615
	Age	52.76	0.0000	0.45	0.5039
	Years of school	77.66	0.0000	5.64	0.0175
	ICAM	24.32	0.0000	1.41	0.2349

Table 7-17 shows the results of a series of Likelihood-ratio tests firstly comparing a random intercepts model with a similar model that includes an additional random slope term but that does not allow covariance. Secondly the random slope model that does not allow for covariance is compared with a similar model that allowed covariance.

[35] If the likelihood calculations were correct then the LR test value should always be equal to or greater than zero. Thus, as this value is negative it suggests a problem with the likehood estimates. This is probably because the model with a random slope for marriage was 'not concave' i.e. the model failed to converge to the maximum likelihood estimation, this is usually a result of a model being too complex for the data to support. Thus a random slope for being married was not fitted in further analysis of the enjoyment of physical activities.

Table 7-18 Random effects model for attitudes to working mothers factor

Variables	Coef.	Std. Err.	z	*P*>|z|	[95% Conf. Interval]	
Level one variables						
Female	-0.465	0.188	-2.470	0.013	-0.833	-0.097
Age (z2)	-0.209	0.019	-10.910	0.000	-0.246	-0.171
Married	0.014	0.022	0.630	0.530	-0.029	0.057
Years of School (z2)	0.144	0.016	8.780	0.000	0.112	0.176
ICAM (z2)	0.068	0.011	6.170	0.000	0.047	0.090
Level one interactions						
Female*married	-0.082	0.023	-3.630	0.000	-0.127	-0.038
Female*Age (z2)	0.046	0.012	3.700	0.000	0.021	0.070
Female*ICAM (z2)	0.051	0.011	4.730	0.000	0.030	0.072
Level two variables						
GII (z2)	-0.250	0.043	-5.850	0.000	-0.333	-0.166
GDP (log)	0.059	0.026	2.260	0.024	0.008	0.110
Cross-level interactions						
Female*GII	-0.051	0.012	-4.340	0.000	-0.074	-0.028
Female*GPD	0.029	0.007	4.190	0.000	0.015	0.043
_cons	-1.621	0.688	-2.360	0.018	-2.969	-0.273
Random-effects Parameters	Estimate		Std. Err.		[95% Conf. Interval]	
Married	0.008		0.002		0.005	0.015
Age (z2)	0.006		0.002		0.003	0.012
Years of school (z2)	0.001		0.001		0.001	0.004
ICAM (z2)	0.050		0.013		0.030	0.083
_cons	0.008		0.002		0.005	0.015
Residual	0.732		0.006		0.720	0.745

Note: Data from ISSP 2002 Family and Changing Gender Roles module, multi-level random slopes model, group variable country (31 countries) (min observations per country 545, max 1713), outcome factor variable from factor analyses of gender role attitudes variables. Higher score = positive view of working mothers.

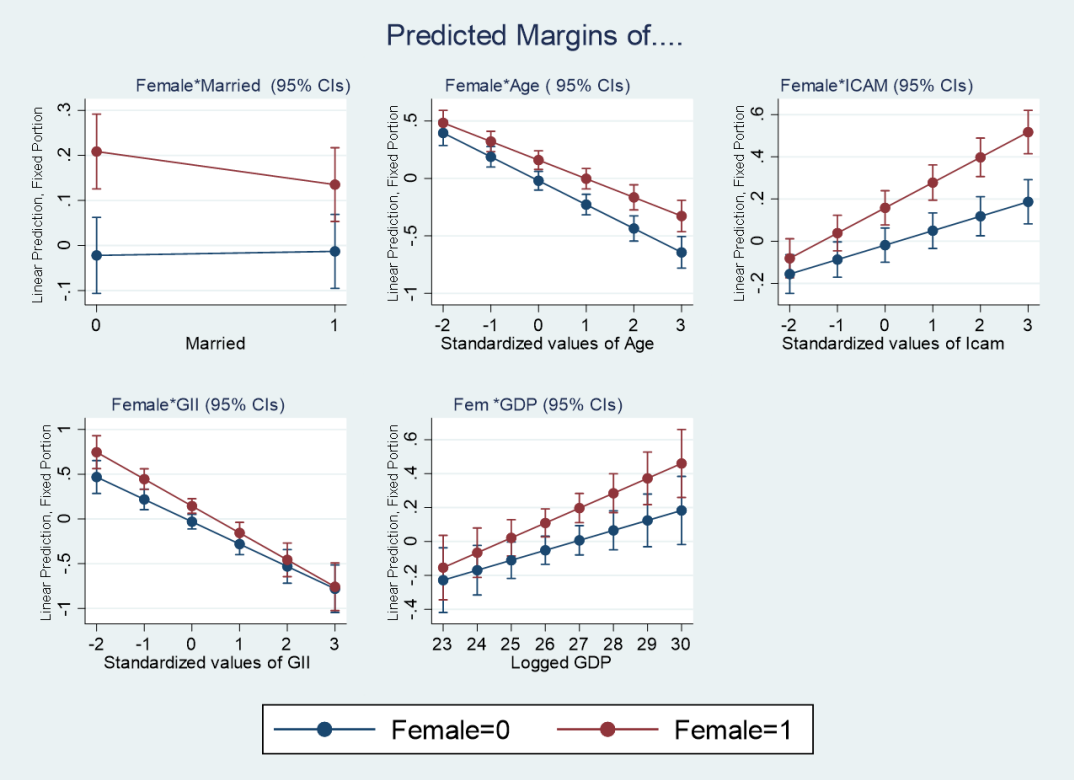

Figure 7-3 Margins plots to visualise the interaction effects shown in table 7-18

Because multiple interaction terms with gender are fitted in the model shown in Table 7-18, to aid with interpretation, Figure 7-3 shows the predicted margins of each interaction term. Marriage has a negative association with women's attitudes toward working women but no significant effect on men's attitudes. Age has a significant negative association with men's and women's attitudes, but the effect is stronger for men. Conversely, being in a higher social stratification position has a positive effect on men's and women's attitudes, but the effect is stronger for women. Additionally, from Table 7-18, we can see that years of schooling is positively associated with attitudes. The level-two variables show that living in a country with more gender equality (higher GII score) is associated with more negative attitudes for men and women, and the effect is stronger for women, whereas living in a country with a higher GDP is associated with more positive attitudes about women working, for both men and women, but the effect is stronger for women.

The variance estimates show that much of the variance in gender attitudes is at the individual level (around 73%). The intracluster correlation coefficient (not shown) reveals about 4% of the variance is at the country level, and therefore about 4% of the differences in attitudes to working mothers is associated with country-level differences after controlling for GDP and GII. The country-level slopes are visualised in Figure 7-4; this shows that the slope for each country for each indicator does not vary dramatically from the mean slope across countries. It was argued

that random slopes could be considered similar to fitting interaction terms between each of the inequalities and each country. Thus, they can also be considered methodologically similar to allowing for intersectionality between individual inequalities. The intersectionality-plus approach argues that membership of a particular inequality category does not necessarily lead to a disadvantage in all circumstances, places and time points. Allowing for inequalities to have random slopes across countries allows for the possibility that inequalities do not necessarily have the same size or direction of effect in all countries, and thus fits with the intersectionality-plus ideology. While in this analysis, the difference in slope is minimal, inclusion does still improve the model; thus, the different effect of inequalities across countries should not be ignored.

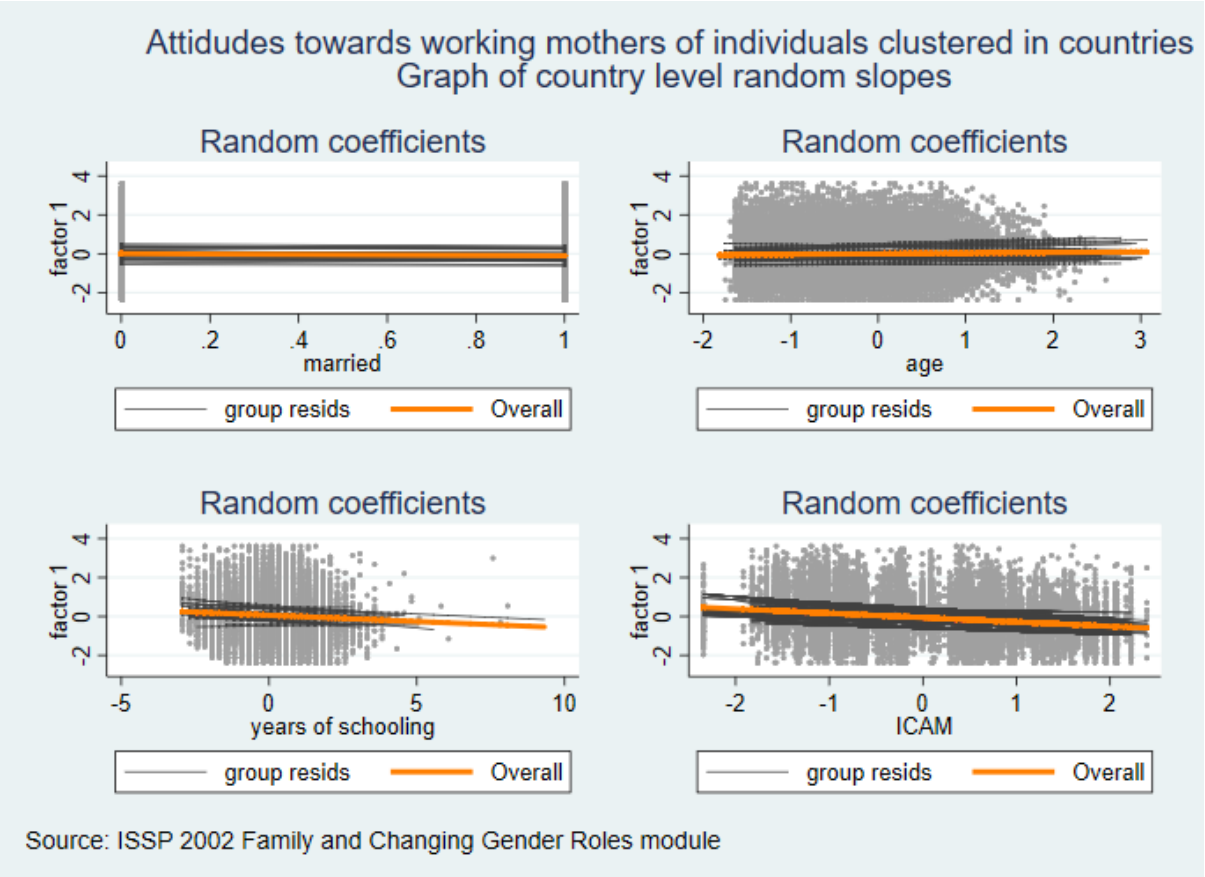

Figure 7-4 Visualisation of random slopes shown in table 7-18

Table 7-19 shows the results for the dependent variable job quality (factor variable); on this variable, a higher score indicates poorer job quality. The interaction effects are visualised in Figure 7-5. This shows that, for women, there is a slight negative association between age and the job quality factor, whereas, for men, there is a stronger positive association. There is therefore, a significant difference in average job quality between young men and women but this difference is not apparent in older people. Social stratification position has a negative association with the job quality factor (higher ICAM scores associated with better job quality on average) for men and women, but women at the lower end of the ICAM score report poorer job quality than men. Table 7-19 shows that, on average, married people have better job quality as do individuals with more years of schooling. The higher-level variable shows that, on average, living in a country with a higher GDP is associated with better job quality for women but worse job quality for men. Living in a country with more gender equality (higher GII score) is associated with men and women reporting better job quality. For women, this may be due to fewer women working overall in countries with less gender equality and those women that do work tending to have more privileged jobs. From the literature review (see Chapter 2) it has been found that the 'opportunity cost' of highly educated women not participating in the labour market is higher as they have greater earnings power and therefore a greater incentive to enter the labour market (England et al 2012). Thus, more highly educated women are likely to be in the labour market, and therefore, in countries with higher gender inequality, it is possible that only relatively advantaged women are entering the labour market.

Table 7-19 shows the variance partition; around 83% of the variance is at the individual level, while the intracluster correlation coefficient (not shown) reveals around 8% is at the higher country level. Figure 7-6 shows a visualisation of the slopes per country, where we can see that the direction of the ICAM effect is the same across countries, but the strength of the effect does vary. For age, the strength of the effect varies across countries and, in some countries, the effect of age is reversed, which offers some support to the intersectionality-plus argument that membership of a particular inequality category does not necessarily lead to a disadvantage in all circumstances, places and time points. In some places, being older is associated with better job quality, and, in others, it is associated with worse job quality.

Table 7-19 Random effects model for job quality factor

	Coef.	Std. Err.	z	*P*>|z|	[95% Conf. Interval]	
Level one variables						
Female	0.853	0.224	3.810	0.000	0.415	1.291
Age (z2)	0.033	0.021	1.520	0.128	-0.009	0.075
Married	-0.114	0.014	-8.010	0.000	-0.142	-0.086
Years of School (z2)	-0.058	0.009	-6.300	0.000	-0.076	-0.040
ICAM (z2)	-0.224	0.017	-13.210	0.000	-0.258	-0.191
Level one interactions						
Female*Age (z2)	-0.051	0.019	-2.750	0.006	-0.087	-0.015
Female*ICAM (z2)	-0.054	0.014	-4.030	0.000	-0.081	-0.028
Level two variables						
GII (z2)	-0.080	0.056	-1.420	0.154	-0.189	0.030
GDP (z2)	0.008	0.032	0.260	0.792	-0.054	0.070
Cross-level interactions						
Female*GII (z2)	-0.037	0.015	-2.390	0.017	-0.067	-0.007
Female*GPD (z2)	-0.025	0.008	-2.980	0.003	-0.042	-0.009
_cons	-0.220	0.835	-0.260	0.792	-1.858	1.417
Random-effects Parameters	Estimate		Std. Err.		[95% Conf. Interval]	
Age (z2)	0.009		0.003		0.004	0.018
ICAM (z2)	0.006		0.002		0.003	0.011
_cons	0.075		0.020		0.045	0.126
Residual	0.827		0.008		0.811	0.843

Note: Data ISSP 2005 Work Orientations module, multi-level random slopes model, group variable country (31 countries) (min observations per country 409, max 1056), outcome factor variable from factor analyses of job quality variables. Higher score = poorer job quality.

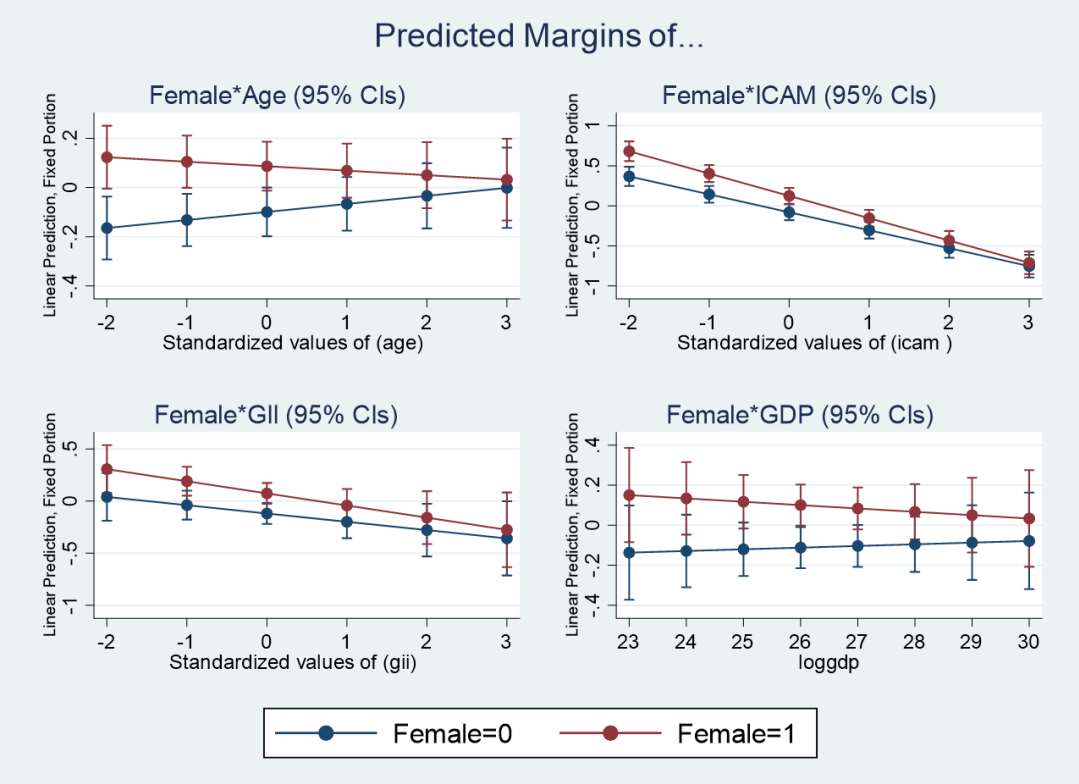

Figure 7-5Margins plots to visualise the interaction effects shown in table 7-19

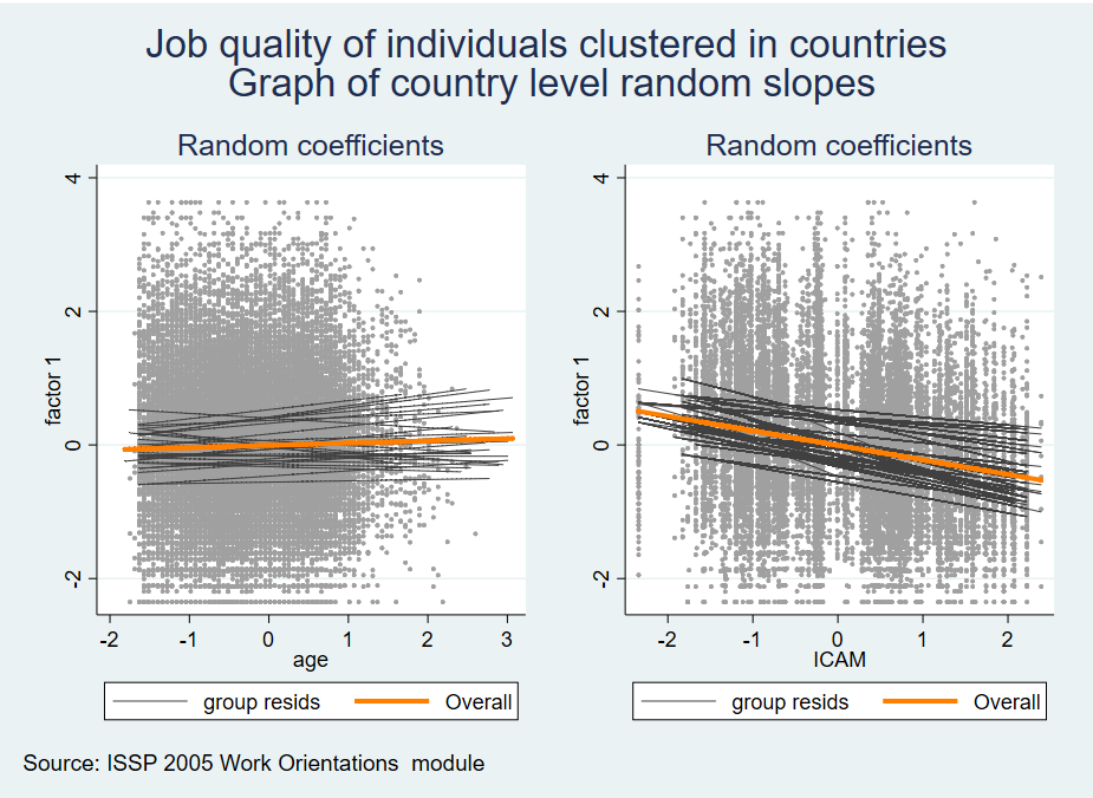

Figure 7-6 Visualisation of random slopes shown in table 7-19

For the outcome variable enjoyment of physical activities (0 = does not enjoy, 1 = does enjoy) a Logistic multi-level model was run, as shown in Table 7-20 years of schooling and social stratification position both have a positive association with enjoying physical activities. Figure 7-7 shows that being married is positively associated with the likelihood of enjoying physical activities, but the association is stronger for men. Being older is negatively associated with the likelihood of enjoying physical activities, and again, this association is stronger for men. At level two, living in a country that has more gender equality overall is associated with less enjoyment of physical activities and this effect is stronger for women. Figure 7-8 shows that, for this outcome, the random slopes by country are quite varied. Again, in some cases, this changes the direction of the effect. The random slopes show that, for a handful of countries, gender has a positive effect on the enjoyment of physical activities, whereas, in others, it has a negative effect. Education also has a much stronger positive effect in some countries than others, and, in some countries, it has a negative effect, showing that inequalities do not work in the same way across countries and again supporting Weldon's (2006) intersectionality-plus argument.

Table 7-20 Random effects model logistic regression model for the enjoyment of physical activities

	Coef.	Std. Err.	z	*P*>|z|	[95% Conf. Interval]	
Level one variables						
Female	-0.159	0.051	-3.110	0.002	-0.259	-0.059
Age	-0.355	0.020	-17.610	0.000	-0.395	-0.316
Married	0.180	0.037	4.880	0.000	0.108	0.252
Years of School	0.262	0.032	8.090	0.000	0.199	0.326
ICAM	0.192	0.015	13.070	0.000	0.164	0.221
Level one interactions						
Female*Married	-0.120	0.049	-2.470	0.014	-0.216	-0.025
Female*Age	0.158	0.027	5.950	0.000	0.106	0.211
Level two variables						
GII	-0.326	0.093	-3.510	0.000	-0.507	-0.144
Cross-level interactions						
Female*GII	-0.143	0.044	-3.250	0.001	-0.229	-0.057
_cons	0.010	0.092	0.110	0.910	-0.170	0.191
Random-effects Parameters	Estimate		Std. Err.		[95% Conf. Interval]	
Female	0.038		0.015		0.018	0.081
Years of schooling (z2)	0.024		0.007		0.013	0.044
cons	0.242		0.064		0.145	0.405

Note: data from ISSP 2007 Leisure Time and Sports module, multi-level logit random slopes model, group variable country (32 countries) (min observations per country 592, max 2322), outcome dummy variable for agreement with the statement 'I enjoy taking part in physical activities' 1= agreement 0 = disagreement.

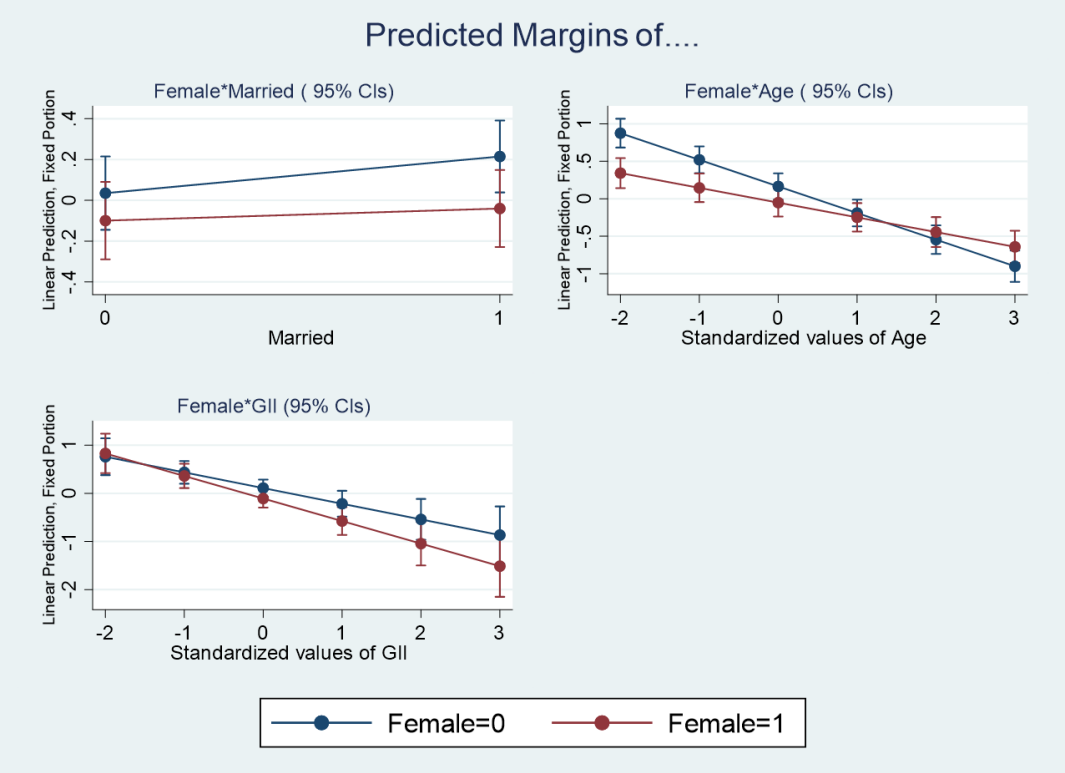

Figure 7-7 Margins plots to visualise the interaction effects shown in table 7-20

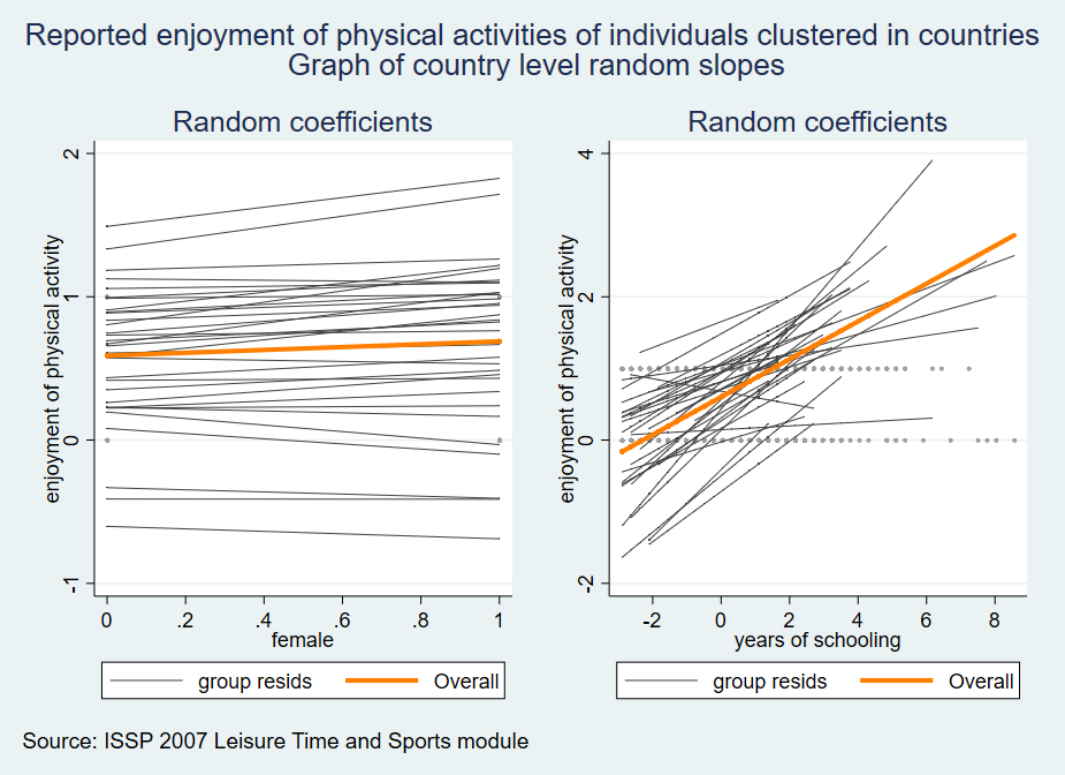

Figure 7-8 Visualisation of random slopes shown in table 7-20

7.4.4.1 Cross-classified models

In Chapter 5, it was concluded that a multilevel modelling approach to intersectionality, with strata at the higher level, was a promising direction for researchers. A stratum is defined as a group of intersecting inequalities, for example, young, highly educated female, or old, no formal education, male. The Stata 'group' command can be used to create such a strata variable from selected inequalities, and this is fitted at level two with the individual level equalities fitted at level one, allowing for variance to be partitioned between the individual level and the strata (or intersectional) level (Evans et al. 2018). This chapter offers an important extension to this approach by partitioning variance between individuals, countries and strata, by using cross-classified models and cross-classified models with an interaction between the higher levels.

This approach is only recommended for use with metric outcome variables (Evans et al. 2018); thus, it is only shown here for the factor variables for attitudes to working mothers and job quality. A further limitation of the approach is that the inequalities used to create the strata must be categorical. Thus, some variables had to be recoded to categorical, resulting in loss of nuance. The inequalities used to create the strata are gender (male, female), marital status (married/cohabiting; not married/cohabiting), education (1. No formal qualification/Lowest formal qualification, 2. Above lowest formal qualification/Higher secondary complete, 3. Above higher secondary/University degree completed), age (15–35; 36–55; 56+), and social stratification (ICAM quintiles). Each of the possible 144 strata (2 x 2 x 3 x 3 x 4) has at least one observation. Only two strata have less than 10 observations, and the majority have over 100 observations.

Table 7-21 shows the ICC statistics for eight models that were run and compared for each outcome variable: models (i) are the null models; and (ii) include level-one variables (female, married or cohabiting, education, age, and ICAM). Model A controls only for country at the higher level, and this model would likely be familiar to many quantitative researchers controlling for the structure of individuals nested within countries. Model B controls only for strata at the higher level; this is the type of model suggested by Evans et al. (2018) for controlling for intersectionality at the higher level; thus the variance at level two can be thought of as the variance associated with intersectionality. While model A suggests that individuals within countries share something in common due to where they live, model B suggests that individuals share something in common due to their strata membership. Models C and D are the new approaches and reflect extensions to the work of Evans et al. (2018). Model C is a three-level cross-classified model that recognises that individuals are nested both within countries and within strata, but that the same strata can be found in different countries. This model would, therefore, test whether, on average,

across countries, there are strata level effects. Model C assumes that the relationship between country membership and strata membership is additive. However, it is also possible to imagine that the strata level (intersectional) effects may be different in different countries. For instance, some countries might be more favourable to those in particular strata. In fact, this is a central tenet of the intersectionality-plus approach, which argues that we must recognise that intersectionality does not mean that each inequality will interact with each other inequality in the same way across time and space (Weldon 2006). We can capture this by adding an additional higher-level term to capture this possible interaction between countries and strata. A new variable is generated, again using the group command in Stata to index country and strata membership, which, when added to the cross-classified model, can be thought of as an interaction term between country and strata, this approach is adopted in model D.

Table 7-21 ICC of multi-level models with country and strata at the higher level, shown with and without controls for each outcome variable

	Variance	A		B		C		D	
		(i)	(ii)	(i)	(ii)	(i)	(ii)	(i)	(ii)
Gender factor	Individual level	0.84	0.75	0.87	0.87	0.74	0.74	0.73	0.73
	Country level	0.16	0.15	-	-	0.15	0.15	0.14	0.14
	Strata level	-	-	0.10	0.01	0.09	0.01	0.09	0.00
	Strata country interaction	-	-	-	-	-	-	0.02	0.02
Work factor	Individual level	0.91	0.83	0.90	0.90	0.83	0.83	0.81	0.81
	Country level	0.07	0.07	-	-	0.07	0.07	0.07	0.07
	Strata level	-	-	0.07	0.00	0.08	0.00	0.08	0.00
	Strata country interaction	-	-	-	-	-	-	0.02	0.02

Note: Table 7-21 shows the ICC statistics for a series of regression models. Models (i) are multi-level models with no control variable; and Models (ii) include level-one variables (female, married or cohabiting, education, age, and ICAM). Models A are random intercepts models with country at the higher level. Models B are random intercepts models with Strata at the higher level. Model C is a cross classified random intercepts model with strata and country at the higher level. Model C is a cross classified random intercepts model with strata and country at the higher level including and additional term that allows for the strata level (intersectional) effects to be different in different countries.

Model A shows that, when individual level inequalities are controlled for, around 15% of the variance in attitudes toward working mothers is at the country level, and around 7% of the variance in subjective job quality is at the country level. Model B shows that only 1% of the variance is at the strata level. Likelihood ratio tests show that Model C is a significant improvement over models A and B, suggesting that accounting for both the clustering of individuals into countries and into intersectional strata is important, despite the variance at strata level being very small. Likelihood ratio tests also show that model D is a significant improvement over model C, providing support for the intersectionality-plus conceptualisation of

intersectionality as this suggests it is important to recognise variance in intersectional effects cross-nationally.

These results add to the emerging literature on the use of multilevel models to account for intersectionality (Bell et al. 2019; Evans et al. 2018; Merlo 2018). As discussed in Chapter 5, the ideas of intersectionality has become a prominent area of interest for empirical sociological research, but quantitatively ordinated stratification scholars have been slow to integrate the ideas of intersectionality into their work (Dubrow 2013). There are few studies that offer practical advice on how best to implement an analytical intersectional approach in empirical research; one notable exception is McCall's (2005) Categorical approach, which recommends the use of multiple interaction effects in models to account for every possible overlapping inequality. However, this approach is problematic as the interpretation and communication of these often large and complex models is challenging, and small sample sizes often represent each specific combination of inequalities (Evans et al. 2018; McCall 2005). Chapter 5 argued that the multi-level approach that has recently been suggested in health literature (Bell et al. 2019; Evans et al. 2018; Merlo 2018) was a better approach, as it results in less complex models in which low numbers of cases are accounted for via the shrinkage of residuals. Chapter 5 also argued that adopting the intersectionality-plus approach was likely to be the most sensible for stratification researchers. This approach argues that outcomes of the intersection of different structures of inequality are likely to vary over time and space, so it is important to consider individual characteristics within context. Thus, this chapter suggests an important extension to the multi-level approach previously recommended by Bell et al. 2019, Evans et al. 2018, and Merlo 2018, which is to use cross-classified models that recognise the clustering of individuals into strata and countries, and that allow the strata level intersectional effects to vary across countries. Cross-classified models have been found to be a useful approach in other areas such as education, for example, for accounting for the cross-classified nature of data on children, within schools, within neighbourhoods, or children's attendance at primary and secondary school (Dunn et al. 2015; Rabe-Hesketh and Skrondal 2012; Rasbash and Goldstein 1994). However, the use of cross-classified models to account for the effects of intersectionality cross-nationally is an original contribution of this thesis. In future work, this approach could prove useful in expanding our understandings of cross-national differences in intersectional effects, which could help to develop theories of intersectionality that ultimately allow for new solutions to overcome intersectional inequality.

7.5 Conclusions

This chapter has focused on approaches to measuring women's social position in a cross-national context. This chapter employed three distinct analytical frameworks, labelled as 'macro', 'selected micro' and 'pooled micro'. Three topics from the International Social Survey Project were chosen to focus the analyses: gender attitudes, working conditions, and sport and leisure activities. Those topics were chosen as each has been found to have a relationship with social stratification position and gender. Factor analysis was used to create two metric variables an 'attitudes to working mothers' factor and a subjective 'job quality' factor.

It has been suggested that it is important that researchers recognise the macro-level diversity in gender equality between countries just as they must recognise diversity between women (Bose 2012). The macro analysis, therefore, looks at the effects of gender equality at the national level on the selected outcome. To test whether macro-level gender equality has a significant effect on the chosen outcome variables, the national-level gender equality indicators were taken from the World Bank, UN Development Reports data, and OECD data. Because the macro-level gender equality indicators were also correlated with GDP, partial correlations controlling for GDP were run between each macro-level indicator and average response to the outcome variable for each country. These partial correlations were also run on different subgroups of the population by disaggregating data by gender, gender and age group, and gender and education level. It was found that, overall, gender equality did affect the outcome variables, and it did so in a similar way for men and women, and in different age groups and education levels.

As macro-level welfare state type has also often been cited as influencing individuals' attitudes and behaviours, a welfare state variable was also created according to Esping-Andersen's (1990, 1999) welfare state typology in order to compare groups of countries with different welfare states. It was found that there were some clear patterns of difference between welfare state types, particularly in regard to attitudes to working mothers, with conservative welfare states on average having more traditional attitudes, and social democratic welfare states being the least traditional, with liberal welfare states falling somewhere in the middle. From the literature review, it is clear that gender role attitudes are linked to the horizontal and vertical segregation of the labour market (Alksnis et al. 2008; Charles and Grusky 2004; Kalantari 2012; McDaniel 2016; Ochsenfeld 2014). Thus, this finding is important when considering how best to measure women's social stratification position. As the different welfare state typologies are likely to affect women's labour market outcomes, different intersectional effects may be found in countries with different welfare state systems.

The selected micro-level analysis is argued to be a compromise between a case study and a multi-level analysis as it allows for a detailed overview in different contexts. Social policies can vary considerably between contexts, and a macro-level approach cannot account for this level of detail because there are too many countries included in the analysis. Grouping countries according to a typology, such as welfare state regimes, also requires a lack of detail for particular countries. Three countries were purposefully selected to represent different levels of gender inequality and different welfare state types. The micro-level analysis was conducted to look at differences between and within each country. The focus of this section was to test whether different approaches to measuring stratification position were more appropriate in different countries, given their different average gender equality. It was hypothesised that, in countries with a higher level of gender inequality, and in countries were fewer women were working and where more women are working part-time rather than full-time, household-level measurements would be more appropriate, as women were likely to be more dependent on men in these countries. No evidence was found for this hypothesis. It was also hypothesised that the use of gender-specific measures would be more important in contexts in which the average working profiles of men's and women are most different in terms of both horizontal and vertical segregation; again, no evidence was found for this hypothesis. It was also hypothesised that the level of measurement at which stratification position is measured would vary by outcome variable, with household-level approaches being more appropriate when the outcome is an attitude or a preference that can might be more influenced by others than an outcome that is directly related to an individual. Some evidence for this hypothesis was found, with the enjoyment of physical activities being better modelled with household-level measures compared to job quality being better modelled with individual-level measures.

While no clear pattern was found to suggest when a household-level measure might be more appropriate, evidence was found that a different story may be told about the results, depending on which household-level approach was taken in the analysis. This is an important finding; as Sorensen (1994) notes, it is rare that the explanatory power of different operationalisations of a household approach to measuring social stratification has been explored. Most household-level analyses implement just one household-level approach. The results here indicate that it would be beneficial to perform a sensitivity analysis to determine whether results are the same across different household approaches.

Weldon (2006) argues that the intersections of different structures of inequality are likely to vary over time and space. Therefore, it is important to consider individual characteristics within context, as different groups are disadvantaged to different extents in different places. For example, gender, race and class might be more intertwined in the USA than in other countries

(Weldon 2006). This thesis would argue that these different intersectional effects can be tested for by using multi-level models. This allows for micro-level intersectional effects to be modelled while controlling for national-level gender equality. It also allows for the effect of micro-level variables to vary by country when random slopes are added; thus, the effect of being female or occupying a more advantaged stratification position can vary by country. It was found that model fit was improved by controlling for country at the higher level and for allowing the effect of inequalities to vary across countries. Therefore, it is concluded that researchers should consider how context affects individual equalities, as Weldon (2006) suggests, and that multi-level modelling is a useful tool to achieve this.

Chapter 5 also concluded that a multilevel modelling approach to intersectionality, with strata at the higher level, was a promising direction for researchers, allowing for variance to be partitioned between individual level and strata (or intersectional) level (Evans et al. 2018). This chapter offers an important extension to this approach by partitioning variance between individuals, countries and strata by using cross-classified models. Weldon (2006) argues that researchers should take an 'intersectionality-plus approach' to study intersectionality, recognising that intersectional effects are not fixed over time and place. This thesis argues that cross-classified multi-level models have the potential to allow for this. For the topics analysis, it was found that the models that recognised the clustering of individuals within strata within countries were better models than those that only recognised one level of the hierarchy. It was also found that the models that allowed the effect of higher-level intersectionality to vary by country were a better fit than those which only allowed for an additive process. Thus, these results support adopting the intersectionality-plus approach in considering intersectional effects. Further work on the cross-classified approach to intersectionality described here would be useful, for instance work that included additional country-level variables in the model might lead to different patterns, and could further enhance understandings of cross-national intersectionality.

8 Conclusions

8.1 Introduction

This thesis has explored approaches to measuring women's social positions which aim to account, at least partially, for the relationship between the social structure of gender and the social stratification structure. This thesis was derived from and enhances two distinct but connected literatures: a large but relatively stagnated literature on the measurement of women's social stratification position (Abbott 1987; Acker 1973; Crompton and Mann 1986; Dale et al. 1985; Erikson 1984; Erikson and Goldthorpe 1992; Goldthorpe 1983; Goldthorpe and Payne 1986; Heath and Britten 1984; Leiulfsrud and Woodward 1988; Sorensen 1994; Stanworth 1984); and an emerging intersectionality literature (Anthias 2012; Bell et al. 2019; Dubrow 2013; Evans et al. 2018; McCall 2005; Merlo 2018; Walby et al. 2012). The 'problem' of fitting women into a stratification research agenda that was designed for the measurement of the occupational positions of male household heads has received little attention since the large and unresolved debates in the 1970s and '80s (Albright 2008), which concern the appropriateness of measuring stratification at the household level and the appropriateness of applying occupation-based stratification measures designed for men to women. Despite there being no clear conclusion on these debates, it is now increasingly common to see women's stratification position being measured at the individual level in social research, often using measures that were originally designed to measure the male occupation structure (Sorensen 1994). Recently, in the social sciences, a growing and influential literature on recognising the intersectionality of social inequalities has emerged (Walby et al. 2012). However, much of the current literature is theoretical or qualitative in nature, and representative statistical evidence on the inequalities that individuals experience as a result of their intersecting social positions has been relatively neglected (Anthias 2013; Walby et al. 2012). The overall orientation of this thesis has been empirical analysis of large-scale social survey data using advanced statistical methods, an orientation that is common in the stratification literature but shared by only a few in the intersectionality literature (Dubrow 2013).

This thesis was structured around three key themes: (i) Gender-specific measures, (ii) Household-level approaches, and (iii) Intersectional approaches. This final chapter proceeds as follows; first, the findings from the empirical chapters are integrated in an effort to address the three themes. Then, the ways in which and to what extent this thesis makes an original empirical contribution to scholarship in this area is clearly stated, accompanied by a series of practical recommendations for researchers, and some concluding remarks.

8.2 Key findings

The literature review indicated that the average employment situation for women has changed quite dramatically in the last 50 years. Those whose employment prospects have most improved are mothers, particularly educated mothers with a working partner, creating a growing schism between 'work-rich' and 'work-poor' family units (Berthoud 2007; Rose 2008). However, due to a prevailing culture of gender essentialism, women are still responsible for the majority of unpaid labour within the home (Charles and Grusky 2004; Coltrane 2000), which is linked to women spending fewer hours in paid employment (Blair-Loy 2003; Correll 2004; England 2010). Having children also significantly reduced the number of hours women spend in employment (Glauber 2008; Sanchez and Thomson 1997). While it is now common for both parents to be in employment, this usually means that the father is working full-time and the mother is working part-time (Gregory and Connolly 2008; ONS 2017). Part-time work is associated with work that is lower-skilled and has lower pay (Blackwell 2001). In addition, occupations are still horizontally and vertically segregated (Charles and Grusky 2004), and occupations that are female-dominated receive lower rewards on average (England et al 2007). Thus, while there is a group of advantaged women in full-time advantaged occupations, there are many more women who still adopt more traditional female patterns of employment in lower-paid low-status work. Furthermore, although men and women in professional occupations may share the same occupational title, women are often condensed into feminised sections of the occupation that do not have the same rewards or prospects for progression as their male counterparts (Bolton and Muzio 2008; Lyonette and Crompton 2008). In Chapter 3, this thesis has argued that many of the commonly used social stratification measures do not pay enough attention to these different occupational patterns of men and women, highlighting how many measures were designed either explicitly or implicitly for men (Dale et al. 1985; Erikson et al. 2012; Heath and Britten 1984; Marshall et al. 1988; Murgatroyd 1984; Oesch 2003; Stanworth 1984). It was therefore suggested that gender-specific measures might more accurately reflect the position of women.

The major contribution of Chapter 4 was the construction of two gender-specific stratification measures that treat women as individuals operating within a de facto separate female labour market. While gender-specific SEI measures have been created before (e.g., Hauser and Warren 1997), these tend to be created using US data. This thesis contributed gender-specific SEI scales based on contemporary British data. CAMSIS scores are traditionally gender-specific; however, women's scores had previously only been created using data on marital patterns. While earlier studies had argued that data on marital patterns work as well as data on friendship patterns (Lambert and Griffiths 2018; Prandy and Lambert 2003) for men, there was no evidence this was the case for women. This thesis contributed by creating a female friendship CAMSIS based on

contemporary British data scores. These were then compared to more traditional approaches. It was found that many of the outlying occupations had either very few men or very few women in them.

When comparing male and female SEI scores, Education officers, School inspectors, Pharmaceutical dispensers, Fitness instructors and Receptionists scored more highly on the male scores. The men in these occupations are more like to have a degree and are more likely to earn more than the income thresholds. Security managers, Garage managers and proprietors, NCOs and other ranks, Inspectors of factories, utilities and trading standards, Statutory examiners, Officers of non-governmental organisations, and Gardeners and groundswomen obtained higher scores on the female scale than on the male SEI scale. These occupations also had large differences in the average education level of the men and women within them, with women being far more likely to have degrees. This highlights the dangers of creating scales combined male and female data as men and women's average education level and income can be quite drastically different. This highlights why using only male occupational information to create an SEI scale is problematic. For example, over 80% of Receptionists are female and Pharmacy is a female-dominated sector, therefore, assigning women a position in the social hierarchy based on the relatively few men in that sector is problematic as the males in that occupation are more advantaged. By contrast, the security industry is dominated by men; however, the number of women working in this field is growing, particularly in the emerging area of cybersecurity (Davies 2017). These emerging areas often require a higher level of education and these less physical jobs also often come with higher rewards (Davies 2017), which may explain why female Security managers obtain a higher SEI score. This occupation offers a further example of why gender-specific scales might be more appropriate, as men and women with the same title might be working quite different jobs with different average educational requirements and rewards.

When comparing the CAMSIS score for women based on their female friends with that based on their male partners, it was found that a handful of female-dominated occupations obtain a lower friendship based CAMSIS score than marriage based CAMSIS score (383 Clothing designers, 461 Receptionists/telephonist, 661 Beauticians and related occupations, 791 Window dressers, floral arrangers). Some basic analysis shows, in general, that these occupations do tend to have more advantaged partners than friends, having a higher proportion of male partners in SOCs 1 and 2, which are generally the most advantaged SOCs in the CAMSIS approach. Because these occupations have quite high numbers of female incumbents, these occupations may be the most compelling example of the differences between the two scales. When comparing male scales in a similar way it has been argued that much of the difference between scores is just due to measurement error (Lambert and Griffiths 2018; Prandy and Lambert 2003) and, while this might

be true for the other male-dominated outlying occupations, this argument is less convincing for the female-dominated occupations. This means that the position of these female-dominated occupations in the CAMISIS score based on marriage patterns might be inappropriately inflated. Conversely, as the women in these stereotypically female occupations do tend to have more advantaged partners, ignoring that information for married incumbents might not represent their advantage level if they share resources with those partners.

In Chapter 5, it was argued that using gender-specific stratification measures designed to reflect interesting inequalities, such as those developed in Chapter 4, could be considered an intersectional approach. Three variations of a CAMSIS model were tested, predicting income: one designed for males based on marriage patterns, one designed for women based on marriage patterns, and one created in this thesis designed for women based on their female friendship patterns. It was found that the CAMSIS score based on female friendship patterns led to a slightly better model, both with and without interaction effects, explaining more variance and being more parsimonious, and suggesting that the design and use of gender-specific measures could be an important way forward when considering the intersection of gender and social position. In Chapter 7, it was hypothesised that the use of gender-specific measures would be more important in contexts in which the average working profiles of men and women are most different in terms of both horizontal and vertical segregation, however, no evidence was found for this hypothesis.

In Chapter 6, it was argued that, despite their lack of popularity in recent years, household-level measures of social stratification position had the potential to be a more accurate indicator of social position for many women. This position was reinforced by the finding in Chapter 4 that women in stereotypically female occupations, who are not particularly advantaged, tended to have more advantaged partners. It was suggested that ignoring this information for married women might not represent their true advantage level if they share resources with those partners (Bottero 2005; Rose 2008). The ongoing asymmetrical inequalities between men and women in the labour market and the home (Bottero 2005) suggested that a household-head measure of stratification position could be appropriate. In contrast, the growing divide between 'work-rich' and 'work-poor' poor households, which is related to the increasing labour market participation of highly educated wives and mothers (Berthoud 2007; Rose 2008), suggested a combined approach would be more appropriate. One key argument cited in the 1980s in support of using a male household approach was that women on average had a weaker attachment to the labour market (Goldthorpe 1983). Given the changing nature of women's working lives over time, Chapter 5 compared a range of household approaches in a longitudinal context, discussing whether different measurements might be more or less appropriate at different time points. There are very few studies which compare the explanatory power of different operationalisations of a household

approach to measuring social stratification (Sorensen 1994); thus, this is an original contribution of this thesis.

When comparing the number of female-headed household over time using different approaches, it was found that there were some major differences between the classifications of couples depending on which household head approach is taken. It had been argued that take-up of the dominance approach was uncommon, because few women were classified as the household head under this approach and thus it was very similar to the conventional approach (Sorensen 1994). However, the findings here did not support this assumption, particularly in the USA and in later periods in the UK. Under the dominance approach, single women and women whose partner has no occupation are considered to be the household head, as are women who are considered to have a greater labour market attachment than their partners. In 1983, Goldthorpe was arguing in defence of the conventional approach due to women's weaker labour market attachment. These figures suggest that, in fact, at that time in the UK, a substantial proportion of women (28%) with working male partners had a greater attachment to the labour market than their partner, and, in the USA, it was as high as 47%, which is quite a dramatic difference from the proportion of women who are designated the household head under the conventional approach and also shows a strong labour market attachment for many women. It is also common to see researchers operationalising a 'dominance approach' by using the more advantaged partner on a specified stratification measure as the household head (e.g., Korupp et al. 2002; Meraviglia and Buis 2015). However, as this does not account for the prevalence of part-time work, many more women's occupations define the family position under this approach than in the dominance approach, particularly in the UK, where part-time working is more common (Tomlinson 2007), suggesting that the two approaches are not interchangeable. There were also some cross-national differences; women in the USA were more frequently designated the household head under all approaches in which that is possible, indeed, in most cases, at least 50% of the total sample and the dual-earner couple sample is assigned a position based on a women's occupation. In the UK, there is greater evidence of an over time trend with women's occupations representing more households over time in each approach where this was possible. It is argued that this trend is likely linked to different patterns of employment of women in the UK and the USA, with UK women being more likely to work part-time (Tomlinson 2007).

It was therefore hypothesised that the conventional approach would have less relevance in the USA than the UK and that it would have more relevance for women in the earlier period in the UK than in the later period. For both political affiliation and subjective social position, the conventional approach outperforms the individual approach for women in the early periods in the UK, supporting the findings of Erikson and Goldthorpe's (1992) study. However, in later years,

and in the USA, the individual approach is a better predictor than the conventional approach in all years for political affiliation and in every year except the 1980s for self-rated position. By Erikson and Goldthorpe's logic, this can be taken as evidence against the use of the conventional approach with more recent data and in support of the individual approach. Erikson and Goldthorpe (1992) noted that, if over time women's workforce patterns became more similar to men's, then an individual approach might be warranted. The findings here seem to support that hypothesis, as women in the UK are now more likely to work and to work full-time than they were in the 1980s (see Chapter 2, Section 2.2). Thus, it could be argued, men and women's work patterns have become more similar across the time frame, possibly explaining why the individual approach is the better predictor in later years.

However, the household-head approach is not the only way in which household stratification position can be measured; it is also possible to define a household position based on more than one occupation. This was achieved here by taking the mean stratification score of couples and adding a couple's scores together. Overall, there is more support for a combined approach than a household-head approach or individual approach. In the UK, taking the mean of both partners' scores generally results in one of the best fitting models for both topics in all time points. In contrast, in the USA, the addition approach is often favoured when predicting political affiliation. This finding supports the use of a combined approach. Erikson (1984) suggested that trying to combine the positions of individuals within a family might be possible. He also argued that, when using class approaches, this would be problematic, due to the different dimensions of the classes. However, he does not consider the use of scale measures, and, if using a scale measure, as this thesis has, it is relatively simple to take the average of the two scales and this is also likely to be more meaningful than taking a class average.

In Chapter 7 it was a hypothesised that countries with a higher level of gender inequality, countries where fewer women were working, and countries where more women are working part-time, household-level measurements would be more appropriate. No evidence was found to support this hypothesis. However, evidence was found that a different story may be told about the results depending on which household-level approach was taken in the analysis. This is an important finding, as it is rare that researchers compare different household level approaches; most household-level analyses have implemented just one approach (Sorensen 1994). The results here indicate that it would be good practice to perform a sensitivity analysis to determine whether results are the same across different household approaches.

This thesis argued in Chapter 5 that social stratification researchers using large-scale survey data would benefit from engaging with the ideas of intersectionality. There has been some disconnect

between intersectional theory and the methods used by mainstream stratification researchers, and social stratification position has therefore been largely neglected in recent intersectional work (Anthias 2013; Dubrow 2013;Walby et al. 2012). There is a small but increasing body of literature that is trying to bridge this methodological divide, which was reviewed in Chapter 5 (Bell et al. 2019; Dubrow 2013; Evans et al. 2018; McCall 2005; Merlo 2018). Chapter 5 also offered an empirical example of intersectional quantitative approaches in practice. It was concluded that Weldon's (2006) intersectionality-plus approach is likely to be the most sensible for stratification researchers. This approach is similar to that of sensitivity analysis and advocates that researchers test multiple different conceptualisations of intersectional relationships. Until recently, the most commonly used quantitative intersectional approach was the categorical approach (McCall 2005), which advocates for fully saturated regression models to account for multiple intersecting inequalities. However, it is argued here that this likely leads to models which are not parsimonious and that, while it is important to test for interaction effects between inequalities, this should be built up more gradually through a sensitivity analysis.

In health inequality literature, a multi-level modelling approach to intersectionality has recently been proposed (Bell et al. 2019; Evans et al. 2018; Merlo 2018). Chapter 5 applied this approach to a social science application of income inequality. It was concluded that a multilevel modelling approach to intersectionality, with strata at the higher level, was a promising direction for researchers. It was established that this new approach to intersectionality is an important step forward, as multi-level modelling is well aligned with the ideas of an intersectional plus approach but is also a new use of a methodology with which many stratification scholars will be familiar. Thus, the adoption and progression of this approach by quantitatively orientated stratification scholars is advisable, and would likely lead to a fuller comprehension of the current context of inequality for both intersectional and stratification scholars. Practically, this approach is also beneficial for working with social science data as frequently only a small number of individuals will have a specific combination of intersecting inequalities. The multi-level approach allows for more parsimonious models which also account for uncertainty via shrinkage of the higher-level residuals (Bell et al. 2019).

The intersectionality-plus approach argues that different social structures have different effects in different contexts; therefore, comparative analysis is an essential part of the intersectional plus approach. Chapter 7 aimed to recognise the macro-level diversity in gender equality between countries as well as diversity between women. It is argued that observing variation over contexts and finding the distinctive features that may cause patterns of relationships between categories can help us understand the relationship between the categories of inequality. In order to consider individual characteristics within a given context, macro-level indicators of gender equity were

considered. It was thereby found that, on average, these macro-level indicators, including welfare state type, did influence variation between countries on the tested outcomes. Multi-level models with country at level two were used to allow for micro-level intersectional effects to be modelled while controlling for national-level gender equality. Random slopes models also allowed for the effect of micro-level variables to vary by country and improved the model fit. It was therefore concluded that researchers should consider how context affects individual inequalities, as suggested by the intersectionality-plus approach.

Chapter 7 also offered an important extension to the intersectional multi-level approach that was outlined in Chapter 5, which is to use cross-classified models that recognise the benefit of the clustering of individuals into strata and countries, and that allow the strata-level intersectional effects to vary across countries. For the topics analysed, it was found that the models that recognised the cross-classified models were better models than those that only recognised one level of hierarchy, and it was also found that the models that allowed the effect of higher-level intersectionality to vary by country were a better fit than those which only allowed for an additive process. Thus, again, the findings of this thesis support the adoption of an intersectionality-plus view of intersectional effects. Cross-classified models have been found to be a useful approach in other areas, such as education (Dunn et al. 2015; Rabe-Hesketh and Skrondal 2012; Rasbash and Goldstein 1994), but the use of cross-classified models to account for the effects of intersectionality cross-nationally is an important original contribution of this thesis. Weldon (2006) argues that we must compare intersectional effects in different countries to illuminate the specific ways that inequalities intersect in different contexts, as detecting such variation helps to develop theories of intersectionality that ultimately allow for new strategies for resistance and reform to overcome intersectional inequality. This thesis has made a significant contribution to this important issue by developing a methodology that would make such research possible

8.3 Concluding remarks

In summary, the purpose of this research was to substantially advance the portrayal of women's social stratification position in social science research. The thesis has addressed gaps in two key bodies of literature: by evaluating long-standing debates in the social stratification literature; and by transporting the ideas of the emerging intersectionality literature to quantitatively orientated, and thus mainstream, stratification research.

In terms of practical recommendations, this thesis argues:

1. Researchers should undertake a substantial sensitivity analysis when using social stratification measures. Elsewhere it has been argued that a sensitivity analysis should

include a comparison of different stratification measures (e.g., Connelly et al. 2016b; Lambert and Bihagen 2014). This thesis would further argue that a sensitivity analysis should compare the uses of those measures at both the individual and household level with different approaches to the household level measurement being implemented. Furthermore, a range of sensible interaction terms, including, but not limited to, the interaction between gender and social stratification position should be tested.

2. Social stratification scholars should engage with the literature surrounding conceptualisation and methodologies of intersectionality to more fully recognise the intersections between stratification position and social inequalities in quantitative research. In particular, the recent use of multi-level models to account for intersectionality (e.g., Evans et al. 2018) and further possible progressions of this approach should be considered.

This thesis has made a distinctive and original contribution to sociology by clearly demonstrating the ongoing intersecting relationship between gender and the social stratification structure and by reviewing and developing strategies that, at least partially, account for this in research. This was achieved by outlining the theoretical rationales behind several different strategies and by offering empirical evidence that highlights their potential importance in a social science context. However, it is noted that further work developing the contribution of this thesis to each of the themes discussed would be desirable in the future. The main areas identified for future work are as follows: Firstly, as the development of gender specific measures found that occupations with few men or women in them were often important outliers, work which replicated this analysis on a larger sample would be valuable. This might allow for stronger conclusions as to whether these occupations are outliers due to measurement error or due to the unique circumstances of those in these gender-specific occupations. Additionally, as this thesis found some evidence of cross-national and longitudinal trends in the appropriateness of different approaches to household level measurement, work that builds on this using larger and more directly comparable data sets with a wider range of outcome variables would be desirable. Finally, further work on how multi-level models can be applied to advance the portrayal of intersectional issues is a promising area for future development, including further refinement of the cross-classified approach to cross-national intersectionality pioneered in this thesis.

References

Abbott, P. (1987) Women's social class identification: does husband's occupation make a difference? *Sociology*, 21 (1), pp. 91–103, DOI:10.1177/0038038587021001007.

Abbott, P. and Sapsford, R. (1987) *Women and Social Class*. London: Tavistock.

Abendroth, A.K., Van Der Lippe, T. and Maas, I. (2012) Social support and the working hours of employed mothers in Europe: the relevance of the state, the workplace, and the family. *Social Science Research*, 41, pp. 581–597, DOI:10.1016/j.ssresearch.2011.12.008.

Acker, J. (1973) Women and social stratification: a case of intellectual sexism. *American Journal of Sociology*, 78 (4), pp. 936–945, DOI:10.1086/225411.

Albright, K. (2008) In families or as individuals? Theoretical and methodological problems in the incorporation of women in class analysis, *Sociology Compass*, 25 (5), pp. 1672–1689, DOI:10.1111/j.1751-9020.2008.00156.x.

Alksnis, C., Desmarais, S. and Curtis, J. (2008) Workforce segregation and the gender wage gap: is "women's" work valued as highly as "men's"? *Journal of Applied Social Psychology*, 38 (6), pp. 1416–1441, DOI:10.1111/j.1559-1816.2008.00354.x.

Anderson, D., Binder, M. and Krause, K. (2002) The motherhood wage penalty: which mothers pay it and why? *American Economic Review*, 92 (2), pp. 354–358, DOI:10.1257/000282802320191606.

Anthias, F. (2012) Intersectional what? Social divisions, intersectionality and levels of analysis. *Ethnicities*, 13 (1), pp. 3–19, DOI:10.1177/1468796812463547.

Anthias, F. (2013) Hierarchies of social location, class and intersectionality: towards a translocational frame. *International Sociology*, 28 (1), pp. 121–138, DOI:10.1177/0268580912463155.

Bartholomew, D.J., Knott, M. and Moustaki, I. (2011) *Latent Variable Models and Factor Analysis: A Unified Approach*. London: Wiley.

Bartley, M. (1999) Measuring women's social position: the importance of theory. *Journal of Epidemiology & Community Health*, 53 (10), pp. 601–602, DOI:10.1136/jech.53.10.601.

Bauman, Z. (1982) *Memories of Class: The Pre-History and after-Life of Class*. London: Routledge & Kegan Paul.

Baxter, J. and Kane, E.W. (1995) Dependence and independence. *Gender & Society*, 9 (2), pp. 193–215, DOI:10.1177/089124395009002004.

Beck, U. and Beck-Gernsheim, E. (2002) *Individualization: Institutionalized Individualism and Its Social and Political Consequences*. London: Sage Publications.

Becker, G.S. (1967) *Human Capital and the Personal Distribution of Income: An Analytical Approach*. Ann Arbor: Institute of Public Administration.

Becker, G.S. (1985) Human capital, effort, and the sexual division of labor. *Journal of Labor Economics*, 3 (1), pp. 33–58, DOI:10.1086/298075.

Becker, G.S. (1991) *A Treatise on The Family*. London: Harvard University Press.

Becker, G.S., Hubbard, W.H.J. and Murphy, K.M. (2010) Explaining the worldwide boom in higher education of women. *Journal of Human Capital*, 4 (3), pp. 203–241, DOI:10.1086/657914.

Belfield, C., Britton, J., Buscha, F., Dearden, L., Dickson, M., van der Erve, L., Sibieta, L., Vignoles, A., and Walker, I. (2018) *The Impact of Undergraduate Degrees on Early-Career Earnings*. London: Department for Education, DOI:10.1920/RE.IFS.2019.0808.

Bell, A., Holman, D. and Jones, K. (2019) Using shrinkage in multilevel models to understand intersectionality: a simulation study and a guide for best practice. *Methodology*, 15 (2), pp. 88–96, DOI:10.1027/1614-2241/a000167.

Berger, M.C. and Black, D.A. (1992) Child care subsidies, quality of care, and the labor supply of low- income, single mothers. *Review of Economics & Statistics*, 74 (4), pp. 635–642, DOI:10.2307/2109377.

Berthoud, R. (2007) *Work-Rich and Work-Poor: Three Decades of Change*. Bristol: The Policy Press. Available at: https://www.jrf.org.uk/report/work-rich-and-work-poor-three-decades-change [accessed 2 October 2019].

Bittman, M., England, P., Folbre, N., Sayer, L. and Matheson, G. (2003) When does gender trump money? Bargaining and time in household work. *American Journal of Sociology*, 109 (1), pp.186–214, DOI:10.1086/378341.

Black, D., Gates, G., Sanders, S. and Taylor, L. (2000) Demographics of the gay and lesbian population in the United States: evidence from available systematic data sources. *Demography*, 37 (2), pp. 139–154, DOI:10.2307/2648117.

Blackburn, R.M. (1999) Is housework unpaid work? *International Journal of Sociology and Social Policy*, 19 (7/8), pp. 1–20, DOI:10.1108/01443339910788839.

Blackwell, L. (2001) Occupational sex segregation and part- time work in modern Britain. *Gender, Work & Organization*, 8 (2), pp. 146–163, DOI:10.1111/1468-0432.00126.

Blair-Loy, M. (2003) *Competing Devotions: Career and Family Among Women Executives*. Cambridge: Harvard University Press.

Blau, D.M. and Hagy, A.P. (1998) The demand for quality in child care. *Journal of Political Economy*, 106 (1), pp. 104–146, DOI:10.1086/250004.

Blau, F.D., Brummund, P. and Liu, A.Y.-H. (2013) Trends in occupational segregation by gender 1970–2009: adjusting for the impact of changes in the occupational coding system. *Demography*, 50 (2), pp. 471–492, DOI:10.1007/s13524-012-0151-7.

Blau, P.M. and Duncan, O.D. (1967) *The American Occupational Structure*. Hoboken: John Wiley & Sons Inc.

Bolton, S.C. and Muzio, D. (2008) The paradoxical processes of feminization in the professions: the case of established, aspiring and semi-professions. *Work, Employment & Society*, 22 (2), pp. 281–299, DOI:10.1177/0950017008089105.

Bolzendahl, C.I. and Myers, D.J. (2004) Feminist attitudes and support for gender equality: opinion change in women and men, 1974–1998. *Social Forces*, 83 (2), pp.759–798, DOI:10.1353/sof.2005.0005.

Borg, I. and Stocks, A. (2013) *A Survey of Childcare and Work Decisions among Families with Children*. Working paper No. 114. London: Department for Work and Pensions. Available at: https://dera.ioe.ac.uk/16390/1/WP114.pdf [accessed 30 October 2019].

Bose, C.E. (2012) Intersectionality and global gender inequality. *Gender & Society*, 26 (1), pp. 67–72, DOI:10.1177/0891243211426722.

Bosworth, D. and Kersley, H. (2015) *Opportunities and Outcomes in Education and Work: Gender Effects*. Research briefing. London: UK Commission for Employment and Skills. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/477360/UKCES_Gender_Effects.pdf [accessed 10 October 2019].

Bottero, W. (2005) *Stratification: Social Division and Inequality*. London: Routledge.

Bottero, W. and Prandy, K. (2003) Social interaction distance and stratification. *British Journal of Sociology*, 54 (2), pp. 177–197, DOI:10.1080/0007131032000080195.

Boye, K. (2008) *Happy hour? Studies on well-being and time spent on paid and unpaid work*. Doctoral thesis, The Swedish Institute for Social Research (SOFI). Available at: http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A199873&dswid=-1187 [accessed 26 November 2015].

Bradley, H. (1989) *Men's Work, Women's Work*. Minneapolis, MN: University of Minnesota Press.

Bradley, H. (2016) *Fractured Identities: Changing Patterns of Inequality*. Cambridge: Polity Press.

Brambor, T., Clark, W.R. and Golder, M. (2006) Understanding interaction models: improving empirical analyses. *Political Analysis,* 14, pp. 63–82, DOI:10.1093/pan/mpi014.

Braumoeller, B.F. (2004) Hypothesis testing and multiplicative interaction terms. *International Organization*, 58 (4), pp. 807–820, DOI:10.1017/S0020818304040251.

Bryan, M.L. and Jenkins, S.P. (2016) Multilevel modelling of country effects: a cautionary tale. *European Sociological Review*, 32 (1), pp. 3–22, DOI:10.1093/esr/jcv059.

Budig, M.J., Misra, J. and Boeckmann, I. (2012) The motherhood penalty in cross-national perspective: the importance of work-family policies and cultural attitudes. *Social Politics*, 19 (2), pp. 163–193, DOI:10.1093/sp/jxs006.

Cattell, R. (1973) *Factor Analysis*. Westport, CT: Greenwood Press.

Cha, Y. (2010) Reinforcing separate spheres. *American Sociological Review*, 75 (2), pp. 303–329, DOI:10.1177/0003122410365307.

Cha, Y. (2013) Overwork and the persistence of gender segregation in occupations. *Gender & Society*, 27 (2), pp. 158–184, DOI:10.1177/0891243212470510.

Cha, Y. and Weeden, K.A. (2014) Overwork and the slow convergence in the gender gap in wages. *American Sociological Review*, 79 (3), pp. 457–484, DOI:10.1177/0003122414528936.

Chan, T. (2010) The social status scale: its construction and properties. In: T. Chan, ed. *Social Status and Cultural Consumption*. Cambridge: Cambridge University Press, pp. 28–56. DOI:10.1017/CBO9780511712036.002.

Chanfreau, J., Gowland, S., Lancaster, Z., Poole, E., Tipping, S. and Toomse, M. (2011) *Maternity and Paternity Rights Survey and Women Returners Survey 2009/10*. Research Report No. 777. London: Department for Work and Pensions. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/214367/rrep777.pdf [accessed 10 October 2019].

Charles, M. and Grusky, D.B. (2004) *Occupational Ghettos: The Worldwide Segregation of Women and Men*. Stanford, CA: Stanford University Press.

Cheryan, S., Ziegler, S.A., Montoya, A.K. and Jiang, L. (2017) Why are some STEM fields more gender balanced than others? *Psychological Bulletin*, 143 (1), pp. 1–35, DOI:10.1037/bul0000052.

Choo, H.Y. and Ferree, M.M. (2010) Practicing intersectionality in sociological research: a critical analysis of inclusions, interactions, and institutions in the study of inequalities. *Sociological Theory*, 28 (2), pp. 129–149, DOI:10.1111/j.1467-9558.2010.01370.x.

Cockburn, C. (1991) *Brothers: Male Dominance and Technological Change*. London: Pluto Press.

Cohen, P.N. and Bianchi, S.M. (1999) Marriage, children, and women's employment: what do we know? *Monthly Labor Review*, 122, pp. 22–31. Available at: https://www.bls.gov/mlr/1999/12/art3full.pdf [accessed 6 October 2019].

Cohen, P.N. and Huffman, M.L. (2003) Occupational segregation and the devaluation of women's work across U.S. labor markets. *Social Forces*, 81 (3), pp. 881–908, DOI:10.1353/sof.2003.0027.

Cohen, R.L., Hughes, C., and Lampard, R. (2011) The methodological impact of feminism: a troubling issue for sociology? *Sociology*, 45 (4), pp. 570–586, DOI:10.1177/0038038511406599.

Coltrane, S. (2000) Research on household labor: modelling and measuring the social embeddedness of routine family work. *Journal of Marriage and Family*, 62 (4), pp. 1208–1233, DOI:10.1111/j.1741-3737.2000.01208.x.

Connelly, R. (1992) The effect of child care costs on married women's labor force participation. *The Review of Economics and Statistics*, 74 (1), pp. 83–90. DOI:10.2307/2109545.

Connelly, R., Gayle, V. and Lambert, P.S. (2016a) A review of educational attainment measures for social survey research. *Methodological Innovations*, 9, DOI:10.1177/2059799116638001.

Connelly, R., Gayle, V. and Lambert, P.S. (2016b) A review of occupation-based social classifications for social survey research. *Methodological Innovations*, 9, DOI:10.1177/2059799116638003.

Correll, S.J. (2004) Constraints into preferences: gender, status, and emerging career aspirations. *American Sociological Review*, 69 (1), pp. 93–113, DOI:10.1177/000312240406900106.

Cory, G. and Alakeson, V. (2014) *Careers and Carers: Childcare and Maternal Labour Supply*. London: Resolution Foundation. Available at: https://www.resolutionfoundation.org/publications/careers-carers-childcare-maternal-labour-supply/ [accessed 30 October 2019].

Cotter, D., Hermsen, J.M. and Vanneman, R. (2011) The end of the gender revolution? Gender role attitudes from 1977 to 2008. *American Journal of Sociology*, 117 (1), pp. 259–289, DOI:10.1086/658853.

Cotter, D.A., Hermsen, J. and Vanneman, R. (2004) *Gender Inequality at Work*. New York: Russell Sage Foundation.

Crenshaw, K. (1989) *Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics*. Chicago, IL: University of Chicago Legal Forum. Available at: http://chicagounbound.uchicago.edu/uclfhttp://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8 [accessed 13 November 2019].

Crenshaw, K. (1991) Mapping the margins: intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, 43 (6), pp. 1241–1299, DOI:10.2307/1229039.

Crompton, R. and Harris, F. (1998) Explaining women's employment patterns: 'Orientations to Work' revisited. *The British Journal of Sociology*, 49 (1), pp. 118–136, DOI:10.2307/591266.

Crompton, R. and Lyonette, C. (2005) The new gender essentialism-domestic and family 'choices' and their relation to attitudes. *The British Journal of Sociology*, 56, pp. 601–620, DOI:10.1111/j.1468-4446.2005.00085.x.

Crompton, R. and Mann, M. (1986) *Gender and Stratification*. Cambridge: Polity.

Dale, A., Gilbert, G.N. and Arber, S. (1985) Integrating women into class theory. *Sociology*, 19 (3), pp. 384–408, DOI:10.1177/0038038585019003004.

Damaske, S. (2011) *For the Family? How Class and Gender Shape Women's Work*. New York: Oxford University Press.

Davies, S.J. (2017) *Women in the Security Profession*. Oxford: Butterworth-Heinemann.

Davis, K. (2008) Intersectionality as buzzword: a sociology of science perspective on what makes a feminist theory successful. *Feminist Theory*, 9 (1), pp. 67–85, DOI:10.1177/1464700108086364.

De Graaf, N.D. and Heath, A. (1992) Husbands' and wives' voting behaviour in Britain: class-dependent mutual influence of spouses. *Acta Sociologica*, 35 (4), pp. 311–322, DOI:10.1177/000169939203500404.

De Luca, D., Meraviglia, C. and Ganzeboom, H.B.G. (2016) ICAM: The International CAMSIS Scale. Available at: http://www.harry.ganzeboom.nl [accessed 21 November 2019].

DeCoster, J. (1998) *Overview of Factor Analysis*. Charottesville, VA: Stat-Help.com. Available at: http://www.stat-help.com [accessed 28 November 2019].

Delamont, S. (2003) *Feminist Sociology*. London: Sage Publications.

DiPrete, T.A. and Forristal, J.D. (1994) Multilevel models: methods and substance. *Annual Review of Sociology*, 20 (1), pp. 331–357, DOI:10.1146/annurev.so.20.080194.001555.

Doogan, K. (2009) *New Capitalism? The Transformation of Work*. Cambridge: Polity Press.

Dubrow, J. (2013) Why should we account for intersectionality in quantitative analysis of survey data? In: Kallenberg V., Meyer J., Müller J., eds. *Intersectionality und Kriti*. Wiesbaden: Springer VS, pp. 161–177.

Duncan, O.D. (1961) A socioeconomic index for all occupations. In: A.J. Reiss, ed. *Occupations and Social Status*. New York: Free Press, pp. 109–38.

Dunn, E.C., Richmond, T.K., Milliren, C.E. and Subramanian, S. V. (2015) Using cross-classified multilevel models to disentangle school and neighborhood effects: an example focusing on smoking behaviors among adolescents in the United States. *Health and Place*, 31, pp. 224–232, DOI:10.1016/j.healthplace.2014.12.001.

England, P. (1992) *Comparable Worth: Theories and Evidence*. New York: Aldine de Gruyter.

England, P. (2001) Gender and access to money: what do trends in earnings and household poverty tell us? In: J. Baxter and M. Western, eds. *Reconfigurations of Class and Gender*. Stanford, CA: Stanford University Press, pp. 131–153.

England, P. (2010) The gender revolution: uneven and stalled. *Gender & Society*, 24 (2), pp. 149–166, DOI:10.1177/0891243210361475.

England, P., Allison, P. and Wu, Y. (2007) Does bad pay cause occupations to feminize, does feminization reduce pay, and how can we tell with longitudinal data? *Social Science Research*, 36 (3), pp. 1237–1256, DOI:10.1016/j.ssresearch.2006.08.003.

England, P., Gornick, J. and Shafer, E.F. (2012) Women's employment, education, and the gender gap in 17 Countries. *Monthly Labor Review*, 135 (4), pp. 3–12. Available at: https://www.gc.cuny.edu/CUNY_GC/media/CUNY-Graduate-Center/PDF/Centers/LIS/gornick-england-et-al-mlr-2012.pdf [accessed 5 November 2019].

Erikson, R. (1984) Social class of men, women and families. *Sociology*, 18 (4), pp. 500–514, DOI:10.1177/0038038584018004003.

Erikson, R. and Goldthorpe, J.H. (1992) Individual or family? Results from two approaches to class assignment. *Acta Sociologica*, 35 (2), pp. 95–105, DOI:10.1177/000169939203500202.

Erikson, R., Goldthorpe, J.H. and Hällsten, M. (2012) No way back up from ratcheting down? A critique of the 'microclass' approach to the analysis of social mobility. *Acta Sociologica*, 55 (3), pp. 211–229, DOI:10.1177/0001699312447633.

Erikson, R., Goldthorpe, J.H. and Portocarero, L. (1979) Intergenerational class mobility in three western European societies: England, France and Sweden. *The British Journal of Sociology*, 30 (4), pp. 415–441, DOI:10.1111/j.1468-4446.2009.01246.x.

Esping- Andersen, G. (1990) *Three Worlds of Welfare Capitalism*. Princeton, NJ: Princeton University Press.

Esping- Andersen, G. (1999) *Social Foundations of Postindustrial Economies*. Oxford: Oxford University Press.

European Commission. (2014) *New Method to Understand Occupational Gender Segregation in European Labour Markets*. Luxembourg: Publications Office of the EU. Available at: https://op.europa.eu/en/publication-detail/-/publication/2f6938c9-86ac-11e5-b8b7-01aa75ed71a1/language-en [accessed 31 October 2019].

European Commission. (2016) *She Figures 2015*. Brussels: European Commission. Available at: https://ec.europa.eu/research/swafs/pdf/pub_gender_equality/she_figures_2015-final.pdf [accessed 4 December 2019].

Evans, C.R., Williams, D.R., Onnela, J.P. and Subramanian, S. V. (2018) A multilevel approach to modeling health inequalities at the intersection of multiple social identities. *Social Science and Medicine*, 203, pp. 64–73, DOI:10.1016/j.socscimed.2017.11.011.

Evans, G. (1996) Putting men and women into classes: an assessment of the cross-sex validity of the Goldthorpe Class Schema. *Sociology*, 30 (2), pp. 209–234, DOI:10.1177/0038038596030002002.

Evertsson, M. and Nermo, M. (2007) Changing resources and the division of housework: a longitudinal study of Swedish couples. *European Sociological Review*, 23 (4), pp. 455–470, DOI:10.1093/esr/jcm018.

Featherman, D.L. and Hauser, R.M. (1976) Prestige or socioeconomic scales in the study of occupational achievement? *Sociological Methods & Research*, 4 (4), pp. 403–422, DOI:10.1177/004912417600400401.

Felson, M. and Knoke, D. (1973) Social status and the married woman. *Journal of Marriage and the Family*, 36 (3), pp. 516–521, DOI:10.2307/350722.

Figart, D.M. (1997) Gender as more than a dummy variable: feminist approaches to discrimination. *Review of Social Economy*, 63 (3), pp. 509–536, DOI:10.1080/00346769700000022.

Fischer, M.M. (2016) *Identifying same-sex couples in cross-national survey data: A comparison of same-sex couples' demographic and socio-economic traits in six European countries*. Amsterdam: DANS Symposium Publications, 8, pp. 50–79. Available at: https://hdl.handle.net/11245/1.513463 [accessed 6 October 2019].

Freeland, R.E. and Hoey, J. (2018) The structure of deference: modeling occupational status using affect control theory. *American Sociological Review*, 83 (2), pp. 243–277, DOI:10.1177/0003122418761857.

Galobardes, B., Lynch, J. and Smith, G.D. (2007) Measuring socioeconomic position in health research. *British Medical Bulletin*, 81 (1), pp. 1–17, DOI:10.1093/bmb/ldm001.

Galobardes, B., Shaw, M., Lawlor, D.A., Lynch, J.W. and Smith, G.D. (2006) Indicators of socioeconomic position (part 1). *Journal of Epidemiology and Community Health*, 60 (1), pp. 7–12, DOI:10.1136/jech.2004.023531.

Ganzeboom, H.B.G. (2010) *A New International Socio-Economic Index [ISEI] of Occupational Status for the International Standard Classification of Occupation 2008 [ISCO-08] Constructed with Data from the ISSP 2002-2007; With an analysis of quality of occupational measurement*

in ISS. Paper presented at the Annual Conference of International Social Survey Programme, Lisbon.

Ganzeboom, H.B.G. and Treiman, D.J. (1996) Internationally comparable measures of occupational status for the 1988 International Standard Classification of Occupations. *Social Science Research*, 25 (3), pp. 201–239, DOI:10.1006/ssre.1996.0010.

Ganzeboom, H.B.G., de Graaf, P.M. and Treiman, D.J. (1992) A standard international socio-economic index of occupational status. *Social Science Research*, 21, pp. 1–56, DOI:10.1016/0049-089X(92)90017-B.

Ganzeboom, H.B.G., Treiman, D.J. (2019) *International Stratification and Mobility File: Conversion Tools.* Amsterdam: Department of Social Research Methodology. Available at: http://www.harryganzeboom.nl/ismf/index.htm [Last revised: 2019/10/05].

Gayle, V., Connelly, R., Lambert, P.S. and McGowan, T. (2015) *A review of occupation-based social classifications for social research*. ESRC Centre for Population Change, Working Paper 60. Southampton: University of Southampton. Available at: https://eprints.soton.ac.uk/373858/ [accessed 4 October 2019].

Gerhardt, U., Knijn, T. and Weckwert, A. (2005) *Working Mothers in Europe. A Comparison of Policies and Practices*, Cheltenham: Edward Elgar.

Giddens, A. (1991) *Modernity and Self-Identity: Self and Society in the Late Modern Age*. Stanford, CA: Stanford University Press.

Ginn, J., Arber, S., Brannen, J., Dale, A., Dex, S., Elias, P., Moss, P., et al. (1996) Feminist fallacies: a reply to Hakim on women's employment. *The British Journal of Sociology*, 47 (1), pp. 167–174, DOI: 10.2307/591122.

Glauber, R. (2008) Race and gender in families and at work: the fatherhood wage premium. *Gender & Society*, 22 (1), pp. 8–30, DOI:10.1177/0891243207311593.

Glennerster, H. (2002) United Kingdom Education 1997–2001. *Oxford Review of Economic Policy*, 18 (2), pp. 120–136, DOI:10.1093/oxrep/18.2.120.

Goldin, C. (2014) A grand gender convergence: its last chapter. *American Economic Review*, 104 (4), pp. 1091–1119, DOI: 10.1257/aer.104.4.1091.

Goldin, C.D. (1990) *Understanding the Gender Gap: An Economic History of American Women*. New York: Oxford University Press.

Goldstein, H. (1987) *Multilevel Models in Educational and Social Research*. London: Griffin.

Goldthorpe, J.H. (1983) Women and class analysis: in defence of the conventional view. *Sociology*, 17 (4), pp. 465–488, DOI:10.1177/0038038583017004001.

Goldthorpe, J.H. and McKnight, A. (2006) The economic basis of social class. In: S.L. Morgan, D.B. Grusky and G.S Fields, eds. *Mobility and Inequality: Frontiers of Research in Sociology and Economics*, Stanford, CA: Stanford University Press, pp. 109–136.

Goldthorpe, J.H. and Payne, C. (1986) On the class mobility of women: results from different approaches to the analysis of recent British data. *Sociology,* 20 (4), pp. 531–555, DOI:10.1177/0038038586020004005.

Gornick, J.C. and Hegewish, A. (2010) *The Impact of "Family-Friendly Policies" on Women's Employment Outcomes and on the Cost and Benefits of Doing Business*. A commissioned report for the World Bank. Washington, DC: The World Bank.

Gornick, J.C. and Jacobs, J.A. (1998) Gender, the welfare state, and public employment: a comparative study of seven industrialized countries. *American Sociological Review*, 63 (5), pp. 688–710, DOI: 10.2307/2657334.

Graetz, B. (1991) The class location of families: a refined classification and analysis. *Sociology*, 25 (1), pp. 101–118, DOI:10.1177/0038038591025001006.

Gregory, M. and Connolly, S. (2008) The price of reconciliation: part-time work, families and women's satisfaction. *Economic Journal*, 118 (526), pp. F1–F7, DOI:10.1111/j.1468-0297.2007.02113.x.

Grönlund, A. and Magnusson, C. (2013) Devaluation, crowding or skill specificity? Exploring the mechanisms behind the lower wages in female professions. *Social Science Research*, 42 (4), pp. 1006–1017, DOI: 10.1016/j.ssresearch.2013.03.001.

Grusky, D.B. and Sørensen, J.B. (1998) Can class analysis be salvaged? *American Journal of Sociology*, 103 (5), pp. 1187–1234, DOI:10.1086/231351.

Grusky, D.B. and Sørensen, J.B. (2001) Are there big social classes? In D.B. Grusky, ed. *Social Stratification: Class, Race, and Gender in Sociological Perspective*. Boulder: Westview Press, pp. 183–194.

Grusky, D.B. and Weeden, K.A. (2006) Does the sociological approach to studying social mobility have a future? In S.L., Morgan, D.B. Grusky, and G.S. Fields, eds. *Mobility and Inequality*. Stanford, CA: Stanford University Press.

Gundert, S. and Mayer, K.U. (2010) Gender segregation in training and social mobility of women in west Germany. *European Sociological Review*, 28 (1), pp. 59–81, DOI:10.1093/esr/jcq048.

Gustafson, P. (2006) Work-related travel, gender and family obligations. *Work, Employment & Society*, 20 (3), pp. 513–530, DOI:10.1177/0950017006066999.

Haas, L. and Rostgaard, T. (2011) Fathers' rights to paid parental leave in the Nordic countries: consequences for the gendered division of leave. *Community, Work and Family*, 14 (2), pp. 177–195, DOI:10.1080/13668803.2011.571398.

Hakim, C. (1998) *Social Change and Innovation in the Labour Market: Evidence from the Census SARs on Occupational Segregation and Labour Mobility, Part-Time Work and Students' Jobs, Homework and Self-Employment*. Oxford: Oxford University Press.

Hakim, C. (2000) *Work-Lifestyle Choices in the 21st Century: Preference Theory*. Oxford: Oxford University Press.

Hakim, C. (2002) Lifestyle preferences as determinants of women's differentiated labor market careers. *Work and Occupations*, 29 (4), pp. 428–459, DOI: 10.1177/073088802237558.

Hakim, C. (2003) *Models of the Family in Modern Societies: Ideals and Realities*. Aldershot: Ashgate.

Hancock, A.M. (2007) When multiplication doesn't equal quick addition: examining intersectionality as a research paradigm. *Perspectives on Politics*, 5 (1), pp. 63–79, DOI:10.1017/S1537592707070065.

Harnois, C. (2013) *Feminist Measures in Survey Research*. London: Sage Publications.

Hartmann, H. (1976) Capitalism, patriarchy, and job segregation by sex. *Signs: Journal of Women in Culture and Society*, 1 (3), Part 2, pp. 137–169, DOI:10.1086/493283.

Hauser, R.M. and Warren, J.R. (1997) Socioeconomic indexes for occupations: a review, update, and critique. *Sociological Methodology*, 27 (1), pp. 177–298, DOI:10.1111/1467-9531.271028.

Hayes, B.C. and Miller, R.L. (1993) The silenced voice: female social mobility patterns with particular reference to the British Isles. *The British Journal of Sociology*, 44 (4), pp. 653–672, DOI:10.2307/591415.

Heath, A. and Britten, N. (1984) Women's jobs do make a difference: a reply to Goldthorpe. *Sociology*, 18 (4), pp. 475–490, DOI:10.1177/0038038584018004001.

Henz, U. and Sundström, M. (2001) Partner choice and women's paid work in Sweden: the role of earnings. *European Sociological Review*, 17 (3), pp. 295–316, DOI:10.1093/esr/17.3.295.

Hill Collins, P. and Bilge, S. (2016) *Intersectionality*. Malden: Polity Press.

Hochschild, A. (1989) *The Second Shift*. London: Penguin Books.

Hope, K. and Goldthorpe, J.H. (1974) *The Social Grading of Occupations*. Oxford: Clarendon Press.

Hout, M. and DiPrete, T.A. (2006) What we have learned: RC28's contributions to knowledge about social stratification. *Research in Social Stratification and Mobility*, 24 (1), pp. 1–20, DOI:10.1016/j.rssm.2005.10.001.

International Labour Organization. (2015) *Women in Business and Management: Gaining Momentum*. Geneva: International Labour Organization. Available at: www.ilo.org/publns [accessed 4 December 2019].

Jaccard, J. (2001) *Interaction Effects in Logistic Regression*. Thousand Oaks, CA: Sage Publications.

Jaccard, J. and Turrisi, R. (2003) *Interaction Effects in Multiple Regression*. Thousand Oaks, CA: Sage Publications.

Jarman, J., Blackburn, R.M. and Racko, G. (2012) The dimensions of occupational gender segregation in industrial countries. *Sociology*, 46 (6), pp. 1003–1019, DOI:10.1177/0038038511435063.

Jaspers, E. and Verbakel, E. (2013) The division of paid labor in same-sex couples in the Netherlands. *Sex Roles*, 68 (5/6), pp. 335–348, DOI: 10.1007/s11199-012-0235-2.

Jewell, H. and Bazeley, A. (2018) *Sex and Power 2018*. London: Fawcett Society. available at: www.fawcettsociety.org.uk [accessed 4 March 2019].

Jonsson, J.O., Grusky, D.B., Di Carlo, M., Pollak, R. and Brinton, M.C. (2009) Microclass mobility: social reproduction in four countries. *American Journal of Sociology*, 114 (4), pp. 977–1036, DOI: 10.1086/596566.

Kalantari, B. (2012) The influence of social values and childhood socialization on occupational gender segregation and wage disparity. *Public Personnel Management*, 41 (2), pp. 241–255, DOI:10.1177/009102601204100203.

Kangas, O. and Rostgaard, T. (2007) Preferences or institutions? Work-family life opportunities in seven European countries. *Journal of European Social Policy*, 17 (3), pp. 240–256, DOI:10.1177/0958928707078367.

Killip, S., Mahfoud, Z. and Pearce, K. (2004) What is an intracluster correlation coefficient? Crucial concepts for primary care researchers. *Annals of Family Medicine*, 2 (3), pp. 204–208, DOI: 10.1370/afm.141.

Kitterød, R.H. and Pettersen, S.V. (2006) Making up for mothers' employed working hours? Housework and childcare among Norwegian fathers. *Work, Employment and Society*, 20 (3), pp. 473–492, DOI: 10.1177/0950017006066997.

Kolenikov, S., and Angeles, G. (2004) *The Use of Discrete Data in Principal Component Analysis with Applications to Socio-Economic Indices*. MEASURE Evaluation Working Paper (WP-04-85). Chapel Hill, NC: MEASURE Evaluation. Available at: https://www.measureevaluation.org/resources/publications/wp-04-85 [accessed 2 October 2019].

Korpi, W. (2000) Faces of inequality: gender, class, and patterns of inequalities in different types of welfare states. *Social Politics*, 7 (2), pp. 127–191, DOI:10.1093/sp/7.2.127.

Korupp, S.E., Ganzeboom, H.B.G. and van der Lippe, T. (2002) Do mothers matter? A comparison of models of the influence of mothers' and fathers' educational and occupational status on children's educational attainment. *Quality and Quantity*, 36 (1), pp. 17–42, DOI: 10.1023/A:1014393223522.

Lambert, P.S. and Bihagen, E. (2014) Using occupation-based social classifications. *Work, Employment & Society*, 28 (3), pp. 481–494, DOI: 10.1177/0950017013519845.

Lambert, P.S. and Griffiths, D. (2018) *Social Inequalities and Occupational Stratification: Methods and Concepts in the Analysis of Social Distance*. Basingstoke: Palgrave.

Lambert, P.S., Leai Larry Tan, K., Prandy, K., Gayle, V. and Bergman, M. (2008) The importance of specificity in occupation- based social classifications. *International Journal of Sociology and Social Policy*, 28 (5/6), pp. 179–192, DOI: 10.1108/01443330810881231.

Lambert, P.S., Prandy, K. and Bergman, M. (2005) *Specificity and universality in occupation-based social classifications*. Paper presented to: The European Association for Survey Research, Barcelona, pp. 18–22, DOI:10.1108/01443330810881231.

Lampard, R. (1995) Parents' occupations and their children's occupational attainment: a contribution to the debate on the class assignment of families. *Sociology*, 29 (4), pp.715–728, DOI:10.1177/0038038595029004010.

Laumann, E.O. and Guttman, L. (1966) The relative associational contiguity of occupations in an urban setting. *American Sociological Review*, 31 (2), pp. 169–178, DOI: 10.2307/2090902.

Leiulfsrud, H. and Woodward, A. (1988) Women at class crossroads: a critical reply to Erikson and Goldthorpe's note. *Sociology*, 22 (4), pp. 555–562, DOI:10.1177/0038038588022004005.

Leiulfsrud, H. and Woodward, A. (1989) Cross-class encounters of a close kind: class awareness and politics in Swedish families. *Acta Sociologica*, 32 (1), pp. 75–93, DOI:10.1177/000169938903200104.

Levanon, A. and Grusky, D.B. (2016) The persistence of extreme gender segregation in the twenty-first century. *American Journal of Sociology*, 122 (2), pp. 573–619, DOI:10.1086/688628.

Levanon, A., England, P. and Allison, P. (2009) Occupational feminization and pay: assessing causal dynamics using 1950–2000 U.S. Census data. *Social Forces*, 88 (2), pp. 865–891, DOI:10.1353/sof.0.0264

Lewis, J. (1992) Gender and the development of welfare regimes. *Journal of European Social Policy*, 2 (3), pp. 159–173, DOI:10.1177/095892879200200301.

Lyonette, C. and Crompton, R. (2008) The only way is up? An examination of women's 'under-achievement' in the accountancy profession in the UK. *Gender in Management*, 23 (7), pp. 506–521, DOI:10.1108/17542410810908857.

Macpherson, S. (2008) *Tackling Occupational Segregation in Scotland: A Report of Activities from the Scottish Government Cross-Directorate Occupational Segregation Working Group*. Edinburgh: Employment Research Institute, Edinburgh Napier University. Available at: https://www2.gov.scot/resource/doc/236539/0064855.pdf [accessed 10 November 2019]

Magnusson, C. (2013) More women, lower pay? Occupational sex composition, wages and wage growth. *Acta Sociologica*, 56 (3), pp. 227–245, DOI:10.1177/0001699313484480.

Mandel, H. and Semyonov, M. (2005) Family policies, wage structures, and gender gaps: sources of earnings inequality in 20 Countries. *American Sociological Review*, 70 (6), pp. 949–967, DOI: 10.1177/000312240507000604.

Mandel, H. and Semyonov, M. (2006) A welfare state paradox: state interventions and women's employment opportunities in 22 countries. *American Journal of Sociology*, 111 (6), pp. 1910–1949, DOI: 10.1086/499912.

Mare, R.D. (1991) Five decades of educational assortative mating. *American Sociological Review*, 56 (1), pp. 15–32, DOI: 10.2307/2095670.

Marshall, G., Newby, H., Rose, D. and Vogler, C. (1988) *Social Class in Modern Britain*. London: Hutchinson.

Marshall, G., Roberts, S., Burgoyne, C., Swift, A. and Routh, D. (1995) Class, gender, and the asymmetry hypothesis. *European Sociological Review*, 11 (1), pp. 1–15, DOI:10.1093/oxfordjournals.esr.a036342.

Martin, J. and Roberts, C. (1984) *Women and Employment, a Lifetime Perspective*. London: HMSO.

McCall, L. (2000) Explaining levels of within-group wage inequality in U.S. labor markets. *Demography*, 37 (4), pp. 415–430, DOI: 10.2307/2648069.

McCall, L. (2005) The complexity of intersectionality. *Signs: Journal of Women in Culture and Society*, 30 (3), pp. 1771–1800, DOI:10.1086/426800.

McClendon, D., Kuo, J.C.-L. and Raley, R.K. (2014) Opportunities to meet: occupational education and marriage formation in young adulthood. *Demography*, 51 (4), pp. 1319–1344, DOI:10.1007/s13524-014-0313-x.

McDaniel, A. (2016) The role of cultural contexts in explaining cross-national gender gaps in STEM expectations. *European Sociological Review*, 32, pp. 122–133, DOI: 10.1093/esr/jcv078.

McDonald, R.P. (1985) *Factor Analysis and Related Methods*. New Jersey: Lawrence Erlbaum Associates.

McGinn, K.L. and Oh, E. (2017) Gender, social class, and women's employment. *Current Opinion in Psychology*, 18, pp. 84–88, DOI:10.1016/j.copsyc.2017.07.012.

McGrath, S. and DeFilippis, J. (2009) Social reproduction as unregulated work. *Work, Employment & Society*, 23 (1), pp. 66–83, DOI: 10.1177/0950017008099778.

McRae, S. (1986) *Cross-Class Families. A Study of Wives' Occupational Superiority*. Oxford: Clarendon Press.

McRae, S. (2003) Constraints and choices in mothers' employment careers: a consideration of Hakim's Preference Theory. *The British Journal of Sociology*, 54 (3), pp. 317–338, DOI:10.1111/j.1468-4446.2003.00317.x.

Meraviglia, C. and Buis, M.L. (2015) Class, status, and education: the influence of parental resources on IEO in Europe, 1893–1987. *International Review of Social Research*, 5 (1), pp. 35–60, DOI:10.1515/irsr-2015-0004

Merlo, J. (2018) Multilevel analysis of individual heterogeneity and discriminatory accuracy (MAIHDA) within an intersectional framework. *Social Science and Medicine,* 203, pp. 74–80, DOI:10.1016/j.socscimed.2017.12.026.

Milan, L. and Whittaker, J. (1995) Application of the parametric bootstrap to models that incorporate a singular value decomposition. *Applied Statistics*, 44, pp. 31–49, DOI: 10.2307/2986193.

Moineddin, R., Matheson, F.I. and Glazier, R.H. (2007) A simulation study of sample size for multilevel logistic regression models. *BMC Medical Research Methodology*, 7 (34), DOI: doi.org/10.1186/1471-2288-7-34.

Murgatroyd, L. (1982) Gender and occupational stratification. *The Sociological Review*, 30 (4), pp. 574–602, DOI:10.1111/j.1467-954X.1982.tb00669.x

Murgatroyd, L. (1984) Women, men and the social grading of occupations. *The British Journal of Sociology*, 35 (4), pp. 473–497, DOI: 10.2307/590431.

Nakao, K. and Treas, J. (1992) *The 1989 Socioeconomic Index of Occupations: Construction From The 1989 Occupational Prestige Scores*. GSS Methodological Report (74). Chicaco, IL: University of Chicago, General Social Survey. Available at: https://pdfs.semanticscholar.org/1800/e6bda3408421e5196651b9beda3a5f19b305.pdf [accessed 3 November 2019].

Ngai, L.R. and Petrongolo, B. (2017) Gender gaps and the rise of the service economy. *American Economic Journal: Macroeconomics*, (4), pp. 1–44, DOI: 10.1257/mac.20150253.

Ochsenfeld, F. (2014) Why do women's fields of study pay less? A test of devaluation, human capital, and gender role theory. *European Sociological Review*, 30 (4), pp. 536–548, DOI:10.1093/esr/jcu060.

OECD. (2019) *Part-time employment rate (indicator)*. Paris: Organisation for Economic Cooperation and Development. DOI:10.1787/f2ad596c-en.

Oesch, D. (2003) Labour market trends and the Goldthorpe class schema: a conceptual reassessment. *Swiss Journal of Sociology*, 29 (2), pp. 241–262.

Oesch, D. (2013) *Occupational Change in Europe: How Technology and Education Transform the Job Structure*. Oxford: Oxford University Press.

Olivetti, C. and Petrongolo, B. (2014) Gender gaps across countries and skills: demand, supply and the industry structure. *Review of Economic Dynamics*, 17 (4), pp. 842–859, DOI:10.1016/j.red.2014.03.001.

Olsen, W., Gash, V., Kim, S. and Zhang, M. (2018) *The Gender Pay Gap in the UK: Evidence from the UKHLS*. London: Government Equalities Office. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/706030/Gender_pay_gap_in_the_UK_evidence_from_the_UKHLS.pdf [accessed 14 March 2019].

ONS. (2016b) *Find out the gender pay gap for your job*. London: Office for National Statistics. Available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/articles/findoutthegenderpaygapforyourjob/2016-12-09 [accessed 12 November 2019].

ONS. (2016a) *Women Shoulder the Responsibility of "Unpaid Work*". London: Office for National Statistics. Available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/articles/womenshouldertheresponsibilityofunpaidwork/2016-11-10 [accessed 30 October 2019].

ONS. (2017) *How do the jobs men and women do affect the gender pay gap?* London: Office for National Statistics Available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/articles/howdothejobsmenandwomendoaffectthegenderpaygap/2017-10-06 [accessed 1 March 2019].

ONS. (2018a) *Families and the Labour Market, England: 2018*. London: Office for National Statistics. Available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/familiesandthelabourmarketengland/2018 [accessed 2 October 2019].

ONS. (2018b) *Understanding the gender pay gap in the UK*. London: Office for National Statistics. Available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/articles/understandingthegenderpaygapintheuk/2018-01-17 [accessed 31 October 2019].

ONS. (2019) *UK Labour Market: December 2018*. London: Office for National Statistics. Available at:

https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/december2018 [accessed 2 October 2019].

Pailhé, A. and Solaz, A. (2007) Time with children: do fathers and mothers replace each other when one parent is unemployed? *European Journal of Population*, 24 (2), pp. 211–236, DOI:10.1007/s10680-007-9143-5.

Parkin, F. (1971) *Class Inequality and Political Order: Social Stratification in Capitalist and Communist Societies*. London: MacGibbon and Kee.

Paxton, P. and Kunovich, S. (2003) Women's political representation: the importance of ideology. *Social Forces*, 82 (1), pp. 87–113, DOI:10.1353/sof.2003.0105.

Penn, R. (2006) *Social Change and Economic Life in Britain*. Bologna: Homeless Books.

Percheski, C. (2008) Opting out? Cohort differences in professional women's employment rates from 1960 to 2005. *American Sociological Review*, 73 (3), pp. 497–517, DOI:10.1177/000312240807300307.

Pettit, B. and Hook, J. (2005) The structure of women's employment in comparative perspective. *Social Forces*, 84 (2), pp. 779–801, DOI:10.1353/sof.2006.0029.

Pettit, B. and Hook, J.L. (2009) *Gendered Tradeoffs: Women, Family, and Workplace Inequality in Twenty-One Countries*. New York: Russell Sage Foundation.

The Pharmaceutical Journal. (2018) *Women underrepresented in senior pharmacy and NHS roles*. Edinburgh: Royal Pharmaceutical Society. Available at: https://doi.org/10.1211/pj.2018.20204515 [accessed 4 December 2019].

Phillips, D., Curtice, J., Phillips, M. and Perry, J. (2018) *British Social Attitudes: The 35th Report*. London: The National Centre for Social Research. Available at: https://www.bsa.natcen.ac.uk/media/39284/bsa35_full-report.pdf [accessed 19 October 2019].

Polachek, S.W. (1981) Occupational self-selection: a human capital approach to sex differences in occupational structure. *The Review of Economics and Statistics*, 63 (1), pp. 60–69, DOI: 10.2307/1924218.

Polavieja, J.G. (2005) Task specificity and the gender wage gap: theoretical considerations and empirical analysis of the Spanish Survey on Wage Structure. *European Sociological Review*, 21 (2), pp. 165–181, DOI:10.1093/esr/jci011.

Polavieja, J.G. (2007) The effect of occupational sex-composition on earnings: job-specialization, sex-role attitudes and the division of domestic labour in Spain. *European Sociological Review*, 24 (2), pp. 199–213, DOI: 10.1093/esr/jcm043.

Prandy, K. (1990) The revised Cambridge Scale of Occupations. *Sociology*, 24 (4), pp. 629–655, DOI: 10.1177/0038038590024004005.

Prandy, K. and Lambert, P.S. (2003) Marriage, social distance and the social space: an alternative derivation and validation of the Cambridge Scale. *Sociology*, 37 (3), pp. 397–411, DOI:10.1177/00380385030373001.

Presser, H.B. and Hermsen, J. (1996) Gender differences in the determinants of work-related overnight travel among employed Americans. *Work and Occupations*, 23 (1), pp. 87–115, DOI:10.1177/0730888496023001005.

Procter, I. and Padfield, M. (1999) Work orientations and women's work: a critique of Hakim's theory of the heterogeneity of women. *Gender, Work and Organization*, 6 (3), pp. 152–162, DOI:10.15209/jbsge.v1i1.79.

Rabe-Hesketh, S. and Skrondal, A. (2012) *Multilevel and Longitudinal Modeling Using Stata*. 3rd ed. College Station, TX: Stata Press.

Rasbash, J. and Goldstein, H. (1994) Efficient analysis of mixed hierarchical and cross-classified random structures using a multilevel model. *Journal of Educational and Behavioral Statistics*, 19 (4), pp. 337–350, DOI:10.2307/1165397.

Reiss, A.J. (1961) *Occupations and Social Status*. New York: Free Press of Glencoe.

Reuben, E., Sapienza, P. and Zingales, L. (2014) *How stereotypes impair women's careers in science*. Proceedings of the National Academy of Sciences of the United States of America, National Academy of Sciences, 111 (12), pp. 4403–4408, DOI: 10.1073/pnas.1314788111.

Risman, B.J., Sprague, J. and Howard, J. (1993) Comment on Francesca M. Cancian's 'Feminist Science'. *Gender and Society*, 7 (4), pp. 608–609, DOI:10.1177/089124393007004010.

Roantree, B. and Vira, K. (2018) *The Rise and Rise of Women's Employment in the UK*. IFS Briefing Note BN234. London: The Institute for Fiscal Studies. DOI:10.1920/BN.IFS.2019.BN0234.

Rose, D. (1995) *Social Research Update: Official Social Classifications in the UK*. Guildford: University of Surrey. Available at: http://sru.soc.surrey.ac.uk/SRU9.html [accessed 4 December 2019].

Rose, D. (2008) *Socio- Economic Classifications: Classes and Scales, Measurement and Theories*. Wivenhoe Park: Institute for Social and Economic Research. Available at: https://www.iser.essex.ac.uk/files/esec/presentations_and_publications/Measurement_Socstrat.doc [accessed 3 November 2019].

Rose, D. and Harrison, E. (2007) The European Socio-Economic Classification: a new social class schema for comparative European research*, European Societies*, 9 (3), pp. 459–490, DOI: https://doi.org/10.1080/14616690701336518.

Rose, D. and Harrison, E. (2010) *Social Class in Europe: An Introduction to the European Socio-Economic Classification*. London: Routledge.

Rose, D. and Pevalin, D. (2003) *A Researcher's Guide to the National Statistics Socio-Economic Classification*. London: Sage Publications.

Rosenfeld, R.A. and Birkelund, G.E. (1995) Women's part-time work: a cross-national comparison. *European Sociological Review*, 11 (2), pp. 111–134, DOI:10.1093/oxfordjournals.esr.a036352.

Rosenfeld, R.A. and Kalleberg, A.L. (1991) Gender inequality in the labor market. *Acta Sociologica*, 34 (3), pp. 207–225, DOI:10.1177/000169939103400304.

Rubery, J., Smith, M. and Fagan, C. (1999) *Women's Employment in Europe: Trends and Prospects*. London: Routledge.

Rummel, R.J. (1970) *Applied Factor Analysis*. Evanston, IL: Northwestern University Press.

Rutherford, S. (2001) ‘Are you going home already?’ The long hours culture, women managers and patriarchal closure. *Time Society*, 10 (2/3), pp. 259–276, DOI:10.1177/0961463X01010002006.

Sanchez, L. and Thomson, E. (1997) Becoming mothers and fathers: parenthood, gender, and the division of labor. *Gender & Society*, 11 (6), pp. 747–772, DOI: 10.1177/089124397011006003.

Savage, M., Devine, F., Cunningham, N., Taylor, M., Li, Y., Hjellbrekke, J., Le Roux, B., et al. (2013) A new model of social class? Findings from the BBC’s Great British Class Survey Experiment. *Sociology*, 47 (2), pp. 219–250, DOI:10.1177/0038038513481128.

Schwarz, G. (1978) Estimating the dimension of a model. *The Annals of Statistics*, 6 (2), pp. 461–464, DOI: 10.1214/aos/1176344136.

Scott, J. (2002) Social class and stratification in late Modernity. *Acta Sociologica*, 45, (1), pp. 23–35, DOI:10.1177/000169930204500103

Sorensen, A. (1994) Women, family, and class. *Annual Review of Sociology*, 20 (1), pp. 27–47, DOI:10.1146/annurev.so.20.080194.000331.

Stanley, L. and Wise, S. (1983) *Breaking Out: Feminist Consciousness and Feminist Research*. London: Routledge & K. Paul.

Stanworth, M. (1984) Women and class analysis: a reply to John Goldthorpe. *Sociology*, 18 (2), pp. 159–170, DOI:10.1177/0038038584018002001.

Staunæs, D. (2003) Where have all the subjects gone? Bringing together the concepts of intersectionality and subjectification. *NORA – Nordic Journal of Feminist and Gender Research*, 11 (2), pp. 101–110, DOI:10.1080/08038740310002950.

Stegmueller, D. (2013) How many countries for multilevel modeling? A comparison of frequentist and Bayesian approaches. *American Journal of Political Science*, 57 (3), pp. 748–761, DOI:10.1111/ajps.12001.

Stevens, G. and Cho, J.H. (1985) Socioeconomic indexes and the new 1980 census occupational classification scheme. *Social Science Research*, 14 (2), pp. 142–168, DOI:10.1016/0049-089X(85)90008-0.

Stevens, G. and Featherman, D.L. (1981) A revised socioeconomic index of occupational status. *Social Science Research*, 10 (4), pp. 364–395, DOI:10.1016/0049-089X(81)90011-9.

Stewart, A., Prandy, K. and Blackburn, R.M. (1980) *Social Stratification and Occupations*. New York: Holmes and Meier Publishers.

Stier, H. and Yaish, M. (2014) Occupational segregation and gender inequality in job quality: a multi-level approach. *Work, Employment & Society*, 28 (2), pp. 225–246, DOI: 10.1177/0950017013510758.

Stier, H., Lewin-Epstein, N. and Braun, M. (2001) Welfare regimes, family-supportive policies, and women’s employment along the life-course. *American Journal of Sociology*, 10 (6), pp. 1731–1760, DOI:10.1086/321302.

Tahlin, M. (2007) Skills and wages in European labour markets, In: D. Gallie, ed. *Employment Regimes and The Quality of Work*. Oxford: Oxford University Press, pp. 35–76.

Tam, T. (1997) Sex segregation and occupational gender inequality in the United States: devaluation or specialized training? *American Journal of Sociology*, 102 (6), pp. 1652–1692, DOI:10.1086/231129.

Taylor, E.A. and Scott, J., (2018) *British Social Attitudes 35 – Gender*. London: The National Centre for Social Research. Available at: http://www.bsa.natcen.ac.uk/media/39248/bsa35_gender.pdf [accessed 4 March 2019].

Thévenoni, O. and Solaz, A. (2013) *Labour Market Effects of Parental Leave Policies in OECD Countries*. OECD Social, Employment and Migration Working Papers (141), Paris: Organisation for Economic Cooperation and Development Publishing. DOI:10.1787/5k8xb6hw1wjf-en.

Tomlinson, J. (2007) Employment regulation, welfare and gender regimes: a comparative analysis of women's working-time patterns and work–life balance in the UK and the US. *The International Journal of Human Resource Management*, 18 (3), pp. 401–415, DOI:10.1080/09585190601167466.

Tomlinson, M. (2003) Lifestyle and social class. *European Sociological Review*, 19 (1), pp. 97–111, DOI:10.1093/esr/19.1.97.

Trappe, H. and Rosenfeld, R.A. (2001) How do children matter? A comparison of gender earnings inequality for young adults in the former East Germany and the former West Germany. In: van der Lippe, T. and van Dijk, L., eds. *Women's Employment in a Comparative Perspective*. New York: Aldine de Gruyter, pp. 109–150.

Treanor, M.C. (2016) The effects of financial vulnerability and mothers' emotional distress on child social, emotional and behavioural well-being: a structural equation model. *Sociology*, 50 (4), pp. 673–694, DOI:10.1177/0038038515570144.

Treas, J. and Widmer, E.D. (2000) Married women's employment over the life course: attitudes in cross-national perspective. *Social Forces*, 78 (4), pp. 1409–1436, DOI: 10.1093/sf/78.4.1409.

Treiman, D.J. (1977) *Occupational Prestige in Comparative Perspective*. New York: Academic Press.

UCAS. (2016) *UCAS data reveals the numbers of men and women placed in over 150 higher education subjects*. Cheltenham: The Universities and Colleges Admissions Service. Available at: https://www.ucas.com/corporate/news-and-key-documents/news/ucas-data-reveals-numbers-men-and-women-placed-over-150-higher [accessed 30 October 2019].

UK Government. (2018) *New 'Share the joy' campaign promotes shared parental leave rights for parents*. London: Department for Business, Energy & Industrial Strategy. Available at: https://www.gov.uk/government/news/new-share-the-joy-campaign-promotes-shared-parental-leave-rights-for-parents [accessed 31 October 2019].

United Nations Development Programme. (2018) *Human Development Indices and Indicators: Technical Notes*. New York: UN Development Programme. Available at: http://hdr.undp.org/sites/default/files/hdr2018_technical_notes.pdf [accessed 12 November 2019].

United Nations Development Programme. (2019) *Gender Inequality Index (GII)*. New York: UN Development Programme. Available at: http://www.hdr.undp.org/en/indicators/68606 [accessed 21 November 2019].

Universities UK. (2015) *Patterns and Trends in UK Higher Education – 2015*. London: Universities UK. Available at: https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2015/patterns-and-trends-2015.pdf [accessed 10 November 2019].

University of Essex. Institute for Social and Economic Research. (2018) *British Household Panel Survey: Waves 1–18, 1991–2009*. [data collection]. 8th Edition. UK Data Service. SN:5151, DOI:10.5255/UKDA-SN-5151-2.

van der Lippe, T. and van Dijk, L. (2002) Comparative research on women's employment. *Annual Review of Sociology*, 28 (1), pp. 221–241, DOI: 10.1146/annurev.soc.28.110601.140833.

Vespa, J. (2009) Gender ideology construction. *Gender & Society*, 23 (3), pp. 363–387, DOI:10.1177/0891243209337507.

Walby, S. (1986) Gender, class and stratification: towards a new approach. In R. Crompton and M. Mann, eds. *Gender and Stratification*. Cambridge: Polity Press, pp. 23–29.

Walby, S. (2007) Complexity theory, systems theory, and multiple intersecting social inequalities. *Philosophy of the Social Sciences*, 37, pp. 449–470, DOI:10.1177/0048393107307663.

Walby, S., Armstrong, J. and Strid, S. (2012) Intersectionality: multiple inequalities in social theory. *Sociology*, 46 (2), pp. 224–240, DOI:10.1177/0038038511416164.

Warner, U. and Hoffmeyer-Zlotnik, J.H.P. (2003) How to measure income, In: J.H.P. Hoffmeyer-Zlotnik and C. Wolf, eds. *Advances in Cross-National Comparison*. Boston: Springer, pp. 307–324.

Warren, J.R., Sheridan, J.T. and Hauser, R.M. (1998) Choosing a measure of occupational standing: how useful are composite measures in analyses of gender inequality in occupational attainment? *Sociological Methods & Research*, 27 (1), pp. 3–76.

Watson, W.B. and Barth, E.A.T. (1964) Questionable assumptions in the theory of social stratification. *Sociological Perspectives*, 7 (1), pp. 10–16, DOI:10.1177/0049124198027001001.

Weeden, K.A., Kim, Y.-M., Di Carlo, M. and Grusky, D.B. (2007) Social class and earnings inequality. *American Behavioral Scientist*, 50 (5), pp. 702–736, DOI:10.1177/0002764206295015.

Weldon, S.L. (2006) The structure of intersectionality: a comparative politics of gender. *Politics and Gender*, 2 (2), pp. 235–248, DOI:10.1017/S1743923X06231040.

Westbrook, L. and Saperstein, A. (2015) New categories are not enough: rethinking the measurement of sex and gender in social surveys. *Gender and Society*, 29 (4), pp. 534–560, DOI:10.1177/0891243215584758.

Williams, J. (2001) *Unbending Gender: Why Family and Work Conflict and What to Do About It*. Oxford: Oxford University Press.

World Bank. (2019) *Gender Data Portal*. Washington, DC: The World Bank. Available at: http://datatopics.worldbank.org/gender/ [accessed 21 November 2019].

World Economic Forum. (2014) *The Global Gender Gap Report*. Cologny: World Economic Forum. Available at: http://www3.weforum.org/docs/GGGR14/GGGR_CompleteReport_2014.pdf [accessed 31 October 2019].

Wright, E.O. (2005) *Approaches to Class Analysis*. Cambridge: Cambridge University Press.

Wright, E.O., Baxter, J. and Birkelund, G.E. (1995) The gender gap in workplace authority: a cross-national study. *American Sociological Review*, 60 (3), pp. 407–435, DOI:10.2307/2096422.

Yuval-Davis, N. (2006) Intersectionality and feminist politics. *European Journal of Women's Studies*, 13 (3), pp. 193–209, DOI:10.1177/1350506806065752.

Appendices

Appendix A

Gender specific SEI scales created using BHPS data in chapter 4 – gaps represent that no men or women were in the data for that occupation so a score could not be predicted – in later analysis these are infilled with the average mean score for the minor or sub major unit group.

SOC 2000		male SEI (year income)	male SEI (hour income)	female SEI (year income)	female SEI (hour income)
1111	Senior officials in national government	57.16	58.27		
1112	Directors and chief executives of major organisations	57.16	58.27	63.35	63.92
1113	Senior officials in local government	57.16	58.27	63.35	63.92
1114	Senior officials of special interest organisations	69.63	67.18	63.35	63.92
1121	Production, works and maintenance managers	38.38	38.96	54.61	52.07
1122	Managers in construction	41.20	41.56	54.61	52.07
1123	Managers in mining and energy	51.09	51.91	54.61	52.07
1131	Financial managers and chartered secretaries	53.45	53.67	59.65	58.94
1132	Marketing and sales managers	47.62	48.10	57.78	56.89
1133	Purchasing managers	46.07	46.28	53.15	53.34
1134	Advertising and public relations managers	51.03	51.60	72.19	70.30
1135	Personnel, training and industrial relations managers	66.55	66.22	58.14	58.47
1136	Information and communication technology managers	51.91	52.14	62.08	61.35
1137	Research and development managers	51.91	52.14	62.08	61.35
1141	Quality assurance managers	48.54	49.18	60.63	60.24
1142	Customer care managers	48.54	49.18	47.63	48.87
1151	Financial institution managers	43.38	44.10	48.00	50.27
1152	Office managers	35.26	36.80	42.58	44.39
1161	Transport and distribution managers	33.13	33.03	36.32	39.12
1162	Storage and warehouse managers	34.56	35.85	34.35	31.96
1163	Retail and wholesale managers	29.63	28.82	32.26	29.98
1171	Officers in armed forces	45.25	45.89	57.90	58.59
1172	Police officers (inspectors and above)	45.25	45.89		
1173	Senior officers in fire, ambulance, prison and related services	49.00	49.94	57.90	58.59
1174	Security managers	32.28	28.63	57.90	58.59
1181	Hospital and health service managers	53.73	53.26	57.90	58.59
1182	Pharmacy managers	53.73	53.26	57.90	58.59
1183	Healthcare practice managers			57.90	58.59
1184	Social services managers	53.73	53.26	67.39	67.28
1185	Residential and day care managers	53.73	53.26	49.81	49.90
1211	Farm managers	53.73	53.26	57.90	58.59
1212	Natural environment and conservation managers	53.73	53.26		
1219	Managers in animal husbandry, forestry and fishing n.e.c.	53.73	53.26	57.90	58.59
1221	Hotel and accommodation managers	29.67	26.02	46.95	40.13
1222	Conference and exhibition managers	29.67	26.02	46.95	40.13
1223	Restaurant and catering managers	29.03	27.15	29.33	27.36
1224	Publicans and managers of licensed premises	27.69	27.39	31.21	29.19
1225	Leisure and sports managers	35.58	36.72	44.78	41.62
1226	Travel agency managers	35.58	36.72	44.78	41.62
1231	Property, housing and land managers	35.71	37.24	46.28	47.27
1232	Garage managers and proprietors	25.63	25.73	47.20	48.28
1233	Hairdressing and beauty salon managers and proprietors	46.99	46.50	47.20	48.28
1234	Shopkeepers and wholesale/retail dealers	30.73	29.71	32.54	30.69
1235	Recycling and refuse disposal managers	46.99	46.50	47.20	48.28
1239	Managers and proprietors in other services n.e.c.	46.99	46.50	47.20	48.28
2111	Chemists	68.87	67.18	72.24	67.84
2112	Biological scientists and biochemists	68.87	67.18	72.24	67.84
2113	Physicists, geologists and meteorologists	68.87	67.18	72.24	67.84
2121	Civil engineers	49.58	49.39	61.17	60.39

2122	Mechanical engineers	46.97	46.38	61.17	60.39
2123	Electrical engineers	47.68	49.37	61.17	60.39
2124	Electronics engineers	54.42	54.87		
2125	Chemical engineers	49.58	49.39		
2126	Design and development engineers	60.20	60.86	61.17	60.39
2127	Production and process engineers	40.00	40.54	61.17	60.39
2128	Planning and quality control engineers	39.99	39.79	61.17	60.39
2129	Engineering professionals n.e.c.	54.46	54.87	61.17	60.39
2131	IT strategy and planning professionals	46.15	46.74	55.30	56.82
2132	Software professionals	53.23	53.39	57.59	58.90
2211	Medical practitioners	68.48	68.57	66.22	66.89
2212	Psychologists	68.48	68.57	75.14	73.00
2213	Pharmacists/pharmacologists			62.59	60.37
2214	Ophthalmic opticians	68.48	68.57		
2215	Dental practitioners	68.48	68.57	62.59	60.37
2216	Veterinarians	68.48	68.57	62.59	60.37
2311	Higher education teaching professionals	77.69	78.08	70.40	70.39
2312	Further education teaching professionals	65.49	66.91	62.03	67.66
2313	Education officers, school inspectors	81.05	80.15	68.13	68.33
2314	Secondary education teaching professionals	79.78	78.98	76.64	76.04
2315	Primary and nursery education teaching professionals	81.17	79.17	74.97	73.21
2316	Special needs education teaching professionals	81.05	80.15	69.02	69.77
2317	Registrars and senior administrators of educational establishments	67.07	68.11	61.18	60.41
2319	Teaching professionals n.e.c.	65.86	66.27	63.57	66.39
2321	Scientific researchers	63.19	63.23	67.42	65.94
2322	Social science researchers	63.19	63.23	67.42	65.94
2329	Researchers n.e.c.	57.46	57.02	67.69	65.01
2411	Solicitors and lawyers, judges and coroners	67.37	66.04	72.41	69.02
2419	Legal professionals n.e.c.	67.37	66.04	72.41	69.02
2421	Chartered and certified accountants	49.86	50.15	63.81	63.88
2422	Management accountants	41.39	41.65	55.06	55.65
2423	Management consultants, actuaries, economists and statisticians	63.43	63.37	58.91	58.15
2431	Architects	72.32	71.70	72.81	69.44
2432	Town planners	72.32	71.70	72.81	69.44
2433	Quantity surveyors	52.96	53.50	72.81	69.44
2434	Chartered surveyors (not quantity surveyors)	54.80	53.68	72.81	69.44
2441	Public service administrative professionals	59.55	58.29	59.36	60.80
2442	Social workers	59.55	58.29	59.36	60.80
2443	Probation officers	59.55	58.29	59.36	60.80
2444	Clergy	63.88	61.81	59.36	60.80
2451	Librarians	59.55	58.29	51.69	55.68
2452	Archivists and curators	59.55	58.29	51.69	55.68
3111	Laboratory technicians	35.03	34.98	49.90	48.67
3112	Electrical/electronics technicians	39.42	38.91	49.90	48.67
3113	Engineering technicians	35.75	36.42	49.90	48.67
3114	Building and civil engineering technicians	30.05	31.62	49.90	48.67
3115	Quality assurance technicians	45.71	45.99	49.90	48.67
3119	Science and engineering technicians n.e.c.	39.47	40.51	47.73	45.19
3121	Architectural technologists and town planning technicians	54.38	54.92	49.90	48.67
3122	Draughtspersons	47.95	46.68	49.90	48.67
3123	Building inspectors	35.03	34.98		
3131	IT operations technicians	44.38	44.58	46.88	46.32
3132	IT user support technicians	37.92	38.56	46.88	46.32
3211	Nurses	51.25	51.99	46.46	52.10
3212	Midwives			47.63	56.03
3213	Paramedics	47.39	48.74		
3214	Medical radiographers	47.39	48.74	59.03	57.88
3215	Chiropodists			59.03	57.88
3216	Dispensing opticians	47.39	48.74	59.03	57.88
3217	Pharmaceutical dispensers	47.39	48.74	31.73	28.85

3218	Medical and dental technicians	26.79	28.63	35.60	36.01
3221	Physiotherapists	47.39	48.74	57.98	64.03
3222	Occupational therapists	47.39	48.74	63.70	65.31
3223	Speech and language therapists			59.84	62.51
3229	Therapists n.e.c.	47.39	48.74	57.88	56.70
3231	Youth and community workers	32.53	32.48	48.19	50.93
3232	Housing and welfare officers	38.37	39.08	42.22	44.07
3311	NCOs and other ranks	23.23	22.40	49.26	47.85
3312	Police officers (sergeant and below)	37.99	38.53	49.26	47.85
3313	Fire service officers (leading fire officer and below)	33.64	34.16		
3314	Prison service officers (below principal officer)	34.34	35.03	49.26	47.85
3319	Protective service associate professionals n.e.c.	34.34	35.03	49.26	47.85
3411	Artists	54.78	55.78		
3412	Authors, writers	54.78	55.78	59.81	59.76
3413	Actors, entertainers	54.78	55.78	59.81	59.76
3415	Musicians	54.78	55.78	59.81	59.76
3416	Arts officers, producers and directors	54.78	55.78	59.81	59.76
3421	Graphic designers	47.85	47.42	50.00	48.10
3422	Product, clothing and related designers	52.13	50.54	52.08	51.56
3431	Journalists, newspaper and periodical editors	58.03	58.40	58.41	57.72
3432	Broadcasting associate professionals	58.03	58.40	58.41	57.72
3433	Public relations officers	56.64	55.47	59.50	58.86
3434	Photographers and audio-visual equipment operators	38.31	38.44	58.41	57.72
3441	Sports players	16.10	19.03	35.70	36.31
3442	Sports coaches, instructors and officials	24.23	26.81	35.70	36.31
3443	Fitness instructors	50.64	51.85	40.06	41.40
3449	Sports and fitness occupations n.e.c.	24.23	26.81	35.70	36.31
3511	Air traffic controllers	30.14	30.76		
3512	Aircraft pilots and flight engineers	30.14	30.76		
3513	Ship and hovercraft officers	30.14	30.76		
3514	Train drivers	30.14	30.76		
3520	Legal associate professionals	45.05	47.56	53.62	52.63
3531	Estimators, valuers and assessors	41.37	42.07	40.92	40.29
3532	Brokers	45.66	47.34	46.78	48.70
3533	Insurance underwriters	53.80	56.10	46.78	48.70
3534	Finance and investment analysts/advisers	46.71	47.14	46.78	48.70
3535	Taxation experts	46.71	47.14	46.78	48.70
3536	Importers, exporters	46.71	47.14	46.78	48.70
3537	Financial and accounting technicians	56.31	56.21	47.89	48.17
3539	Business and related associate professionals n.e.c.	46.86	47.14	54.69	54.58
3541	Buyers and purchasing officers	30.43	29.81	46.92	45.55
3542	Sales representatives	39.19	39.08	43.46	42.32
3543	Marketing associate professionals	42.64	42.88	56.74	56.93
3544	Estate agents, auctioneers	42.64	42.88	53.40	46.07
3551	Conservation and environmental protection officers	60.29	60.35	74.16	74.92
3552	Countryside and park rangers				
3561	Public service associate professionals	60.29	60.35	59.80	59.77
3562	Personnel and industrial relations officers	50.65	48.82	49.28	49.12
3563	Vocational and industrial trainers and instructors	47.84	48.41	48.47	47.60
3564	Careers advisers and vocational guidance specialists	47.84	48.41	55.19	55.33
3565	Inspectors of factories, utilities and trading standards	40.66	42.47	63.37	66.46
3566	Statutory examiners	40.66	42.47	63.37	66.46
3567	Occupational hygienists and safety officers (health and safety)	43.14	44.20	50.56	48.95
3568	Environmental health officers	70.38	70.61	63.37	66.46
4111	Civil Service executive officers	47.37	47.91	47.75	51.57
4112	Civil Service administrative officers and assistants	36.27	35.81	34.56	36.16
4113	Local government clerical officers and assistants	38.37	38.75	38.27	38.05
4114	Officers of non-governmental organisations	38.37	38.75	65.29	68.33
4121	Credit controllers	33.69	34.15	32.68	32.30
4122	Accounts and wages clerks, book-keepers, other financial clerks	33.69	34.15	35.96	37.21
4123	Counter clerks	36.77	36.86	31.67	32.81

4131	Filing and other records assistants/clerks	34.51	33.88	36.76	37.02
4132	Pensions and insurance clerks	27.84	28.31	32.24	35.08
4133	Stock control clerks	24.85	25.06	34.41	33.60
4134	Transport and distribution clerks	28.86	28.33	34.24	33.80
4135	Library assistants/clerks	37.13	36.62	35.10	36.53
4136	Database assistants/clerks	37.13	36.62	30.53	30.14
4137	Market research interviewers	37.13	36.62	33.24	34.11
4141	Telephonists	30.90	29.58	27.60	27.13
4142	Communication operators	30.90	29.58	40.44	41.44
4150	General office assistants/clerks	38.29	37.95	32.29	33.33
4211	Medical secretaries			29.15	29.19
4212	Legal secretaries	37.10	38.86	33.64	34.18
4213	School secretaries	37.10	38.86	36.56	33.99
4214	Company secretaries	37.10	38.86	46.68	54.39
4215	Personal assistants and other secretaries	37.10	38.86	33.33	34.25
4216	Receptionists	37.10	38.86	27.93	27.84
4217	Typists	37.10	38.86	32.96	36.31
5111	Farmers	25.39	24.61	47.60	43.78
5112	Horticultural trades	25.39	24.61	47.60	43.78
5113	Gardeners and groundsmen/groundswomen	18.75	18.24	47.60	43.78
5119	Agricultural and fishing trades n.e.c.	25.39	24.61	47.60	43.78
5211	Smiths and forge workers	24.15	20.64		
5212	Moulders, core makers, die casters	24.15	20.64		
5213	Sheet metal workers	26.23	25.88	30.05	29.32
5214	Metal plate workers, shipwrights, riveters	23.14	21.85		
5215	Welding trades	22.43	22.23	30.05	29.32
5216	Pipe fitters	23.78	23.72		
5221	Metal machining setters and setter-operators	23.78	24.05	30.05	29.32
5223	Metal working production and maintenance fitters	26.13	26.61	30.05	29.32
5224	Precision instrument makers and repairers	24.52	25.31	30.05	29.32
5231	Motor mechanics, auto engineers	21.63	21.10	30.05	29.32
5232	Vehicle body builders and repairers	22.51	23.06		
5233	Auto electricians	21.63	21.10		
5234	Vehicle spray painters	23.14	24.27		
5241	Electricians, electrical fitters	26.71	27.52	36.40	39.04
5242	Telecommunications engineers	22.57	24.09	36.40	39.04
5243	Lines repairers and cable jointers,	26.96	27.41		
5244	TV, video and audio engineers	36.11	35.81	36.40	39.04
5245	Computer engineers, installation and maintenance	41.67	42.33	36.40	39.04
5249	Electrical/electronics engineers n.e.c.	29.38	28.91	36.40	39.04
5311	Steel erectors	23.34	24.51		
5312	Bricklayers, masons	21.10	20.66	30.05	29.32
5313	Roofers, roof tilers and slaters	22.74	23.19		
5314	Plumbers, heating and ventilating engineers	23.82	24.10	30.05	29.32
5315	Carpenters and joiners	24.55	24.00	30.05	29.32
5316	Glaziers, window fabricators and fitters	19.12	19.43		
5319	Construction trades n.e.c.	21.96	21.42	30.05	29.32
5321	Plasterers	20.12	18.22		
5322	Floorers and wall tilers	23.02	22.45		
5323	Painters and decorators	23.02	22.45	30.05	29.32
5411	Weavers and knitters	18.00	17.33	25.56	25.44
5412	Upholsterers	18.00	17.33	25.56	25.44
5413	Leather and related trades	18.00	17.33	25.56	25.44
5414	Tailors and dressmakers			25.56	25.44
5419	Textiles, garments and related trades n.e.c.	18.00	17.33	25.56	25.44
5421	Originators, compositors and print preparers	24.92	26.38	24.48	26.58
5422	Printers	24.92	26.38	24.48	26.58
5423	Bookbinders and print finishers	28.63	28.58	24.48	26.58
5424	Screen printers	24.92	26.38		

5431	Butchers, meat cutters	19.77	18.33	25.36	23.00
5432	Bakers, flour confectioners	18.11	17.42	25.36	23.00
5433	Fishmongers, poultry dressers	18.51	16.97	25.36	23.00
5434	Chefs, cooks	19.64	18.27	26.79	25.68
5491	Glass and ceramics makers, decorators and finishers	19.51	19.91	29.61	29.58
5492	Furniture makers, other craft woodworkers	21.66	20.94	29.61	29.58
5493	Pattern makers (moulds)	19.51	19.91		
5494	Musical instrument makers and tuners	19.51	19.91		
5495	Goldsmiths, silversmiths, precious stone workers	19.51	19.91	29.61	29.58
5496	Floral arrangers, florists			29.61	29.58
5499	Hand craft occupations n.e.c.	19.51	19.91	29.61	29.58
6111	Nursing auxiliaries and assistants	22.23	24.59	30.28	30.51
6112	Ambulance staff (excluding paramedics)	28.81	27.95	30.28	30.51
6113	Dental nurses			34.86	36.08
6114	Houseparents and residential wardens	30.48	29.69	33.18	34.58
6115	Care assistants and home carers	29.15	29.05	28.46	29.58
6121	Nursery nurses	16.10	17.26	28.13	29.43
6122	Childminders and related occupations	16.10	17.26	28.70	28.27
6123	Playgroup leaders/assistants	16.10	17.26	28.55	27.87
6124	Educational assistants	38.56	37.61	33.64	33.57
6131	Veterinary nurses and assistants	22.23	24.59	24.48	24.92
6139	Animal care occupations n.e.c.	22.23	24.59	29.84	28.85
6211	Sports and leisure assistants	18.85	19.10	31.05	30.21
6212	Travel agents	28.58	29.26	27.43	29.74
6213	Travel and tour guides	38.11	36.36	28.04	27.97
6214	Air travel assistants	28.58	29.26	33.61	32.71
6215	Rail travel assistants	28.58	29.26	33.61	32.71
6219	Leisure and travel service occupations n.e.c.	28.58	29.26	33.61	32.71
6221	Hairdressers, barbers	28.58	29.26	25.27	25.17
6222	Beauticians and related occupations			25.61	24.28
6231	Housekeepers and related occupations	22.67	22.82	25.01	23.83
6232	Caretakers	22.67	22.82	24.48	24.49
6291	Undertakers and mortuary assistants				
6292	Pest control officers				
7111	Sales and retail assistants	21.97	21.73	26.16	26.00
7112	Retail cashiers and check-out operators	17.95	18.48	25.38	25.56
7113	Telephone salespersons	26.96	26.23	30.22	31.19
7121	Collector salespersons and credit agents	27.34	27.06	28.61	29.37
7122	Debt, rent and other cash collectors	27.34	27.06	28.61	29.37
7123	Roundsmen/women and van salespersons	18.20	17.07	28.61	29.37
7124	Market and street traders and assistants	18.20	17.07	28.61	29.37
7125	Merchandisers and window dressers	26.79	25.99	32.09	30.49
7129	Sales related occupations n.e.c.	29.21	29.85	33.80	34.27
7211	Call centre agents/operators	29.05	29.60	31.22	31.64
7212	Customer care occupations	33.16	32.45	32.09	32.73
8111	Food, drink and tobacco process operatives	19.83	19.43	26.63	24.83
8112	Glass and ceramics process operatives	18.51	18.71		
8113	Textile process operatives	26.91	26.35	25.96	26.36
8114	Chemical and related process operatives	27.76	28.12	25.96	26.36
8115	Rubber process operatives	22.13	23.06	25.96	26.36
8116	Plastics process operatives	20.80	20.10	25.96	26.36
8117	Metal making and treating process operatives	27.63	28.09		
8118	Electroplaters	18.51	17.26		
8119	Process operatives n.e.c.	26.91	26.35		
8121	Paper and wood machine operatives	23.14	23.86	30.56	30.25
8122	Coal mine operatives	30.68	31.70		
8123	Quarry workers and related operatives	30.68	31.70		
8124	Energy plant operatives	35.71	36.89		
8125	Metal working machine operatives	25.71	26.06	30.56	30.25

8126	Water and sewerage plant operatives	32.69	34.26		
8129	Plant and machine operatives n.e.c.	23.31	23.99	30.56	30.25
8131	Assemblers (electrical products)	23.16	22.89	26.50	25.86
8132	Assemblers (vehicles and metal goods)	26.57	26.66	26.50	25.86
8133	Routine inspectors and testers	26.01	26.51	30.06	28.53
8134	Weighers, graders, sorters	26.01	26.51	30.06	28.53
8135	Tyre, exhaust and windscreen fitters	18.64	16.57		
8136	Clothing cutters	26.86	26.71	27.26	27.06
8137	Sewing machinists	26.86	26.71	27.26	27.06
8138	Routine laboratory testers	26.86	26.71	26.93	25.95
8139	Assemblers and routine operatives n.e.c.	26.86	26.71	26.93	25.95
8141	Scaffolders, stagers, riggers	28.03	27.09		
8142	Road construction operatives	23.87	25.69		
8143	Rail construction and maintenance operatives	23.86	24.09	30.56	30.25
8149	Construction operatives n.e.c.	28.03	27.09	30.56	30.25
8211	Heavy goods vehicle drivers	24.99	22.93	28.38	28.45
8212	Van drivers	22.86	20.95	28.38	28.45
8213	Bus and coach drivers	21.43	21.43	28.38	28.45
8214	Taxi, cab drivers and chauffeurs	21.15	20.29	28.38	28.45
8215	Driving instructors	29.41	29.22		
8216	Rail transport operatives	29.41	29.22	28.38	28.45
8217	Seafarers (merchant navy); barge, lighter and boat operatives	29.41	29.22		
8218	Air transport operatives	23.14	18.22	28.38	28.45
8219	Transport operatives n.e.c.	29.41	29.22	28.38	28.45
8221	Crane drivers	21.59	20.52		
8222	Fork-lift truck drivers	21.59	20.52	28.38	28.45
8223	Agricultural machinery drivers	21.59	20.52		
8229	Mobile machine drivers and operatives n.e.c.	25.15	23.67		
9111	Farm workers	24.56	24.33	26.63	25.44
9112	Forestry workers	24.56	24.33		
9119	Fishing and agriculture related occupations n.e.c.	20.62	19.61	26.63	25.44
9121	Labourers in building and woodworking trades	21.46	21.63	25.87	24.58
9129	Labourers in other construction trades n.e.c.	20.12	21.24		
9131	Labourers in foundries	20.12	19.14		
9132	Industrial cleaning process occupations	19.12	18.40	25.87	24.58
9133	Printing machine minders and assistants	27.34	28.63	25.87	24.58
9134	Packers, bottlers, canners, fillers	20.86	20.37	26.25	25.55
9139	Labourers in process and plant operations n.e.c.	20.12	19.14	25.87	24.58
9141	Stevedores, dockers and slingers	20.97	20.21		
9149	Other goods handling and storage occupations n.e.c.	20.97	20.21	25.91	25.80
9211	Postal workers, mail sorters, messengers, couriers	20.81	20.95	27.32	28.37
9219	Elementary office occupations n.e.c.	26.28	26.18	28.33	27.88
9221	Hospital porters	16.77	16.61		
9222	Hotel porters	16.77	16.61	25.54	25.13
9223	Kitchen and catering assistants	17.21	17.25	25.54	25.13
9224	Waiters, waitresses	20.31	20.39	26.45	25.57
9225	Bar staff	21.73	21.83	27.63	26.51
9226	Leisure and theme park attendants	21.94	22.81	29.08	28.53
9229	Elementary personal services occupations n.e.c.	22.46	23.42	27.98	28.49
9231	Window cleaners	19.87	19.81		
9232	Road sweepers	19.87	19.81		
9233	Cleaners, domestics	18.44	18.46	25.30	25.27
9234	Launderers, dry cleaners, pressers	19.87	19.81	28.04	26.39
9235	Refuse and salvage occupations	18.11	18.22	25.30	25.27
9239	Elementary cleaning occupations n.e.c.	19.87	19.81	25.30	25.27
9241	Security guards and related occupations	23.44	21.38	35.37	33.80
9242	Traffic wardens	17.67	18.96	30.20	29.79
9243	School crossing patrol attendants	17.67	18.96	30.20	29.79
9244	School midday assistants	17.67	18.96	25.93	27.04

9245	Car park attendants	18.51	18.71	30.20	29.79
9249	Elementary security occupations n.e.c.	17.67	18.96	30.20	29.79
9251	Shelf fillers	20.26	21.19	26.71	26.50
9259	Elementary sales occupations n.e.c.	16.10	16.71	26.71	26.50

Appendix B

Occupation pairs coded as pseudo diagonals for FFCAMSIS scale creation

SOC1	Occupation of friend one	SOC2	Occupation of friend two
111	Managers in building contracting	121	Marketing and sales managers
599	Other craft and related occupations n.e.c.	199	Other managers and administrators n.e.c.
202	Physicists, geologists and meteorologists	201	Biological scientists and biochemists
300	Laboratory technicians	201	Biological scientists and biochemists
201	Biological scientists and biochemists	209	Other natural scientists n.e.c.
223	Dental practitioners	220	Medical practitioners
340	Nurses	221	Pharmacists/pharmacologists
346	Medical technicians, dental auxiliaries	221	Pharmacists/pharmacologists
220	Medical practitioners	223	Dental practitioners
270	Librarians qualified	230	University and polytechnic teaching professionals
270	Librarians qualified	234	Primary (and middle school deemed primary) and nursery education teaching professionals
209	Other natural scientists n.e.c.	300	Laboratory technicians
220	Medical practitioners	340	Nurses
346	Medical technicians, dental auxiliaries	340	Nurses
349	Other health associate professionals animals	340	Nurses
220	Medical practitioners	341	Midwives
340	Nurses	341	Midwives
346	Medical technicians, dental auxiliaries	341	Midwives
349	Other health associate professionals animals	342	Medical radiographers
220	Medical practitioners	343	Physiotherapists
340	Nurses	343	Physiotherapists
340	Nurses	344	Chiropodists
341	Midwives	346	Medical technicians, dental auxiliaries
220	Medical practitioners	347	Occupational and speech therapists, psychotherapists, therapists n.e.c.
340	Nurses	347	Occupational and speech therapists, psychotherapists, therapists n.e.c.
341	Midwives	347	Occupational and speech therapists, psychotherapists, therapists n.e.c.
342	Medical radiographers	347	Occupational and speech therapists, psychotherapists, therapists n.e.c.
343	Physiotherapists	347	Occupational and speech therapists, psychotherapists, therapists n.e.c.
344	Chiropodists	347	Occupational and speech therapists, psychotherapists, therapists n.e.c.
346	Medical technicians, dental auxiliaries	349	Other health associate professionals animals
364	Organisation and methods and work study officers	360	Estimators, valuers
340	Nurses	370	Matrons, houseparents
344	Physiotherapists	370	Matrons, houseparents
270	Librarians qualified	390	Information officers and technical librarians
599	Other craft and related occupations n.e.c.	391	Vocational and industrial trainers
599	Other craft and related occupations n.e.c.	391	Vocational and industrial trainers
270	Librarians qualified	421	Library assistants/clerks press
220	Medical practitioners	450	Medical secretaries
340	Nurses	450	Medical secretaries
344	Chiropodists	450	Medical secretaries
346	Medical technicians, dental auxiliaries	450	Medical secretaries
347	Occupational and speech therapists, psychotherapists, therapists n.e.c.	450	Medical secretaries
461	Receptionists/telephonist	452	Typists and word processor operators
461	Receptionists/telephonist	459	Other secretaries, personal assistants, typists, word processor operators n.e.c.
461	Receptionists/telephonist	460	Receptionists general office dental
381	Artists, commercial artists, graphic designers	518	Goldsmiths, silversmiths, precious stone workers
529	Other electrical/electronic trades n.e.c.	520	Production fitters (electrical/electronic)
599	Other craft and related occupations n.e.c.	521	Electricians, electrical maintenance fitters
554	Coach trimmers, upholsterers and mattress makers	553	Sewing machinists, menders, darners and embroiderers
555	Shoe repairers, leather cutters and sewers, footwear lasters, makers and	553	Sewing machinists, menders, darners and embroiderers
814	Other textiles processing operatives hydro	553	Sewing machinists, menders, darners and embroiderers
561	Printers general	562	Book binders and print finishers specialised
598	Office machinery mechanics dictaphone	592	Book binders and print finishers specialised

160	Farm owners and managers, horticulturists	595	Horticultural trades
220	Medical practitioners	640	Assistant nurses, nursing auxiliaries
340	Nurses	640	Assistant nurses, nursing auxiliaries
343	Physiotherapists	640	Assistant nurses, nursing auxiliaries
370	Matrons, houseparents	640	Assistant nurses, nursing auxiliaries
220	Medical practitioners	641	Vocational and industrial trainers
340	Nurses	641	Vocational and industrial trainers
343	Physiotherapists	641	Vocational and industrial trainers
370	Matrons, houseparents	641	Vocational and industrial trainers
340	Nurses	643	Dental nurses
346	Medical technicians, dental auxiliaries	643	Dental nurses
340	Nurses	644	Care assistants and attendants old
343	Physiotherapists	644	Care assistants and attendants old
347	Occupational and speech therapists, psychotherapists, therapists n.e.c.	644	Care assistants and attendants old
661	Beauticians and related occupations	660	Hairdressers,
671	Housekeepers (non-domestic)	670	Domestic housekeepers and related occupations
791	Window dressers, floral arrangers	720	Sales assistants
580	Bakers, flour confectioners	800	Bakery confectionery process hand foreman
217	Process and production engineers	820	Chemical, gas and petroleum process plant operatives
893	Electrical energy, boiler and related plant operatives and attendants	820	Chemical, gas and petroleum process plant operatives
893	Electrical energy, boiler and related plant operatives and attendants	820	Chemical, gas and petroleum process plant operatives
859	Other assemblers/lineworkers poppy	839	Other metal making treating process operatives steel
889	Other transport machinery operatives horse	841	Press stamping and automatic machine operatives
382	Industrial designers and textile designers	850	Assemblers/lineworkers (electrical/electronic goods)
850	Assemblers/lineworkers (electrical/electronic goods)	851	Assemblers/lineworkers vehicles metal nutter
859	Other assemblers/lineworkers poppy	851	Assemblers/lineworkers vehicles metal nutter
850	Assemblers/lineworkers (electrical/electronic goods)	859	Other assemblers/lineworkers poppy
824	Rubber process operatives, moulding machine operatives, tyre builders	899	Other plant and machine operatives n.e.c.
825	Plastic process operatives, moulders extruders goods	899	Other plant and machine operatives n.e.c.
840	Machine tool operatives (inc. CNC machine tool operatives)	899	Other plant and machine operatives n.e.c.

Appendix C

Female Friendship CAMSIS scores

SOC name	Soc90	FFCamsis
General administrators; national government (Assistant Secretary/Grade 5 and above)	100	65.66
General Managers; large companies and organisations	101	65.66
Local government officers (administrative and executive functions)	102	65.66
General administrators; national government (HEO to Senior Principal/Grade 6)	103	66.68
Production, works and maintenance managers	110	66.67
Managers in building and contracting	111	66.67
Clerks of works	112	66.67
Managers in mining and energy industries	113	66.67
Treasurers and company financial managers	120	65.85
Marketing and sales managers	121	64.88
Purchasing managers	122	64.88
Advertising and public relations managers	123	77.64
Personnel, training and industrial relations managers	124	67.54
Organisation and methods and work study managers	125	64.88
Computer systems and data processing managers	126	65.71
Company secretaries	127	53.36
Credit controllers	130	55.49
Bank, Building Society and Post Office managers (except self-employed)	131	53.09
Civil service executive officers	132	59.28
Other financial institutions and office managers n.e.c.	139	56.84
Transport managers n.e.c.	140	50.02
Stores controllers	141	50.02
Managers in warehousing and other materials handling	142	76.92
Officers in UK armed forces	150	50.78
Officers in foreign and Commonwealth armed forces	151	50.78
Police officer (inspector and above)	152	56.81
Fire service officers (station officer and above)	153	53.80
Prison officers (principal officer and above)	154	53.80
Customs and excise, immigration service officers (customs: chief preventive officer and above; exise: surveyor and above)	155	56.81
Farm owners and managers, horticulturists	160	59.25
Other managers in farming, forestry and fishing n.e.c.	169	62.05
Property and estate managers	170	57.53
Garage managers and proprietors	171	52.11
Hairdressers' and barbers' managers and proprietors	172	46.79
Hotel and accommodation managers	173	48.40
Restaurant and catering managers	174	40.12
Publicans, innkeepers and club stewards	175	41.72
Entertainment and sports managers	176	59.26
Travel agency managers	177	60.57
Managers and proprietors of butchers and fishmongers	178	52.11
Managers and proprietors in service industries n.e.c.	179	52.11
Officials of trade associations, trade unions, professional bodies and charities	190	79.73
Registrars and administrators of educational establishments	191	78.40
Other managers and administrators n.e.c.	199	58.17
Chemists	200	61.86
Biological scientists and biochemists	201	76.54
Physicists, geologists and meteorologists	202	76.54
Other natural scientists n.e.c.	209	94.11
Civil, structural, municipal, mining and quarrying engineers	210	78.87
Mechanical engineers	211	78.87
Electrical engineers	212	78.87
Electronic engineers	213	83.63
Software engineers	214	76.08
Chemical engineers	215	78.87
Design and development engineers	216	90.87

Process and production engineers	217	90.87
Planning and quality control engineers	218	90.87
Other engineers and technologists n.e.c.	219	90.87
Medical practitioners	220	91.46
Pharmacists/pharmacologists	221	69.89
Ophthalmic opticians	222	88.68
Dental practitioners	223	88.68
Veterinarians	224	91.46
University and polytechnic teaching professionals	230	81.93
Higher and Further education teaching professionals	231	77.56
Education officer, school inspectors	232	73.14
Secondary (and middle school deemed secondary) education teaching professionals	233	82.32
Primary (and middle school deemed primary) and nursery education teaching professionals	234	76.08
Special education teaching professionals	235	75.47
Other teaching professionals n.e.c.	239	74.32
Judges and officers of the court	240	88.21
Barristers and advocates	241	99.00
Solicitors	242	88.21
Chartered and certified accountants	250	68.85
Management accountants	251	74.57
Actuaries, economists and statisticians	252	74.86
Management consultants, business analysts	253	77.80
Architects	260	74.13
Town planners	261	74.13
Building, land, mining and 'general practice' surveyors	262	74.13
Librarians	270	68.94
Archivists and curators	271	71.22
Psychologists	290	84.38
Other social and behavioural scientists	291	65.18
Clergy	292	99.00
Social workers, probation officers	293	65.18
Laboratory technicians	300	64.08
Engineering technicians	301	57.56
Electrical/electronic technicians	302	57.56
Architectural and town planning technicians	303	70.19
Building and civil engineering technicians	304	70.19
Other scientific technicians n.e.c.	309	57.56
Draughtspersons	310	57.56
Building inspectors	311	70.19
Quantity surveyors	312	70.19
Marine, insurance and other surveyors	313	57.56
Computer analyst/programmers	320	57.83
Air traffic planners and controllers	330	57.83
Aircraft flight deck officers	331	57.83
Ship and hovercraft officers	332	57.83
Nurses	340	54.61
Midwives	341	64.16
Medical radiographers	342	63.51
Physiotherapists	343	76.43
Chiropodists	344	68.77
Dispensing opticians	345	68.77
Medical technicians, dental auxiliaries	346	51.18
Occupational and speech therapists, psychotherapists, therapists n.e.c.	347	66.85
Environmental health officers	348	69.06
Other health associate professionals n.e.c.	349	42.04
Legal service and related occupations	350	67.89
Estimators, valuers	360	59.57
Underwriters, claims assessors, brokers, investment analysts	361	67.10
Taxation experts	362	56.43
Personnel and industrial relations officers	363	69.55
Organisation and methods and work study officers	364	82.70
Matrons, houseparents	370	46.69
Welfare, community and youth workers	371	55.61
Authors, writers, journalists	380	73.71

Artists, commercial artists, graphic designers	381	66.51
Industrial designers	382	57.47
Clothing designers	383	57.66
Actors, entertainers, stage managers, producers and directors	384	69.12
Musicians	385	72.20
Photographers, camera, sound and video equipment operators	386	71.43
Professional athletes, sports officials	387	61.57
Information officers	390	69.16
Vocational and industrial trainers	391	63.82
Careers advisers and vocational guidance specialists	392	62.77
Driving instructors (excluding HGV)	393	63.82
Inspectors of factories, utilities and trading standards	394	57.56
Other statutory similar inspectors n.e.c.	395	63.82
Occupational hygienists and safety officers (health and safety)	396	70.44
Other associate professional and technical occupations n.e.c.	399	65.93
Civil Service administrative officers and assistants	400	52.30
Local government clerical officers and assistants	401	57.51
Accounts and wages clerks, book-keepers, other financial clerks	410	51.72
Counter clerks and cashiers	411	47.44
Debt, rent and other cash collectors	412	50.81
Filing, computer and other records clerks (inc. legal conveyancing)	420	54.87
Library assistants/clerks	421	57.65
Clerks (n.o.s.)	430	49.01
Stores, despatch and production control clerks	440	39.07
Storekeepers, warehousemen/women	441	43.42
Medical secretaries	450	52.38
Legal secretaries	451	56.21
Typists and word processor operators	452	48.53
Other secretaries, personal assistants, typists, word processor operators n.e.c.	459	51.25
Receptionists	460	47.71
Receptionists/telephonists	461	36.22
Telephone operators exchange	462	39.09
Radio and telegraph operators, other office communication system operators	463	49.70
Computer operators, data processing operators, other office machine operators	490	44.93
Tracers, drawing officer assistants	491	45.08
Bricklayers, masons	500	45.08
Roofers, slaters, tilers, sheeters, cladders	501	45.08
Plasterers	502	45.08
Glaziers	503	45.08
Builders, building contractors	504	45.08
Scaffolders, stagers, steeplejacks, riggers	505	45.08
Floorers, floor coverers, carpet fitters and planners, floor and wall tilers	506	45.08
Painters and decorators	507	45.08
Other construction trades n.e.c.	509	45.08
Centre, capstan, turret and other lathe setters and setter-operators	510	37.34
Boring and drilling machine setters and setter-operators	511	48.77
Grinding machine setters and setter-operators	512	48.77
Milling machine setters and setter-operators	513	48.77
Press setters and setter-operators	514	48.77
Tool makers, tool fitters and markers out	515	37.34
Metal working production and maintenance fitters	516	37.34
Precision instrument makers and repairers	517	57.08
Goldsmiths, silversmiths, precious stone workers	518	57.08
Other machine tool setters and setter operators n.e.c. (incl. CNC setter-operators)	519	48.77
Production fitters (electrical/electronic)	520	33.26
Electricians, electrical maintenance fitters	521	33.26
Electrical engineers (not professional)	522	33.26
Telephone fitters	523	33.26
Cable jointers, lines repairers	524	33.26
Radio, TV and video engineers	525	33.26
Computer engineers, installation and maintenance	526	33.26
Other electrical/electronic trades n.e.c.	529	33.26
Smiths and forge workers	530	35.98

Moulders, core makers, die casters	531	35.98
Plumbers, heating and ventilating engineers and related trades	532	33.26
Sheet metal workers	533	37.34
Metal plate workers, shipwrights, riveters	534	35.98
Steel erectors	535	35.98
Barbenders, steel fixers	536	35.98
Welding trades	537	37.34
Motor mechanics, auto engineers (inc. road patrol engineers)	540	26.49
Coach and vehicle body builders	541	26.49
Vehicle body repairers, panel beaters	542	26.49
Auto electricians	543	26.49
Tyre and exhaust fitters	544	26.49
Weavers	550	23.91
Knitters	551	28.98
Warp preparers, bleachers, dyers and finishers	552	28.98
Sewing machinists, menders, darners and embroiderers	553	23.91
Coach trimmers, upholsterers and mattress makers	554	28.98
Shoe repairers, leather cutters and sewers, footwear lasters, makers and finishers, other leath making and repairing	555	19.02
Tailors and dressmakers	556	48.17
Clothing cutters, milliners, furriers	557	28.98
Other textiles, garments and related trades n.e.c.	559	28.98
Originators, compositors and print preparers	560	60.19
Printers	561	60.19
Book binders and print finishers	562	42.26
Screen printers	563	42.26
Other printing and related trades n.e.c.	569	42.26
Carpenters and joiners	570	45.08
Cabinet makers	571	45.08
Case and box makers	572	45.08
Pattern makers (moulds)	573	45.08
Other woodworking trades n.e.c.	579	45.08
Bakers, flour confectioners	580	27.46
Butchers, meat cutters	581	33.18
Fishmongers, poultry dressers	582	33.18
Glass product and ceramics makers	590	28.50
Glass product and ceramics finishers and decorators	591	21.72
Dental technicians	592	35.61
Musical instrument makers, piano tuners	593	35.61
Gardeners, groundsmen/women	594	41.58
Horticultural trades	595	41.58
Coach painters, other spray painters	596	21.72
Face trained coalmining workers, shotfirers and deputies	597	35.61
Office machinery mechanics	598	35.61
Other craft and related occupations n.e.c.	599	57.08
NCOs and other ranks, UK armed forces	600	50.78
NCOs and other ranks, foreign and commonwealth armed forces	601	50.78
Police officers (sergeant and below)	610	54.59
Fire service officers (leading fire officer and below)	611	54.59
Prison service officers (below principal officer)	612	56.81
Customs and excise officers, immigration officers (customs: below chief preventive officer; excise: below surveyor)	613	56.81
Traffic wardens	614	41.98
Security guards and related occupations	615	53.00
Other security protective service occupations n.e.c.	619	41.98
Chefs, cooks	620	31.62
Waiters, waitresses	621	34.69
Bar staff	622	35.46
Travel and flight attendants	630	48.67
Railway station staff	631	38.18
Assistant nurses, nursing auxiliaries	640	37.65
Hospital ward assistants	641	32.49
Ambulance staff	642	32.49
Dental nurses	643	49.70

Care assistants and attendants	644	34.76
Nursery nurses	650	50.35
Playgroup leaders	651	50.11
Educational assistants	652	56.66
Other childcare and related occupations n.e.c.	659	42.92
Hairdressers, barbers	660	40.83
Beauticians and related occupations	661	44.20
Domestic housekeepers and related occupations	670	34.54
Housekeepers (non-domestic)	671	28.13
Caretakers	672	35.59
Launderers, dry cleaners, pressers	673	32.57
Undertakers	690	41.54
Bookmakers	691	26.01
Other personal and protective service occupations n.e.c.	699	41.54
Buyers (retail trade)	700	66.24
Buyers and purchasing officers (not retail)	701	66.24
Importers and exporters	702	66.24
Air, commodity and ship brokers	703	66.24
Technical and wholesale sales representatives	710	56.33
Other sales representatives n.e.c.	719	50.67
Sales assistants	720	38.18
Retail cash desk and check-out operators	721	34.64
Petrol pump forecourt attendants	722	45.25
Collector salespersons and credit agents	730	48.49
Roundsmen/women and van salespersons	731	39.13
Market and street traders and assistants	732	39.13
Scrap dealers, scrap metal merchants	733	43.54
Merchandisers	790	48.72
Window dressers, floral arrangers	791	39.63
Telephone salespersons	792	43.81
Bakery and confectionery process operatives	800	21.05
Brewery and vinery process operatives	801	21.05
Tobacco process operatives	802	20.29
Other food, drink and tobacco process operatives n.e.c.	809	19.59
Tannery production operatives	810	17.53
Preparatory fibre processors	811	17.53
Spinners, doublers, twisters	812	17.53
Winders, reelers	813	17.53
Other textiles processing operatives	814	17.53
Chemical, gas and petroleum process plant operatives	820	23.02
Paper, wood and related process plant operatives	821	23.02
Cutting and slitting machine operatives (paper products etc)	822	23.02
Glass and ceramics furnace operatives, kilnsetters	823	23.02
Rubber process operatives, moulding machine operatives, tyre builders	824	23.02
Plastic process operatives, moulders and extruders	825	23.02
Synthetic fibre makers	826	23.02
Other chemicals, paper, plastics and related operatives n.e.c.	829	23.02
Furnace operatives (metal)	830	23.02
Metal drawers	831	23.02
Rollers	832	23.02
Annealers, hardeners, temperers (metal)	833	23.02
Electroplaters, galvanisers, colour coaters	834	23.02
Other metal making and treating process operatives n.e.c.	839	23.02
Machine tool operatives (inc. CNC machine tool operatives)	840	1.00
Press stamping and automatic machine operatives	841	23.02
Metal polishers	842	7.70
Metal dressing operatives	843	23.02
Shot blasters	844	7.70
Assemblers/lineworkers (electrical/electronic goods)	850	23.33
Assemblers/lineworkers (vehicles and other metal goods)	851	28.36
Other assemblers/lineworkers n.e.c.	859	11.08
Inspectors, viewers and testers (metal and electrical goods)	860	32.67
Inspectors, viewers, testers and examiners (other manufactured goods)	861	37.36

Packers, bottlers, canners, fillers	862	22.87
Weighers, graders, sorters	863	22.87
Routine laboratory testers	864	53.55
Other routine process operatives n.e.c.	869	23.02
Bus inspectors	870	39.86
Road transport depot inspectors and related occupations	871	39.86
Drivers of road goods vehicles	872	36.32
Bus and coach drivers	873	36.32
Taxi, cab drivers and chauffeurs	874	49.86
Bus conductors	875	36.32
Seafarers (merchant navy); barge, lighter and boat operatives	880	33.20
Rail transport inspectors, supervisors and guards	881	36.32
Rail engine drivers and assistants	882	33.20
Rail signal operatives and crossing keepers	883	33.20
Shunters and point operatives	884	33.20
Mechanical plant drivers and operatives (earth moving and civil engineering)	885	33.20
Crane drivers	886	32.81
Fork lift and mechanical truck drivers	887	32.81
Other transport machinery operatives n.e.c.	889	32.81
Washers, screeners and crushers in mines and quarries	890	14.95
Printing machine minders and assistants	891	27.73
Water and sewerage plant attendants	892	14.95
Electrical energy, boiler and related plant operatives and attendants	893	12.75
Oilers, greasers, lubricators	894	14.95
Mains and service pipe layers, pipe joiners	895	14.95
Construction and related operatives	896	12.75
Woodworking machine operatives	897	12.75
Mine (excluding coal) and quarry workers	898	14.95
Other plant and machine operatives n.e.c.	899	12.75
Farm workers	900	48.59
Agricultural machinery drivers and operatives	901	40.83
All other occupations in farming and related	902	33.72
Fishing and related workers	903	40.83
Forestry workers	904	33.72
Coal mine labourers	910	18.85
Labourers in foundries	911	18.85
Labourers in engineering and allied trades	912	18.85
Mates to metal/electrical and related fitters	913	18.85
Other labourers in making and processing industries n.e.c.	919	18.85
Mates to woodworking trades workers	920	18.85
Mates to building trades workers	921	18.85
Rail construction and maintenance workers	922	18.85
Road construction and maintenance workers	923	18.85
Paviors, kerb layers	924	18.85
Other building and civil engineering labourers n.e.c.	929	18.85
Stevedores, dockers	930	18.85
Goods porters	931	30.01
Slingers	932	27.22
Refuse and salvage collectors	933	27.22
Driver's mates	934	27.22
Postal workers, mail sorters	940	34.57
Messengers, couriers	941	37.20
Hospital porters	950	31.18
Hotel porters	951	31.18
Kitchen porters, hands	952	30.01
Counterhands, catering assistants	953	30.96
Shelf fillers	954	32.73
Lift and car park attendants	955	32.73
Window cleaners	956	31.18
Road sweepers	957	31.18
Cleaners, domestics	958	31.29
Other occupations in sales and services n.e.c.	959	38.18
All other labourers and related workers	990	18.85
All others in miscellaneous occupations n.e.c.	999	68.27

Appendix D

Additive approach (Main effects)	lnic jbhrs age degree fem minority z2icam if touse ==1
Multiplicative (Female interactions)	reg lnic jbhrs age degree fem minority z2icam z2femicam femdegree femage femhours femmin if touse ==1
Categorical Approach	reg lnic jbhrs age degree fem minority z2icam z2femicam z2icamdegree z2icamage z2icamhours z2icammin femdegree femage femhours femmin mindegree minage minhours degreeage degreehours agehours if touse ==1
Intersectionality only (gender specific measures) – recommended by McCall 2005	reg lnic jbhrs age degree minority z2ffcamsis minjbcssc agejbcssc degreejbcssc hoursjbcssc if sex==2 & touse ==1
Random intercepts model (occupation at level 2)	mixed lnic jbhrs fem minority degree age if touse ==1 ||jbsoc:,
Random slopes model (occupation at level 2)	mixed lnic jbhrs fem minority degree age if touse ==1 ||jbsoc:fem degree
Creating strata variable	egen strata = group(jbrgsc fem minority degree age4)
Random intercepts model (strata at level 2) – recommended by Evans et al. 2018	mixed lnic i.jbrgsc fem minority degree i.age4 if touse ==1||strata:
Random intercepts model with interactions (strata at level 2) – recommended by Bell et al. 2019	mixed lnic age degree fem minority i.jbrgsc##fem i.jbrgsc##minority i.jbrgsc##degree jbrgsc#c.age femdegree femage femmin mindegree minage degreeage if touse ==1||strata:,

Appendix E

```
******traditional
capture drop tradicam
gen tradicam =icam
replace tradicam= s_icam if  missing(icam )
replace tradicam =s_icam if sex==2 & !missing(s_icam)

******dominance
*fulltime
tab1 wrkst spwrkst
capture drop spdom
gen spdom =0
replace spdom =1 if spwrkst==1 & wrkst>1

*selfemp
capture drop selfemp
gen selfemp = wrktyp
recode selfemp 1=0 2=0 3=0 4=1 5=0 6=0
capture drop s_selfemp
gen s_selfemp = spwrktyp
recode s_selfemp 1=0 2=0 3=0 4=1 5=0 6=0
tab selfemp s_selfemp
replace spdom =1 if  s_selfemp ==1 & selfemp==0

 * non-manual respondent
capture drop manual
gen manual =0
replace manual =1 if egp6 == 4
replace manual =1 if egp6 == 5
tab manual egp6
* non-manual spouse
capture drop s_manual
gen s_manual =0
replace s_manual =1 if s_egp6 == 4
replace s_manual =1 if s_egp6 == 5
tab s_manual s_egp6

replace spdom =1 if s_manual==0 & manual ==1
capture drop domicam
gen domicam =icam
replace domicam= s_icam if  missing(icam )
replace domicam =s_icam if spdom ==1 & !missing(s_icam )

******higher
capture drop highicam
gen highicam =icam
replace highicam= s_icam if  missing(icam )
replace highicam =s_icam if s_icam > icam & !missing(s_icam )

******combined - mean
capture drop meanicam
gen meanicam =icam
replace meanicam= s_icam if  missing(icam )
replace meanicam = (icam + s_icam) /2 if !missing(s_icam )& !missing(icam )

******combined- add
capture drop addicam
gen addicam =icam
replace addicam= s_icam if  missing(icam )
replace addicam = icam + s_icam if !missing(s_icam )& !missing(icam )
```

Appendix F

```
egen strata = group(fem icam4 age3 education3 married)
egen strata _c = group(strata COUNTRY)
*Multi level model  - level 2 Country  - null
mixed  z2factor1  if touse ==1  ||COUNTRY:,
est store null
estat icc

* Multi level model  - level 2 Country- main effects
mixed    z2factor1  icam4  fem  married education3 age3  if touse ==1||COUNTRY:,
est store main
estat icc

*Multi level model  - level 2 strata - null
mixed  z2factor1  if touse ==1  || strata:,
est store null1
estat icc

*Multi level model  - level 2 strata - main effects
mixed    z2factor1  icam4  fem  married education3 age3  if touse ==1|| strata:,
est store main1
estat icc

* Multi level model  - Cross classified - null
mixed  z2factor1  if touse ==1  || _all:R.COUNTRY, ||  strata:
est store null2

* Multi level model  - Cross classified  - main effects
mixed    z2factor1  icam4  fem  married education3 age3  if touse ==1  || _all:R.COUNTRY, ||  strata:
est store main2

* Multi level model  - Cross classified interaction - null
mixed  z2factor1  if touse ==1  || _all:R.COUNTRY, ||  strata: || strata _c:
est store null3

* Multi level model  - Cross classified interaction -  main effects
mixed    z2factor1  icam4  fem  married education3 age3  if touse ==1  || _all:R.COUNTRY, ||  strata: || strata _c:
est store main3

*******************************************************************************
*for reference inappropriate three level hierarchical model would be
*mixed  z2factor1  if touse ==1  || COUNTRY, ||  strata:
```