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The Role of Fairness Perceptions in Patient and Employee Health: A Multi-Level, Multi-Source Investigation

Abstract

This research extends the group engagement model (GEM) to examine how fairness judgments implicate both organizational-level and individual-level outcomes, including patient health and satisfaction (i.e., patient health outcomes) and employee health. Based on the social identity arguments of the GEM, we argue that fair career advancement procedures at the organizational-level and experiences of discrimination at the individual-level are indicators of identity-based evaluations of fairness. Utilizing annual staff survey data from the National Health Service (NHS) in the UK (n= 147 hospitals with n = 60,602 employees), we observe that organizational fairness of career advancement procedures significantly relates to patient health through the hospital-level mediator, employee voice. Individual fairness of an employee's personal experience with discrimination significantly relates to employee health through the individual-level mediator, psychological safety. Results support the three-stage indirect effect from organizational-level fairness to employee health via individual-level fairness and individual-level psychological safety. In supplemental studies, measurement limitations are addressed through multi-trait multi-method matrix and content validation approaches. These results indicate that the archival NHS measures sufficiently operationalize the constructs of interest providing further support for the hypothesized model. The theoretical and practical implications of this work for multilevel conceptualizations of fairness and healthcare organizations are presented.

Keywords: fairness, the group engagement model, organizational justice, voice, employee health

The Role of Fairness Perceptions in Patient and Employee Health: A Multi-Level, Multi-Source Investigation

Issues of fairness resonate throughout society, affecting individuals over the course of their lives. In the workplace, individual-level fairness perceptions represent an employee's beliefs about how equitably they are treated by their organization and its authorities (Ambrose & Schminke, 2009; Greenberg & Colquitt, 2005; Whitman et al., 2012). When aggregated to the organizational-level, organizational-level fairness is recognized as the extent to which employees collectively believe that people in the organization are being treated fairly (Ambrose & Schminke, 2009; Whitman et al., 2012). A well-established theory of organizational justice known as the group engagement model (GEM; Tyler, 1999; Tyler & Blader, 2000) maintains that employees rely on identity-based fairness perceptions as critical antecedents of their internal motivations and cooperative workplace behaviors (Blader & Tyler, 2003). In the current research, we draw upon the GEM to empirically test a complex, multilevel model that links fairness perceptions to patient and employee health outcomes via theoretically grounded explanatory mechanisms (see Figure 1 for hypothesized conceptual model).

The first contribution of this work is to leverage the GEM to link discrimination and equal opportunities with fairness at a more gestalt level. Justice scholars have not yet reached a consensus over how to best operationalize fairness at the group-level and have called for research that aligns theory and measurement in this area (Ambrose & Schminke, 2008; Whitman et al., 2012). The GEM's four component framework of procedural justice (Tyler & Blader, 2003) provides a theoretical rationale for aggregating identity-based fairness perceptions related to career advancement procedures to the organizational-level. Further, the framework suggests that different sources of procedural fairness (e.g., organization vs. supervisor/colleagues) inform "a

distinct judgment that people make and that, furthermore, they each make a unique contribution to understanding people's overall fairness judgments" (Tyler & Blader, 2003, p. 83). Our operationalizations of fairness thus include the *organization* as a source of procedural fairness for career advancement at the organizational level. At the individual level, we examine colleagues and supervisors as sources of individual-level procedural fairness related to an employee's personal experience with discrimination at work. Additionally, the GEM predicts both shared and distinct effects of fairness perceptions on outcomes. Therefore, we draw from the GEM to examine how identify-based fairness judgments in the form of collective appraisals of the fairness of career advancement procedures, as well as individual experiences with discrimination relate to both organizational- and individual-level outcomes (see Figure 1 for the hypothesized conceptual model).

Second, while prior research has demonstrated connections between organizational- and individual-level fairness with health, scholars have also argued for the importance of evaluating mediators in the fairness to health relationship both at the individual- and organizational-levels (Ambrose & Schminke, 2009; Whitman et al., 2012). We therefore incorporated (a) employee voice at the organizational-level and (b) psychological safety at the individual-level as explanatory mechanisms in our conceptual model. Regarding the former mechanism, a plethora of research demonstrates that employee voice is a proximal outcome of procedural fairness at the individual-level (Morrison et al., 2011); however, less is known about the strength or form of this relationship at the organizational-level. Further, voice has not been examined in the context of the GEM but may be an important mechanism and more proximal indicator of "cooperative behaviors" (Tyler & Blader, 2003). We anticipate that at the organizational-level, people's collective perceptions of fair career advancement opportunities contribute to their willingness to

speak up and engage with their colleagues for the betterment of the organization. This failure to speak up creates poor patient satisfaction, as there is a lack of sufficient provider interaction. It further contributes to increased patient mortality, as providers are not communicating effectively to promote high-quality patient care. Collective engagement in voice is a relatively novel and understudied area of employee voice research (Morrison, 2011; Morrison et al., 2011). Indeed, the literature could greatly benefit from an empirical assessment of the social and contextual factors that influence organizational-level voice, as well understanding how shared attitudes about speaking up predict group-level outcomes.

Regarding the latter mechanism, we contribute to extant literature by examining the mediating role of individual-level psychological safety in the individual-level relationship between fairness and employee health, as well as in the cross-level relationship from organizational-level fairness to employee health. The GEM contends that people's psychological and behavioral engagement at work is influenced by procedural justice through identity judgments. Psychological safety involves being able to be yourself without fear of exploitation and mistreatment by others. Further, psychological safety has been examined extensively in a healthcare context as a critical team-level variable that drives individual- and group-level outcomes. Psychological safety may be a critical explanatory factor in the posited link between fairness and health outcomes, as employees likely will not take interpersonal risks or engage with colleagues when they experience unfair treatment (i.e., discrimination based on their social identity characteristics). A lack of engagement may contribute to burnout and absenteeism, yielding poorer employee health. By including psychological safety as a mediator in our conceptual model, we provide a seminal extension of the GEM by considering a construct that

aligns well with the theoretical arguments put forth by Blader and Tyler (2003) but has yet to be empirically tested.

A final contribution of this work is that, by testing our model with data from a representative, diverse sample of employees in the United Kingdom (and re-examining the relationships in an independent sample of employees from the United States), we offer strong evidence in favor of the "business case" for equitable organizational procedures and diversity management. In recent years, there has been international public outcry calling for organizations to mitigate discrimination and advance fair, inclusive organizational structures that afford employees with equal opportunities (Chhaya, 2020). However, there is mixed evidence for the effectiveness of programs that many organizations rely on (e.g., diversity training) for fostering fairness and inclusion (Bezrukova et al., 2016). In this work, we demonstrate that it is imperative for organizations to implement *fair procedures* that reduce injustices towards employees. Not only does this directly benefit employee health, but it has major implications for meaningful organizational-level outcomes like the number of patient deaths.

The Group Engagement Model

The GEM rests on a *relational model* of justice, suggesting that individuals attend to procedural justice information, because it demonstrates valued information about one's belonging to a group (Blader & Tyler, 2009). In this work, we argue that career advancement procedures and individual experiences with discrimination both serve as indicators of procedural fairness that are closely connected to social identity and "the interpersonal experience of a procedure" (Tyler & Blader, 2003). People's fairness perceptions may be inextricably linked to their experiences of discrimination and unequal access in the workplace (Fujimoto et al., 2013); however, this argument has yet to be conceptualized or empirically tested under a theoretically

driven, multilevel framework. As such, it seems prudent to examine experiences of discrimination and equal career advancement procedures through the lens of an established theory of organizational justice to provide an empirical test of the relationship between identity-based indicators of procedural fairness and meaningful organizational outcomes. By arguing that social identity plays a key role in the types of behaviors (i.e., extra role behaviors) that employees will choose to engage in, the GEM explains the impact of procedural fairness on employee motivations and cooperative workplace behavior (Blader & Tyler, 2009). Social identity theory (Tajfel, 1978; Tajfel & Turner, 1979) maintains that individuals evaluate their positions in society by categorizing themselves and others into collective units (e.g., groups). If people believe that they are being treated fairly, i.e., perceive organizational procedures and decision-making processes as just, they will choose to socially identify with their organization, rather than solely with others who share similar identity characteristics (Tyler & Blader, 2003). This is because strong social identity with one's organization leads to deindividuation processes, wherein individuals internalize group norms and characteristics (Tyler & Blader, 2003). Individuals are thus intrinsically motivated to act on behalf of the group's interests, as a greater sense of belonging fosters positive self-image and self-evaluations within the group (Tajfel, 1978; Tyler & Blader, 2003).

Linking the Group Engagement Model with Equal Career Advancement Procedures and Experiences of Discrimination

We propose that the GEM might explain why individuals turn to social identity, and their experiences as members of diverse demographic groups, for fairness-relevant information. Employees who observe unfair career advancement opportunities at the organizational-level, or experience discrimination at the individual-level, may be a) more sensitive to justice-related

information and b) more withdrawn at work as they do not trust the organization to treat employees fairly (Fujimoto et al., 2013; Tyler & Blader, 2003). Equal career advancement procedures, as they are communicated by the organization and reflected in organizational procedures, act as a signal of organizational-level fairness. When equal career advancement procedures are present and discernable, employees in the organization may demonstrate a collective sense of belonging and feel more motivated to act on the organization's behalf, as this information signals that they can trust the organization to act fairly towards all employees regardless of their identity and background. When constructing fairness judgments at the individual-level, an employee may attribute unfair situations to their being part of a devalued demographic group, causing them to withdraw from the organization because of experiencing discrimination (Olkonnen & Lipponen, 2006; Tyler & Blader, 2003). If an organization is perceived as perpetuating unequal treatment, this may yield unfavorable fairness judgments both at the individual- and organizational-levels and subsequently impede organizational performance, collective engagement in organizational citizenship behaviors (OCBs), as well as individual-level employee health, all of which negatively impact the organization's bottom line.

We argue that *organizational fairness of career advancement procedures* arises as employees make collective judgments about the fairness and equity of organizational policies related to career advancement. Organizational-level fairness is measured as a hospital-level variable comprising aggregate fairness perceptions in line with extant research on operationalization of justice at the group-level (Ambrose & Schminke, 2009; Colquitt & Rodell, 2015). Moreover, *individual fairness of personal experience with discrimination* arises as an individual evaluates their personal experience(s) with discrimination within their organization and cognitively appraises the appropriateness of such treatment. Thus, individual-level fairness is

operationalized as an employee-level variable, in line with most research examining the effects of fairness on outcomes (Ambrose & Schminke, 2009; Colquitt & Rodell, 2015). We contend that that *individual fairness of personal experience with discrimination* (i.e., individual-level fairness) and *organizational fairness of career advancement procedures* (i.e., organizational-level fairness), impact employee and patient health outcomes (see Figure 1).

The Impact of Fairness on Health Outcomes

Individual-Level Fairness and Individual (Employee) Health

Generally, health refers to "a complete state of physical, mental, social well-being and not merely the absence of disease or infirmity" (World Health Organization, 1948; as seen in Robbins, Ford, & Tetrick, 2012, p. 235). When employees encounter health issues this not only directly impacts medical costs for organizations through increasing healthcare expenses, but also provokes greater absenteeism, turnover, and loss of productivity amongst personnel (Robbins et al., 2012). According to the GEM, fairness may be relied upon as a resource that promotes employee health, whereas a lack of fairness may engender heightened stress, thereby negatively impacting both psychological and physiological functioning (Robbins et al., 2012; Vermunt & Steensma, 2005).

Researchers have demonstrated that individual-level fairness perceptions and individual-level experiences of discrimination similarly impact employees' physical and mental health. The perceived injustice of inequitable pay, for example, contributes to the deterioration of employees' physical health (Schunck et al., 2015). Additionally, procedural injustice engenders negative consequences for employees' psychosomatic well-being (Schmitt & Doerfel, 1999). A dearth of procedural justice is also associated with increased depressive symptoms amongst employees, as well as greater sickness absenteeism (for a systematic review see Ndjaboué et al.,

2012). Research on racio-ethnic discrimination finds that experiences of discrimination lead to diminished mental health, positive affect, quality of life, and self-esteem (Gee et al., 2007; Lim & Cortina, 2005; Noh et al., 2007; Williams et al., 2010). Scholars have also explored the consequences of experiences of discrimination for physical health outcomes, such as all-cause mortality, hypertension, breast cancer, and asthma (Lewis et al., 2015). When people experience discrimination from their colleagues or supervisors and subsequently form judgments about this inequitable treatment, they form an identity-based fairness perception at the individual-level. Rather than be judged fairly in light of their job-related contributions, they may feel marginalized due to their identity characteristics. Because individuals cannot change these "surface-level" characteristics of their identity (e.g., race/ethnicity, age), they may feel isolated, distressed, and insecure in the workplace as a result of unfair treatment. We propose that individual-level fairness arises from the absence of experienced discrimination, and an employee who does not experience discrimination will report more positive health outcomes compared to an employee who does experience discrimination.

Hypothesis 1. Individual-level fairness will be positively related to individual-level employee health.

Organizational Fairness and Individual-Level Employee Health

The cross-level relationship from aggregated justice perceptions to employee health at the individual-level has been evidenced in prior research. For example, the interaction of procedural and distributive justice climates has been linked to significant improvements in individual-level mental health outcomes for employees, such as depression and anxiety (Spell & Arnold, 2007). A poor justice climate has also been shown to increase individual-level employee somatic complaints, above and beyond the effects of individual-level justice perceptions (Herr et al.,

2018). Similarly to individual-level fairness, organizational-level fairness related to career advancement enables employees to trust their organization as a source of procedural fairness, making them more likely to identify and engage with the organization (Tyler & Blader, 2003). Based on these findings and using the GEM as a backdrop, we propose a cross-level effect:

Hypothesis 2. Organizational-level fairness will be positively related to individual-level employee health.

Organizational-Level Fairness and Organizational-Level Patient Health Outcomes

Patient health and satisfaction represent distinct yet important organizational-level performance metrics. Justice at the unit-level has been linked to customer ratings of service quality in healthcare organizations (Molina et al., 2014) with units who perceived more equitable treatment offering enhanced functional and relational service quality (Molina et al., 2014). In healthcare organizations, employees not only have to fulfill their basic job demands by providing patients the care they need, but also often must go above and beyond these integral job demands to treat patients with adequate concern, respect, and sympathy in order for patients to feel satisfied with the care provided. For healthcare providers, engaging in appropriate bedside manner becomes a type of OCB in the hospital-setting, as it is not necessarily a core requirement for improving patient health; however, it likely impacts patient satisfaction. Justice climate has been shown to positively relate to group-level engagement in OCBs (Cropanzano et al., 2016; Tang & Tang, 2012; for a review see Thornton & Rupp, 2015), as well as unit-level effectiveness outcomes (e.g., productivity, customer satisfaction; Whitman et al., 2012). As such, it is particularly important to examine how it affects both objective patient outcomes (e.g., patient mortality), as well as subjective perceptions of providers (e.g., patient satisfaction) to provide a comprehensive picture of effective patient care at the organizational level. We propose the

following hypotheses pertaining to the relationships between organizational-level fairness and organizational-level patient health outcomes:

Hypothesis 3. Organizational-level fairness will be positively related to organizational-level patient health outcomes (H3a: patient mortality, H3b: patient satisfaction).

Why Fairness Impacts Health Across Multiple Levels: Identifying Mediating Mechanisms

Identifying underlying mechanisms that delineate when fairness perceptions impact employee health at the individual-level and patient outcomes at the organizational-level requires an examination of potential mediators. We maintain that in this health-care context in particular, *psychological safety* and *employee voice* will operate as significant individual-level and organizational-level mediators, respectively.

The Role of Individual-Level Psychological Safety

Psychological safety, the perception that it is safe to take interpersonal risks and trust others in the workplace (Edmondson, 1999), is a critical driver of employee engagement, organizational commitment, and job satisfaction (for a meta-analytic review see Frazier et al., 2017). The GEM contends that people rely on procedural justice to inform evaluations of their perceived status and respect at work (Tyler & Blader, 2003). Thus, the ability to be authentic to oneself and behave according to one's identity characteristics may be an integral part of this process. In their annual review of the psychological safety literature, Edmonson and Lei (2014) assert that "psychological safety is fundamentally about reducing interpersonal risk" (p. 24). If an employee experiences discrimination at work and no one attempts to correct this injustice, a lack of psychological safety may arise due to a perception of an unjust status hierarchy and increased mistrust of organizational authorities or colleagues. The target of discrimination feels devalued and may disengage to promote self-protection and reduce exploitation. We argue that

employee withdrawal, a proximal consequence of poor psychological safety, may be inherently stressful as it creates a more isolating environment, harms the employee's self-concept, and makes them fearful of rejection (Nembhard & Edmonson, 2011). Consequently, they will disengage from the workgroup and potentially organization, which we hypothesize could explain the relationship between individual experiences of discrimination and employee health.

Limited research has directly examined the effects of individual-level psychological safety on employee health; however, scholars have found support for models linking psychosocial safety climate to employee psychological health, organizational commitment, burnout, and strain (Dollard & Bakker, 2010). Meta-analytic evidence for the psychological safety construct supports the homology assumption - the notion that psychological safety relationships generalize across levels and theoretical inferences can be made from the group- to individual-levels of analysis (Frazier et al., 2017). We maintain that the relationship between psychological safety and employee health at the individual-level of analysis is not theoretically unfounded but should be empirically investigated to further test the generalizability of the homology assumption. In short, we argue that individual-level fairness positively relates to individual-level psychological safety, which in turn demonstrates a positive relationship with individual-level employee health.

Hypothesis 4. Individual-level psychological safety will mediate the relationship between individual-level perceptions of fairness and individual-level employee health.

Linking Organizational Fairness to Individual-Level Outcomes

In the current research, we propose that organizational-level fairness impacts individual-level employee health through the cross-level mediating roles of individual-level fairness and individual-level psychological safety. In organizations where most employees perceive their

organization as fair with regard to career advancement procedures, an employee may be less likely to experience discrimination at the individual-level due to equitable organizational norms and policies that that prohibit unjust prejudicial behavior. An employee may also feel a greater sense of psychological safety to openly engage with and trust others, because of company-wide policies that authentically signal the organization's commitment to fair, respectful treatment. As such, we hypothesize that organizational-level fairness will relate to individual-level outcomes, because social identity perceptions are constructed interpersonally with attention to organizational policies and procedures that signal belongingness (Blader & Tyler, 2009).

Hypothesis 5. Individual-level perceptions of fairness and individual-level psychological safety will mediate the relationship between organizational-level fairness and individual-level employee health (cross-level mediation).

The Role of Organizational-Level Employee Voice

Morrison (2011) provides an overarching conceptualization of the construct of voice, defining it as the "discretionary communication of ideas, suggestions, concerns, or opinions about work-related issues with the intent to improve organizational or unit functioning" (p. 375). Voice is a socially based behavior (Greenberg & Edwards, 2009), facilitated through positive intergroup relationships (Morrison, 2011). Morrison and colleagues (2011) introduced *group voice climate* as collective perceptions regarding one's ability to speak up and engage in voice at the unit-level. The positive relationship between fairness perceptions with employee voice behavior has been evidenced at the individual-level (Takeuchi et al., 2012). Scholars have also examined the implications of employee voice at the individual-level in the healthcare context, finding that voice engenders more upward feedback (e.g., nurses communicating with doctors), which has critical implications for error reduction in a hospital setting (Adelman, 2012). Further,

the promotion of employee voice at the individual-level is positively related to an employee's engagement in OCBs, as well as their organizational commitment, and job performance (Wilkinson et al., 2018). Yet, the role of organizational-level antecedents (e.g., organizational-level fairness) on organizational-level employee voice, as well as the relationship between organizational-level voice and organizational-level outcomes (e.g., patient health) has rarely been systematically investigated and therefore requires further empirical research (Greenberg & Edwards, 2009). The relationship between justice climate and voice climate has recently been demonstrated at the unit-level. In a study of 77 work groups, (n = 392 employees) Xiaoyi and Yunfeng (2018) found that justice climate facilitated voice climate, which subsequently fostered group voice behavior. It may be particularly fruitful to explore the mediating effect of organizational-level voice in the relationship between organizational-level fairness perceptions and patient outcomes, as voice has been shown to be particularly important for group-level effectiveness outcomes (Le Pine & Van Dyne, 1998; Morrison et al., 2011).

According to Morrison and colleagues (2011), "Because groups are characterized by interdependence, shared responsibility, diffuse expertise, and divergent perspectives, their effectiveness depends on members sharing their knowledge and speaking up with suggestions and opinions" (p. 183). In a healthcare context, providers may witness unsafe behavior by their colleagues or supervisors (e.g., mishandling of medications, failure to follow safety protocols); however, if employees develop a collective perception that their engagement in voice behavior will be met with an unjust response by the organization, they may remain silent in favor of self-protection (Morrison et al., 2011). Thus, employees develop a shared perception of when it is worthwhile to speak up and rely on their fairness perceptions as an indicator that speaking up will not be met with unjust repercussions or unreasonable sanctions. In this study, we propose

that organizational-level fairness affects patient health outcomes through the mediating role of organizational-level voice. Hospitals with employees who engage more, that choose to speak up for the betterment of the organization, may be perceived more favorably by patients thereby garnering higher patient satisfaction ratings. Further, in hospitals where employees voice their ideas and concerns, patient health outcomes (i.e., patient satisfaction and patient mortality) may be superior compared to organizations where employees do not voice.

Hypothesis 6. Organizational-level employee voice will mediate the relationship between organizational-level fairness and organizational-level patient health outcomes (H6a: patient mortality, H6b: patient satisfaction).

Method

Context

This study used data from the National Health Service (NHS) in England. The NHS comprises several hundred publicly funded healthcare provider organizations, which operate semi-autonomously under a centralized framework. Several different types of provider organizations exist, with the largest being called “acute trusts”, which are individual hospitals or groups of geographically close hospitals operating under joint management (and often sharing employees). Our study used data from acute trusts.

Data were collected from three different routine collections: the annual NHS staff survey (which includes a large sample of employees from every organization within the NHS), the NHS annual acute inpatient survey, and patient mortality data calculated from routine hospital episode statistics by NHS Digital, which is the NHS organization that collects and publishes many forms of data across the service. Data were taken from the NHS year 2010-11 (running from April 2010 to March 2011), which is the most recent year for which individual-level staff survey data

are available to the authors. This research was approved by the Rice University IRB (Protocol Number: IRB-FY2020-16, Study Title: Examining the Association of Fairness Perceptions with Employee Attitudes).

Sample

All 147 non-specialist acute trusts that were part of the NHS at the time of this study were included in the analysis. Within each organization, a random sample of 850 employees was selected for the staff survey: these employees were sent a questionnaire covering a range of topics relating to their experience at work, including management practices, attitudes, well-being, and errors and incidents. Further information about the NHS staff survey is available at www.nhsstaffsurveys.com.

In total, after excluding those sent out to employees who were not eligible (usually because they had left the organization), 118,801 questionnaires were sent out, and 60,602 responses received: a response rate of 51%. A large majority (80%) of respondents were female, and an even larger majority (86%) described their ethnic background as White, with 8% saying they were Asian, 4% Black, 1% of mixed ethnicity, and 2% from other ethnic backgrounds. 16% were 30 or under, 23% aged 31-40, 31% aged 41-50, and 31% over 50. 37% were from a nursing background, 9% from a medical/dental background, 20% were allied health professionals or related healthcare staff, 24% in administrative/clerical roles, 2% in non-clinical managerial roles, and 9% from other occupational groups (including maintenance, ancillary staff, etc.). These demographics coincide fairly consistently with the NHS overall demographics (e.g., NHS overall is 78% female and 80% White).

Measures

Most of the measures from the NHS staff survey were developed specifically for that survey when it started in 2003; some were adapted from existing measures but altered to fit the NHS context following extensive pilot testing. All measures went through extensive cognitive testing to ensure good comprehension and content validity. Details of these are as follows:

Organizational-level fairness. Survey respondents were asked a single question, "Does your [organization] act fairly with regard to career progression / promotion, regardless of ethnic background, gender, religion, sexual orientation, disability or age?", with response options "Yes", "No" or "Don't know". The organizational-level variable is the proportion of respondents within each organization who responded "Yes", excluding those who responded, "Don't know".

Organizational-level employee voice. This was measured via three items: "I am able to make suggestions to improve the work of my team/department", "There are frequent opportunities for me to show initiative in my role", and "I am able to make improvements happen in my area of work". Responses were on a 5-point Likert scale (with responses ranging from "Strongly disagree" to "Strongly agree"). Cronbach's alpha for the scale was 0.86. As this was operationalized at the organizational-level, the variable was aggregated for the analysis. Justification for the aggregation was provided by an ICC(2) of 0.73, and an average $r_{wg(j)}$ statistic of 0.81 (LeBreton & Senter, 2008).

Individual-level fairness. Respondents were asked two related questions: "In the last 12 months have you personally experienced discrimination at work from any of the following? (a) Patients / service users, their relatives or other members of the public; (b) Manager / team leader or other colleagues". Response options for each are "Yes" and "No". For the purposes of this work, we consider only fairness from colleagues, and therefore a respondent was considered to

have experienced discrimination if they answered “Yes” to part (b). Thus, individual fairness in experiences of discrimination was operationalized as a binary variable.

Individual-level psychological safety. Respondents were asked to rate the extent to which they agreed with four statements: “The people I work with treat me with respect”, “The people I work with seek my opinions”, “I am trusted to do my job”, and “I feel I belong to a team”. This was previously used by King et al., (2017). Cronbach’s alpha was 0.83.

Individual-level employee health. Three questions were taken from the SF-8 (an eight item short form questionnaire measuring health-related quality of life (Ware, Kosinski, Dewey, & Gandek, 2001): “Overall, how would you rate your health during the past four weeks?”, “During the past four weeks, how much difficulty did you have doing your daily work, both at home and away from home, because of your physical health?”, and “During the past four weeks, how much did personal or emotional problems keep you from doing your usual work or other daily activities?”

The first item is assessed on a scale ranging from “Excellent” to “Very poor”. The second has response options: “None at all”, “A little bit”, “Some”, “Quite a lot”, “Could not do daily work”. The third has response options “Not at all”, “Very little”, “Somewhat”, “Quite a lot”, “Could not do daily activities”. Cronbach’s alpha was 0.75. Note that this is coded so that a higher score represents worse health – I retain this direction of coding to maintain some consistency with the SF-8.

Organizational-level patient satisfaction. Each year, the NHS acute inpatient survey sends questionnaires to a randomly selected sample of adult patients who had had at least one night’s stay in hospital over a specific period of time during the year. Up to 1000 patients per organization per year are surveyed; further details on the methodology are available on the staff

survey website (Picker Institute, 2011). A single question was used as the measure of patient satisfaction: “Overall, how would you rate the care you received?”. Response options were “Excellent”, “Very good”, “Good”, “Fair”, and “Poor”. These were scaled from 0-100, so that “Excellent” was worth 100 and “Poor” worth 0, and then aggregated to the organizational level. As a measurement of perceived quality of care, this represents a combination of physical and psychological health of patients and is seen as a particularly salient outcome for organizations.

Patient mortality. This was the standardized mortality rate, measured as the ratio of actual deaths to expected deaths given the case mix (adjusted for demographic factors, diagnosis, and other background variables). It is calculated and published by NHS Digital, with data taken from hospital episode statistics (routinely collected). It is scored so that 100 represents average (expected) levels of mortality, with higher scores representing higher mortality (i.e. a worse outcome). Full details of the measure are available at NHS Digital (2019). This is clearly linked to patient health, and as a published measurement, is viewed by hospitals as a key performance indicator.

Measurement Validation

Because these were developed by the NHS for annual staff surveys, they are not based on previously published scales and have not been validated. To provide further support for the criterion validity of the constructs of interest, we employed two approaches – a multi-trait, multi-method matrix (MTMM, see Campbell & Fiske, 1959) and content validation approach (for the instructions/approach we adopted see Colquitt et al., 2019). Results of the MTMM approach (conducted with a sample of n=298 working adults) demonstrate that the validated voice measure (i.e., the 5-item promotive voice subscale from the employee voice scale; $\alpha = 0.92$; Liang et al., 2012) and NHS measure of voice were correlated at 0.63, a strong correlation and indication that

the NHS measure does a sufficient job of capturing the construct of promotive voice or voice efficacy. The validated organizational fairness measure (i.e., 3-items from the perceived overall justice measure intended to measure the fairness of the organization; $\alpha = 0.73$; Ambrose & Schminke, 2009) and NHS measure of organizational fairness were correlated at 0.33, indicating a moderate correlation. The validated psychological safety measure (i.e., the 7-item team psychological safety measure; $\alpha = 0.64$; Edmonson, 1999) and its corresponding NHS measure were correlated at 0.28, indicating a weak correlation. The validated individual fairness measure (i.e., 3-items from the perceived overall justice measure intended to measure one's *personal* experiences with fairness; $\alpha = 0.92$; Ambrose & Schminke, 2009) and the NHS item of individual fairness were correlated at 0.13, indicating a weak correlation. Two item-level exploratory factor analyses (EFA) were also conducted to examine whether the items loaded correctly onto the anticipated four factors (organizational fairness, individual fairness, voice, and psychological safety/civility). Results of the EFAs indicated that the NHS organizational fairness, individual fairness, and voice items load onto the same factors as the items from their corresponding validated measures, providing support for the suitability of those NHS measures. The MTMM results for the measure of psychological safety suggest that the NHS measure is not capturing the construct of psychological safety. As such, the authors also included a validated measure of civility (i.e., 4-item measure of work-group civility, $\alpha = 0.80$; Walsh et al., 2012) in the content validation to determine whether the same finding would emerge.

We applied Hinkin and Tracey's (1999) general approach to content validation and adapted specific instructions for content validation best practices from Colquitt et al. (2019). However, we also incorporated specific recommendations from Colquitt et al. (2019) that diverge from Hinkin and Tracey's (1999) method. Specifically, we utilized a sample of SMEs

(advanced graduate students in industrial-organizational psychology) instead of naïve judges, as their psychometric expertise makes them better able to differentiate between high- and low-quality items. Further, the SMEs' understanding of the diversity and justice literatures may enable them to determine which items most accurately map onto the constructs of interest. We calculated Hinkin and Tracey Correspondence (*htc*) statistics (see Colquitt et al., 2019, p. 7) to further determine definitional correspondence. The *htc* statistic equals the average mean definitional correspondence rating divided by the maximum anchor for all scale items and "takes on the maximum value of 1 when all judges select the maximum anchor for all scale items" (Colquitt et al., 2019, p. 11). Colquitt et al. (2019) also note that knowing the average definitional correspondence of the items in each measure provides straight-forward information of content adequacy. The mean definitional correspondence ratings for the validated and NHS measures, along with *htc* statistics are presented in Table 12 in Appendix B. The *htc* statistics for the NHS scales ranged from 0.39 (psychological safety) to 0.94 (organizational-level fairness) and took on values of 0.71 for the NHS voice and individual fairness measures. Further, the NHS psychological safety measure converged more (*htc* = 0.39 vs. *htc* = 0.59) when evaluated alongside the civility construct definition. This overall pattern of findings is fairly consistent with the EFA findings from our MTMM study, suggesting that the NHS measures for organizational fairness, individual fairness, and voice appear to be moderately to strongly aligned with their corresponding constructs definitions; however, the NHS psychological safety measure does not demonstrate a great deal of correspondence with the psychological safety construct definition. Despite the relative lack of support for the psychological safety measure alignment, the majority of the NHS measures sufficiently capture the constructs of interest and the results of the content validation generally support the measurement conceptualization offered in study one (full results

available upon request; see Appendix A for selected validated measures and Appendix B for content validation analyses, as well as supplemental mediation analyses using the validated measures and study two measures).

Analysis

Due to the multilevel nature of the data[1], all analysis involving individual-level outcomes (hypotheses 1, 2, 4, and 5) were tested in a nested framework within individuals grouped within organizations; in particular, hypotheses 2, 4, and 5 required cross-level analysis with an organizational-level predictor. Hypotheses 3 and 6 were tested at the organizational-level. For the mediation hypotheses (4, 5, and 6), indirect effects were calculated; in particular, given that the mediator in hypothesis 5 is binary, we estimated the indirect effect using transformations provided by MacKinnon and Dwyer (1993) so that the logistic regression estimates could be combined with the linear regression estimates to give the indirect effect. All analysis was conducted using Mplus (Muthén & Muthén, 1998-2017), and used Monte Carlo integration so that cases with incomplete data could be included in the analysis and full information maximum likelihood estimates generated, which are less biased than estimates using listwise or pairwise deletion (Enders & Bandalos, 2001).

Individual-level analysis controlled for age and sex (following the majority of studies with individual health outcomes; Bernerth & Aguinis, 2016), as well as broad ethnicity (White vs. minority, as White staff are less likely to face unfair treatment), occupational group, line management responsibility and organizational tenure (as certain groups and more senior staff may be less likely to experience unfair treatment). Organizational-level analysis controlled for

[1] A factor analysis was conducted on the NHS items. The basic three-factor model of the survey scales fits the data very well (CFI = 0.982, TLI = 0.975, RMSEA = 0.047 (95% CI 0.046-0.048), SRMR = 0.027) with very good evidence of discriminant validity as well.

size of the organization (measured as number of employees), and whether or not the organization was situated in London, which has been shown previously to be a predictor of patient satisfaction in particular (e.g. King et al., 2011).

Results

Tables 1 and 2 show the means, standard deviations and intercorrelations of all study variables at the individual- and organizational-levels respectively. Table 1 includes the individual-level measurement of voice even though it was operationalized at the organizational-level, to demonstrate that there is a correlation of 0.54 between voice and psychological safety. This then requires care in interpretation. A confirmatory factor analysis demonstrated that the two factors were indeed separate (the two-factor model with CFI = 0.99, TLI = 0.98, RMSEA = 0.06, SRMR = 0.02), and in particular better fit than a one-factor model (CFI = 0.79, TLI = 0.69, RMSEA = 0.22, SRMR = 0.09; difference in chi-squared = 37303 (1df); $p < .001$). In addition, discriminant validity was confirmed using Fornell and Larcker's (1981) test, which showed average variance extracted of 0.56 and 0.66 for psychological safety and voice respectively, clearly exceeding the squared correlation of 0.40. Table 1 also includes the aggregated version of organizational fairness, as this was used in some of the analyses with individual health as an outcome.

Table 3 shows the results of the multilevel regression analyses testing hypotheses 1 and 2. In the first, it can clearly be seen that individual-level fairness has a positive and significant relationship with individual health ($B = 0.51$, $p < .001$). This means that individuals experiencing discrimination are typically 0.51 units worse off in terms of individual health. This is more than half a standard deviation (0.80), and therefore this should be considered a large effect. Thus hypothesis 1 is clearly supported. In the second regression, it can clearly be seen that

organizational fairness has a negative relationship with individual health (B = -0.59, p < .001). Individuals in organizations that are seen as fairer by the employees generally, are those in which individual health is better. Thus hypothesis 2 is supported.

Table 4 shows the results of the organizational-level model testing hypotheses 3a and 3b. In the first column, it can be seen that there is a significant positive relationship (B = 30.34, p <.001) between organizational fairness and patient satisfaction, accounting for 8% of the variance in patient satisfaction. This means that for a one standard deviation change (0.04 units) in organizational fairness, there would be an expected change of around 1.2 units in patient satisfaction – just under a third of a standard deviation, indicating this is a moderate sized effect. In the second column, it can be seen that there is a significant negative relationship between organizational fairness and patient mortality (B = -40.43, p = .046), accounting for 2% of the variance after control variables. This means that a one standard deviation increase in organizational fairness is associated with a change of -1.6 units in patient mortality. Although this is around 0.15 standard deviations and would therefore typically be considered a small effect, this is equivalent to 1.6% fewer deaths in these hospitals and is therefore clearly a practically significant effect (equates to 30 fewer deaths per year). Therefore, hypotheses 3a and 3b are supported.

Table 5 shows the results from the multilevel mediation model used for testing hypotheses 4 and 5, and therefore includes both mediators as dependent variables as well as the main dependent variable, individual health. Because individual-level fairness is measured as a binary variable, the final column shows results from a cross-level logistic regression rather than linear regression. Hypothesis 4 was tested by examining the indirect effect from individual-level fairness to individual health via psychological safety. This has a significant indirect effect (effect

= 0.17, 95% CI: (0.16, 0.19)); using Preacher and Kelley's (2011) P_m statistic, this equates to P_m = 0.33, meaning that 33% of the effect of individual-level fairness can be explained by the mediation of psychological safety. Thus hypothesis 4 is supported. Hypothesis 5 was examined by looking at the three-stage indirect effect from organizational-level fairness to individual health via individual-level fairness and psychological safety. Due to the binary mediator, the P_m statistic cannot be calculated this time, but the indirect effect of -0.21 is significant (95% CI: (-0.26, -0.16)), and therefore hypothesis 5 is also supported.

Table 6 shows results from the organizational-level mediation model testing hypothesis 6. Again, a separate column is shown for the results with the mediator (voice) as the dependent variable. The indirect effect from organizational fairness to patient satisfaction via voice is 5.28 (95% CI: (1.63, 11.25)). This time P_m = 0.17, meaning that 17% of the relationship between organizational fairness and patient satisfaction can be accounted for by voice. The indirect effect from organizational fairness to patient mortality via voice is -15.74 (95% CI: (-35.86, -3.56)). Here P_m = 0.39 meaning that 39% of the relationship between organizational fairness and patient mortality can be accounted for by voice. Therefore hypothesis 6 is supported.

Supplementary analysis

Due to the high correlation between voice and psychological safety, the mediation models for hypotheses 4, 5, and 6 were re-run including both variables as potential mediators (at the appropriate level). For the models with individual health as an outcome, psychological safety remained a significant mediator (both for hypothesis 4 and hypothesis 5). Voice also had a significant mediation effect, although this was less than half of the size of that for psychological safety. Given the large sample size, it is not surprising that a smaller indirect effect would also be significant. For hypothesis 6, psychological safety was not a significant mediator of either

relationship (or a significant predictor of either outcome), but voice retained significance as a mediator in both cases even with psychological safety in the model. Taken together these results suggest that the hypothesized mediators were correct for the proposed level and are not interchangeable.

To allow for the possibility of overall hospital performance effects accounting for the organizational-level relationships, we also re-tested hypotheses 3 and 6 with quality of hospitals as a control variable (these were 4-point ratings provided by the Care Quality Commission, which rates all NHS organizations in England - see King et al., 2011, for further details). It is noteworthy that this measure is itself limited by the fact that it condenses many contrasting dimensions into a single score, and this score is measured on a coarse, four-point scale. All the relationships retained similar patterns, although in some cases they were no longer statistically significant. Specifically, the relationship between organizational fairness and patient satisfaction is still highly significant, supporting H3b, although the relationship with patient mortality is no longer statistically significant ($p = .084$), meaning H3a is not so strongly supported. For the mediated relationships, there is no longer a significant indirect relationship between organizational fairness and patient satisfaction via voice, so H6b is not supported with this control variable, but there is a significant indirect relationship between organizational fairness and patient mortality via voice, so H6a is supported. Overall, therefore, even after accounting for a variable that should account for substantial variance in these outcomes (patient mortality and satisfaction), many of the effects of fairness persist.

Discussion

In the current study, we examine the impact of identity-based fairness perceptions on health outcomes, drawing upon the GEM and testing a complex multilevel model. In hypotheses

1 and 2, we predicted that individual- and organizational-level experiences with fairness would be positively related to individual health, respectively. Results support both hypotheses, suggesting that favorable evaluations of fairness positively influence employee health. In hypotheses 3a and 3b, we anticipated that organizational-level fairness would be positively related to patient satisfaction and negatively related to patient mortality, a comprehensive assessment of patient health. This hypothesis also received support, which is both theoretically and practically significant, as it indicates that the employees who perceive their organizations as fairer with respect to career advancement procedures are also those in which patients have better health outcomes. In hypotheses 4 and 5, multilevel mediation analyses were conducted to assess the mediating mechanism of psychological safety, and in hypothesis 6, we examined the role of the organizational-level mediator, employee voice. In hypothesis 4, we predicted that psychological safety would mediate the direct relationship between individual experiences with fairness and individual health. In hypothesis 5, we posited that individual experiences with fairness and psychological safety would mediate the direct relationship between organizational-level fairness and individual health, a cross-level mediation. Results support both hypotheses, increased psychological safety links fairness perceptions, both at the organizational- and individual-level, with individual health. The organizational-level variable, employee voice, was analyzed in hypothesis 6 wherein we predicted that voice would mediate the direct relationships between organizational-level fairness and patient satisfaction, as well as organizational-level fairness and patient mortality. We found support for hypothesis 6, with employee voice accounting for 17% of the variance in the relationship between organizational-level fairness and patient satisfaction, and 39% of the variance in the relationship between organizational-level fairness and patient mortality.

Theoretical and Practical Implications

These findings provide robust support for the hypothesized model, demonstrating that when employees perceive greater fairness at the organizational- and individual-levels, health outcomes are better for patients and employees, respectively. Furthermore, if employees regard their organization as fairer, they may feel encouraged to speak up for the betterment of the organization. By applying fairness theories to experiences of discrimination and perceptions of equal employment opportunities, we extend the limited research that has examined how organizational justice relates to diversity management in the workplace (Fujimoto et al., 2013).

The associations between fairness perceptions and patient health outcomes have rarely been examined at the organizational level, as such this finding represents an important contribution to the organizational justice literature from a methodological perspective (Whitman et al., 2012). We also assess both subjective outcomes (i.e., patient satisfaction ratings) and objective outcomes (i.e., levels of patient mortality) to provide healthcare organizations with practically meaningful results. If patients are more satisfied, they may be more inclined to return for future services, a financially beneficial outcome for the organization. Additionally, in 2010-2011 (the NHS data year) there were a total of 274,735 deaths across the 147 organizations. This means an average of 1868.9 deaths per organization, which represents 3.20% of all eligible patients admitted. Therefore, in an average-sized organization, 1.6% of deaths represents about *30 extra or fewer people dying across the year*. If patients indicate decreased mortality rates, and we do see that patients in more fair organizations have 1.6% or 30 fewer deaths in the year, these healthcare organizations will likely be regarded more favorably by clients and encounter fewer wrongful death lawsuits, both of which confer financial benefits. Promoting positive perceptions of fairness through diversity management not only affects individual-level psychological safety,

but also fosters greater voice behavior at the organizational-level. As demonstrated, increased psychological safety and employee voice are associated with the promotion of employee and patient health in these hospital organizations; therefore, creating an equitable environment for employees of all backgrounds is a necessary first step to achieving these effects.

Despite the abundance of research linking either discrimination or organizational justice to affective and behavioral outcomes in organizations, comparatively less scholarship has explored how diversity-oriented policies (i.e., equal employment opportunities) and experiences of discrimination influence organizational- and individual-level fairness perceptions (Colquitt et al., 2015; Dhanani et al., 2018). Applying the GEM allows us to explore the interpersonal nature of justice judgements and their grounding in social identity. The effective management of diversity and communication of fairness for all employees is critical for organizations, as they increasingly employ individuals from heterogenous demographic backgrounds. This research conveys that people's perceptions of fair treatment related to identity characteristics influences their willingness to speak up at the organizational level, suggesting the importance of further empirical tests of collective engagement in voice (Morrison, 2011). Further, the associations of higher levels of fairness with positive patient and employee health outcomes provides support for a "business case" argument for organizational justice through effective diversity management. Organizations that provide fair career advancement procedures may be more likely to have healthier employees with sufficient mental and physical capabilities for optimal performance. Additionally, organizations who are regarded as fairer in terms of career advancement procedures by their employees, demonstrate more positive client outcomes, in this case superior patient satisfaction and decreased patient mortality, both of which should affect the organization's bottom line.

Limitations and Future Research Directions

This study is not without limitations; we must situate the results in context. First, the measures used in this research come from the NHS staff survey and are not based on previously validated scales. We attempted to resolve this limitation by applying measurement validation approaches in two separate studies. In the first, we surveyed an independent sample of employees and analyzed a multi-trait multi-method matrix (MTMM), finding support for the construct validity of the fairness and voice measures. In the second, we applied a content validation approach wherein subject matter experts in industrial-organizational psychology were asked to indicate how well the NHS measures corresponded with widely cited measures for the constructs of interest. By evaluating the alignment between the NHS measures and previously validated measures of organizational justice, employee voice, and psychological safety, we provided additional support for our conceptual model (McIntire & Miller, 2005). Conducting the MTMM and content validation analyses also further supported the theoretical framework that we present by effectively linking measures of discrimination and equal employment opportunities to measures of justice, an area that scholars note requires attention (Dhanani et al., 2018). We also recognize the relative lack of diversity in our NHS sample, as it was largely White and female; however, we re-tested the mediation models in our follow-up study with a more demographically diverse sample. The mediation models held at the individual-level for the validated measures, providing support for the conceptual model examined in study one (see Appendix B).

Due to the cross-sectional approach, we cannot rule out reverse causality in the relationship between organizational-level fairness and employee health (the cross-level relationship). While some research on psychological well-being might support the possibility of reversed relationships (e.g., poor well-being could lead to negative perceptions of context), the

rationale is not as strong for such reverse causality among the variables of focus here. For example, collective experiences of unfairness with regards to career advancement procedures are unlikely to result from poor patient outcomes. Thus, the overall arguments for reverse causality appear weaker than what we have conceptualized and tested. Additionally, the large effect sizes observed in this study, as well as the statistical significance of all purported hypotheses provide strong empirical support for these findings, and advance both theoretical and practical knowledge of the influences of fairness perceptions in organizations. Future research could address this limitation by using a longitudinal between-persons design, a within-persons design, or an experimental paradigm to explore causal and intra-individual outcomes of fairness perceptions (Dhanani et al., 2018).

Although the majority of NHS measures showed moderate to strong convergence with their associated validated measures, the NHS psychological safety measure was not as well-aligned. In the interest of being thorough, we included a validated measure of civility in our validation studies to eliminate it as an alternative mechanism. However, psychological safety appears to be a more *conceptually* appropriate construct than civility for several reasons. First, civility is commonly operationalized at the group-level (Nagy, 2017) with less theoretical support for individual-level examinations, whereas psychological safety has been established as an individual-level and group-level construct (Li et al., 2014). Additionally, there is empirical evidence for the relationship between civility as a predictor of procedural justice (e.g., Scruggs & Nagy, 2009), but less support for the reverse relationship. Further, in the diversity literature, *incivility* (i.e., modern discrimination, or subtle, ambiguous, but nevertheless harmful interpersonal behaviors that violate workplace norms for respect; Cortina et al., 2008) is also referred to as an antecedent of discrimination, or even an overlapping construct, but not an

outcome. Indeed, we reasoned that the NHS items could be better used to represent the construct of psychological safety, as this would additionally be supported by the GEM's arguments around reducing interpersonal exploitation and using fairness as a relevant information source to make those decisions. However, as Edmonson and Lei (2014) noted in their annual review of the psychological safety literature, there have long been issues in how the construct of psychological safety is operationalized as well as divergent findings across measures. These inconsistencies may also help to explain the lower-than-expected correlations between the NHS measure and the Edmonson measure. Despite the limitations in the NHS psychological safety measure, it is important to note the basic pattern of findings at the individual-level of analysis held across measures and samples. That is, in our analyses of data from the NHS and Qualtrics employee sample, the measures that we conceive of as psychological safety mediated the relationship between fairness and well-being. Considering these arguments, we retained psychological safety in our conceptual model instead of placing greater emphasis on civility as an alternative mechanism. In addition, given that the civility measure did not demonstrate clear convergence with the NHS measure of psychological safety in our follow-up studies, we do not necessarily think it is a clear conceptual driver of these results. Future research may benefit from exploring civility as an alternative mechanism; however, we think it may be more fruitful to examine other more theoretically aligned mediators (e.g., identity judgments).

An additional limitation reflects the slight alteration in results when hospital quality was examined as a control variable. At the organizational level, we initially observed that fairness of career advancement procedures was negatively related to patient mortality and positively related to patient satisfaction. To rule out alternative drivers of the outcomes of interest, we controlled for hospital quality as an antecedent of patient outcomes. The results changed slightly (i.e., H3a

and H6b no longer receive full support); however, the multilevel effects of fairness perceptions on health outcomes remained significant. Although in our study there is some redundancy in measurement that likely explains the hospital quality variable's role in our model, in that both of our organizational level outcomes contribute to the overall set of performance indicators on which the hospital quality rating is based, future research must consider hospital quality as an important contextual and potentially confounding variable.[2] Other community- and organizational-level variables (e.g., hospital location, community's access to healthcare, median community income, proportion of minority residents in the community, etc.) that may denote greater community-level status, wealth, or access to resources should also be integrated in conceptual models of identity-based fairness in light of well-established evidence linking socioeconomic disparities and community indicators to health outcomes (Wang & Geng, 2019).

A final area warranting further inquiry surrounds our decision to aggregate from the individual-level to the organizational-level in determining organizational-level fairness perceptions. In this work, we provide an empirical assessment of procedural fairness related to identity characteristics, which is important given divergence in the justice literature over operationalization and the dearth of research examining organizational- and individual-level fairness perceptions within a multilevel conceptual framework (Whitman et al., 2012). However, justice scholars disagree over the level of analysis at which justice effects are most pronounced, as well as whether effects change depending on the nature of the measure (e.g., gestalt vs. facet). Certain scholars suggest that justice may be examined at the group- or organizational-level, with shared justice judgments as the foundation of "justice climates" in organizations, teams, and

[2] While hospital quality is correlated with patient satisfaction at a moderate level ($r = 0.30$, $p < .001$), and with patient mortality at a low level ($r = -0.17$, $p = .05$), this is in part because the assessment of hospital quality is based on a range of factors including both patient satisfaction and mortality; moreover, the correlation of organizational fairness with both despite the two being uncorrelated suggests there are separate mechanisms for the two outcomes.

departments (Whitman et al., 2012). However, debates over whether individual judgments aggregated to the group level constitute climate, or not, and whether these judgments are episodic in nature or an ongoing process have not yet been resolved and necessitate further empirical research (Rupp & Paddock, 2010).

Conclusion

Utilizing multilevel, archival healthcare data, we demonstrate that fairness perceptions impact both patient- and employee-health. The multilevel conceptualization of fairness and the link to social identity represents a novel contribution to theorizing on organizational justice, and the practical significance of this work cannot be underemphasized given its application to objectively meaningful outcomes (e.g., patient mortality) in healthcare organizations.

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Tables and Figures

Table 1

Means, Standard Deviations and Intercorrelations of Individual-Level Variables

			Intercorrelations														
	Mean	St. Dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Individual health	1.92	0.80															
2. Psychological safety	3.89	0.63	-0.26														
3. Voice	3.54	0.80	-0.22	0.54													
4. Individual fairness[1]	0.09	0.28	0.18	-0.27	-0.22												
5. Organizational fairness[2]	0.89	0.04	-0.03	0.02	0.01	-0.07											
6. Occ. group: medical/dental	0.09	0.28	-0.08	0.04	-0.01	-0.01	-0.03										
7. Occ. group: nursing	0.37	0.48	0.05	0.01	0.00	0.04	0.00	-0.23									
8. Occ. group: administrative	0.24	0.42	0.00	-0.01	0.00	-0.03	0.00	-0.16	-0.41								
9. Occ. group: management	0.02	0.14	-0.02	0.03	0.10	-0.01	-0.02	-0.04	-0.11	-0.08							
10. Occ. group: other clinical	0.20	0.39	0.01	0.01	0.03	-0.02	0.01	-0.15	-0.37	-0.27	-0.07						

11. Occ. group: other non-clinical	0.09	0.28	-0.01	-0.06	-0.06	0.02	0.04	-0.09	-0.23	-0.16	-0.04	-0.15					
12. Organizational tenure[3]	3.96	1.59	0.02	0.03	0.02	-0.00	0.06	-0.11	0.10	-0.01	0.00	-0.02	0.00				
13. Age[4]	3.77	1.07	-0.03	0.00	-0.01	0.01	0.02	-0.02	-0.01	0.06	0.01	-0.11	0.09	0.51			
14. Gender: female[5]	0.80	0.40	0.06	0.01	-0.01	-0.02	0.03	-0.29	0.23	0.09	-0.05	-0.04	-0.17	0.08	0.01		
15. Ethnicity: white[6]	0.86	0.35	0.01	0.01	-0.01	-0.12	0.26	-0.15	-0.06	0.10	0.03	0.04	0.03	0.16	0.09	0.11	
16. Line management status[7]	0.30	0.46	-0.02	0.13	0.25	-0.01	-0.05	0.08	0.06	-0.14	0.16	0.00	-0.06	0.19	0.11	-0.09	-0.04

Notes

[1] 1 = experienced discrimination, 0 = not experienced discrimination

[2] Organizational-level variable used (proportion of respondents agreeing that their employer acts fairly)

[3] Tenure coded as 1 = Less than a year, 2 = 1-2 years, 3 = 3-5 years, 4 = 6-10 years, 5 = 11-15 years, 6 = over 15 years

[4] Age coded as 1 = 16-20, 2 = 21-30, 3 = 31-40, 4 = 41-50, 5 = 51-65, 6 = over 65

[5] 1 = female, 0 = male

[6] 1 = White, 0 = non-White

[7] 1 = line manager, 0 = not a line manager

All correlations with magnitude .02 or greater have $p < .001$

The reviewer team helpfully pointed out that we should include the level 2 variables in this table for completeness. We would generally expect lower correlations between a level 1 variable and a level 2 variable, because the constructs being measured are not directly comparable. If we were to examine the correlation between individual unfairness and individual perceptions of organizational unfairness, this would be far higher ($r = 0.42$, $p < .001$). But the low correlation also indicates that, by aggregating organizational unfairness to the organizational level, the construct created is indeed distinct from individual fairness, reflecting the variety of experiences of all organizational members.

Table 2

Means, Standard Deviations and Intercorrelations of Organizational-Level Variables

			Intercorrelations					
	Mean	St. Dev.	1	2	3	4	5	6
1. Patient satisfaction	76.7	3.5						
2. Patient mortality	100.0	10.4	-0.01					
3. Location[1]	0.16	0.37	-0.42***	-0.61***				
4. Number of employees	4625	2389	0.31***	-0.09	-0.08			
5. Organizational fairness	0.89	0.04	0.49***	0.31***	-0.67***	0.03		
6. Voice	3.54	0.08	0.08	-0.30***	0.24**	-0.15	0.08	
7. Hospital quality[2]	2.85	0.79	0.30***	-0.17*	0.08	0.00	0.08	0.29***

Notes
[1]Location: 1 = London, 0 = elsewhere
[2]Hospital quality measured on a scale from 1 = “Weak” to 4 = “Excellent”
N = 147
* p < .05; ** p < .01; *** p < .001

Table 3

Results of multilevel models for hypotheses 1 and 2 (predicting individual health)

	Hypothesis 1		Hypothesis 2	
	B (SE)	95% CI for B	B (SE)	95% CI for B
Occ. group: medical/dental	-0.15 (0.02)***	(-0.18, -0.11)	-0.17 (0.02)***	(-0.20, -0.14)
Occ. group: nursing	0.05 (0.01)***	(0.02, 0.07)	0.04 (0.01)**	(0.02, 0.07)
Occ. group: administrative	0.01 (0.01)	(-0.02, 0.04)	-0.01 (0.01)	(-0.04, 0.02)
Occ. group: management	-0.04 (0.03)	(-0.09, 0.01)	-0.06 (0.03)*	(-0.11, -0.01)
Occ. group: other clinical	0.03 (0.01)*	(0.00, 0.06)	0.01 (0.01)	(-0.01, 0.04)
Organizational tenure	0.02 (0.00)***	(0.01, 0.02)	0.02 (0.00)***	(0.01, 0.02)
Age	-0.04 (0.00)***	(-0.04, -0.03)	-0.03 (0.00)***	(-0.04, -0.03)
Gender: female	-0.06 (0.01)***	(-0.08, -0.05)	-0.06 (0.01)***	(-0.08, -0.04)
Ethnicity: white	0.05 (0.01)***	(0.03, 0.07)	0.02 (0.01)	(0.00, 0.04)
Line management status	-0.03 (0.01)**	(-0.04, -0.01)	-0.03 (0.01)***	(-0.05, -0.02)

Organizational-level fairness			-0.59 (0.08)***	(-0.75, -0.44)
Individual-level fairness	0.51 (0.01)***	(0.49, 0.54)		

Notes
B represents the unstandardized regression coefficient
* p < .05; ** p < .01; *** p < .001

Table 4

Results of organizational-level models for hypotheses 3a (predicting patient satisfaction) and 3b (predicting patient mortality)

Dependent variable	Patient satisfaction		Patient mortality	
	B (SE)	95% CI for B	B (SE)	95% CI for B
Location[1]	-1.31 (0.88)	(-3.05, 0.44)	-20.62 (2.44)	(-25.44, -15.79)
Size of organization[2]	0.41 (0.10)***	(0.21, 0.62)	-0.62 (0.14)*	(-1.18, -0.06)
Organizational fairness	30.34 (7.30)***	(15.90, 44.77)	-40.43 (20.07)*	(-80.11, -0.75)
R^2	0.36		0.41	
ΔR^2 due to Organizational fairness	0.08		0.02	

Notes
[1] Location: 1 = London, 0 = elsewhere
[2] Size represented by number of employees/1000, to allow meaningful coefficients
B represents the unstandardized regression coefficient
* p < .05; ** p < .01; *** p < .001

Table 5

Results of multilevel model for hypotheses 4 and 5 (mediation model)

Dependent variable	Individual health		Psychological safety		Individual fairness	
	B (SE)	95% CI for B	B (SE)	95% CI for B	Odds ratio (SE)	95% CI for odds ratio
Occ. group: medical/dental	-0.10 (0.02)***	(-0.14, -0.07)	0.15 (0.01)***	(0.13, 0.18)	0.55 (0.04)***	(0.48, 0673)
Occ. group: nursing	0.07 (0.01)***	(0.03, 0.08)	0.08 (0.01)***	(0.08, 0.12)	0.95 (0.05)	(0.85, 1.05)
Occ. group: administrative	0.03 (0.01)*	(0.00, 0.06)	0.07 (0.01)***	(0.05, 0.09)	0.69 (0.04)***	(0.62, 0.77)
Occ. group: management	-0.01 (0.03)	(-0.05, 0.04)	0.12 (0.02)***	(0.08, 0.16)	0.77 (0.11)	(0.59, 1.01)
Occ. group: other clinical	0.05 (0.01)***	(0.03, 0.08)	0.08 (0.01)***	(0.06, 0.11)	0.71 (0.04)***	(0.64, 0.80)
Organizational tenure	0.02 (0.00)*	(0.01, 0.03)	0.01 (0.00)**	(0.00, 0.01)	1.01 (0.01)	(0.99, 1.04)
Age	-0.04 (0.00)***	(-0.04, -0.03)	-0.01 (0.00)***	(-0.02, -0.01)	0.95 (0.01)***	(1.02, 1.09)
Gender: female	-0.08 (0.01)***	(-0.10, -0.06)	-0.04 (0.01)***	(-0.05, -0.02)	1.21 (0.04)***	(1.03, 1.22)
Ethnicity: white	0.06 (0.01)***	(0.05, 0.09)	-0.04 (0.01)***	(-0.06, -0.03)	0.39 (0.02)***	(0.39, 0.46)
Line management status	0.02 (0.01)**	(0.01, 0.04)	0.17 (0.01)***	(0.16, 0.18)	0.93 (0.03)***	(0.82, 0.95)

Organizational-level fairness	-0.40 (0.08)***	(-0.52, -0.20)	0.23 (0.10)*	(0.02, 0.39)	0.04 (0.01)***	(0.03, 0.11)
Individual-level fairness	0.34 (0.01)***	(0.28, 0.33)	-0.61 (0.01)***	(-0.48, -0.44)		
Psychological safety	-0.29 (0.01)***	(-0.30, -0.27)				

Notes
B represents the unstandardized regression coefficient
* p < .05; ** p < .01; *** p < .001

Table 6

Results of organizational-level mediation model for hypothesis 6

Dependent variable	Voice		Patient satisfaction		Patient mortality	
	B (SE)	95% CI for B	B (SE)	95% CI for B	B (SE)	95% CI for B
Location[1]	0.11 (0.02)***	(0.07, 0.15)	-2.07 (0.95)*	(-3.95, -0.18)	-18.32 (2.62)***	(-23.49, -13.15)
Size of organization[2]	-0.00 (0.00)	(-0.01, 0.00)	0.44 (0.10)***	(-1.18, -0.06)	-0.70 (0.28)*	(-1.25, -0.15)
Organizational fairness	0.78 (0.18)***	(0.42, 1.13)	25.06 (7.69)**	(9.86, 40.26)	-24.70 (21.00)	(-66.21, 16.82)
Voice			6.80 (3.39)*	(0.10, 13.49)	-21.11 (9.40)	(-39.69. -2.52)

Notes
[1] Location: 1 = London, 0 = elsewhere
[2] Size represented by number of employees/1000, to allow meaningful coefficients
B represents the unstandardized regression coefficient
* p < .05; ** p < .01; *** p < .001

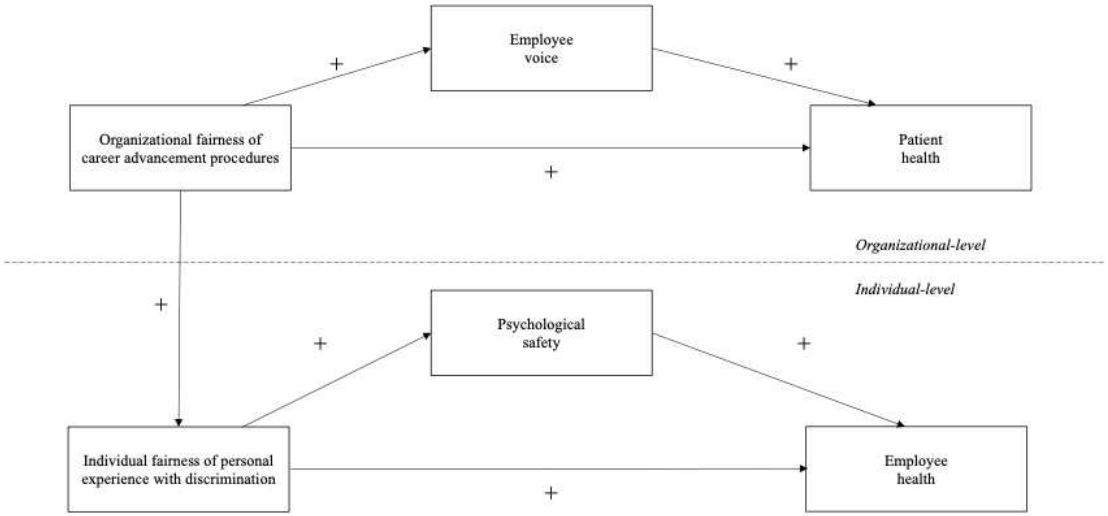


Figure 1. Proposed model

Appendix A

Table 7. Organizational-level fairness measures

Organizational-level fairness	
NHS Survey Items	Validated Scale Items
"Does your [organization] act fairly with regard to career progression / promotion, regardless of ethnic background, gender, religion, sexual orientation, disability or age?"	"Usually, the way things work in this organization are not fair" (POJ2, reverse scored) "For the most part, this organization treats its employees fairly" (POJ5) "Most of the people who work here would say they are often treated unfairly" (POJ6, reverse scored)

Table 8. Individual-level fairness measures

Individual-level fairness	
NHS Survey Items	Validated Scale Items

"In the last 12 months have you personally experienced discrimination at work from any of the following? (a) Patients / service users, their relatives or other members of the public; (b) Manager / team leader or other colleagues."	"Overall, I'm treated fairly by my organization" (POJ1) "In general, I can count on this organization to be fair" (POJ3) "In general, the treatment I receive around here is fair" (POJ4)

Table 9. Employee voice measures

Employee voice	
NHS Survey Items	Validated Scale Items

"I am able to make suggestions to improve the work of my team/department" "There are frequent opportunities for me to show initiative in my role" "I am able to make improvements happen in my area of work"	"[I] proactively develop and make suggestions for issues that may influence the unit." "[I] proactively suggest new projects which are beneficial to the work unit." "[I] raise suggestions to improve the unit's working procedure." "[I] proactively voice out constructive suggestions that help the unit reach its goals." "[I] make constructive suggestions to improve the unit's operation."

Table 10. Psychological safety measures

Psychological safety	
NHS Survey Items	Validated Scale Items

"The people I work with treat me with respect" "The people I work with seek my opinions" "I am trusted to do my job" "I feel I belong to a team"	"If you make a mistake on this team, it is often held against you." "Members of this team are able to bring up problems and tough issues." "People on this team sometimes reject others for being different." "It is safe to take a risk on this team." "It is difficult to ask other members of this team for help." "No one on this team would deliberately act in a way that undermines my efforts." "Working with members of this team, my unique skills and talents are valued and utilized."

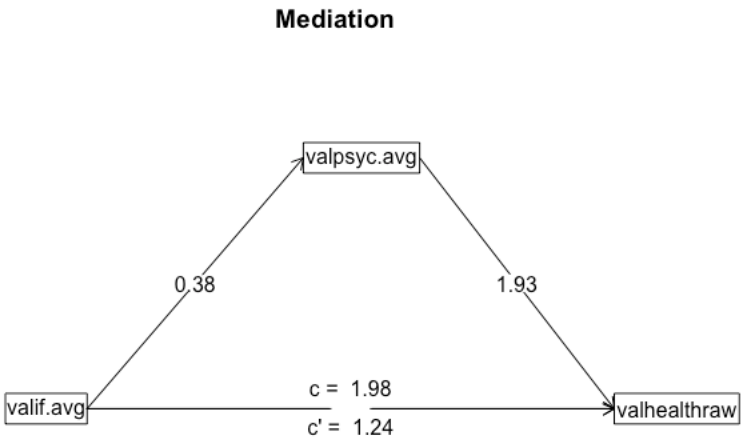
Table 11. Civility measures

Civility

NHS Survey Items	Validated Scale Items
"The people I work with treat me with respect" "The people I work with seek my opinions" "I am trusted to do my job" "I feel I belong to a team"	"Rude behavior is not accepted by your coworkers "Angry outbursts are not tolerated by anyone in your work group" "Respectful treatment is the norm in your work group" "Your coworkers make sure everyone in your work group is treated with respect"

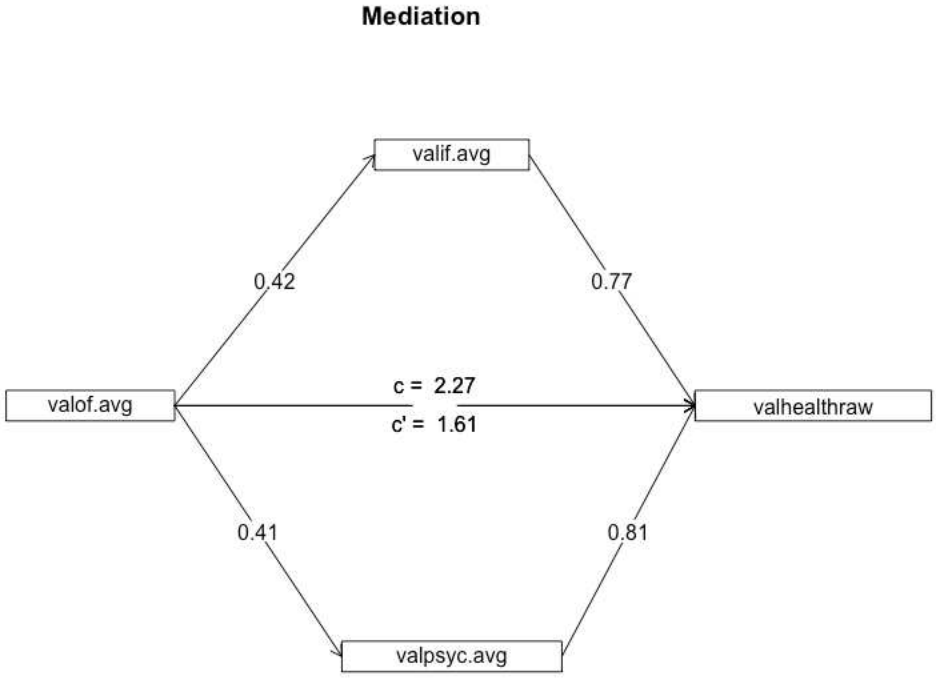
Appendix B

We conducted a mediation analysis using the validated measures of individual fairness (i.e., 3-items from the perceived overall justice measure intended to measure one's *personal* experiences with fairness; α = 0.92; Ambrose & Schminke, 2009), psychological safety (i.e., the 7-item team psychological safety measure; α = 0.64; Edmonson, 1999), and employee health (i.e., the SF-8 questionnaire; Ware et al., 2001) to provide support for our conceptual model and the relationships tested in study one with the NHS measures. We used the mediation package in R 4.0.0 to test the proposed model (Tingley et al., 2014). The effect of individual fairness on employee health was fully mediated via individual psychological safety. As the figure below illustrates, the regression coefficient between individual fairness and employee health and the regression coefficient between psychological safety and employee health was significant. The indirect effect was (.38)*(1.93) = 0.74. A bootstrapped 95% confidence interval for this effect was (0.30, 1.22), indicating a clearly statistically significant effect.



We conducted a second mediation analysis, again at the individual-level and using the mediate package in R (Tingley et al., 2014), to explore whether the serial mediation from the validated organizational fairness measure to the validated employee health measure through via the mediators of individual fairness and psychological safety held with the validated measures.

The effect of organizational fairness on employee health was fully mediated via individual fairness and individual psychological safety. As the figure below illustrates, the regression coefficient between individual fairness and employee health and the regression coefficient between psychological safety and employee health was significant. The indirect effect was 0.66, with a bootstrapped 95% confidence interval of (0.09, 1.20), indicating clear statistical significance. We conducted these mediation analyses in a separate, more demographically diverse sample to provide greater support for the conceptual model proposed in study one by testing the same relationships with validated measures of the constructs of interests. The findings presented here suggest that the mediators of voice and psychological safety do indeed operate as underlying mechanisms in the relationship between fairness perceptions and employee health outcomes.



References

Tingley D, Yamamoto T, Hirose K, Keele L, Imai K (2014). "mediation: R Package for Causal Mediation Analysis." *Journal of Statistical Software*, **59**(5), 1–38. http://www.jstatsoft.org/v59/i05/.

Table 12. Mean Definitional Correspondence Ratings for all Measures

Definition	Measure	n	*M*	*SD*	htc
Organizational Fairness	NHS Voice	7	1.48	1.08	0.21
Organizational Fairness	Val Voice	7	1.43	1.07	0.20
Organizational Fairness	*NHS Organizational Fairness*	*7*	*6.57*	*1.13*	*0.94*
Organizational Fairness	Val Organizational Fairness	7	6.86	0.36	0.98
Organizational Fairness	NHS Psychological Safety	7	2.00	1.47	0.29
Organizational Fairness	Val Psychological Safety	7	2.10	1.65	0.30
Organizational Fairness	NHS Individual Fairness	7	3.93	2.46	0.56
Organizational Fairness	Val Individual Fairness	7	6.29	1.79	0.90
Organizational Fairness	Val Civility	7	2.61	1.86	0.37
Individual Fairness	NHS Voice	7	1.71	1.19	0.24
Individual Fairness	Val Voice	7	1.60	1.14	0.23
Individual Fairness	NHS Organizational Fairness	7	6.00	1.00	0.86
Individual Fairness	Val Organizational Fairness	7	5.43	1.60	0.78
Individual Fairness	NHS Psychological Safety	7	2.61	2.01	0.37
Individual Fairness	Val Psychological Safety	7	2.14	1.54	0.31
Individual Fairness	*NHS Individual Fairness*	*7*	*5.00*	*2.69*	*0.71*

Individual Fairness	Val Individual Fairness	7	6.67	0.80	0.95
Individual Fairness	Val Civility	7	3.09	2.03	0.44
Voice	*NHS Voice*	*7*	*4.95*	*2.50*	*0.71*
Voice	Val Voice	7	6.26	1.60	0.89
Voice	NHS Organizational Fairness	7	1.43	1.13	0.20
Voice	Val Organizational Fairness	7	1.81	1.12	0.26
Voice	NHS Psychological Safety	7	2.50	1.99	0.36
Voice	Val Psychological Safety	7	2.82	2.15	0.40
Voice	NHS Individual Fairness	7	1.43	1.09	0.20
Voice	Val Individual Fairness	7	1.86	1.15	0.27
Voice	Val Civility	7	2.55	1.89	0.36
Psyc Safety	NHS Voice	7	3.10	2.00	0.44
Psyc Safety	Val Voice	7	3.57	1.63	0.51
Psyc Safety	NHS Organizational Fairness	7	2.14	1.68	0.31
Psyc Safety	Val Organizational Fairness	7	2.29	1.49	0.33
Psyc Safety	*NHS Psychological Safety*	*7*	*2.75*	*1.60*	*0.39*

Psyc Safety	Val Psychological Safety	7	5.16	2.08	0.74
Psyc Safety	NHS Individual Fairness	7	2.07	1.49	0.30
Psyc Safety	Val Individual Fairness	7	2.33	1.39	0.33
Psyc Safety	Val Civility	7	3.45	1.86	0.49
Civility	NHS Voice	7	2.05	1.2	0.29
Civility	Val Voice	7	2.2	1.86	0.31
Civility	NHS Organizational Fairness	7	3.86	3.02	0.55
Civility	Val Organizational Fairness	7	3.57	2.62	0.51
Civility	NHS Psychological Safety	7	4.14	2.64	0.59
Civility	Val Psychological Safety	7	3.65	2.47	0.52
Civility	NHS Individual Fairness	7	4.42	2.64	0.63
Civility	Val Individual Fairness	7	4.14	2.77	0.59
Civility	Val Civility	7	5.18	2.40	0.74

Note. NHS = National Health Service, Val = Validated (refers to the referent validated measure for each construct), OF = organizational-level fairness measure, IF = individual-level fairness measure. Constructs and measures are *italicized* to indicate when measures were evaluated for alignment with their corresponding construct definition.