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Pushing the Limits: The Need for a Behavioural Approach to Equality in Civil Engineering

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ABSTRACT

Diversity within civil engineering has been limited by the sector's failure to recruit and retain minorities. A contributing factor to this disproportionate turnover of out-group members is hostile and discriminatory treatment from peers and managers. When evaluated critically, equality approaches intended to reduce discrimination within organisations have been found to have either no impact, or even a negative impact. It is posited that employee perceptions of organisational fairness influence employee attitudes towards equality approaches and must be considered before undertaking further work in this area. Regression analysis is used to evaluate survey data from 700 employees of large civil engineering main contractor organisations (MCOs) in order to determine if a relationship between employee perceptions of organisational fairness and attitudes towards equality approaches exists. The analysis found a significant correlation between the two variables. Although causality cannot be established from this research alone, the findings suggest that perceptions of fairness may shape employee responses to equality approaches, which in turn may impact on their behaviour towards minority group members. These findings imply that failure to implement such a behavioural approach to issues of equality—one that considers the organisational perceptions of employees—may limit diversity within organisations.

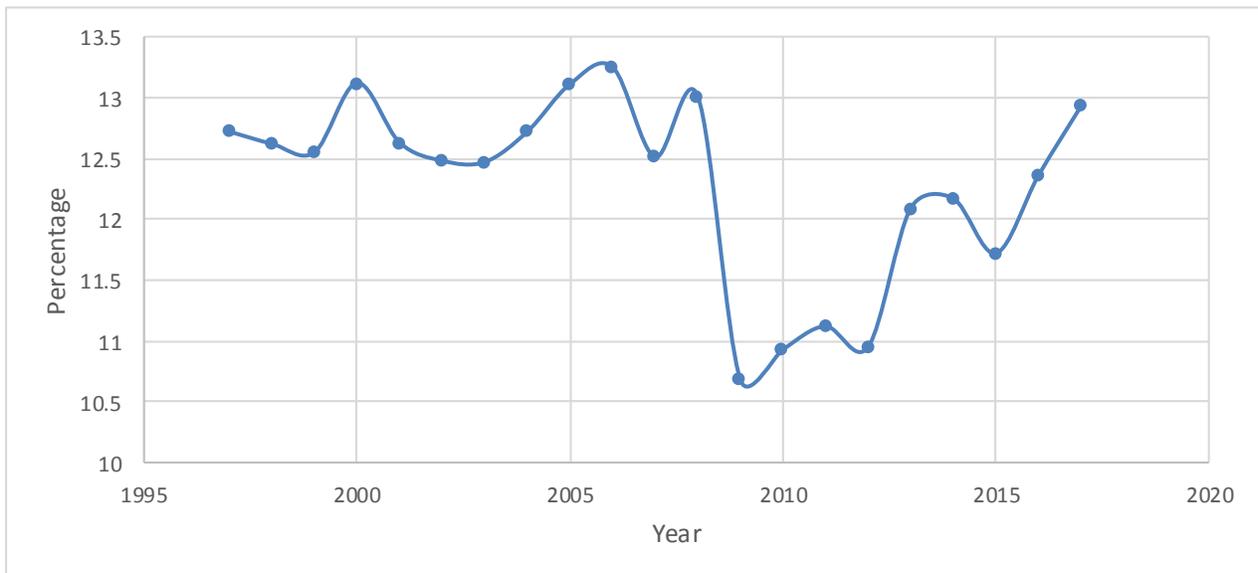
KEYWORDS

Engineering; construction; equality; fairness heuristic theory; critical diversity studies

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INTRODUCTION

Research over the last 20 years has revealed how the civil engineering sector, and the construction industry in particular, face ongoing challenges in their attempts to implement equality policies. For example, there is a lack of representation of women (de Graft-Johnson, Sara, Gleed, & Brkljac, 2009; Greed, 2006), who make up under 13% of the overall construction workforce—a figure that has not improved in 20 years (Graph 1). Figures from the top 50 main contracting organisations report 17% women generally, with 9% in construction-related roles (UKCG, 2013). Black and minority ethnic (BME) employees make up 6% of large UK main contracting organisations, compared to 13% of the UK population overall (Holloway, 2005; Caplan, Aujla, Prosser, & Jackson, 2009; UKCG, 2013). Furthermore, 10% of the sector workforce comprises people with disabilities, compared to 16% of the working-age population (Office for National Statistics, 2017). It is of note here that the already low proportion of workers with disabilities stems from the industry's high accident rate, rather than unequal recruitment practices (Newton & Ormerod, 2005). Information on other underrepresented groups such as LGBT+ (lesbian, gay, bisexual, transgender) and religious affiliation is currently lacking (Powell & Sang., 2013).



Graph 1. Representation of the percentage of women in the construction sector (Office for National Statistics, 2018).

In their seminal text *The Nature of Prejudice*, Allport, Clark and Pettigrew (1954) identified in- and out-groups. Allport, Clark and Pettigrew determined that the status of an in- or out-group is not a reflection of the size of the group, but rather of the power and resources available to the group and the level of acceptance by the in-group. In Allport's formulation, in-groups are those in possession of power

and resources, whereas out-groups are those without such attributes. The segregation and underrepresentation of out-groups in civil engineering implies that the sector is not benefiting from the full spectrum of talent available. Increasingly, research on equality in the construction industry shows that difference from the in-group is a more significant indicator of experience than identification with a particular group (Powell & Sang, 2013). It is therefore useful for this research to find an existing sociological construct that enables an understanding of the experience of difference in the workplace that is not rooted in a single identity.

In- and out-groups are established in two ways: either from an identifiable characteristic such as race or gender, or self-identification into a group, such as a religion or political party (Robbins & Krueger, 2005). It is commonplace for individuals covered by a protected characteristic—a term in English law referring to a characteristic that cannot legally be discriminated against (Monaghan, 2007), such as women, members of black minority ethnic communities, people with disabilities, LGBT+ members, and minority religious groups—to be automatically considered members of the “out-group.” However, legal definitions alone do not encompass the full range of factors driving attribution to a specific out-group. For example, other identifiable groupings not covered by law might include low socioeconomic class and subculture identity.

Research on equality in construction and civil engineering has predominantly focused on the experiences of women as a minority, and there is little research into age, ethnicity, disability, religion, and sexual orientation in relation to the sector as a whole, or indeed a view that encompasses these traits holistically (Sang, 2012). Although it is important to investigate the challenges women face, if this research is not part of a broader debate it can be problematic, not least as the constant focus on women can present them, rather than the organisation or sector, as the problem (Barnard, Powell, Bagilhole, & Dainty, 2010). For this paper, due to the scarcity of research on the full range of potential out-groups, work focused on the experiences of any minorities will be considered as potentially indicative of the behaviour faced by out-groups as a whole.

In main contractor organisations (MCOs), representation and recruitment of out-group members into the industry is an issue (Wright, 2015). However, retention and progression of out-groups can be seen as a more significant problem (Barnard et al., 2010; Wright, 2015), stemming from a lack of support, barriers to progression, and discriminatory treatment (Bagilhole, Dainty, & Neale, 2002; EHRC, 2009; Holloway 2005). Research shows that women and people from BME communities leave in higher numbers compared to their white male colleagues (Gurjao, 2006; Missa & Ahmed, 2010), typically only five years into their career (Dainty, Bagilhole, & Neale, 2001). In addition, out-groups have been found to experience, amongst other things, discrimination, stereotyping, and prejudice from managers and peers (Adeyemi, Ojo, Aina, & Olanipekun, 2006; Chan, 2013; Missa & Ahmed, 2010; Newton & Ormerod, 2005; Powell, Bagilhole, & Dainty, 2009; Ruff, 2006).

Gender pay gap data reveal that, whilst women civil engineers are paid 2.8% more than men in the same role (Office for National Statistics, 2016), women working in other construction engineering roles do not fare as well. Women working as construction and building trades supervisors are paid 45% less than their male counterparts; quality control and planning engineers 10.3% less than men; quantity surveyors are paid 8.1% less than men; and construction project managers 3.2% less than men (Office for National Statistics, 2016). There are currently no data quantifying pay relative to other out-group status.

This research suggests that out-groups face additional challenges compared to their in-group counterparts that cause them to fall behind in their careers and even leave the sector. The disproportionate challenges faced by out-groups is an issue that has persisted in the literature for two decades. In 2000, Dainty, Bagilhole, and Neale (2000) proposed that until women could be retained in industry, it was unlikely that any headway would be made simply by increasing the number of women in construction by recruitment alone—an idea reinforced by Powell et al. (2009). This failure to retain out-group members limits diversity in MCOs.

Impact of Manager and Peer Discrimination

There is a large body of research that acknowledges other factors that influence the career choices of out-groups in MCOs, such as structural discrimination; how the company organises itself and the impact that has on out-groups (Barnard et al., 2010; Caplan, Aujla, Prosser, & Jackson, 2009; Galea, Loosemore, Powell, & Chappell, 2014; Powell, Dainty, & Bagilhole, 2010); and leadership (Ely & Padvic, 2007; Groeneveld, 2011; Ochieng and Price, 2010). It is not the intention of this work to deny or discredit the existence or importance of these other factors. Rather, this paper takes the view that some factors contribute to the retention and development of out-groups in MCOs, whilst recognising that the attitudes and behaviour of managers and peers are crucial.

There is evidence that the behaviour of managers and peers has a significant impact on out-group members—enough to warrant separate investigation. Ness (2012) provides examples of the different expressions of hostility from peers and managers against women in construction, with overt discrimination encountered by women in trade roles and covert discrimination more likely within the white-collar professions. These findings are backed up by Worrall, Harris, Stewart, Thomas, and McDermott (2010), who found women faced low perceptions of capability alongside sexist and negative attitudes in professional roles. Similarly, Holloway (2005) found that employees who identified as BME faced discrimination from managers and peers that became more insidious as they progressed up the career ladder. The following papers provide evidence of discrimination against out-group individuals by peers and managers as a common occurrence: Caplan et al. (2009); Dainty (1999); Dainty et al. (2000); Gale (1994); de Graft-Johnson, Manley, and Greed (2003); Greed (1991, 2000, 2006); Powell, Bagilhole, and Dainty (2006, 2009); Powell, Dainty, and Bagilhole (2011); Sang, Dainty, and Ison (2007). Therefore, it is valid to examine the relationship between workers' perceptions of equality approaches on the one hand, and the behaviour shown towards minorities on the other, in order to better understand the complexity of trying to tackle inequalities in the workplace.

The Effectiveness of Equality Approaches

The terms “diversity” and “equality” are often used interchangeably within business and industry (Bagilhole, 2012). However, the academic fields of diversity management and critical diversity studies favour the term “diversity.” For clarity, when we refer to approaches that organisations have put in place, they shall be referred to as equality approaches (Apfelbaum, Stephens, & Reagans, 2016; Liff, 1997).

Within the construction engineering sector, the predominant MCO approach favours equality policies (Galea, Powell, Loosemore, & Chappell, 2015; Ness, 2011; Powell et al., 2010), diversity training, and client-led, project-based solutions. This approach is often aimed at entry-level roles, such as those seen at the London 2012 Olympic Park site (Minnaert, 2014). Such approaches, undertaken by organisations in the sector, are often episodic, rarely measured, and predominantly focused on entry-level recruitment (Barnard et al., 2010; Powell et al., 2010; Rhys Jones, 2006). There is a deficit of objective and empirical research undertaken to understand the impact of these approaches on managers, peers, or the out-group, and thus it is difficult to determine their impact. Given the lack of empirical research demonstrating the impact and outcomes of organisational equality approaches, we must look beyond the construction industry to the field of critical diversity studies in order to gain a deeper understanding of how effective equality approaches have been evaluated.

Research arising from the field of diversity management and business has faced criticism for “distant cheerleading,” where it is assumed that any recommendations to improve equality and diversity will have the desired response (Gotsis & Kortezi, 2015; Prasad & Mills, 1997). Critical diversity studies questions the outcomes of diversity management within organisations, calling for a new approach to diversity whilst taking a more theoretical stance (Metcalf & Woodhams, 2008). The aim of critical diversity studies is not to denounce existing work on diversity, but rather to strengthen it by providing robust and objective critique (Metcalf & Woodhams, 2012). Although still a young field with many questions to answer, critical diversity studies provides a fuller understanding of the impact of equality approaches within organisations than the field of diversity management. This fuller understanding makes critical diversity studies much more relevant to our focus on the attitudes and behaviours of managers and peers. To date, results from the field of critical diversity studies have been varied, with research finding both progress and deterioration as outcomes of equality approaches. In a statistical analysis of the effects of corporate diversity measures, Dobbin and Kalev (2013) found diversity training, diversity performance evaluations, and bureaucratic rules to be largely ineffective in suppressing managerial bias. However, it was found that approaches that engaged managers—such as diversity taskforces, full-time diversity staff and mentoring—led to increased diversity representation in management roles.

Kaiser et al. (2013) argue that the presumed benefits of diversity approaches create an illusion of equality, propped up by short-term demographics and feedback that masks the real experiences of out-groups and creates an environment in which out-group members are not able to voice problematic experiences. Other research has also found negative impacts arising from equality initiatives (Kaiser et al.,

2013; Kalev, Dobbin, & Kelly, 2006). Edelman and Krieger (2011) argue that greater diversity could result in *more* discrimination of out-group members rather than less. Sanchez and Medkik (2004) found that, although trainees initially reacted positively to diversity training, they actually held more differential views towards out-group members after attending the training. Coetzee and Bezuidenhout (2011) described affirmative action programmes as responsible for granting tokenistic positions, in which out-group employees were given roles without responsibility. Kravitz and Platania (1993) also suggest that the implementation of equality approaches can reduce the productivity of in-group members.

The main conclusion reached by the field of critical diversity studies is that currently, there is a lack of understanding of why equality approaches sometimes work and sometimes do not (Ahmed, 2007; Holck, 2016). In order to push the limits of diversity, we need to understand why equality approaches are not consistently achieving the desired outcomes. One emerging argument (Brooke & Tyler, 2010; Coetzee & Bezuidenhout, 2011; Robertson & Hoffman, 2000; Stone-Romero & Stone, 2005) is that the way in which employees perceive organisational fairness directly impacts upon their attitudes towards equality approaches (AEA).

In an attempt to understand employee attitudes towards diversity management, Robertson and Hoffman (2000) analysed natural language accounts from 712 workers in a large organisation. The research looked at incidents in which diversity was a perceived factor and found that those incidents that respondents viewed as negative were more likely to cite issues of justice. Along with the research of Robertson and Hoffman (2000), there is a substantial body of existing research around fairness in the workplace, termed organisational justice, which has not been fully utilised in either diversity management or critical diversity studies literature (Kulik, Carol, & Yiqiong, 2015). Although there have been some recent papers that have attempted to unite these concepts (Brooke & Tyler, 2010; Fujimoto, 2013; Kulik et al., 2015), they are not empirically based. It is this shortfall that this research intends to address.

Perhaps controversially, for a paper on equality, the focus of this study is on in-group managers and peers. This decision was taken on the basis of previous research in construction and engineering, which has demonstrated that it is the in-group that is most frequently cited as the primary cause of discrimination and hostile treatment (Caplan et al., 2009; Dainty, 1999; Dainty et al., 2000; de Graft-Johnson et al., 2003; Greed, 1991, 2000, 2006; Powell et al., 2006, 2009, 2011; Sang et al., 2007). This is not to imply that out-group members cannot be capable of discrimination; indeed, research clearly demonstrates out-group on out-group hostility as a tactic used to gain favour with the in-group (Allport, 1979; Brewer, 1999; Dovidio, Glick, & Rudman, 2005). However, due to demographic representations and unfair power distributions that favour the in-group, it is surmised that in-group members' attitudes have a greater impact upon out-group members and should thus be prioritised in this initial research. The decision was therefore taken to focus on in-group attitudes and develop empirically based understandings of the relationship between equality approaches, perceptions, and

behaviours in order to feed into the development of practical solutions that may improve the experience of out-groups in MCOs.

Impact of Employee Perceptions of Organisational Fairness on Employee Attitudes Towards Equality Approaches

By taking a step back and considering how the attitudes and behaviour of managers and peers are formed, and why they might lead to hostile and discriminatory behaviour, it is possible that we may develop a better understanding of why equality approaches have failed to deliver a consistent result. Both the formation and impact of fairness in the workplace have been studied extensively in relation to the concept of organisational justice (Colquitt, Conlon, Wesson, Porter, & Ng, 2001). The central tenet of organisational justice is that the feelings of members of a given organisation—how they feel they are treated in the workplace—are assessed against the perceived treatment of other members of the same organisation. The consequent fairness judgments can affect performance and wellbeing at work (Crawshaw, Cropanzano, Bell, & Nadisic, 2013; Leopold, 2002). Byrne and Cropanzano (2001) defined this as “an area of psychological inquiry that focuses on perceptions of fairness in the workplace” (p. 4)—an approach with its roots in social-psychological research.

Much research has been carried out in this relatively new field. Studies establishing the positive impacts of perceived fairness in the workplace include higher job satisfaction (Folger & Cropanzano, 1998; McFarlin & Sweeney, 1992); greater organisational commitment (Ambrose & Schminke, 2009; Moorman, 1991; Podsakoff, 2000); and increased acceptance of work policies (Greenberg, 1994). Conversely, unfair organisations were linked with decreased cooperation and less obedience towards authority figures (Huo, Smith, Tyler, & Lind, 1996); increased absenteeism and turnover (Alexander & Ruderman, 1987); participation in counterproductive behaviour at work (Cohen-Charash & Spector, 2001); and theft from the workplace (Greenberg, 1990, 1993).

There is a collective agreement on the definition of justice. Colquitt and Rodell (2015) define justice as “the perceived adherence to rules that reflect appropriateness in decision contexts” (p. 188), whilst Goldman and Cropanzano (2015) similarly state that it addresses “[w]hether one adheres to certain rules or standards” (p. 313). Whilst we can determine justice as the perceived adherence to rules within organisations, the definition of fairness is rather more complex. Goldman and Cropanzano (2015, p. 313) state that “fairness” should refer to how the individual responds to perceptions of justice (and rule compliance). In other words, “justice” denotes conduct that is morally required, whereas “fairness” denotes an evaluative judgment as to whether this conduct is morally praiseworthy. Colquitt and Rodell (2015) take a different stance, defining fairness “as a global perception of appropriateness” (p. 188). Despite the differences between the two perspectives, both support justice as the cause of fairness; the difference is in their scope. Goldman and Cropanzano (2015) would allow for an individual to have more than one view of fairness; for example, the process was fair, but the manager was not. Conversely, Colquitt and Rodell (2015) would term this a “faceted fairness” and use the term fairness on its own to refer to the overall view of the organisation.

This research uses Colquitt and Rodell's (2015) definition, which views justice in terms of employee perception of adherence to distribution, procedure and interaction, and fairness as the overall employee perception of how well that adherence was observed. In the context of this research, when asking employees about the work of the organisations, the term "justice" will be used, whilst, when talking about the employee overall perception, the term "fairness" will be adopted.

The understanding of organisational justice has developed in four distinct waves: distributive justice (DJ) considers the outcomes received by individuals; procedural justice (PJ) focusses on how justice decisions are made; and interactional justice (IJ) examines how information about justice decisions is communicated to employees. A critical development in work on PJ is its dominance over distributive justice. Alexander and Ruderman (1987) found that, whilst both PJ and DJ had a significant influence on job satisfaction, supervisor evaluation, conflict/harmony, trust in management, and turnover intentions, PJ had a stronger influence. Similar findings were found regarding the dominance of IJ over both PJ and DJ (Colquitt et al., 2001). The fourth wave, integrated justice, attempts to integrate the previous three waves into models that explain employee behaviour (Colquitt, Greenberg, & Zapata-Phelan, 2005).

It is in this final wave of integrated justice that we find fairness heuristic theory (FHT), which may offer some insight into employee attitudes towards equality approaches. FHT posits that employees make fairness judgments within the first weeks or months of joining an organisation. They then use these judgements to decide if other organisational policies and approaches are fair, implying that even a fair diversity policy would not be advantageous in an otherwise unfairly perceived organisation (van den Bos & Miedema, 2000; Lind & van den Bos, 2002; Lind, Kray, & Thompson, 2001).

Three distinct phases were developed by Van den Bos (2001) in order to explain the fairness heuristic process:

Phase 1, Pre-formation or judgement phase. Individuals gather information about trustworthiness of the authority. This usually occurs either early in the workplace experience, or after an exceptional event. This information is used to decide if the authority can be trusted

Phase 2, Formation phase or use phase. Individuals need information to find out whether the authority has treated them fairly. Specifically, about their inclusion or exclusion from the group.

Phase 3, Postformation. On the basis of the obtained information, individuals form fairness judgments and then use these judgements to guide them as they evaluate and decide how to react to the outcomes and procedures they encounter.

Since the 1990s, studies have supported the FHT primacy effect—that fairness perceptions are established early in the organisational relationship (Bianchi & Brockner, 2012; Colquitt, Scott, Judge, & Shaw, 2006; Lind et al., 2001). Lind et al.'s (2001) laboratory-based study investigated the response rates of supervisors

to queries: immediately; delayed; or not at all. The research found that the (early) responsiveness of supervisors primed individual perceptions of fairness. The substitutability effect, in which an employee who is not fully aware of the details of an organisational initiative will rely on preexisting generalised fairness judgment, has also received support (van den Bos, Lind, Vermunt, & Wilke, 1997; Jones & Martens, 2008), demonstrating the importance of early fairness judgements.

Although FHT applies to any business undertaking, employee perceptions of unfairness could have a disproportionate impact on out-groups. There may be an increase in discrimination and hostility if the in-group perceive equality approaches are giving the out-group an unfair advantage (Stone-Romero & Stone, 2005). Unlike most other business improvement processes, the implementation of an equality approach can be seen to directly detract from the in-group by providing an additional resource to the out-group. This fact alone makes this research of particular importance (Allport, 1979; Stone-Romero & Stone, 2005).

METHODS

This research is part of a larger mixed methods design that employs the abductive theory of method (ATOM; Haig, 2008) in order to create a robust theory on the relationship between employee perceptions of fairness on the one hand, and attitudes towards equality approaches on the other. This section of the research reports on the quantitative data collected and represents the “phenomena detection phase,” which seeks to establish patterns, although does not claim the causality of those patterns.

It is, of course, possible that respondents’ underlying personal value of equality (PVE)—how they feel about equality outside of the work environment—may impact upon their responses. To counter the impact of PVE, it will be measured as a variable to compare against attitudes towards equality approaches (AEA), resulting in the following hypotheses:

Hypothesis 1: There is a significant relationship between AEA and perceptions of (a) DJ; (b) PJ; and (c) IJ.

Hypothesis 2: There is a significant relationship between the PVE and perceptions of (a) DJ; (b) PJ; and (c) IJ.

Participants and Setting

The sample used for this project was drawn from the employees of three large MCOs (hereafter MCO A, B, and C) in the United Kingdom. All of the organisations feature in the top 15 by turnover in 2015 and offer a range of management and engineering services in the UK construction sector. The required sample size from each organisation was calculated using the work of Kotrlik and Higgins (2001). The level of confidence was then determined at 95%, resulting in a Z-score of 1.96, whilst the margin of error was set at 5%, resulting in the following required sample sizes (Table 1).

| Organisation | Population | Required sample | Returned sample |
|--------------|------------|-----------------|-----------------|
| A | 341 | N=181 | N=187 |
| B | 500 | N=217 | N=236 |
| C | 2500 | N=333 | N=445 |

Table 1. Organisation sample sizes.

The populations across the three MCOs were similar, with each reporting an average of 20% of women across the organisation, 45% of employees working on site, and senior managers making up an average of 13% of the organisation. These three descriptors (women, place of work, and senior managers) were used as indicators in order to determine if the sample size was reflective of the population.

Data were collected by asking each organisation to allocate a suitable person to distribute the questionnaire and to ensure the respondents reflected the population and met the minimum required sample size as stipulated by the researchers. The questionnaire was distributed electronically via each company's internal email system, providing a link to an online questionnaire tool (survey monkey) that was only accessible to the researcher. The survey ran until the minimum sample sizes were achieved.

In the usable, completed surveys, 22% of the respondents were female, 40% of whom were site-based. Directors made up 2% of the returned questionnaires, with a further 12% of senior managers and 41% of managers, placing over half of the respondents in active managerial roles. It was determined that the overall sample was reflective of the population.

In total, 868 questionnaires were returned from the three organisations (Table 1), representing a combined 26% response rate. Of the 868 surveys, 790 were usable, with 78 surveys being discarded as they were incomplete. The decision was taken to group the data from all three organisations when undertaking the regression analysis to reduce the likelihood of type 1 errors (Field, 2013). The data were also considered separately in a cross-organisational analysis.

Measures

Although overall fairness measures are advised when measuring FHT, this is only true in the use phase. In the judgment phase, the use of factorial justice measures (distributive, procedural, and interpersonal) is recommended (Ambrose & Cropanzano, 2003; Colquitt & Rodell, 2015). Given the research context of MCOs, there was some concern that each new project would trigger a new "judgement phase" for the individual. There is currently a gap in the research on this subject, and therefore it was decided that the most appropriate approach would be to employ a factorial justice measure that not only considers the possible high numbers of employees in the judgment phase, but would also allow us to consider individual justice relationships. This decision was further reinforced by research confirming factorial justice as a reliable indicator of overall fairness perceptions (Ambrose & Cropanzano, 2003; Colquitt & Rodell, 2015). It would, however, be of interest to compare the results of this study to any future results, utilising overall fairness measures in a later study.

DJ was measured using Moorman's (1991) scale, adapted from Price and Mueller's (1986) DJ index. The factor contains five items with questions focused on employee input and organisational output, asking respondents to attribute a score regarding: how well rewarded they are for the effort they put in; responsibility; experience; work done well; and stress. When tested, reliability was reported above 0.95 on the Cronbach's alpha test.

PJ was measured using Moorman's (1991) scale, which was designed using the rules developed by Leventhal (1980) and Folger and Konovsky (1989). A seven-item scale was used, asking respondents to compare how well they felt procedures within the organisation were developed; provided opportunities to appeal; took a view of all sides; generated a standard approach; heard concerns; provided feedback; and allowed employees to request clarification. Cronbach's alpha test returned scores of above 0.90 for this factor.

IJ was also measured using Moorman's (1991) scale, which borrowed from the work of Bies and Moag (1986) and Bies and Shapiro (1987). A five-item scale asked respondents to rate their colleagues with regard to: considering their viewpoint; hiding inappropriate thoughts; treating them with kindness; and dealing with them in a truthful manner. The reliability score returned on this factor was a good 0.89. The decision to use Moorman's (1991) measures across all of the justice factors was based upon their being the best fit across criteria, including faceted (not overall) measures of justice; overall organisation focus (as opposed to situation specific); multi-foci, indirect design; and the number of items in each factor.

PVE was measured with an amended version of Ng and Burke (2004) measures, which was derived from Little, Murry, and Wimbush (1998) and Mor Barak (1998). Ng and Burke (2004) measures initially consisted of three factors—PVE, general egalitarianism, and symbolic prejudice. After undertaking parallel analysis, factor analysis, and reliability testing, this was reduced to one factor with four items—a PVE that returned a Cronbach's alpha score of 0.80.

The question sets asked respondents to think outside of the workplace when scoring: the attention the government has paid to women and children; the achievements of women and minorities; how far equal rights have been pushed; and whether the country would be better off if we were less concerned with equal rights.

AEA were measured using Ng and Burke (2004) measures, which were based on Bell, Harrison, and Mclaughlin (1997). Undertaking parallel analysis, factor analysis, and reliability testing, this became a five-item factor with a reliability above 0.80. The factor considered employee attitudes towards organisational equality approaches: equality projects give everyone a chance; equality projects help create a more diverse workforce; equality projects create greater awareness of discrimination; and our society should do what it takes to give everyone equal opportunity. All factors were measured using a six-point Likert type scale.

Data Analyses

The process of data analysis comprised three stages: preliminary testing, hypothesis testing, and organisational comparison. Preliminary testing included factor analysis, parallel analysis, and Cronbach's alpha in order to ascertain goodness of fit for the factor items and reliability (Field, 2013; Gliem & Gliem, 2003). The Shapiro-Wilk test was applied to test for normality (Shapiro & Wilk, 1965), and although the sample size allowed for the use of regression analysis on non-parametric data—as this set was found to be—the results influenced the use of the Kruskal-Wallis test in the final stage. Stem and leaf, box plots and scatter plot graphs were then used to gain an initial understanding of the data (Field, 2013). This preliminary process involved scrutinising the data for quality, which can involve identifying and dealing with data and testing assumptions of the planned analysis (Fidell & Tabachnick, 2003). This critical and timeconsuming part of the work paved the way for the primary analysis and prevented misleading results.

For the second stage, the items were combined into five overall factors that were to be the focus of the analysis (DJ, PJ, IJ, PVE, and AEA). The data set was identified as continuous, interval using the mean as a measure of central tendency (Carifio & Perla, 2007, 2008; Jamieson, 2004; Parker, McDaniel, & Crumpton-Young, 2002). Although skewed, the large data set allowed parametric testing to be conducted (Carifio & Perla, 2007; Shapiro & Wilk, 1965). Subsequently, regression analysis was used, as it can substantially test the relationship between fairness variables and equality variables (Field, 2013). The distinction made earlier concerning the aim of the research is an important one, as regression analysis can be reliably used to predict a relationship, however, it should not be used to explain one (Moksony, 2014). That this research only seeks to determine if there is a pattern in the data worthy of further exploration and testing makes it a suitable candidate for regression analysis. $P \leq 0.05$ is used as a level of confidence due to its common use in the social sciences, including work in the field of organisational justice (Field, 2013). The three justice measures (DJ, PJ, and IJ) were compared to the two equality measures (AEA and PVE) in order to determine if there was any significant correlation.

The final stage was comparative, utilising the Kruskal-Wallis test to determine if there was a significant difference in the employee responses to the justice and equality measures across the three MCOs.

RESULTS

Testing the Hypotheses

This section aims to test the research hypotheses in order to establish if there are any patterns present in the data.

Hypothesis 1(A): There is a significant relationship between AEA and perceptions of (a) DJ; (b) PJ; and (c) IJ.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .608 ^a | .370 | .367 | .80424 |

a. Predictors: (Constant), DJ, PJ, IJ.

Table 2. Regression model summary.

Correlation and multiple regression analyses were conducted in order to examine the relationship between employee attitudes towards equality approaches and perceptions of organisational fairness (distributive, procedural, and interactional). The R square value (Table 2) reveals that perception of justice accounts for 38% of the variation in AEA. With an F value of 145.66, the final model enhances our ability to improve the outcome variable.

| Model | | Unstandardised Coefficients | | Standardised Coefficients | | |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 1.651 | .154 | | 10.732 | .000 |
| | DJ | .053 | .030 | .054 | 1.734 | .83 |
| | PJ | .171 | .039 | .164 | 4.360 | .001 |
| | IJ | .454 | .037 | .469 | 12.353 | .000 |

a. Dependent Variable: AEA

Table 3. Coefficients.

Table 3 demonstrates that all three of the fairness variables exhibit a positive relationship between the predictor and the outcome. IJ and PJ have a significance of less than 0.05, which indicates that they are making a significant contribution to the model. DJ returns a significance of 0.83, meaning it does not make a significant contribution to the model.

The data were checked using scatter plots in order to establish the distribution and bootstrapping. On the basis of the foregoing, we reject the null hypothesis for PJ and IJ variables and fail to reject the null hypothesis for DJ variables.

Hypothesis 2(A): There is a significant relationship between the PVE and perceptions of (a) DJ; (b) PJ; and (c) IJ.

Correlation and multiple regression analyses were conducted in order to examine the relationship between employee PVE and perceptions of organisational fairness (distributive, procedural, and interpersonal). The model's R square value (Table 4) shows us that perception of fairness accounts for 3.7% of the variation in PVE. In the social sciences, R squared values should be between 0.2 and 0.8 in order to be considered acceptable (Field, 2013). The F value ratio is 7.54 which, being significantly more than 1, means that the final model significantly improves our ability to predict the outcome variable. It should be noted that, although the response is a significant improvement on the mean, this does not imply that it has practical importance. The low R square value (3.7%) indicates that the vast majority of variation in PVE is not explained in the model.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .202 ^a | .041 | .037 | .97029 |

a. Predictors: (Constant), DJ, PJ, IJ

b. Dependent Variable: PVE

Table 4. Regression model summary.

Table 5 demonstrates that DJ variables exhibit a positive relationship between the predictor and the outcome. PJ and IJ have little, if any, relationship. IJ and PJ have a significance greater than 0.05, which indicates that they are not making a significant contribution to the model. DJ returns a significance of .00, meaning it is making a significant contribution to the model.

| Model | | Unstandardised Coefficients | | Standardised Coefficients | | |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 3.498 | .186 | | 18.844 | .000 |
| | DJ | .191 | .037 | .201 | 5.213 | .000 |
| | PJ | .038 | .047 | .037 | .794 | .427 |
| | IJ | -.039 | .044 | -.041 | -.878 | .380 |

a. Dependent Variable: PVE

Table 5. Coefficients.

It is interesting that DJ was the only factor to have a significant relationship with PVE. It is not within the scope of this research to try and understand the causal effects of this relationship, but it is indeed something that suggests ideas for further research.

Based on the foregoing, we therefore reject the null hypothesis for distributive fairness variables and fail to reject the null hypothesis for PJ and IJ variables.

Cross-Organisation Analysis

The regression analysis established a relationship between justice measures and AEA. It is not known if this relationship can be influenced in any way. The research now uses the Kruskal-Wallis test in order to analyse the three justice measures and the two equality measures within each MCO in order to determine whether there is any indication that the relationship between fairness and equality might be different within each MCO. Evidence of different relationships between employee perceptions of fairness and attitudes towards equality approaches indicates MCOs might be able to influence employee attitudes through fairness perceptions.

DJ

Reject the Null Hypothesis – The distribution of DJ is the same across MCOs.

DJ was not the same across all MCOs, $H(2)=28.94$, $p=0$. Pairwise comparisons with adjusted p-values showed that there were no significant differences between DJ in MCO A – C ($p=0.82$, $r=-0.05$). There was a significant difference in DJ in MCO A – B ($p=0.002$, $r=0.18$) and B – C ($p=0.0$, $r=-0.22$).

PJ

Reject the Null Hypothesis – The distribution of PJ is the same across MCOs.

PJ was not the same across all MCOs, $H(2)=164.19$, $p=0$. Pairwise comparisons with adjusted p-values showed that there were no significant differences between PJ in MCO A – C ($p=0.26$, $r=-0.07$). There was a significant difference in PJ in MCO A – B ($p=0.00$, $r=0.46$) and B – C ($p=0.0$, $r=-0.52$).

IJ

Reject the Null Hypothesis – The distribution of IJ is the same across MCOs.

IJ was not the same across all MCOs, $H(2)=275.16$, $p=0$. Pairwise comparisons with adjusted p-values showed that there were no significant differences between IJ in MCO A – C ($p=1.0$, $r=-0.01$). There was a significant difference in IJ in MCO A – B ($p=0.00$, $r=-0.81$) and B – C ($p=0.0$, $r=0.54$).

PVE

Fail to reject the Null Hypothesis – The distribution of PVE is the same across MCOs.

PVE was the same across all MCOs, $H(2)=1.53$, $p=0.47$. Multiple comparisons were not performed because the overall test does not show significant differences across the samples.

AEA

Reject the Null Hypothesis – The distribution of AEA is the same across MCOs.

AEA was not the same across all MCOs, $H(2)=195.63$, $p=0$. Pairwise comparisons with adjusted p-values showed that there were no significant differences between AEA in MCO A – C ($p=1.0$, $r=-0.03$). There was a significant difference in AEA in MCO A – B ($p=0.00$, $r=0.54$) and B – C ($p=0.0$, $r=0.55$).

One of the most interesting things revealed by the data is how similar the responses to MCO A and C are to one another (Figure 1). This is of particular interest given the difference in sample size (A[N=91], B[N=134], C[N=261]).

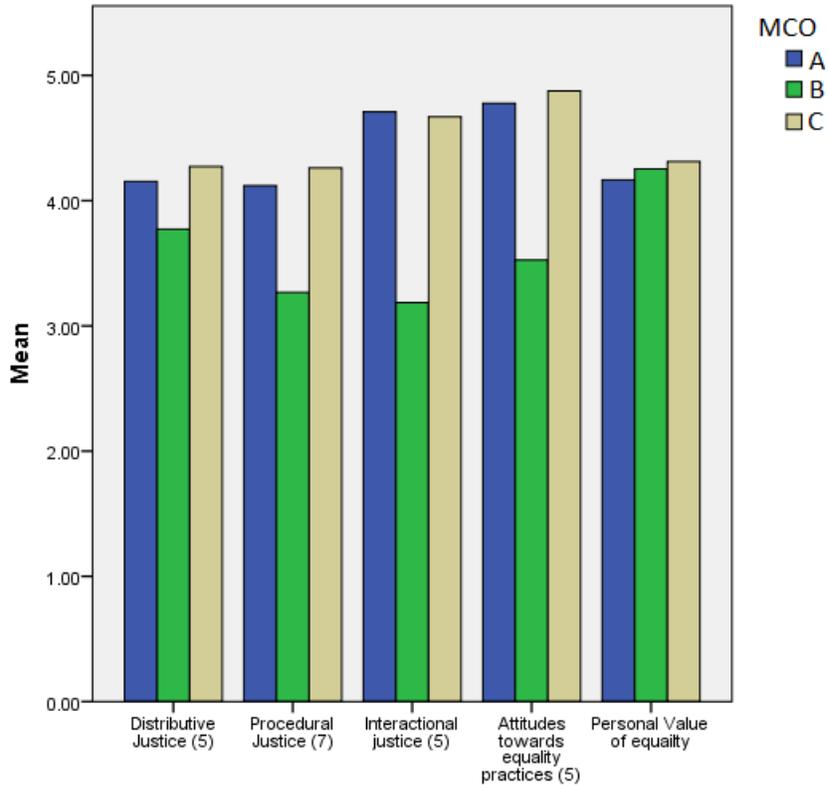


Figure 1. Mean justice and equality measures by MCO.

Comparing MCO A with MCO B

MCO A and B were similar across some measures (Figure 1), including population and sample size, organisational approach to equality, and turnover per employee. The similarities between the two MCOs imply that these factors do not significantly influence the respondents’ mean score regarding attitudes towards equality measures.

IJ and AEA show the most significant difference in response. The difference in IJ is particularly interesting given that in MCO A, it was the highest scoring justice measure and the lowest scoring in group B. Given research that shows the impact of IJ overriding the effects of procedural and DJ (Alexander & Ruderman, 1987; Colquitt et al., 2001), these results are particularly worrying for MCO B, but could explain why the responses to AEA also drop in line with the justice measure.

The response to PVE is also interesting. This is mainly because it is higher for MCO B than it is for MCO A. This implies that an employee’s PVE does not impact their attitude towards equality approaches as much as the justice measures—if indeed, at all. The further implication is that MCOs need to tackle internal perceptions of justice if they are to improve employee AEA and have a realistic chance of equality approaches making a positive difference to the MCO.

Comparing MCO A with MCO C

MCO A and C differed in sample size, population, equality approach, and turnover per employee. This makes it even more interesting that the responses returned are

very similar in both pattern and score. This added weight to the argument made when comparing MCO A and B, namely that these factors do not significantly influence employee attitudes towards equality approaches. The high means of both IJ and AEA are a stark contrast to what was seen in MCO B and further suggest that there is an influential relationship here worth considering in more detail.

Comparing MCO B with MCO C

The relationship between MCO B and MCO C is similar to that between MCO A and B, reinforcing the earlier comparisons. Although MCO B and C do differ regarding sample size, population, equality approach, and turnover per employee, these differences are not as great as those between MCO A and C or A and B, so it is unlikely that this is the reason for the differences across the means. Again, PVE is similar across both MCOs, but AEA and justice measures vary substantially. MCO A demonstrates unfair responses to equality where MCO C returns positive ones.

FINDINGS

The findings demonstrated a significant relationship between justice measures (PJ and IJ) and AEA. Despite the fluctuation of other responses, the PVE stayed relatively constant between the MCOs. This builds upon the earlier findings of Paluck (2007), who found that social norms were prioritised over personal beliefs in the area of equality. This is of particular importance, as it implies two things: Firstly, employees across all three MCOs held similar PVE. No single MCO reported a significantly different PVE that might indicate a disproportionate impact regarding their responses towards AEA. Secondly, it would seem that employee attitudes towards equality approaches are influenced by the structures and actions of the MCO and its other employees. The implication here that MCOs can put effective strategies in place in order to improve employee attitudes towards equality approaches is an important one that may be key to underpinning how MCOs ensure the success of equality approaches.

DISCUSSION

This paper has addressed the relationship between employee perceptions of fairness and employee attitudes towards organisational equality approaches in large MCOs in the United Kingdom. The impact of employee fairness perceptions (PJ, IJ) was found to be a stronger indicator of employee AEA than employee PVE, indicating that employee AEA can be influenced by organisational activity. The discovery of an MCO's ability to influence employee AEA using fairness perceptions is important, as it demonstrates that MCOs have agency in this area. Crucially, it must be recognised that this agency can influence both positive and negative attitudes that may impact upon out-group employees and the overall business strategy (Ahmed, 2007; Edelman & Krieger, 2011; Holck, 2016; Janssens & Zanoni, 2014; Kaiser et al., 2013; Kalev et al., 2006; Kravitz & Platania, 1993; Sanchez & Medkik, 2004; Vermeulen & Coetzee, 2011).

Negative employee AEA might impact on the success of equality approaches in two ways. Firstly, a singular negative attitude could directly lead to deviant behaviour towards out-group individuals or the organisation (Stone-Romero & Stone, 2005). Secondly, if enough employees developed negative AEA, an underlying culture of

hostility could become apparent, possibly making out-group members feel unwelcome and emboldening individuals with hostile views to take action (Kaiser et al., 2013; Kravitz & Platania, 1993; Ness, 2011).

If a causal link can be demonstrated between perceptions of fairness and AEA, there is a strong argument to support positive employee perceptions of fairness as a necessary prerequisite of any organisational equality approach (Brooke & Tyler, 2010; Coetzee & Bezuidenhout, 2011; Robertson & Hoffman, 2000; Stone-Romero & Stone, 2005). Put plainly, if employee perceptions of fairness are negative, it is likely employees will foster negative AEA, which may result in increased hostility and discrimination towards the out-group. On a more positive note, if MCOs can permeate positive perceptions of fairness amongst employees, there is likely to be a positive AEA, which may result in a more supportive and inclusive environment for out-groups. The ambiguity demonstrated in the research in the field of equality regarding the effectiveness of equality approaches (Ahmed, 2007; Holck, 2016; Janssens & Zanoni, 2014) may well rest upon pre-existing perceptions of fairness amongst employees.

Considering the impact of fairness on attitudes towards equality approaches has the potential to change, not only the way in which MCOs approach equality, but also the experience of out-groups. This research implies that work around equality—both academic and in practice—must understand the behavioural response of the employee if it is to have the desired impact. A continued failure to acknowledge the response of the in-group and the relationship of fairness to AEA is likely to be unproductive and may cultivate a negative experience for out-groups in the sector.

Limitations

There are four main limitations to this work. First, although a relationship between employee perceptions of fairness (EPF) and employee attitudes towards equality approaches (AEA) has been established, causality has not. As there could well be an unknown variable that impacts upon both factors, the second stage of the larger body of research within which this work sits is designed to interrogate this relationship further and uncover any such causal links. However, the lack of provable causality at this stage should not detract from the importance of these findings, especially as some would believe that sufficient clear data are in itself indicative (Hill, 2015). The researchers take the position that the patterns detected in this research are sufficient to compel further action, either to determine causality or to reconsider how we approach equality in MCOs.

The second limitation is that this study is confined to the attitudes of employees and therefore it cannot be demonstrated that those attitudes will lead to behaviour. Although this research has been designed in line with current thinking around how to measure attitudes that may lead to behaviour—predominantly to be specific and contextual (Ajzen, 2005; Fishbein & Ajzen, 2005; Javaras, 2004; Wilson, Lindsey, & Schooler, 2000)—there is still a significant unknown element. Without further research, specifically into attitudes and behaviour in this context, we cannot be sure that employee attitudes towards equality approaches will lead to behaviour that either positively supports or negatively impacts out-groups.

The third limitation concerns sample size. Although the data sets achieved the required sample sizes and were deemed “marvellous” on the Hutcheson and Sofroniou (1999) scale, there is still the risk that the subject matter (equality and fairness) will attract individuals with a vested interest. Although several statistical tests were carried out to determine any variances in group and sample, there is always the chance that the population may not be accurately reflected. It is hoped that further research using these measures will, over time, fully reveal the accuracy of these results.

Finally, employees working in professional roles (i.e., civil engineers) may be more likely to merge their personal values with their professional standing, which may create a limitation within the study regarding the effectiveness of the PVE measure. Further research would be useful in gaining a greater understanding of these intricacies.

Implications for Research

For academia, these findings suggest a move towards a “behavioural equality” approach that builds upon critical diversity studies and values established research from the fields of psychology and sociology (including, but not limited to, organisational justice) in order to understand how organisational employees respond to equality approaches, the impact this has on out-group employees, and the role the organisational environment plays in determining how employee attitudes develop towards equality approaches.

Implications for Practice

For industry, these findings suggest that current approaches designed to improve equality may, in organisations perceived as generally unfair, be increasing hostility and discrimination towards out-group members. In order to effect real change to the organisational bottom line and the experience of out-group members, it is suggested that embedding fairness, or at least improving employee perceptions of fairness, should be the first step in any organisation’s equality strategy.

CONCLUSION

Van den Brink and Benschop (2012) posited that inequality should be addressed before equality within organisations. This research warns that this thinking does not go far enough. In-group perceptions of fairness and the impact they have on employee attitudes towards equality approaches must be better understood and addressed before any inequality or equality approaches are put in place in order to minimise any adverse impact upon either business or out-group. Failure to recognise the behavioural response of the in-group, both towards equality approaches and subsequently towards the out-group, is a potentially short-sighted and dangerous, if well-intended, approach.

REFERENCES

- Adeyemi, A. Y., Ojo, S. O., Aina, O. O., & Olanipekun, E. A. (2006). Empirical evidence of women under-representation in the construction industry in Nigeria. *Women in Management Review, 21*(7), 567–577. <https://doi.org/10.1108/09649420610692516>
- Ahmed, S. (2007). The language of diversity. *Ethnic and Racial Studies, 30*(2), 235–256.
- Ajzen, I. (2005). *Attitudes, personality, and behavior*. New York: McGraw-Hill Education (UK).
- Alexander, S., & Ruderman, M. (1987). The role of procedural and distributive justice in organizational behavior. *Social Justice Research, 1*(1), 177.
- Allport, G. W., Clark, K., & Pettigrew, T. (1954). The nature of prejudice. New York: Addison-Wesley Publishing Company
- Ambrose, M. L., & Cropanzano, R. (2003). A longitudinal analysis of organizational fairness: An examination of reactions to tenure and promotion decisions. *Journal of Applied Psychology, 88*(2), 266–275. <https://doi.org/10.1037/0021-9010.88.2.266>
- Ambrose, M. L., & Schminke, M. (2009). The role of overall justice judgments in organizational justice research: A test of mediation. *The Journal of Applied Psychology, 94*(2), 491–500. <https://doi.org/10.1037/a0013203>
- Apfelbaum, E. P., Stephens, N. M., & Reagans, R. E. (2016). Beyond one-size-fits-all: Tailoring diversity approaches to the representation of social groups. *Journal of Personality and Social Psychology, 111*(4), 547–566. <https://doi.org/10.1037/pspi0000071>
- Bagilhole, B. (2009). *Understanding equal opportunities and diversity: The social differentiations and intersections of inequality*. Bristol: Policy Press.
- Bagilhole, B. M., Dainty, A. R. J., & Neale, R. H. (2002). A woman engineer's experiences of working on British construction sites. *International Journal of Engineering Education, 18*(4), 422–429.
- Barnard, S., Powell, A., Bagilhole, B., & Dainty, A. (2010). Researching UK women professionals in SET: A critical review of current approaches. *International Journal of Gender Science and Technology, 2*(3), 361–381.
- Bell, M. P., Harrison, D. A., & Mclaughlin, M. E. (1997). Asian American attitudes toward affirmative action in employment: Implications for the model minority myth. *The Journal of Applied Behavioral Science, 33*(3), 356–377. <https://doi.org/10.1177/00218863973333006>
- Bianchi, E. C., & Brockner, J. (2012). In the eyes of the beholder? The role of dispositional trust in judgments of procedural and interactional fairness. *Organizational Behavior and Human Decision Processes, 118*(1), 46–59. <https://doi.org/10.1016/j.obhdp.2011.12.005>
- Bies, R. J., & Moag, J. S. (1986). Interactional justice: Communication criteria of fairness. In R. J. Lewicki, B. H. Sheppard, & M. H. Bazerman (Eds.), *Research on negotiation in organizations* (Vol. 1, pp. 43–55). Greenwich: JAI Press.

- Bies, R. J., & Shapiro, D. L. (1987). Interactional fairness judgments: The influence of causal accounts. *Social Justice Research, 1*(2), 199–218. <https://doi.org/10.1007/BF01048016>
- van den Bos, K. (2001). Uncertainty management: The influence of uncertainty salience on reactions to perceived procedural fairness. *Journal of Personality and Social Psychology, 80*(6), 931–941.
- van den Bos, K., Lind, E. A., Vermunt, R., & Wilke, H. A. M. (1997). How do I judge my outcome when I do not know the outcome of others? The psychology of the fair process effect. *Journal of Personality and Social Psychology, 72*(5), 1034–1046. <https://doi.org/10.1037/0022-3514.72.5.1034>
- van den Bos, K., & Miedema, J. (2000). Toward understanding why fairness matters: The influence of mortality salience on reactions to procedural fairness. *Journal of Personality and Social Psychology, 79*(3), 355–366.
- Brewer, M. B. (1999). The psychology of prejudice: Ingroup love or outgroup hate? *Journal of Social Issues, 55*(3), 429–444. <https://doi.org/10.1111/0022-4537.00126>
- van den Brink, M., & Benschop, Y. (2012). Slaying the seven-headed dragon: The quest for gender change. *Gender, Work & Organization, 19*(1), 71–92. <https://doi.org/10.1111/j.1468-0432.2011.00566.x>
- Brooke, J. K., & Tyler, T. R. (2010). Diversity and corporate performance: A review of the psychological literature. *North Carolina Law Review, 89*, 715. Retrieved from <http://heinonline.org/HOL/Page?handle=hein.journals/nclr89&id=721&div=&collection=>
- Byrne, Z. S., & Cropanzano, R. (2001). The history of organisational justice: The founders speak. In R. Cropanzano (Ed.), *Justice in the workplace* (2nd ed., pp. 3–26). New Jersey: Lawrence Erlbaum Associates, Inc.
- Caplan, A., Aujla, A., Prosser, S., & Jackson, J. (2009). *Race discrimination in the construction industry: A thematic review* (Research report 23). Manchester: Equality and Human Rights Commission.
- Carifio, J., & Perla, R. J. (2007). Ten common misunderstandings, misconceptions, persistent myths and urban legends about Likert scales and Likert response formats and their antidotes. *Journal of Social Sciences, 3*(3), 106–116.
- Carifio, J., & Perla, R. (2008). Resolving the 50-year debate around using and misusing Likert scales. *Medical Education, 42*(12), 1150–1152. <https://doi.org/10.1111/j.1365-2923.2008.03172.x>
- Chan, P. W. (2013). Queer eye on a "straight" life: Deconstructing masculinities in construction. *Construction Management and Economics, 31*(8), 816–831. <https://doi.org/10.1080/01446193.2013.832028>
- Coetzee, M., & Bezuidenhout, M. (2011). The fairness of affirmative action: In the eye of the beholder. *Southern African Business Review*. College of Economic and Management Sciences (UNISA). Retrieved from <http://www.ajol.info/index.php/sabr/article/view/76400>

- Cohen-Charash, Y., & Spector, P. E. (2001). The role of justice in organizations: A meta-analysis. *Organizational Behavior and Human Decision Processes*, 86(2), 278–321. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0749597801929589>
- Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O. L. H., & Ng, K. Y. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, 86(3), 425–445.
- Colquitt, J. A., Greenberg, J., & Zapata-Phelan, C. P. (2005). What is organizational justice? A historical overview. In J. Greenberg & J. A. Colquitt (Eds.), *Handbook of organisational justice* (pp. 3–58). Mahwah: Psychology Press.
- Colquitt, J., & Rodell, J. B. (2015). Measuring justice and fairness. In *The oxford handbook of justice in the workplace* (pp. 187–204). Oxford: Oxford University Press.
- Colquitt, J. A., Scott, B. A., Judge, T. A., & Shaw, J. C. (2006). Justice and personality: Using integrative theories to derive moderators of justice effects. *Organizational Behavior and Human Decision Processes*, 100(1), 110–127. <https://doi.org/10.1016/j.obhdp.2005.09.001>
- Crawshaw, J. R., Cropanzano, R., Bell, C. M., & Nadisic, T. (2013). Organizational justice: New insights from behavioural ethics. *Human Relations*, 66(7), 885–904. <https://doi.org/10.1177/0018726713485609>
- Dainty, A. (1999). Women's careers in large construction companies: Expectations unfulfilled? *Career Development International*, 4(7), 353–358. Retrieved from <http://www.emeraldinsight.com/journals.htm?articleid=883207&show=abstract>
- Dainty, A. R. J., Bagilhole, B. M., & Neale, R. H. (2000). A grounded theory of women's career under-achievement in large UK construction companies. *Construction Management and Economics*, 18(2), 239–250.
- Dainty, A. R. J., Bagilhole, B. M., & Neale, R. H. (2001). Women in management review Emerald article: Male and female perspectives on equality measures for the UK construction sector male and female perspectives on equality measures for the UK construction sector. *Women in Management Review*, 16(6), 297–304.
- Dobbin, F., & Kalev, A. (2013). The origins and effects of corporate diversity programs. In Quinetta Roberson (Ed.), *Oxford handbook of diversity and work* (pp. 253–281). New York: Oxford University Press.
- Dovidio, J., Glick, P., & Rudman, L. (2005). Reflecting on the nature of prejudice: Fifty years after Allport. In *On the nature of prejudice* (pp. 2–15). Oxford: Blackwell Publishing Ltd.
- Edelman, L., & Krieger, L. (2011). When organizations rule: Judicial deference to institutionalized employment structures. *American Journal of Sociology*, 117(3), 888–954 (Ses 0651870). Retrieved from <http://www.jstor.org/stable/10.1086/661984>
- Ely, R., & Padavic, I. (2007). A feminist analysis of organizational research on sex differences. *Academy of Management Review*, 32(4), 1121–1143. <https://doi.org/10.5465/AMR.2007.26585842>

Fidell, L. S., & Tabachnick, B. G. (2003). Preparatory data analysis. In J. A. Schinka & W. F. Velicer (Eds.), *Handbook of psychology: Volume 2 research methods in psychology* (pp. 115–141). Hoboken, NJ: John Wiley & Sons, Inc.
<https://doi.org/10.1002/0471264385.wei0205>

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. London: Sage.
<https://doi.org/10.1016/B978-012691360-6/50012-4>

Fishbein, M., & Ajzen, I. (2005). The influence of attitudes on behavior. *The handbook of attitudes*, 173(221), 31. Retrieved from
http://www.bm.ust.hk/~mark790b/readings/T5bR2_ajzen2005.pdf

Folger, R., & Cropanzano, R. (1998). *Organizational justice and human resource management*. Thousand Oaks: SAGE Publications.

Folger, R., & Konovsky, M. A. (1989). Effects of procedural and distributive justice on reactions to pay raise decisions. *Academy of Management Journal*, 32(1), 115–130. <https://doi.org/10.2307/256422>

Fujimoto, Y. (2013). Towards a diversity justice management model: Integrating organizational justice and diversity management. *Social Responsibility Journal*, 9(1), 148–166. <https://doi.org/10.1108/17471111311307877>

Gale, A. W. (1994). Women in non-traditional occupations: The construction industry. *Women in Management Review*, 9(2), 3–14. Retrieved from
<http://www.emeraldinsight.com/journals.htm?articleid=1412011&show=abstract>

Galea, N., Loosemore, M., Powell, A., & Chappell, L. (2014, September). Gender equity in construction professions: A new institutionalist perspective. In A. B. Raiden & E. Aboagye-Nimo (Eds.), *Proceedings of the 30th Annual ARCOM Conference* (pp. 1111–1119). Portsmouth, UK: Association of Researchers in Construction Management.

Galea, N., Powell, A., Loosemore, M., & Chappell, L. (2015, August). Designing robust and revisable policies for gender equality: Lessons from the Australian construction industry. *Construction Management and Economics*, 6193, 1–15.
<https://doi.org/10.1080/01446193.2015.1042887>

Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *Presented at the Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education, The Ohio State University, Columbus, OH, October 8-10, 2003.* . 83-88

Goldman, B., & Cropanzano, R. (2015). "Justice" and "fairness" are not the same thing. *Journal of Organizational Behavior*, 36(2), 313–318.
<https://doi.org/10.1002/job.1956>

Gotsis, G., & Kortezi, Z. (2014). *Critical studies in diversity management literature: A review and synthesis*. New York: Springer. <https://doi.org/10.1007/978-94-017-9475-6>

de Graft-Johnson, A., Manley, S., & Greed, C. (2003, May). *Why do women leave architecture? Research into the retention of women in architectural practice* (Research paper). Bristol: University of the West of England.

- de Graft-Johnson, A., Sara, R., Glead, F., Brkljac, N., & Greed, C. (2009). *Gathering and reviewing data on diversity in the construction professions* (Technical report). London: Industry Council.
- Greed, C. (1991). *Surveying sisters*. New York: Routledge.
- Greed, C. (2000). Women in the construction professions: Achieving critical mass. *Gender, Work and Organization*, 7(3), 181–196. <https://doi.org/10.1111/1468-0432.00106>
- Greed, C. (2006). Social exclusion: Women in construction. In A. Gale & M. Davidson (Eds.), *Managing diversity and equality in construction: Initiatives and practice* (1st ed., pp. 71–97). Oxon: Taylor and Francis.
- Greenberg, J. (1990). Organizational justice: Yesterday, today, and tomorrow. *Journal of Management*, 16(2), 399–432. <https://doi.org/10.1177/014920639001600208>
- Greenberg, J. (1993). Stealing in the name of justice: Informational and interpersonal moderators of theft reactions to underpayment inequity. *Organizational Behavior and Human Decision Processes*, 54(1), 81–103. <https://doi.org/10.1006/obhd.1993.1004>
- Greenberg, J. (1994). Using socially fair treatment to promote acceptance of a work site smoking ban. *Journal of Applied Psychology*, 79(2), 288–297. <https://doi.org/10.1037/0021-9010.79.2.288>
- Groeneveld, S. (2011). Diversity and employee turnover in the Dutch public sector: Does diversity management make a difference? *International Journal of Public Sector Management*, 24, 594–612. <https://doi.org/10.1108/09513551111163675>
- Gurjao, S. (2006, October). Inclusivity: The changing role of women in the construction workforce. In *Proceedings of the Construction in the XXI century: Local and Global Challenges the Joint International Symposium of CIB Working Commissions* (pp. 23–24).
- Haig, B. D. (2008). Précis of “an abductive theory of scientific method.” *Journal of Clinical Psychology*, 64, 1019–1022. <https://doi.org/10.1002/jclp.20506>
- Hill, A. B. (2015). The environment and disease: Association or causation? *Journal of the Royal Society of Medicine*, 108(1), 32–37. <https://doi.org/10.1177/0141076814562718>
- Holck, L. (2016). Putting diversity to work. *Equality, Diversity and Inclusion: An International Journal*, 35(4), 296–307. <https://doi.org/10.1108/EDI-12-2015-0107>
- Holloway, R. (2005, June). *Black and minority ethnic representation in the built environment professions*. London: Commission for Architecture and the Built Environment (CABE).
- Huo, Y. J., Smith, H. J., Tyler, T. R., & Lind, E. A. (1996). Superordinate identification, subgroup identification, and justice concerns: Is separatism the problem; Is assimilation the answer? *Psychological Science*, 7(1), 40–45. <https://doi.org/10.1111/j.1467-9280.1996.tb00664.x>

- Hutcheson, G. D., & Sofroniou, N. (1999). *The multivariate social scientist*. Thousand Oaks: Sage Publications. Retrieved from <https://uk.sagepub.com/en-gb/eur/the-multivariate-social-scientist/book205684>
- Jamieson, S. (2004). Likert scales: How to (ab)use them. *Medical Education*, 38, 1212–1218.
- Janssens, M., & Zanoni, P. (2014). Alternative diversity management: Organizational practices fostering ethnic equality at work. *Scandinavian Journal of Management*, 30, 317–331.
- Javaras, K. N. (2004). *Statistical analysis of Likert data on attitudes* (Doctoral dissertation, Ph. D. thesis, Oxford University, Oxford).. Retrieved from <http://ora.ox.ac.uk/objects/uuid:50754d97-86c2-433d-96b0-319787ece3e5>
- Jones, D. A., & Martens, M. L. (2008). The mediating role of overall fairness and the moderating role of trust certainty in justice-criteria relationships: The formation and use of fairness heuristics in the workplace. *Journal of Organizational Behavior*, 30(8), 1025–1051. <https://doi.org/10.1002/job.577>
- Kaiser, C. R., Major, B., Jurcevic, I., Dover, T., Brady, L. M., & Shapiro, J. R. (2013). Presumed fair: Ironic effects of organizational diversity structures. Retrieved from <http://psycnet.apa.org/journals/psp/104/3/504.pdf&uid=2012-31077-001&db=PA>
- Kalev, A., Dobbin, F., & Kelly, E. (2006). Best practices or best guesses? Assessing the efficacy of corporate affirmative action and diversity policies. *American Sociological Review*, 71(4), 589–617. <https://doi.org/10.1177/000312240607100404>
- Kotrlik, J. W. K. J. W., & Higgins, C. C. H. C. C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*, 19(1), 43.
- Kravitz, D. A., & Platania, J. (1993). Attitudes and beliefs about affirmative action: Effects of target and of respondent sex and ethnicity. *Journal of Applied Psychology*, 78(6), 928–938.
- Kulik, Carol, T., & Yiqiong, L. (2015). The fork in the road: Diversity management and organizational justice. In R. Cropanzano & M. L. Ambrose (Eds.), *The Oxford handbook of justice in the workplace* (pp. 561–575). Oxford: Oxford University Press.
- Leopold, J. (2002). *Human Resources in Organisations*. London: Financial Times.
- Leventhal, G. (1980). What should be done with equity theory? In *Social Exchange* (pp. 27–55). New York: Plenum Press.
- Liff, S. (1997). Two routes to managing diversity: Individual differences or social group characteristics. *Employee Relations*, 19(1), 11–26. <https://doi.org/10.1108/01425459710163552>

Lind, E. A., & van den Bos, K. (2002). When fairness works: Toward a general theory of uncertainty management. *Research in Organizational Behavior*, 24, 181–223. [https://doi.org/10.1016/S0191-3085\(02\)24006-X](https://doi.org/10.1016/S0191-3085(02)24006-X)

Lind, E. A., Kray, L., & Thompson, L. (2001). Primacy effects in justice judgments: Testing predictions from fairness heuristic theory. *Organizational Behavior and Human Decision Processes*, 85(2), 189–210. <https://doi.org/10.1006/obhd.2000.2937>

Little, B. L., Murry, W. D., & Wimbush, J. C. (1998). Perceptions of workplace affirmative action plans: A psychological perspective. *Group & Organization Management*, 23(1), 27–47. <https://doi.org/10.1177/1059601198231003>

McFarlin, D. B., & Sweeney, P. D. (1992). Research notes: Distributive and procedural justice as predictors of satisfaction with personal and organizational outcomes. *Academy of Management Journal*, 35(3), 626–637. <https://doi.org/10.2307/256489>

Metcalfe, B. D., & Woodhams, C. (2008). Critical perspectives in diversity and equality management. *Gender in Management*, 23(6), 377–381. <https://doi.org/http://dx.doi.org/10.1108/17542410810897508>

Metcalfe, B. D., & Woodhams, C. (2012). Introduction. New directions in gender, diversity and organization theorizing: Re-imagining feminist post-colonialism, transnationalism and geographies of power. *International Journal of Management Reviews*, 14(2), 123–140. <https://doi.org/10.1111/j.1468-2370.2012.00336.x>

Minnaert, L. (2014). Making the Olympics work: Interpreting diversity and inclusivity in employment and skills development pre-London 2012. *Contemporary Social Science*, 9(2), 196–209. <https://doi.org/10.1080/21582041.2013.838290>

Missa, P., & Ahmed, V. (2010, September). BME migrants' employment in construction: A multicultural perspective. In *Proceedings 26th Annual ARCOM Conference* (pp. 6–8).

Moksony, F. (Ed.). (1990). Small is beautiful: The use and interpretation of R2 in social research [Special Issue]. *Szociológiai Szemle*, 130–138.

Monaghan, K. (2007). *Equality Law* (1st ed.). Oxford: Oxford University Press.

Moorman, R. H. (1991). Relationship between organizational justice and organizational citizenship behaviors: Do fairness perceptions influence employee citizenship? *Journal of applied psychology*, 76(6), 845.

Mor Barak, M. E. (1998). Organizational and personal dimensions in diversity climate: Ethnic and gender differences in employee perceptions. *The Journal of Applied Behavioral Science*, 34(1), 82–104. <https://doi.org/10.1177/0021886398341006>

Ness, K. (2012). Constructing masculinity in the building trades: "Most jobs in the construction industry can be done by women." *Gender, Work & Organization*, 19(6), 654–676.

Newton, R., & Ormerod, M. (2005). Do disabled people have a place in the UK construction industry? *Construction Management and Economics*, 23(10), 1071–1081. <https://doi.org/10.1080/01446190500372510>

Ng, E. S. W., & Burke, R. J. (2004). Cultural values as predictors of attitudes towards equality and diversity: A Canadian experience. *Women in Management Review*, 19(6), 317–324. <https://doi.org/10.1108/09649420410555088>

Ochieng, E. G., & Price, A. D. F. (2010). Managing cross-cultural communication in multicultural construction project teams: The case of Kenya and UK. *International Journal of Project Management*, 28(5), 449–460. <https://doi.org/10.1016/j.ijproman.2009.08.001>

Office for National Statistics. (2016). Find out the gender pay gap for your job. Retrieved February 8, 2017, from <http://visual.ons.gov.uk/find-out-the-gender-pay-gap-for-your-job/>

Office for National Statistics. (2017). *One digit industry, construction, showing the number of disabled workers for the period Jan to Dec 2015 and Jan to Dec 2016*. Newport, UK: Office for National Statistics. Retrieved July 15, 2018, from <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/adhocs/007497onedigitindustryconstructionshowingthenumberofdisabledworkersfortheperiodjantodec2015andjantodec2016>

Office for National Statistics. (2018). *EMP13: Employment by industry*. Newport, UK: Office for National Statistics. Retrieved July 15, 2018, from <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13>

Paluck, E. L. (2007). Reducing intergroup prejudice and conflict with the mass media: A field experiment in Rwanda. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 68(6–B), 4179. <https://doi.org/10.1037/a0011989>

Parker, P. L., McDaniel, H. S., & Crumpton-Young, L. L. (2002). Do research participants give interval or ordinal answers in response to Likert scales? In *IIE Annual Conference Proceedings* (p. 1). Institute of Industrial and Systems Engineers (IISE).

Podsakoff, P. M. (2000). Organizational citizenship behaviors: A critical review of the theoretical and empirical literature and suggestions for future research. *Journal of Management*, 26(3), 513–563. <https://doi.org/10.1177/014920630002600307>

Powell, A., Bagilhole, B. M., & Dainty, A. R. J. (2006). The problem of women's assimilation into UK engineering cultures: Can critical mass work? *Equal Opportunities International*, 25(8), 688–699. <https://doi.org/10.1108/02610150610719146>

Powell, A., Bagilhole, B., & Dainty, A. (2009). How women engineers do and undo gender: Consequences for gender equality. *Gender, Work & Organization*, 16(4), 411–428. <https://doi.org/10.1111/j.1468-0432.2008.00406.x>

Powell, A., Dainty, A., & Bagilhole, B. (2010, September). Achieving gender equality in the construction professions: lessons from the career decisions of women construction students in the UK. In: Egbu, C. (Ed) Procs 26th Annual ARCOM Conference, 6-8 September 2010, Leeds, UK, Association of Researchers in Construction Management, 573-582.

Powell, A., Dainty, A., & Bagilhole, B. (2011). A poisoned chalice? Why UK women engineering and technology students may receive more "help" than their male peers. *Gender and Education*, 23(5), 585–599.
<https://doi.org/10.1080/09540253.2010.527826>

Powell, A., & Sang, K. J. C. (2013). Equality, diversity and inclusion in the construction industry. *Construction Management and Economics*, 31(8), 795–801.
<https://doi.org/10.1080/01446193.2013.837263>

Prasad, P., & Mills, A. (1997). From showcase to shadow. In P. Prasad, A. J. Mills, M. Elmes, & A. Prasad (Eds.), *Managing the organizational melting pot: Dilemmas of workplace diversity* (p. 395). Thousand Oaks, CA: Sage Publications.

Price, J. L., & Mueller, C. W. (1986). *Handbook of organizational measurement*. Marshfield MA: Pittman.

Rhys Jones, S. (2006). Government initiatives and toolkits. In A. W. Gale & M. J. Davidson (Eds.), *Managing diversity and equality in construction: Initiatives and practice* (1st ed., pp. 262–278). Oxon: Taylor and Francis.

Robbins, J. M., & Krueger, J. I. (2005). Social projection to ingroups and outgroups: A review and meta-analysis. *Personality and Social Psychology Review*, 9(32), 32–47. <https://doi.org/10.1207/s15327957pspr0901>

Robertson, C. J., & Hoffman, J. J. (2000). How different are we? An investigation of Confucian values in the United States. *Journal of Managerial Issues*, 12(1), 34–47.

Ruff, A. (2006). Discrimination law and the construction industry. In A. W. Gale & M. J. Davidson (Eds.), *Managing diversity and equality in construction: Initiatives and practice* (p. 355). Oxon: Taylor & Francis.

Sanchez, J. I., & Medkik, N. (2004). The effects of diversity awareness training on differential treatment. *Group & Organization Management*, 29(4), 517–536.
<https://doi.org/10.1177/1059601103257426>

Sang, K. J. C. (2012). Powell, A., & Sang, K. J. (2013). Equality, diversity and inclusion in the construction industry [Special issue]. *Construction Management and Economics*. 31(8).

Sang, K. J. C., Dainty, A. R. J., & Ison, S. G. (2007). Gender: A risk factor for occupational stress in the architectural profession? *Construction Management and Economics*, 25(12), 1305–1317. <https://doi.org/10.1080/01446190701546177>

Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika*, 52(3/4), 591–611.
<https://doi.org/10.1093/biomet/52.3-4.591>

Stone-Romero, E. F., & Stone, D. L. (2005). How do organizational justice concepts relate to discrimination and practice? In *Handbook of organisational justice* (pp. 439–467). Mahwah New Jersey: Lawrence Erlbaum Associates.

UKCG. (2013). *UKCG Workforce Survey 2013*. UKCG Unpublished.

Vermeulen, L. P., & Coetzee, M. (2011). Perceptions of the dimensions of the fairness of affirmative action: A pilot study. *South African Journal of Business Management, 37*(2), 53–64.

Wilson, T. D., Lindsey, S., & Schooler, T. Y. (2000). A model of dual attitudes. *Psychological review, 107*(1), 101.

Worrall, L., Harris, K., Stewart, R., Thomas, A., & McDermott, P. (2010). Barriers to women in the UK construction industry. *Engineering, Construction and Architectural Management, 17*(3), 268–281. <https://doi.org/10.1108/09699981011038060>

Wright, T. (2015). New development: Can "social value" requirements on public authorities be used in procurement to increase women's participation in the UK construction industry? *Public Money and Management, 35*(2), 135–140. <https://doi.org/10.1080/09540962.2015.1007708>