LIVES WORKING PAPER 2017 / 61

IMPROVING OUR UNDERSTANDING OF EMPLOYER DECISION-MAKING THANKS TO FACTORIAL SURVEY ANALYSIS

PATRICK McDONALD

RESEARCH PAPER

http://dx.doi.org/10.12682/lives.2296-1658.2017.61

ISSN 2296-1658

The National Centres of Competence in Research (NCCR) are a research instrument of the Swiss National Science Foundation

Author

McDonald, P.

Abstract

Factorial Survey Analysis (FSA) is an analytical tool that presents respondents with fictional situations ("vignettes") to be rated or judged. In this paper we study the uses of FSA in labour market sociology, with a particular focus on employer-based surveys, and what they can teach us about hiring decisions. FSA is a useful tool in this context as it targets employers directly, rather than relying on inference from labour-force surveys, or recollection of previous decision-making. Additionally, it makes causal relationships more easily identifiable. This review article seeks to pinpoint the contributions FSA has made to the field, and shows that FSA is useful in gleaning new and important information on previously hard-to-reach issues. Particularly, FSA can be used to analyse employers' use of signals and indices, and their decision-making behaviours in general. Finally, the paper proposes some further applications for FSA going forward, especially in terms of understanding recruitment discrimination

Keywords

Factorial survey analysis | employer surveys | recruitment | employer behaviour | discrimination

Author's affiliation

LINES/LIVES, Institute of Social Sciences, University of Lausanne

Correspondence to

Patrick.McDonald@unil.ch

1. Introduction

The tools and strategies employers use in their decision-making are of prime interest for labour market sociology. However, the bulk of research is on the supply, or employee, side of the labour market[1]. This is partly due to convenience – labour force surveys in particular are widespread and provide easy data access to researchers. Yet while this may provide some insight into the forces at work in the labour market, it is an incomplete picture. Labour force surveys rely on the answers and perceptions of employees and the unemployed, and require inferences and assumption on the part of the researcher to discern the employer's behaviour. This asymmetry is all the more problematic since in the employer-employee relationship, it is the employer who wields most of the decisional power, the ability to "hire and fire" being of utmost importance in any consideration of labour market behaviours (Behrenz 2001).

The informational asymmetry has begun to be corrected in recent years, with a stronger focus on employers in the analysis of labour-market dynamics. Employer surveys take various forms – from traditional surveys (e.g. Taylor and Walker 1994; Breen et al. 1995), through to audit studies where fictitious applications are sent for jobs (e.g. Protsch and Solga 2015; Pager et al. 2009), content analysis of job advertisements (e.g. Sacchi et al. 2016; Bennett 2002), and qualitative interviews (e.g. Bonoli and Hinrichs 2012; Larsen and Vesan 2011). Additionally, a strand of single-firm studies has developed in the past 20-30 years, whereby researchers are granted extensive access to a company's internal data and archives (e.g. Fernandez and Weinberg 1997; Petersen, Saporta and Seidel 2000).

While these techniques succeed in addressing the lack of employer study in labour market questions, they each have their drawbacks. Surveys and interviews are subject to social desirability bias (Pager and Quillian 2005), audit studies require significant time and resources which increase considerably with the depth of analysis sought (Pager et al. 2009; Protsch and Solga 2015), content analyses can only analyse information an employer chooses to make public, while firm-based studies rely on the goodwill of companies and provide information limited to a single (and possibly not very representative) firm (Fernandez and Weinberg 1997). These drawbacks mean that research on employers continues to be far less common than on employees.

This paper focuses on a different technique used to study employers' preferences and choices, factorial survey analysis (FSA). This type of analysis uses tailor-made vignettes, presented to targeted respondents, to create data for analysis. FSA is not new – the idea has its origins in Peter Rossi's 1951 dissertation, and was codified in Rossi and Nock (1984), who propose a survey technique that presents respondents fictional circumstances to rate. Since the 1980s it has slowly been taken up by social scientists, though largely in the fields of crime and deviance (Wallander 2009), and marketing (Green and Srinivasan 1990). Since the early 2000s, however, labour market research has used the technique with increasing frequency. FSA requires respondents to make judgements based on fictional situations presented to them. This means employers can be asked about their decision-making processes without relying on memory recall, or running the risk of divulging confidential information. Researchers are able to focus on specific factors and to manipulate different factors they wish to test, all the while controlling for other confounding influences. If well designed, they can diminish the probability of social desirability bias, and require no more effort than a standard survey. As a quasi-experimental technique, it has the benefit of making causal inference more accessible, as it avoids unobserved heterogeneity between individuals.

This review article will show what we have learned through FSA-based employer surveys. FSA is especially well-suited to the analysis of signals because different signals and indices, such as education, race and nationality, gender and age profiles, can be varied and randomised. Drawing on the existing literature, we will argue that its application in labour market sociology allows us to glean new information about recruitment practices and employer decision-making, thus going some way to correcting the lack of information from the employer side of the labour market equation. FSA is a credible statistical technique that provides robust results, and can be combined with other analytical techniques to form a multi-dimensional picture of labour-market characteristics and employer-employee dynamics more broadly, and employers' recruitment behaviour specifically.

This article is structured as follows. First, we briefly outline the technical and theoretical background of FSA and the advantages to its use, and outline some criticisms. We then review the use of FSA to survey employers in the main areas of its uptake: older workers, ethnic/national discrimination, and education. Finally, the conclusion provides a summary and proposes future directions for the use of FSA in labour market sociology.

2. Factorial Survey Analysis – background and advantages

Factorial survey analysis examines the basis and influences of social judgements by posing a series of *vignettes* to respondents, and asking them to make a judgement based on the information provided. Vignettes are made up of *dimensions* (variables), the characteristics of the vignette that vary in their *levels* (values). Examples include vignettes based on the housing market, where the neighbourhood, price, and age of the house are the varying dimensions, or on punishment for criminals, where the crime, circumstances, and mental state of the criminal may be the varying dimensions (Auspurg and Hinz 2015). Such surveys are used either to elicit a *normative judgement* – where a respondent is asked to judge how they think something *should be* (choosing a punishment, rating the fairness of a situation) – or a *positive belief* – how they think something *is* (reflect on how they would behave in a given situation, estimate an outcome) (Wallander 2009, 509).

Similar techniques are popular across a broad range of social, economic, and commercial research. FSA is closely related to conjoint analysis, or discrete choice experiments, a technique frequently used in marketing and recently picked up by political scientists, where consumers (or voters) are shown different products with similar features and asked to choose between them (Green et al. 2001; Ryan et al. 2001). Despite their different names and theoretical backgrounds, these techniques are practically the same (Hainmueller et al. 2014). Together with other lesser-used studies such as Paper People Studies and Policy Capturing Studies, they form what is termed "Experimental Vignette Methodology" (EVM) (Aguinis and Bradley 2014).

One pitfall of statistical analysis of survey data is the difficulty of disentangling causal relationships. While observational data can detect correlation, it is difficult to pinpoint causality without using sophisticated statistical designs (Morgan and Winship 1999). As an alternative, Morgan and Winship suggest a return to "experimental thinking", with the quasi-experimental design, overlooked by sociology until recently, one important technique. Quasi-experimental design differs from pure experiments in that they are not fully controlled and randomised by the researcher (Morgan and Winship 2007, 9-11). However, their circumstances can to a degree be manipulated by the researcher, meaning that causal relationships can be more readily identified. Quasi-experimental designs have found increasing favour with social and economic researchers since the early 1980s, when criticism

of empirical work in economics began gaining traction (Angrist and Pischke 2010). This has led to increasing use of research design incorporating principles from randomised experiments, as well as better justification of methods used in analysis and "better and more data" – using more observations, collecting data more frequently and employing a diverse range of methods (Angrist and Pischke 2010, 11-12). FSA addresses the latter criterion, and can help address the two former, though it requires several conditions for success: The quasi-experimental nature does mean that more thought must be given to their design, something which is unnecessary in a simple ex post observational study. In FSAs, for example, care must be taken to ensure dimension combinations are not illogical, meaning nonsensical vignettes (for example, a doctor with only high-school education) must be weeded out before randomising vignettes.

FSA's format has a number of advantages in comparison to other analysis techniques such as surveys and administrative data. First, it plugs an important knowledge gap by analysing behaviour directly: It questions employers in a way that more closely emulates their real-life decision-making, and less easily manipulated by its respondents, than survey analysis – the go-to for most research in the social sciences. Additionally, decision-making is a multidimensional process, where many different factors come simultaneously into play. It is therefore useful to present them all at once, in a manner that makes sense to respondents, to ascertain the importance of certain vignettes rather than rely on self-assessment.

We are interested specifically in the benefits of using FSA in labour market sociology, and especially as a way of measuring employer decision-making in recruitment processes. Here, it has a number of advantages: It provides a good simulation of the hiring process and reflects the multidimensional nature of recruitment decisions. Furthermore, FSA is also able to go into greater detail on questions of employer behaviour than its alternatives. For example, audit studies[2] have the advantage of analysing real hiring processes, but they give up detail to gain this realism: the most that can be hoped from an audit study is to know if certain profiles would be invited to interview. FSA, on the other hand, can ask employers questions about salary, company fit, ease to train, amongst others. Such questions add necessary depth to our knowledge of employers' practices and reinforce the utility of FSA as an analytical tool for decision-making processes.

3. Factorial Survey Analysis – criticism

FSA can be criticised in a number of ways. Commonly, vignette studies are dismissed as not reflecting real life, in terms of the urgency of decision-making, the make-up of the sample, or the design of the vignettes. Responding to a series of vignettes may also lead to fatigue and thus respondent-induced error. A number of significant concerns regarding vignettes' real-life relevance come out of the work of Pager and Quillian (2005), who use a follow-up telephone interview to an audit study to show that employers' responses in surveys do not always reflect their real-life behaviour. They pinpoint three key weak points of survey-based research, in which FSA can be included: (i.) social desirability bias, (ii.) abstract situations and external validity, and (iii.) priming intensity.

First, social desirability bias can be a crippling challenge for any survey-based research project where subjects are at least partially aware of their participation. Respondents are likely to downplay any bias against women, minorities, and/or people with a criminal record, when answering a vignette survey as opposed to an actual recruitment process (Pager and Quillian 2005, 364-65). Vignettes could thus underestimate the actual effects of discrimination in reality.

Second, a critical issue that arises with data from any simulated rather than real situation is the internal and external validity of the results[3]. Though vignettes are designed to closely resemble realistic scenarios, they cannot do so perfectly and risk being useless without thoughtful interpretation. A profile accepted in a vignette survey may be rejected in real life. This may be partly because of differing circumstances in a specific hiring situation and the availability of more detailed information in reality, but it may also be due to the fact that in an FSA, there is no pressure or urgency to hire, and therefore respondents can accept profiles more easily knowing there will be no consequences. In this sense, one of FSA's strengths – that it is carried out in a controlled environment so effects can be easily pinpointed – becomes one of its weaknesses. This stands in contrast with both audit studies, which do reflect reality but are limited in the results they collect and require a large amount of resources, and surveys, which are simple and theoretically a retelling of reality, but possibly fraught with social desirability bias – which is not completely mitigated by FSA as respondents may well quickly grasp the purpose of the survey. One way to avoid these

problems is to combine a factorial analysis with other data sources – labour force surveys or audit studies, for example – and compare the results.

Third, priming intensity refers to the detail of description of the subject or situation in question. Just as meeting someone in real life and reading their description on paper are two different things, so can the type of description vary significantly. A vague CV leaving a respondent to "fill in the gaps" may lead to an entirely different result than a long and detailed résumé complete with photo. Similarly, the type of language or photo used may seek to portray a certain profile in a flattering or unflattering light.

Various other design problems may beset factorial surveys. Poor design may lead to the presentation of illogical situations. Given that a vignette combines several different dimensions, it is possible that without proper caution, illogical profiles may appear in a survey – for example, a doctor earning only $300 per month, or a 20-year old looking to enter the labour market who has been unemployed for the last five years. Such illogical cases may lead to respondent disengagement, which in turn can result in unreliable data. Avoiding such issues requires extra reflection on the part of the research designer to create a vignette universe that is realistic and captures all necessary information.

Similarly, respondent fatigue due to survey length and complexity of the survey may cause problems if not properly addressed. Having too many vignettes to analyse and/or too many dimensions per vignette can result in cognitive overload, and therefore inconsistent evaluations. Sauer et al. (2011) estimate the limit to be at a maximum of around 12 vignettes per respondent, each with at most 30 dimensions (p.98).

While these criticisms deserve acknowledgement, Pager and Quillian argue that they are not enough to discredit survey data altogether, as we can nonetheless glean important information about employers' decision-making processes (Pager and Quillian 2005, 372). In this way, FSA can be legitimately used as a way of establishing thresholds or minimum requirements of employers, but should not be seen as exhaustive or predictive. Nevertheless, the information we glean even in these general terms can help us better understand recruitment processes.

4. Applications in labour market sociology

We undertook an extensive database research to find a representative cross-section of papers using FSA, with employers as the research target. Though FSA has been used across a number of issues relating to the labour market, several key areas stand out: older workers, discrimination based on nationality, and education. These three topics form the basis of our literature review. FSA's use has accelerated in the last few years. Prior to 2010, 10 papers using FSA in the field of labour-market studies had been published. Between 2010 and 2016, close to 30 have appeared. It is also obvious that there is a marked cluster of FSA users. Dutch-based FSA studies account for 14 papers, with US-based studies the next highest at six. This is partly explained by the fact that the Dutch LISS Panel (Longitudinal Internet Studies for the Social sciences) includes an FSA component, though only three papers use this as the basis for their research. The German PASS Panel (Labour Market and Social Security survey) also includes an FSA component which is used by three papers, and the Understanding Society survey in Britain includes an FSA section for their 1500-member Innovation Panel.

17 of the papers use a sample of professionals – HR managers or company executives or owners. These respondents are either drawn from the panel studies outlined above or specifically assembled for the research in question. A further two studies use samples of professionals and business students. From these 19 papers, we focus on 12 that specifically cover recruitment and hiring processes. The appendix provides a brief summary of all the studies found (Table A.1), as well as a more detailed overview of the 12 reviewed here (Table A.2).

We discuss the papers in terms of their main topics: Hiring and firing of older workers (five papers), migrant discrimination (two papers) and education and skills (five papers). These papers underline that FSA is particularly useful in analysing the effect of signals on employers. Signalling theory has its basis in the work of Spence (1973), who argues that due to informational asymmetry, important characteristics of a job applicant – such as their productivity – cannot be observed directly. Recruiters must instead infer these characteristics from what they can observe. Spence divides these observable characteristics into *signals*, or characteristics that can be changed, and *indices*, or those that cannot (Spence 1973, 357). Signalling theory has since become one of the linchpins of studying recruitment. Education,

in particular, is widely accepted to signal quality in a candidate (Connelly et al. 2011), but empirical evidence has suggested that other characteristics are often used as signals by employers – names can signal ethnicity, participating in sporting activities can signal fitness and be positive for jobs requiring manual labour, and participation in Active Labour Market Programmes can either signal diligence and willingness to learn, or discrepancies in necessary knowledge (Liechti et al. 2016). How employers react to these signals and indices in either a CV or a job interview is an essential knowledge in the recruitment process. FSA can be effectively employed to analyse signals and indices, by including the signals of interest in as levels in the vignettes.

4.1 Older workers

Understanding the effects and consequences of an ageing workforce is critical to responding to demographic changes. Radl (2012) argues that although there is a policy consensus on encouraging older workers to remain in the workforce in Europe, this has yet to be translated to increasing employment rates for older people. This can partly be put down to continuing discrimination towards older workers amongst employers, which Jyrkinen and McKie (2012) suggest is especially pervasive for female workers, who accumulate less economic capital across their working lives than men. Nine papers have used FSA to study this issue, five of which are published in peer-reviewed journals and will be discussed here. All were written by Dutch researchers and have considerable authorship overlap. Retirement issues, and hiring of older employers, are a recurring theme in these papers. Henkens et al. (2009) use FSA to evaluate the circumstances in which an older worker will be offered early retirement or encouraged to continue working. Running a small-scale survey of 22 middle managers in Dutch government departments, 4 managers from large Dutch multinationals and 25 business students, they construct vignettes with dimensions regarding the position the older employee holds, exogenous pressures on the organisation, and personal characteristics of the employee: knowledge, experience, health, and attitudes to retirement (Henkens et al. 2009, 1586-7). They find that a worker's positive attitude and good health are important in keeping older workers on, with looking forward to retirement a strong signal for offering early retirement. (Henkens et al. 2009, 1578).

Karpinska et al. (2011) tackle the subject from a different angle. Again with a small sample of managers from seven different economic sectors (20) and business students (17),

they explore the circumstances in which an early-retired person may be hired, finding that the business cycle, especially in terms of labour-force shortages, is key to managers when considering a rehire of a retired person (Karpinska et al. 2011, 583). Muldens et al. (2014) use the LISS Panel to implement an FSA survey among 443 managers. They examine the inclination of managers to rehire workers older than the mandatory retirement age, finding that willingness to work for a lower wage is the most important aspect, though managers are in general not willing to employ these workers (Muldens et al. 2014, 428-9). A final paper on the same subject, from Karpinska et al. (2013), reports a different result. Through an FSA survey of 238 managers from the LISS Panel, they find that keeping workers beyond the retirement age is unpopular amongst employers. However, keeping workers on may be considered if the employer holds older workers generally in high regard, if there are labour market shortages, or if the worker in question is perceived as being diligent and in good health (Karpinska et al 2013, 1333).

Training opportunities for older workers is the subject of another paper by Karpinska et al. (2015). Again through the LISS Panel, they conduct a vignette study of 153 managers. Vignettes containing dimensions of financial situation of the organisation, age, sex, health, full or part-time work, work performance, and work attitude (Karpinska et al. 2015, 108). They find that training opportunities are generally not afforded to older workers, but that their possibilities decrease even further with age or if the worker is in poor health. On the other hand, a perceived positive attitude of an older worker increases the likelihood of further training being offered (Karpinska et al. 2015, 108-110).

The range of issues surrounding older workers studied by FSA is broad and the context (Dutch) is narrow. Furthermore, all of the papers suffer from a lack of depth in their results: sector-level differences or differences based on the size of the firm would be interesting to know but are left out of the analysis. This may be due to sample sizes too small to disaggregate into different sectors, or the fact that the LISS survey does not contain adequate information on this topic. However, a number of interesting results can be seen. First, an older employee's health and work attitudes are key in considerations of retirement, employment, and training. Good health and a positive attitude towards remaining in work are seen as positive signals. Conversely, bad health and a poor attitude towards working are stronger negative signals. Second, a slack or tight labour market (abundance or shortage of

labour supply) may influence employers' decisions about older workers. A tight labour market may mean deciding to defer the retirement of some older workers.

4.2 Migrant discrimination

The labour market experiences of migrants are a key focus for labour market sociology. The broad range of issues covered include the ethnic/migrant penalty (e.g. Ebner and Helbling 2016), skill transferability (Shan 2013), and employment precariousness (e.g. Potter and Hamilton 2014). FSA is beginning to be taken up as a means of analysing these areas, but has thus far been limited to discrimination and transferability of qualifications. A study of 242 Dutch managers by van Beek et al. (1997), seeks to determine how much experience, sex, and nationality matter in hiring. In a sobering result for non-natives and women, the paper shows that employers are willing to give up productivity – captured by experience and education – for a young, native, male worker, especially in a position with customer interface (van Beek et al. 1997, 314).

In Germany, Damelang and Abraham (2016) focus on foreign qualifications and their transferability from the country of origin to Germany. They survey 168 German CEOs and firm owners, with vignette dimensions of nationality, vocational certificate, work experience, age, last employer, type of position, and number of applications. Their results are better for migrants than those of van Beek et al., showing that although qualified Germans are preferred, applicants with a foreign certificate generally do well in recruitments – especially if they are from Western Europe. The real losers, according to the study, are unqualified workers, especially those from Eastern Europe (Damelang and Abraham 2016, 102-3).

In terms of migrant discrimination, then, FSA produces mixed results. On one hand, van Beek and colleagues find that an applicant's nationality overrides their other attributes. On the other, Damelang and Abraham show that qualifications are usually more important. Changing attitudes in the 15 years between publication of these papers may explain this disparity, as may differences between the Dutch and German labour markets. Further FSA in this field could provide more information on employers' perceptions of race and nationality, especially given FSA's ability to reduce social desirability bias. As with the research on the ageing workforce, it would be interesting to see results disaggregated to the sector level, or

more interest paid to the characteristics of respondents rather than a focus purely on the vignettes.

4.3 Education and skills

The way in which employers assess the education of job applicants had not been studied up until a number of Dutch-based studies utilised FSA to investigate its use in employers' decision-making (de Wolf and van der Velden 2001; di Stasio 2014; Humburg and van der Velden 2014; di Stasio and van de Werfhorst 2016). Studying education through FSA is beneficial because it allows us to understand the way in which employers utilise education as a signal.

Education as a signal for recruiters is studied by di Stasio (2014) in a survey of 59 Italian employers in the IT sector. Using dimensions of gender, work experience, an in-firm internship, field of study, grades, study duration, and extra curricular activities, she finds that in the Italian context, where education and grading systems are standardised but the links between education institutions and the labour market are weak, good grades are the strongest signal of employability, while interning matters little (di Stasio 2014, 806). The effects of the institutional context on education credentials are further studied by di Stasio and van de Werfhorst (2016), this time surveying 38 employers in the Netherlands and 34 in England, again with a focus on the IT sector and vignettes containing similar dimensions as in di Stasio (2014). They conclude that the type of educational institutions prevalent in the country have an important effect on the use of education as a signal. Amongst Dutch employers, where there is a stronger vocational education tradition than in Britain, a close match between the field of study or vocational training completed and the vacant occupation is considered important when considering applicants. British employers, on the other hand, treat education as a signal of trainability: What is studied is less important than grades, with academic performance of high importance to the English employers surveyed (di Stasio and van de Werfhorst 2016, 22).

Another strand of educational signalling explored by FSA is the labour market utility of qualifications immediately following graduation. With unemployment becoming a greater issue amongst young workers worldwide, this topic is attracting increasing interest (James et al. 2013) Humburg and van der Velden (2014) point out that graduate job applications are

"the first time [graduates] get reliable information on the labour market value of their credentials" (p.1). As with education in general, it is the employer who acts as the gatekeeper for the validity of educational qualifications, and as such it makes sense to ask him or her directly, rather than infer the value of qualifications indirectly. Humburg and van der Velden's study encompasses nine European countries, and in an unusual design, was left open in each country until 100 employers had completed the survey. Employers from the industries that hire the most graduates (excluding health and education) were invited to complete the survey: Electro-technology, engineering, financial services, ICT, legal services, media and communication, and policy and organisation. Employers had to have hired graduates within the past five years. They find some cross-country differences – university prestige, for example, seems only to matter in Britain. Overall, however, they find that occupation-specific skills and communication skills bear by far the most importance in being hired. That being said, there was a large amount of variance in the responses, suggesting that there is no perfect graduate profile, but that desired characteristics in a recent graduate are a highly individual preferences (Humburg and van der Velden 2014, 15-16).

Differing levels of education affect the skills of job applicants, but the skills of recent graduates are difficult to quantify. The skills valued by employers seeking recent social science graduates are the subject of a paper by de Wolf and van der Velden (2001), who survey 27 Dutch employers of social science graduates by presenting them with candidates for three different types of jobs: management trainee, policymaker, or scientific researcher. The paper finds that different competences matter for different profiles – specific academic skills are valued for researchers, while soft skills are important for management trainees. Policymakers are best served by a mix of both. Other personal, non-academic skills such as communication and personality type are important for the job of a manager but less so for the other two occupations (de Wolf and van der Velden 2001, 327).

Other studies analyse the interplay of social capital with education, and the effect of these two factors on job opportunities. Di Stasio and Gërxhani (2015) use FSA to study the role and importance of referrals from social contacts in recruitment. Their survey centres on the IT industry in England, with 34 HR professionals taking part. This approach allows them to, on the one hand, see the role of referrals in conjunction with other signals, as well as the difference between formal (work-based) and informal referrals. They are also able to

ascertain the effects of referrals on more than just the likelihood of an interview – their analysis covers both hiring and trainability. This demonstrates that FSA can be deployed in analysing employers' decisions relating to informal recruitment, which audit studies cannot capture. They find that while employers value a referral from an informal contact, the fact of being referred is not a bonus per se – it is the additional information provided by a referral that is valued most by employers. This, however, only holds for highly-educated job applicants – Those with less education are in fact penalised for being referred (di Stasio and Gërxhani 2015, 103-104).

5. Future applications and conclusion

Clearly, FSA's usage in employer-based settings is on the increase. However, it is also apparent that its use remains concentrated in a small number of areas and a small number of regions. Furthermore, in a number of instances, the studies use only small sample sizes. This produces interesting illustrative data but weakens external validity. Using FSA with larger sample sizes would be a good way forward and no doubt provide interesting and useful new observations. Furthermore, it often seems that by incorporating FSA into their analysis, researchers are liable to disregard the characteristics of the respondents. Information on the sector of the employer surveyed, as well as their own personal characteristics (age, sex, education history and more) is highly relevant and would add depth to the analysis.

FSA has clear advantages that encourage its usage in the analysis of signals and indices. This could be taken further by integrating further characteristics considered as signals into factorial surveys. Characteristics such as marital status and children – which could act as signals of human capital and productivity – are sometimes added as control variables or descriptive statistics, but have not been a direct focus of FSA. Outcomes for women in the workforce, and the effects of the choice to have children, are becoming more important as women's tertiary graduation rates begin to outpace men's, and women increasingly remain in the workforce once they have children (OECD 2015). FSA can integrate these characteristics into vignettes alongside other important signals, like education, experience, and referrals, adding to the literature on a fast changing labour market, the nature of which affects women and young mothers especially (Correll et al. 2007).

Outside of outcomes for older workers, FSA has not been broadly used for indices, or those characteristics that cannot be changed. To date the study of indices has been largely left to audit studies, or through inference from survey data. This in particular is problematic, as many indices – age, sex, ethnicity or race – are highly prone to social desirability bias. Recent audit studies have focused on topics such as race and ethnicity in low-skilled occupations in New York City (eg. Pager et al. 2009), and on the signalling effect of cognitive and non-cognitive skills (eg. Protsch and Solga 2015). However, these analyses can go no further than ascertaining if their profiles were adequate enough to be called for interview. Further, they cannot control for respondent characteristics beyond what is publicly known, unless they are followed up with a survey or interview. This leaves an opening for FSA, which could provide more information on these indices.

There are further signals used by employers that would benefit from further probing by FSA. Indeed, FSA has shown its utility in questions of age, especially related to retired workers, but also indirectly with younger workers. Older workers face a different set of issues, including the reticence of employers to invest in workers with fewer years left before retirement, concerns surrounding their trainability, and higher wages compared to younger workers, which could be [4]probed with FSA. Of course, social desirability remains a concern whenever topics such as age and race are raised, but when formulated correctly FSA vignettes may provide denser, more reliable information to complement what is currently a paucity of sociological analysis.

Understanding the recruitment process is vital to understanding the labour market in general – and we therefore need to know more about recruiters' decisions. Factorial survey analysis plugs an important gap by offering a new perspective on many of the issues accounted in labour market and vulnerability analysis. FSAs can go directly to the recruiter, the gatekeeper of the labour market, and through their vignette design are able to present complex profiles with ease, and ask more profound questions than surveys or audit studies. They require the same robustness checks as any quantitative analysis, and may need to be combined with other, more common forms of quantitative and qualitative analysis to lead to firm conclusions, but they provide a new perspective that can be very useful in pinpointing the factors and influences that play a part in labour market outcomes.

6. Notes

[1] There are notable exceptions to this, particularly in the fields of organisational sociology, management studies, and behavioural economics (see for example Holzer et al. 2006, Taylor and Walker 1994, Taylor 2006).

[2]Audit studies are carried out by sending fictional applications for real jobs. They vary 1-2 dimensions, typically race or gender, and analyse whether this artificial variation leads to lower or higher overall recall to interviews. This is often supplanted this with qualitative data on a selection of the firms and organisations targeted (see Pager and Quillian 2009, Protsch and Solga 2015).

[3] McDermott (2011) defines internal validity as "the extent to which an experimenter can be confident that his or her findings result from experimental manipulation" (p. 28), and external validity as "the generalizability of findings from a study, or the extent to which conclusions can be applied across different populations or situations" (p. 34).

7. References

Aguinis, H., Bradley, K. (2014) Best practice recommendations for designing and implementing experimental vignette methodology studies. *Organizational Research Methods* 17(4): 351–371.

Alberti, G. (2014) Mobility strategies, "mobility differentials" and "transnational exit": the experiences of precarious migrants in London's hospitality jobs. *Work, Employment & Society* 28(6): 865–881.

Angrist, J., Pischke, J.-S. (2010) The credibility revolution in empricial economics: How better research design is taking the con out of econometrics. *Journal of Economic Perspectives* 24(2): 3–30.

Angrist, J., Pischke, J.-S. (2009) *Mostly Harmless Economics: An Empricist's Companion*.

Princeton: Princeton University Press.

Auspurg, K., Hinz, T. (2015) *Factorial Survey Experiments, Quantitative Applications in the Social Sciences*. Los Angeles: Sage.

Behrenz, L. (2001) Who gets the job and why? An explorative study of employers' recruitment behaviour. *Journal of Applied Economics* IV(2): 255–278.

Bennett, R. (2002) Employers' demands for personal transferable skills in graduates: a content analysis of 1000 job advertisements and an associated empirical study. *Journal of Vocational Education & Training* 54(4): 457–476.

Bonoli, G., Hinrichs, K. (2012) Statistical discrimination and employers' recruitment: Practices for low-skilled workers. *European Societies* 14(3): 338–361.

Breen, R., Hannan, D., O'Leary, R. (1995) Returns to education: Taking account of employers' perceptions and use of educational credentials. *European Sociological Review* 11(1): 59–73.

Brynin, M., Guveli, A. (2012) Understanding the ethnic pay gap in Britain. *Work, Employment & Society* 26(4): 574–587.

Budig, M., England, P. (2001). The wage penalty for motherhood. *American Sociological Review* 66(2): 204-225.

Connelly, B., Certo, S., Ireland, R., Reutzel, C. (2011) Signaling Theory: A Review and Assessment. *Journal of Management* 37(1): 39–67.

Correll, S., Benard, S., Paik, I. (2007). Getting a job: Is there a motherhood penalty? *American Journal of Sociology* 112(5): 1297-1338.

Damelang, A., Abraham, M. (2016) You can take some of it with you! A vignette study on the acceptance of foreign vocational certificates and ethnic inequality in the German labour market. *Zeitschrift für Soziologie* 45(2): 91–106.

de Wolf, I., van der Velden, R. (2001) Selection processes for three types of academic jobs: An experiment among Dutch employers of social sciences graduates. *European Sociological Review* 17(3): 317–330.

di Stasio, V. (2014) Education as a signal of trainability: Results from a vignette study with Italian employers. *European Sociological Review* 30(4): 796–809.

di Stasio, V., Gërxhani, K. (2015). Employers' social contacts and their hiring behaviour in a factorial survey. *Social Science Research* 51: 93–107.

di Stasio, V., van de Werfhorst, H. (2016) Why does education matter to employers in different institutional contexts? A vignette study in England and the Netherlands. *Social Forces* 00: 1–30 (accessed 5 April 2016).

Ebner, C., Helbling, M. (2016) Social distance and wage inequalities for immigrants in Switzerland. *Work, Employment & Society* 30(3): 436–454.

Fernandez, R., Weinberg, N. (2012) Sifting and sorting: Personal contacts and hiring in a retail bank. *American Sociological Review* 62(6): 883–902.

Green, P., Krieger, A., Wind, Y. (2001). Thirty years of conjoint analysis: Reflections and prospects. *Interfaces* 31(3): S56–S73.

Green, P., Srinivasan, V. (1990) Conjoint analysis in marketing: New Developments with implications for research and practice. *Journal of Marketing* 54(4): 3–19.

Hainmueller, J., Hopkins, D., Yamamoto, T. (2014) Causal inference in conjoint analysis: Understanding multidimensional choices via stated preference experiments. *Political Analysis* 22: 1–30.

Henkens, K., van Solinge, H., Cozijnsen, R. (2009) Let go or retain? A comparative study of the attitudes of business students and managers about the retirement of older workers. *Journal of Applied Social Psychology* 39(7): 1562–1588.

Holzer, H., Raphael, S., Stoll, M. (2006) Employers in the Boom: How Did the Hiring of Less-Skilled Workers Change during the 1990s? *The Review of Economics and Statistics* 88(2): 283–299.

Humburg, M., van der Velden, R. (2012) Skills and the graduate recruitment process: Evidence from two discrete choice experiments. *ROA Research Memorandum* 2014/2: 1–30.

James, S., Warhurst, C., Tholen, G., Commander, J. (2013) What we know and what we need to know about graduate skills. *Work, Employment & Society* 27(6): 952–963.

Jyrkinen, M., McKie, L. (2012) Gender, age and ageism: Experiences of women managers in Finland and Scotland. *Work, Employment & Society* 26(1): 61–77.

Karpinska, K., Henkens, K., Schippers, J. (2013) Retention of older workers: Impact of managers' age norms and stereotypes. *European Sociological Review* 29(6): 1323–1335.

Karpinska, K., Henkens, K., Schippers, J. (2011) The recruitment of early retirees: A vignette study of the factors that affect managers' decisions. *Ageing and Society* 31(4): 570–589.

Karpinska, K., Henkens, K., Schippers, J., Wang, M. (2015) Training opportunities for older workers in the Netherlands: A vignette study. *Research in Social Stratification and Mobility* 41: 103–112.

Larsen, C., Vesan, P. (2012) Why public employment services always fail. Double-sided asymmetric information and the placement of low-skill workers in six European countries. *Public Administration* 90(2): 466–479.

Liechti, F., Fossati, F., Bonoli, G., Auer, D. (2016) The Signaling Value of Labor Market Programs. *NCCR On The Move Working Paper* #9.

McDermott, R. (2011) Internal and external validity. In: Druckman, J., Green, D., Kuklinski, J., Lupia, A. (Eds.), *Cambridge Handbook of Experimental Political Science*. Cambridge: Cambridge University Press, 27–40.

Mulders, J., van Dalen, H., Henkens, K., Schippers, J. (2014). How likely are employers to rehire older workers after mandatory retirement? A vignette study among managers. *De Economist* 162: 415–431.

OECD (2015). *Education at a glance 2015: OECD indicators*. Paris: OECD Publishing.

Pager, D., Quillian, L. (2005) Walking the talk? What employers say versus what they do. *American Sociological Review* 70(3): 355–380.

Pager, D., Western, B., Bonikowski, B. (2009) Discrimination in a low-wage labor market: A field experiment. *American Sociological Review* 74(5): 777–799.

Petersen, T., Saporta, I., Seidel, M.-D. (2000) Offering a job: Meritocracy and social networks. *American Journal of Sociology* 106(3): 763–816.

Potter, M., Hamilton, J. (2014) Picking on vulnerable migrants: Precarity and the mushroom industry in Northern Ireland. *Work, Employment & Society* 28(3): 390–406.

Protsch, P., Solga, H. (2015) How employers use signals of congnitive and noncognitive skills and labour market entry: Insights from field experiments. *European Sociological Review* 31(5): 521–532.

Radl, J. (2012) Too old to work, or too young to retire? The pervasiveness of age norms in Western Europe. *Work, Employment & Society* 26(5): 755–771.

Rafferty, A. (2012) Ethnic penalties in graduate level over-education, unemployment and wages: Evidence from Britain. *Work, Employment & Society* 26(6): 987–1006.

Rossi, P. (1951) *The Application of Latent Structure Analysis to the Study of Social Stratification*. PhD. Columbia University.

Rossi, P., Nock, S. (1982) *Measuring Social Judgements: The Factorial Survey Approach*. Los Angeles: Sage.

Ryan, M., Bate, A., Eastmond, C., Ludbrook, A. (2001) Use of discrete choice experiments to elicit preferences. *Quality in Health Care* 10(Suppl I): i55–i60.

Sacchi, S., Kriesi I., Buchmann, M. (2016). Occupational Mobility Chains and the Role of Job Opportunities for Upward, Lateral, and Downward Mobility in Switzerland. *Research in Stratification and Mobility* 44:10-21

Sauer, C., Auspurg, K., Hinz, T., Liebig, S. (2011) The application of factorial surveys in general population samples: The effects of respondent age and education on response times and response consistency. *Survey Research Methods* 5(3): 89–102.

Shan, H. (2013). Skill as a relational construct: hiring practices from the standpoint of Chinese immigrant engineers in Canada. *Work, Employment & Society* 27(6): 915–931.

Spence, M. (1973) Job market signaling. *The Quarterly Journal of Economics* 87(3): 355–374.

Taylor, B. (2005) Factorial Surveys: Using Vignettes to Study Professional Judgement. *British Journal of Social Work* 36(7): 1187–1207.

Taylor, P., Walker, A. (1994) The ageing workforce: Employers' attitudes towards older people. *Work, Employment & Society* 8(4): 569–591.

van Beek, K., Koopman, C., van Praag, B. (1997) Shopping at the labour market: A real tale of fiction. *European Economic Review* 41: 295–317.

Wallander, L. (2009) 25 years of factorial surveys in sociology: A review. *Social Science Research* 38: 505–520.

Winship, C., Morgan, S. (2007) *Counterfactuals and Causal Inference: Methods and Principles for Social Research.* Cambridge: Cambridge University Press.

Winship, C., Morgan, S. (1999) The estimation of causal effects from observational data. *Annual Review of Sociology* 25: 659–709.

8. Appendix

Table A.1: Summary of FSA papers in labour market sociology

Characteristics	Frequency
Discipline	
Sociology	19
Economics	5
Social Psychology	4
Business/Management	3
Other	2
Subjects	
Ageing	9
Discrimination (sex, nationality/race)	5
Education	4
Social networks/contacts/capital	4
Migration	2
Other	5
Respondents	
Professionals	17
General Population	9
Students	4
Student/Professional mix	2
Other	3
Year of publication	
Pre-1990	2
1990-1999	3
2000-2009	6
2010-present	23
Country of focus	
Netherlands	14
USA	6
UK	5
Germany	4
Italy	3
Belgium	2
Switzerland	2
Austria	1
Finland	1
Poland	1
Slovakia	1
Sweden	1
Type of publication	
Peer-reviewed paper	24
Working/discussion paper	4
PhD thesis	2
Conference proceeding	1

Table A.2: Overview of reviewed papers

Author(s)	Country/ Region	Sample	Subject	Key findings
Damelang & Abraham (2016)	Germany	168 employers drawn from CORIS (Cluster-Orientated Regional Information System) database	Transferability of migrants' qualifications	Native applicants preferred, but foreign qualifications are transferable, especially from neighbouring Western European countries.
de Wolf & van der Velden (2001)	Netherlands	27 employers drawn from pool of employers of Utrecht University social science graduates	Selection behaviour of employers for high-skilled jobs	Different skills (soft/specific/communication) are valued differently for different types of job (policy, research, managerial).
di Stasio (2014)	Italy	59 ICT industry employers/HR experts	Signalling value of education	Good grades are the strongest indicator of trainability. Interning at the firm unimportant in countries with weak ties between education and business.
di Stasio & van de Werfhorst (2016)	Netherlands /England	72 (38 in NL, 34 in England) recruiters and HR professionals in the IT industry	Value of, and response to, education in different institutional contexts	Stronger vocational traditions lead to more emphasis on what is studied. Other systems see education as a signal of further trainability and care more about grades.
Di Stasio & Gërxhani (2015)	England	34 HR professionals in the ICT industry	Role and importance of social contacts in hiring decisions	Strong link between referral and education – low-skilled workers are punished for a referral, high-skilled workers rewarded.
Henkens et al. (2009)	Netherlands	26 middle managers from Dutch multinationals/government, 25 business students	Attitudes towards retirement of older workers	An older worker's health, attitude, and flexibility signal to employer the benefits of keeping them on.
Humburg & van der Velden (2014)	Europe	903 employers in Czech Republic, France, Germany, Italy, Poland, Spain, Sweden, The Netherlands, UK (ca. 100 per country)	Utility of qualifications after graduation	Occupation-specific skills and interpersonal skills are most important factors in hiring decisions. University prestige/reputation an important factor in Britain but not elsewhere.
Karpinska et al. (2013)	Netherlands	238 managers in the Netherlands drawn from LISS panel survey	Keeping workers beyond retirement age	Retaining workers beyond retirement age is unpopular amongst employers, though tolerated in specific circumstances.

Table A.2 (continued)

Author(s)	Country/ Region	Sample	Subject	Key findings
Karpinska et al. (2011)	Netherlands	20 Dutch managers in different industries, 17 business students at Utrecht University	Employers' decisions on early retirees re-entering the labour force.	Occupational context most important factor – willingness to hire increases especially with labour-market shortages.
Karpinska et al. (2015)	Netherlands	515 managers drawn from the LISS panel	Training opportunities for older workers	Training opportunities negatively correlated with increasing age and declining health. Positive attitudes in older workers lead to higher likelihood of training being offered.
Muldens et al. (2014)	Netherlands	443 managers drawn from LISS panel	Re-hiring workers after retirement age	General unwillingness to hire workers who have retired. Willingness of a retired worker to take a lower wage or take more flexible conditions seen positively.
van Beek et al. (1997)	Netherlands	475 firm representatives drawn from Select/View database	Hiring migrant workers	Employers are willing to forego certain occupational traits usually seen positively – experience and occupational skills especially – for an ideal profile of a young Dutch man.