

# HOW DO I COMPARE? THE EFFECT OF WORK-UNIT DEMOGRAPHICS ON REACTIONS TO PAY INEQUALITY

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Prior research suggests that individuals react negatively when they perceive they are underpaid. Moreover, individuals frequently select pay referents who share their race and gender, suggesting that demographic similarity affects one's knowledge of pay differences. Leveraging these insights, the authors examine whether the gender and racial composition of a work unit shapes individuals' reactions to pay deprivation. Using field data from a large health care organization, they find that pay deprivation resulting from workers receiving less pay than their same-sex and same-race coworkers prompts a significantly stronger response than does pay deprivation arising from workers receiving less pay than their demographically dissimilar colleagues. A supplemental experiment reveals that this relationship likely results from individuals' propensity to select same-category others as pay referents, shaping workers' information about their colleagues' pay. The study's findings underscore the need to theoretically and empirically account for how demographically driven social comparison processes affect reactions to pay inequality.

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Comparing one's outcomes to those of others is a basic human activity, and scholars have long recognized that people determine satisfaction not simply by the value of their rewards but by that value relative to others' rewards (Festinger 1954; Gartrell 2002). Drawing on this insight, a robust literature on intra-organizational pay inequality has informed our understanding of the many outcomes associated with pay differences among colleagues, including the effect of these differences on worker satisfaction, performance, and turnover. Research in this area frequently emphasizes that workers tend to compare themselves to colleagues who work in the same job and the same unit within the firm, as these boundaries seem to

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affect workers' earnings and influence the amount of information with which people make internal pay comparisons (e.g., Nickerson and Zenger 2008). However, current research rarely develops or tests arguments about whether the selection of internal pay referents—colleagues to whom workers compare their pay—varies systematically within these boundaries. As a result, scholars have yet to consider whether workers' reactions to pay inequality vary depending on which colleagues workers perceive as desirable and/or available pay comparison targets.

This omission occurs perhaps because many intra-organizational pay-inequality studies rely on publicly available wage data, which obviates the need to consider factors that affect workers' knowledge of their colleagues' pay (see Conroy, Gupta, Shaw, and Park 2014). Yet, employees in most firms cannot readily obtain information about their peers' pay. In this study, we draw on social-identity and similarity-attraction theories that emphasize how demographic characteristics shape social comparisons in the workplace to develop theory about how workers' gender or racial similarity to their work-unit peers shapes the workers' access to information about the amount of their pay relative to that of their colleagues. Doing so enables us to explain why the gender and racial composition of a work unit is likely to shape individuals' reactions to pay deprivation, which is defined as the cumulative pay difference between a worker and their higher-paid peers.

Current theory leads us to expect that higher pay deprivation will be associated with greater perceptions of inequity. We extend this work by arguing that workers will respond more strongly to being paid less than demographically similar peers than to being paid less than dissimilar peers. Specifically, we theorize that when knowledge of others' pay is not readily available, individuals will have more information about the pay of their demographically similar coworkers than about coworkers of a different gender or race, because individuals are more likely to select same-sex or same-race others as pay referents. We test our hypotheses by examining the effects of pay deprivation on voluntary turnover, a commonly explored behavioral response in studies of workplace pay inequality.

We examine this relationship using five years of personnel records covering more than 2,600 work units in a large US health care firm (hereafter "HealthCo"). Our uniquely detailed data provide information on pay, race, gender, performance, and work units for employees at various levels and geographic locations and in distinct functions and professions within a single firm. We supplement our field data with an experimental simulation to examine how gender similarity affects referent selection, allowing us to better identify how the referent-selection process affects reactions to pay inequality and to address endogeneity concerns.

We find support for our baseline prediction that pay deprivation is positively associated with voluntary turnover. The results also indicate that workers receiving less pay than that of their same-sex and same-race coworkers prompts a significantly stronger response than does workers

receiving less pay than that of their other-sex or other-race coworkers. Our experimental results reveal that this likely stems from individuals' propensity to select similar others as pay referents, thereby shaping workers' information about their work-unit peers' pay.

These results extend existing theories of intra-organizational pay inequality. If we take two workers with identical observable characteristics—such as pay, performance, and pay rank—and place them in separate groups with the same pay basis, prior theory provides no reason to expect these workers to respond differently to identical levels of pay deprivation. By contrast, our findings suggest that if the demographic composition of those groups differs, then these individuals will likely have distinct knowledge about their relative pay and, thus, may react differently. Whereas prior research has rarely theorized the process of selecting pay referents within firms, we highlight how this process shapes responses to pay inequality. Hence, our study underscores the importance of theoretically and empirically accounting for attributes likely to affect the selection of pay referents and, thus, responses to workplace pay inequality.

### **Organizational Wage-Setting**

Many early wage-setting systems were designed to maintain perceptions of equity by limiting pay differences between workers doing the same job. After World War II, most large US firms developed a bureaucratized system of employment practices that prioritized internal equity in the firms' wage structure (Osterman 1999). This approach emerged from fierce negotiations between labor unions and management over employment terms, in which unions, attempting to reduce opportunities for discrimination, favoritism, and nepotism that affected workers' pay (Slichter, Healy, and Livernash 1960), sought to curtail managerial discretion over compensation decisions. Non-unionized workplaces then adopted this approach, to forestall unionization (Jacoby 1985). In these bureaucratic internal labor markets, wages were based almost exclusively on the job rather than on individuals' characteristics (Doeringer and Piore 1971).

Several changes in wage structures have since increased the likelihood of differences in intra-group wages. Reflecting a shift to market-based employment relationships and labor unions' diminishing power, individual attributes now more strongly influence the assignment of wages (see Gupta, Conroy, and Delery 2012). This approach leads to pay differences based on human-capital differences (e.g., work experience) and performance, as firms pay productive workers more than they pay less-productive colleagues. In our setting, we use various analytical approaches to account for these human-capital and performance-based pay differences.

Yet, pay differences may arise from other factors. For example, pay is also increasingly contingent on contextual factors regarding how employees enter their jobs. Many companies determine starting salaries based on

prevailing wages in the local labor market, such that employees hired during tighter labor markets and/or hired into jobs in more-competitive local labor markets may receive higher salaries, compared to colleagues hired into similar jobs at other times or locations. Moreover, most firms now use both external and internal hiring to fill jobs, with external hires consistently receiving higher pay compared to colleagues entering the same job internally (Bidwell 2011). Furthermore, evidence suggests that supervisors often control wage-setting within their work units and may have their own preferences for more- or less-compressed wages (Pillutla, Farh, Lee, and Lin 2007).

Because of these shifts, workers doing similar work in similar parts of a firm are often paid different amounts. Below, we theorize about how demographic characteristics that shape whom workers select as their pay referents affect reactions to these intra-unit pay differentials.

### **Pay Deprivation and Turnover**

Early research on workplace pay inequality predominately explored competing predictions about whether greater pay inequality yields positive or negative outcomes, often using turnover as a dependent variable (see Downes and Choi 2014). For example, motivation theories in psychology and economics suggest that larger pay differentials improve worker motivation and reduce turnover by linking effort and outcomes (Jenkins, Mitra, Gupta, and Shaw 1998). By contrast, research on fairness, including equity theory (Adams 1963) and relative deprivation theory (Merton 1957), contends that paying individuals differently for the same job may trigger perceptions of inequity and/or injustice, leading workers to exit the firm (Riddell 2011). In fact, recent meta-analytic evidence finds that perceptions of injustice have more strongly affected voluntary turnover over time, suggesting that this may be why many firms attempt to ban discussions of pay among colleagues (Rubenstein, Eberly, Lee, and Mitchell 2018).

Recognizing that some level of pay inequality is inevitable in contemporary organizations, research has attempted to identify the contextual variables affecting individuals' reactions to workplace pay inequality (see Shaw 2014). For example, high earners have been found to respond positively to larger variations in pay, whereas low earners generally react negatively to it (Trevor and Wazeter 2006). This pattern is consistent with insights from relative deprivation theory, which submits that individuals experience deprivation when they judge their rewards as inferior to those of comparable others, such as colleagues in their work unit. Feelings of deprivation increase as the number of others receiving greater rewards increases *and* as the gap between the focal worker's rewards and those of advantaged others increases (Bolino and Turnley 2009). Compared to workers who experience little to no deprivation, individuals who experience high levels of deprivation likely perceive their work situation as less desirable and, thus, are more likely to exit the firm.

Relative deprivation approaches to pay inequality primarily focus on the perceptions and reactions associated with unfavorable upward comparisons. Although workers may gain satisfaction from favorable downward comparisons, studies suggest that negative reactions from upward comparisons outweigh these benefits (Messick and Thorngate 1967; Greenberg 1988). Prior research therefore leads us to expect that the level of pay deprivation workers experience directly affects their willingness to exit the firm.<sup>1</sup> Hence, we offer the following baseline hypothesis:

**Hypothesis 1 (H1):** Pay deprivation will be positively associated with voluntary turnover.

### **Referent Selection, Demographic Similarity, and Pay Information**

Before individuals can assess how much they are paid relative to others, they must first identify a referent(s) for comparison. Prior pay-inequality research has emphasized how structural factors meaningfully shape referent selection; although workers can compare themselves to others in different organizations, work units, and jobs, prior work has found that workers are most likely to compare themselves to others working in the same organizations, same work units (Card, Mas, Moretti, and Saez 2012), and same jobs (Conroy et al. 2014). Workers also tend to select referents who are similar in (perceived) performance (Martin, Suls, and Wheeler 2002). These factors shape referent selection primarily because workers assume they directly affect pay. For these reasons, research on horizontal pay inequality tends to examine how workers doing similar work in similar parts of an organization respond to pay inequality, while empirically accounting for performance differences (e.g., Shaw 2015).

Social-comparison research has emphasized, however, that attributes unrelated or indirectly related to the outcome under evaluation may also drive referent selection (Crosby 1976; Wood 1989). For example, Miller (1982) found that when given the choice to compare their scores on a logical reasoning test to another study participant's score, more than 90% of participants selected a referent of similar physical attractiveness, although participants perceived no relationship between attractiveness and logical reasoning. Individuals are likely to select referents who share attributes only indirectly related to the outcome of interest when the attribute is central to their own identities (Miller 1984), because they perceive that they are likely to share similar life experiences, personal values, priorities, and attitudes toward work (Goethals and Darley 1977; Gibson and Lawrence 2010). For example, research reveals that individuals' perceptions of surface-level similarity (e.g., similarity of race or gender) predicts perceptions of deep-level similarity (e.g., work style) (Kammeyer-Mueller, Livingston, and Liao 2011).

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<sup>1</sup>Although we focus on pay deprivation, in our supplemental analyses later in the article in the Other Tests subsection, we also consider relative pay advantage.

We therefore expect that because demographic characteristics, specifically gender and race, are often central to workers' identities (Wood 1989; Alcoff 2006), these characteristics will affect the selection of pay referents even if individuals perceive these characteristics to have a limited effect on pay.

Indeed, a key insight from social-categorization theory is that people use salient social categories, such as demographic characteristics (Tajfel 1978), to construct social identities and define others as similar to or different from themselves (Hogg and Terry 2000). That is, demographically similar employees more likely view themselves as members of the same social category. The in-groups and out-groups resulting from social categorization are therefore thought to influence how individuals select referents for self-comparison (Goodman 1977). The importance of category-based membership groups to self-identity may therefore lead individuals to assess their rewards relative to those in their groups (Arnkellson and Smith 2000), suggesting that individuals are more likely to seek pay information about demographically similar others.

Similarity-attraction arguments further suggest that demographic composition affects the creation of friendship ties within groups (Byrne 1971), which, in turn, shape the information shared among group members. Although people vary in their propensity for relationships with members of different demographic groups, evidence shows that across widely varying relations, such links are rare compared to within-group ties (Wimmer and Lewis 2010). For example, data from the General Social Survey reveal that only 15% of respondents reported discussing an important matter with a person of another race (McPherson, Smith-Lovin, and Brashears 2006). Fear of rejection from demographic out-groups also dampens individuals' willingness to engage in cross-demographic group interactions (Shelton and Richeson 2005). Moreover, while individuals may proactively seek information about others to make social comparisons, the exchange of personal information frequently occurs from the "unbidden byproduct of social relations through personal contacts" (Gartrell 2002: 166). That is, discussions about pay and other sensitive topics are likely to be unplanned, emerging naturally through informal conversation among friends who are also colleagues. Because people tend to develop close ties to and communicate with demographically similar others (Berscheid and Walster 1978) and because much information flows through close personal associations (Krackhardt 1992), demographic similarity profoundly affects the information shared among colleagues.

Both social-categorization and similarity-attraction arguments, therefore, emphasize that a key factor driving in-group social comparisons is opportunities for contact with others sharing a salient characteristic such as gender or race. Although exceptions exist (e.g., Davison 2014), research has generally found a preference for same-sex and same-race referents. For example, when given an opportunity to obtain pay data about cross-sex others in contexts where sex was ostensibly unrelated to performance,

subjects overwhelmingly preferred information about same-sex others (Major and Testa 1989). When women were presented with successful targets of both sexes, they preferred to compare themselves with the same-sex target and saw female targets as potential role models (Buunk and Van der Laan 2002). Gibson and Lawrence (2010) found that although men and women do include cross-sex others as career referents, both men's and women's career referents reflect a significantly larger proportion of same-sex others (see also Buchanan 2008). Lawrence (2006) found a comparable pattern for same-race referents. In sum, prior theory has found that demographic similarity significantly affects the referents people choose.

We similarly expect that gender and racial similarity will significantly influence whom workers select as pay referents, which will affect, in turn, workers' information about others' pay and their calculation of their own relative rewards. Because demographic similarity should affect individuals' choice of pay referents, it should also influence people's information about the pay of others in their work units. That is, when information about others' pay is unavailable, workers will likely be more aware of their demographically similar peers' pay, compared to that of their non-similar peers.<sup>2</sup> We expect these dynamics to hold in most organizational contexts, as US employers (HealthCo included) rarely share salary information among employees. We note, however, that lack of pay transparency represents an important boundary condition to our theory; in organizations in which pay is fully transparent, demographic similarity is unlikely to affect one's information about their colleagues' pay and, thus, perceptions of pay deprivation.

In sum, if workers' knowledge of pay differentials is affected by their demographic similarity with their higher-paid work-unit peers, we should expect individuals to respond more strongly to pay differentials with those who are demographically similar, compared to differentials with those who are dissimilar. To illustrate our argument, in Figure 1 we present two hypothetical units of four workers. In group A, all of the workers are the same demographically (e.g., same sex) whereas in group B, one of the workers ( $B_1$ ) is of a different demographic category (e.g., different sex). The groups are otherwise observationally identical: Each pair of workers ( $A_1/B_1$ ,  $A_2/B_2$ , etc.) receives the same pay ( $w$ ), has the same performance rating ( $r$ ), is in the same location in the pay distribution, is identical on a vector of all other observable attributes such as tenure ( $\tau$ ), and has the same level of actual pay deprivation ( $D_a$ ).<sup>3</sup> The only difference is that  $A_1$  and  $B_1$  are of different

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<sup>2</sup>When few (or no) individuals in a work unit share the same demographic characteristics as those of the focal worker, the focal worker will have fewer opportunities to make comparisons in their immediate work unit. Therefore, comparisons are more likely to span across work units, and the effect of same-category pay deprivation is thus likely to be weaker.

<sup>3</sup>As we detail in the methods section, our measure of pay deprivation ( $D$ ) is the Yitzhaki index (1979), which is calculated by summing the differences between the focal individual and all of the higher-paid individuals in their reference group, divided by the reference group size.

Figure 1. Intra-group Pay Comparisons

	Group A				Group B			
								
$w$	\$40,000	\$35,000	\$30,000	\$25,000	\$40,000	\$35,000	\$30,000	\$25,000
$r$	4	3	2	1	4	3	2	1
$\tau$	a	b	c	d	a	b	c	d
$D_a$	\$0	\$1,250	\$3,750	\$7,500	\$0	\$1,250	\$3,750	\$7,500
$D_o$	\$0	\$1,250	\$3,750	\$7,500	\$0	\$0	\$1,667	\$5,000

Notes:  $w$  = wage (pay);  $r$  = performance rating,  $\tau$  = a vector of all other observable attributes (i.e., tenure);  $D_a$  = actual pay deprivation;  $D_o$  = observed pay deprivation.

sex. Although we focus on sex in this example, we note that the same logic applies to differences in racio-ethnicity.

Prior research has consistently found that worker  $A_3$  is more likely to voluntarily exit than is worker  $A_2$ , as the pay of  $A_3$  is lower than that of  $A_2$ . To date, however, existing theory provides little guidance as to whether or why  $A_3$  and  $B_3$  may respond differently to identical levels of pay deprivation. We predict that because  $A_3$  is the same sex as  $A_1$  and  $A_2$ ,  $A_3$  will more likely compare themselves to and have greater information about the pay of  $A_1$  and  $A_2$ . By contrast, although  $B_3$  will likely compare themselves to and have information about  $B_2$ 's pay, this will be less likely to occur with  $B_1$  because  $B_1$  and  $B_3$  are demographically dissimilar. Therefore, if both  $A_3$  and  $B_3$  know the pay only of their same-sex colleagues,  $B_3$  will observe a lower level of pay deprivation ( $D_o$ ) than will  $A_3$  (\$1,667 compared to \$3,750), although their actual levels of pay deprivation are equivalent.<sup>4</sup> Hence, we expect that  $A_3$  will more likely exit the firm than will  $B_3$ .

These arguments do not imply that workers never compare themselves to or seek information about dissimilar others' pay. Concerns about and charges of wage discrimination, for example, require individuals to have information about dissimilar others' pay. Theory and empirical evidence suggest, however, that even if cross-category social comparisons and cross-category information sharing more likely occur now than in the past, they nevertheless likely happen much less frequently than do within-group comparisons and information sharing (e.g., Shelton and Richeson 2005).

<sup>4</sup>In this example, observed deprivation ( $D_o$ ) for  $A_3$  is  $[(A_1 - A_3) + (A_2 - A_3)]/n$ , which equates to  $[(\$40,000 - \$30,000) + (\$35,000 - \$30,000)] / 4$ , or \$3,750. The formula for  $D_o$  for  $B_3$  assumes that  $B_1$  is not part of the reference group ( $n$ ) because of their demographic dissimilarity. Thus, the formula is  $(\$35,000 - \$30,000) / 3$ , or \$1,667.

Our baseline expectation is a positive relationship between pay deprivation and individual turnover. We also expect a positive relationship between pay deprivation with same-sex (race) others and turnover because workers are more likely to compare themselves with and have pay information about demographically similar others in their work units. Further, because employees are less likely to observe how their pay compares to demographically dissimilar others, they are unlikely to react as strongly to actual differences in how much they are paid relative to demographically dissimilar others than to how much they are paid relative to similar others. Therefore, we also expect reactions to pay deprivation with same-sex (race) others to be stronger than such reactions with different-sex (race) others.

**Hypothesis 2 (H2):** a) Same-sex pay deprivation and b) same-race pay deprivation will be positively associated with voluntary turnover.

**Hypothesis 3 (H3):** a) Same-sex pay deprivation will be more strongly associated with voluntary turnover than will other-sex pay deprivation. b) Same-race pay deprivation will be more strongly associated with voluntary turnover than will other-race pay deprivation.

## Data

### Sample

To test our hypotheses, we used five years of personnel records covering all employees in nearly every job at HealthCo, a large US health-services corporation.<sup>5</sup> The data set comprises 64,589 annual observations of 36,021 individual employees organized into 2,624 work units, from 2008 to 2012. The data contain detailed information on each individual's demographics (including sex and race), job, location, supervisor, performance, and total annual compensation.<sup>6</sup> The employees in our sample are distributed across more than 30 functions, 15 broad job categories, and all 50 states and one US territory.

Although HealthCo does not provide workers with information about others' pay in the organization, it also has no formal pay-secrecy policy. Based on our conversations with 35 managers and HR personnel working across all functions and at all levels of the organization (excluding the C-suite), we found no evidence that managers systematically discourage workers from discussing their pay. Thus, workers can discover their colleagues' pay through conversations with others.

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<sup>5</sup>The only jobs not included in our data set are those in the C-suite (e.g., CEO, CFO, and so on), which represent fewer than 0.01% of all jobs at HealthCo; workers who are not part of a work unit (e.g., physicians in specialized roles; 4.1% of all jobs); and jobs for which workers are on fixed-term contracts (generally fewer than six months).

<sup>6</sup>We cannot separate salary and bonus payments; however, salary accounts for most compensation for most workers at HealthCo.

## Dependent Variable

Our dependent variable is voluntary turnover. We construct a dummy variable that takes the value of 1 if a worker exits HealthCo voluntarily during a calendar year and 0 otherwise. Because we use administrative records from January of each year to calculate our individual- and unit-level measures, we examine the effect of these covariates on voluntary turnover during the same calendar year.<sup>7</sup>

## Independent Variables

To operationalize *overall pay deprivation*, we use the Yitzhaki index of relative deprivation. Classic treatments usually depict relative deprivation as a perception that one is generally “worse off” than others with whom they compare (e.g., Runciman and Runciman 1966). Building from these insights, Yitzhaki (1979) considered income a key variable in determining one’s sense of deprivation. Specifically, he assumed that an individual feels deprived if anyone has a higher income (Ebert and Moyes 2000). Yitzhaki’s measure of relative deprivation is then the (normalized) sum of the income gaps between the focal person and all those paid more (Adjaye-Gbewonyo and Kawachi 2012). This measure captures both dimensions of deprivation as defined by Bolino and Turnley (2009): 1) the number of others receiving greater rewards and 2) the gap between the focal worker’s rewards and those of advantaged others. Thus, for worker  $y_i$ , pay deprivation ( $D$ ) can be calculated as follows:

$$D(y_i) = \frac{1}{n} \sum_j (y_j - y_i) I_{ij} \quad I_{ij} = \begin{cases} 1, & \text{if } y_i < y_j \\ 0, & \text{if } y_i \geq y_j \end{cases}$$

where  $n$  is the size of the focal individual’s work unit, and  $y_j$  is the pay of all individuals  $j$  whose incomes exceed that of  $y_i$ . When the worker is the highest-paid member of a work unit in a given year, pay deprivation equals 0. HealthCo provided individual-level pay data for January of each year, as changes in annual compensation for most employees take effect in that month. This measure reflects total annual compensation, including both salary and expected bonus payments,<sup>8</sup> for the calendar year. Work units at

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<sup>7</sup>As part of their employee-retention efforts, HealthCo invests substantial effort to ensure that turnover events are accurately recorded as voluntary or involuntary. An HR representative submits turnover data, following conversations with the supervisor and exit interviews with workers. Our HR contacts acknowledged a small number of instances in which supervisors encourage employees to find another job, such that an apparently “voluntary” exit may be closer to an “involuntary” exit. The HR personnel try to root out this concern in the exit-interview process, however, and the firm strongly discourages such methods. In a robustness check, analyses with overall turnover as the dependent variable yield similar results to those presented below (analyses available upon request).

<sup>8</sup>For the employees in jobs that are bonus-eligible, the total annual compensation recorded in the personnel records in January reflects the employee’s base salary plus the bonus amount they are expected to receive based on the specific nature of their bonus plan. This total amount is communicated to the employee at the beginning of the year. It is therefore the total amount they should expect to earn, and thus the amount that should be expected to serve as their basis for pay comparisons.

HealthCo are defined as a group of employees who occupy the same role, share the same supervisor, and are located in the same department.

We calculate our measures of *same-sex pay deprivation* and *same-race pay deprivation* similarly to our measure of overall pay deprivation. These measures are the cumulative difference between an individual's income and those of the same-sex/same-race others in the work unit with greater incomes, divided by the total number of same-sex/same-race others in the unit. We calculate *other-sex pay deprivation* and *other-race pay deprivation* in the same way, but these represent focal individuals of a different sex or race. We examine gender and race independently, as the sample work units do not include enough demographic variance to allow examination of these characteristics together. To ease interpretation, we scaled each of the deprivation measures by \$10,000.<sup>9</sup>

The sources of intra-unit pay differentials at HealthCo are important. It would be problematic if these differentials resulted from work units' demographic diversity because supervisors at HealthCo systematically prefer or are biased against workers of a certain sex and/or race. Such biases may independently affect the probability of worker turnover while also affecting work-unit diversity and pay deprivation, creating a spurious relationship between our measures of pay deprivation and turnover. Although explicit and implicit biases undoubtedly exist at HealthCo, evidence suggests they are not systematic enough to explain the pattern of results we observe. First, the firm's HR professionals emphasized that they conduct internal audits and other reporting procedures to identify and address systematic inter-sex and inter-race pay differentials. Second, conducting a set of regressions predicting worker pay, we found no systematic evidence of pay differentials by sex or race. We also observe, within work units, a relatively small correlation between levels of pay dispersion and measures of gender diversity ( $r = 0.02$ ) and racial diversity ( $r = 0.08$ ), both calculated using Blau's index of heterogeneity.

Our conversations with HealthCo revealed no discernable pattern to how intra-unit pay differentials emerged. Rather, these differences appear to result from several factors, such as employees entering jobs at various times and locations, jobs filled both internally and externally, and performance-based pay changes that accumulate for each worker over time. Yet, we also expect that supervisors' preference for more-dispersed versus more-compressed wages may vary, which we address in robustness checks that include supervisor-fixed effects.

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<sup>9</sup>Our mean pay deprivation is 0.29, which equates to \$2,900. By construction, the Yitzhaki index of pay deprivation equals 0 for the highest-paid member of each work unit in each year. Similarly, same-sex/same-race pay deprivation equals 0 for the highest-paid member of each sex/race category in each work unit in each year. Hence, when a worker is the only member of their sex/race category in a work unit in a given year, same-sex/same-race pay deprivation equals 0. In analyses available by request, we include a dummy variable to indicate when workers are the only member of their sex category or their race category. Neither variable is a statistically significant predictor of turnover, and including these controls had no impact on the hypothesized effects.

## Control Variables

Numerous individual- and unit-level variables may affect the relationship between pay deprivation and turnover. Because pay level has been shown to affect employee responses to pay inequality, we control for the natural logarithm of an employee's annual *salary*. We also include variables indicating whether an employee was a *top performer* or a *bottom performer* in a given year, with average performer as the omitted category, as performance has been shown to affect both pay level and responses to pay inequality.<sup>10</sup> Although HealthCo's personnel records do not include years of education or the highest degree completed, we include measures of *age*, *age-squared*, *firm tenure*, and *firm tenure-squared* to account for workers' human-capital differences.

We control for gender by including a dummy variable for *female*, with male the omitted category. We also include a series of dummy variables to control for race-ethnicity: *Black*, *Hispanic*, *Asian*, and *other minority*, with *white* the omitted category. We include dummy variables indicating whether the employee and direct supervisor are of the same gender (*supervisor same gender*) and the same race (*supervisor same race*), as research shows that the demographic match between workers and their supervisor affects performance evaluations and turnover decisions (Castilla 2011). To account for the possibility that intra-unit pay differentials might vary systematically by job type and that different jobs might lead some workers to interact more with cross-unit others (and thus compare pay with them), we also include a series of job-category dummy variables to control for job type and level. HealthCo groups jobs into 15 distinct categories, with each comprising jobs at the same hierarchical level and with similar responsibilities.<sup>11</sup> Furthermore, we control for function dummies to account for the possibility that our main indicator variables vary systematically by job function.<sup>12</sup>

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<sup>10</sup>Employees at HealthCo receive an annual rating that reflects their performance across eight job-specific competencies. Their overall competency rating reflects the average score across these competencies, resulting in a single continuous measure between 1 (not contributing) and 4 (fully contributing). As in most organizations, the narrow range of scores makes it difficult to make clear demarcations among many individuals in a group. Managers and employees at HealthCo reported that they clearly distinguish employees receiving a 3.5 or above (considered the very top performers) and 2 or below (considered the poorest performers) but that little meaningful difference exists among those in the middle (considered average performers). We ran analyses using continuous competency scores, and the results are similar to those presented below.

<sup>11</sup>Four broad job categories are further subdivided into the 15 categories we use in our analyses. *Entry-level (non-exempt/hourly) jobs* are divided into four subcategories: operations support, administrative support, specialists and technicians, and team leads. *Mid-level managerial roles* are divided into six subcategories: analysts and facilitators, consultants, strategic consultants, front-line supervisors, sales/market managers, and unit managers. *Director roles* are divided into three subcategories: sales/market directors, unit directors, and sales vice presidents. *Executive (non-C-Suite) jobs* are divided into two subcategories: market leaders and senior vice president. We altered the category descriptors to preserve HealthCo's anonymity.

<sup>12</sup>There are 30 job functions at HealthCo, most of which are common to most large organizations, including sales, marketing, finance, service operations, and IT. A few functions are more specific to the health services industry, such as clinical guidance, underwriting, and provider contracting (e.g., contracting with doctors and hospitals).

Because group size may affect workers' access and reactions to information about others (e.g., Pfeffer and Langton 1988; Garcia, Tor, and Limberg 2020), we also control for *work-unit size* by using the natural log of each work unit's number of members. Additionally, because a work unit's average pay may affect the relationship between pay deprivation and voluntary turnover, we control for the natural log of *work-unit mean salary*. We include a measure of *firm-tenure dispersion*, as it may affect both pay deprivation and individual turnover decisions (Pfeffer and Langton 1993). We calculate this measure as the coefficient of the variation of worker tenure within each unit. We also control for the *correlation between pay and performance* for each work unit in each year, as evidence suggests that workers may react differently to pay differentials when pay associates more closely with observable performance indicators (Trevor, Reilly, and Gerhart 2012; Breza, Kaur, and Shamdasani 2018). To account for external labor-market variations, we include dummy codes for the *core-based statistical area* (CBSA) in which the employee works as well as *year* dummies. All continuous variables were grand-mean centered.

## Methods and Results

Table 1 shows the means, standard deviations, and correlations for the main variables. Our unit of analysis is the individual, and the unit of observation is the individual-year. Because our dependent variable, voluntary turnover, is dichotomous, we present a series of logit analyses, with the dependent variable set to 1 if an employee voluntarily left HealthCo in a given year. Since we have repeat observations of individuals over time, we clustered the robust standard errors by individual to account for non-independence. We also ran estimates using linear probability models and hierarchical linear models, and results are similar to those presented below. These analyses are available by request. We discuss the results of using alternative modeling strategies in our supplemental analyses (see Robustness Checks below).

## Results

Table 2, model 1, measures the effects of overall pay deprivation on voluntary turnover, with no control variables except for job, function, CBSA, and year dummies. Models 2 and 3 examine the effects of same- and other-sex pay deprivation and same- and other-race pay deprivation, respectively. Models 4 through 6 mirror models 1 through 3 but also include all of our control variables. Models 1 and 4 reveal a significant and positive relationship between pay deprivation and turnover, providing support for Hypothesis 1 (H1). To convey the magnitude of this effect, increasing a worker's pay deprivation by \$10,000 increases the likelihood of voluntary exit by 23.6% (from 3.8% to 4.7%).<sup>13</sup>

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<sup>13</sup>The average annual turnover rate for US health-services companies during this period was 11.9% (Bureau of Labor Statistics 2020). The firm's lower turnover results, in part, from HealthCo's consistent reputation for being among the best places to work among its industry peers. It is also one of the largest, most respected employers in many cities, thereby limiting both the supply and relative attractiveness of external opportunities for many employees.

Table 1. Descriptive Statistics and Correlation Matrix

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1 Pay deprivation	0.29	0.45										
2 Same-sex pay deprivation	0.37	0.49	0.86									
3 Other-sex pay deprivation	0.37	0.84	0.46	0.25								
4 Same-race pay deprivation	0.37	0.50	0.85	0.84	0.45							
5 Other-race pay deprivation	0.62	1.80	0.25	0.25	0.15	-0.02						
6 Top performer	0.36	0.48	0.00	0.01	0.00	0.03	-0.04					
7 Bottom performer	0.30	0.46	-0.03	-0.04	-0.02	-0.06	0.03	-0.50				
8 Salary <sup>a</sup>	55,689.62	33,330.12	0.19	0.24	0.17	0.27	0.03	0.17	-0.18			
9 Female	0.71	0.46	-0.07	-0.06	-0.25	-0.08	0.00	-0.03	0.03	-0.26		
10 Black	0.15	0.36	-0.06	-0.05	-0.05	-0.14	0.19	-0.11	0.12	-0.15	0.10	
11 Hispanic	0.13	0.33	-0.04	-0.02	-0.02	-0.04	0.07	0.08	-0.03	-0.19	0.00	-0.16
12 Asian	0.03	0.17	0.03	0.02	0.03	-0.06	0.24	0.02	-0.03	0.10	-0.08	-0.08
13 Other	0.02	0.13	0.01	0.00	0.01	-0.07	0.32	-0.02	0.02	-0.02	0.00	-0.06
14 White	0.67	0.47	0.06	0.04	0.04	0.18	-0.37	0.02	-0.07	0.22	-0.04	-0.60
15 Age	41.35	11.07	-0.03	0.02	-0.04	0.03	-0.06	0.11	-0.11	0.22	0.03	-0.09
16 Tenure	5.99	5.90	0.02	0.03	0.00	0.05	-0.06	0.16	-0.24	0.16	0.05	-0.06
17 Supervisor same sex	0.64	0.48	-0.04	0.00	-0.22	-0.05	-0.01	0.01	0.00	-0.08	0.15	0.01
18 Supervisor same race	0.67	0.47	0.03	0.03	0.02	0.15	-0.34	0.07	-0.09	0.09	-0.04	-0.37
19 Work unit size <sup>a</sup>	35.35	35.70	-0.08	0.06	-0.01	0.02	0.12	-0.11	0.18	-0.23	0.10	0.09
20 Work unit mean salary <sup>a</sup>	55,570.63	32,458.61	0.37	0.38	0.25	0.40	0.08	0.14	-0.16	0.97	-0.26	-0.15
21 Work unit tenure dispersion	73.38	34.64	0.02	0.05	0.03	0.04	0.07	-0.10	0.13	0.04	0.01	-0.01
22 Correlation between performance and pay	0.25	0.37	-0.04	-0.03	-0.02	-0.03	-0.01	-0.01	0.01	-0.11	0.02	0.04

(continued)

Table 1. Continued

Variable	11	12	13	14	15	16	17	18	19	20	21
12 Asian	-0.07										
13 Other	-0.05	-0.02									
14 White	-0.55	-0.26	-0.20								
15 Age	0.02	-0.06	-0.05	0.09							
16 Tenure	-0.05	-0.06	-0.07	0.12	0.35						
17 Supervisor same sex	0.03	-0.02	-0.01	-0.02	0.06	0.02					
18 Supervisor same race	-0.06	-0.22	-0.19	0.47	0.09	0.12	0.08				
19 Work unit size <sup>a</sup>	0.08	-0.04	0.03	-0.12	0.01	-0.16	0.03	-0.09			
20 Work unit mean salary <sup>a</sup>	-0.20	0.10	-0.01	0.22	0.18	0.13	-0.08	0.09	-0.24		
21 Work unit tenure dispersion	-0.05	0.02	0.02	0.03	-0.02	-0.12	0.01	-0.01	0.26	0.05	
22 Correlation between performance and pay	-0.02	-0.02	-0.01	-0.01	0.00	0.06	0.00	-0.02	0.06	-0.11	-0.06

Notes:  $n = 63,783$ .

<sup>a</sup>The means and standard deviations (SD) reflect the non-log-transformed values for these variables. The correlations reflect the correlations between the log-transformed values and the other variables, as we use the long-transformed values in our multivariate analyses.

Table 2. Logistic Regressions on Voluntary Turnover

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Pay deprivation	0.348*** (0.047)			0.186* (0.074)		
Same-sex pay deprivation		0.304*** (0.046)			0.169** (0.063)	
Other-sex pay deprivation		0.018 (0.028)			-0.026 (0.031)	
<i>Coefficient difference</i>		$\chi^2 = 23.39***$			$\chi^2 = 7.41**$	
Same-race pay deprivation			0.276*** (0.044)			0.134* (0.065)
Other-race pay deprivation			0.031** (0.011)			0.003 (0.014)
<i>Coefficient difference</i>			$\chi^2 = 29.26***$			$\chi^2 = 4.13*$
Top performer				-0.249*** (0.059)	-0.248*** (0.059)	-0.249*** (0.059)
Bottom performer				0.503*** (0.055)	0.504*** (0.055)	0.503*** (0.055)
Salary (ln)				-0.683* (0.296)	-0.853** (0.260)	-0.894*** (0.263)
Female				-0.092 (0.052)	-0.109* (0.055)	-0.092 (0.052)
Black				-0.115 (0.068)	-0.114 (0.068)	-0.103 (0.070)
Hispanic				-0.267** (0.094)	-0.266** (0.094)	-0.259** (0.095)
Asian				-0.027 (0.141)	-0.027 (0.141)	0.001 (0.149)
Other				0.234 (0.142)	0.241 (0.142)	0.266 (0.158)
Age				-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)
Age-squared				0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Tenure				0.044*** (0.009)	0.044*** (0.009)	0.045*** (0.009)
Tenure-squared				-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)
Supervisor same sex				-0.107* (0.053)	-0.104* (0.053)	-0.112* (0.053)
Supervisor same race				0.039 (0.046)	0.025 (0.046)	0.038 (0.046)
Work unit size (ln)				0.012 (0.024)	0.004 (0.025)	0.005 (0.025)
Work unit mean salary (ln)				0.454 (0.339)	0.621* (0.306)	0.673* (0.310)
Work unit tenure dispersion				-0.002*** (0.001)	-0.002*** (0.001)	-0.002** (0.001)
Correlation between performance and pay				-0.224*** (0.062)	-0.226*** (0.063)	-0.226*** (0.062)
Constant	-4.666*** (1.032)	-4.647*** (1.028)	-4.634*** (1.035)	-4.058*** (1.019)	-4.055*** (1.017)	-4.062*** (1.021)
Observations	63,783	63,783	63,783	63,783	63,783	63,783
Log-likelihood	-8,987	-8,991	-8,994	-8,792	-8,789	-8,792
Wald chi-squared	7,303	7,303	7,300	7,198	7,191	7,198

Notes: Standard errors in parentheses. All models include controls for job, function, core-based statistical area (CBSA), and year.

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

We also find support for H2a and H2b, which predicted a positive relationship between voluntary turnover and a) same-sex pay deprivation and b) same-race pay deprivation. Models 2 and 5 reveal a significant, positive relationship between same-sex pay deprivation and turnover. Models 3 and 6 reveal a similarly significant, positive relationship between same-race pay deprivation and turnover. To test H3, we ran chi-squared tests to compare the same- and other-sex pay-deprivation coefficients to the same- and other-race pay-deprivation coefficients. The results show that the differences between same- and other-sex pay deprivation (models 2 and 5) and same- and other-race pay deprivation (models 3 and 6) are statistically significant. These findings therefore support H3a and H3b, that because individuals are more apt to compare themselves to and obtain information about demographically similar others' pay, they will respond more strongly to within-category than to cross-category pay deprivation.

## Robustness Checks

### *Fixed Effects*

We use random effects in our analyses because our theory focuses on how different levels of pay deprivation (e.g., high versus low) rather than changes in pay deprivation (e.g., increasing) affect voluntary turnover. Our field study shows repeated observations for the same individuals and work units, however, allowing us to use high-dimensional linear probability models with both individual- and supervisor-fixed effects to analyze how *changes* to our pay deprivation measures affect turnover (see Guimarães and Portugal 2010).<sup>14</sup> These models provide a more conservative test of our hypotheses because they allow us to account for stable, unobserved differences across both individuals and supervisors that may affect the relationship between pay deprivation and turnover. For example, if supervisors who tend to rely on more-dispersed pay schedules also engage in behaviors that increase turnover, this spurious correlation might affect our results. Because our panel is relatively short, we believe these models can capture many of these potential omitted variables.

We exclude controls in these models that do not vary or vary for few individuals, including sex, race, supervisor same sex, supervisor same race, and job, function, and CBSA dummies. To capture external labor-market conditions, however, we did include county-level measures of unemployment. We lose some observations in these models, as 5,610 individuals in our sample appear only one time. The results presented in Table 3 are consistent with those in our main analysis. Model 1 reveals a positive, significant relationship between pay deprivation and turnover, providing additional support for H1. The results also support H2a and H2b, as both same-sex

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<sup>14</sup>We ran separate models for individual- and supervisor-fixed effects, and the results are consistent with those presented below. These analyses are available upon request.

*Table 3.* High-Dimensional Linear Probability Models with Individual- and Supervisor-Fixed Effects on Voluntary Turnover

<i>Variables</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
Pay deprivation	0.032*** (0.008)	—	—
Same-sex pay deprivation	—	0.016*** (0.006)	—
Other-sex pay deprivation	—	0.003 (0.002)	—
<i>Coefficient difference</i>		$\chi^2 = 5.40^*$	
Same-race pay deprivation	—	—	0.015* (0.006)
Other-race pay deprivation	—	—	-0.001 (0.001)
<i>Coefficient difference</i>			$\chi^2 = 6.16^*$
Observations	58,979	58,979	58,979
<i>R</i> -squared	0.39	0.39	0.39
Log likelihood	45,089	45,077	45,076

*Notes:* Standard errors in parentheses.

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

and same-race pay deprivation relate significantly to turnover. Supporting H3a and H3b, tests reveal that the coefficient for same-sex pay deprivation is significantly greater than that for other-sex pay deprivation, while the coefficient for same-race pay deprivation is significantly greater than that for other-race pay deprivation.

### *Other Tests*

The tests described above considered how relative pay deprivation affects decisions to exit. Recognizing that our pay comparison process may lead some workers to find they are paid more than some of their work-unit colleagues, we also considered that individuals might note their relative pay advantages (i.e., how much more they make relative to their lower-paid peers) when deciding to exit. We create two measures of relative pay advantage: 1) a modified Yitzhaki measure in which we examined the pay gaps between individuals and those paid less than them and 2) a measure in which we took the largest Yitzhaki in the group and subtracted from it each individual's actual Yitzhaki measure. The inclusion of these variables as a control had no material effect on our findings.

We also note that the same Yitzhaki score can derive from dissimilar circumstances. For example, person A might be the second-highest paid person in a group of 10, but with a substantial pay gap between her and the highest-paid worker. Person B might be the fifth highest-paid person in a group of 10, with relatively small gaps between her and each higher-paid colleague, although her total pay deprivation is the same value as person A's. To understand how these different circumstances may influence our results, we ran tests using salary rank as both a control and in place of the Yitzhaki

measure. Although salary rank and the Yitzhaki measure positively correlate, the Yitzhaki measures remain significantly associated with turnover across models when we include salary rank measures. When analyzing rank alone, we find the models fail to reach significance when we include all controls. This pattern suggests that relative position alone does not drive this effect.

### **Experimental Simulation**

Two interrelated challenges arise in using observational data to test these hypothesized relationships. First, our analyses are susceptible to omitted-variable bias. Given our relatively short panel, our incorporation of individual- and supervisor-fixed effects minimizes but does not fully address this concern. A second challenge of observational data is that it can be difficult to isolate and test the purported mechanisms directly. While much theory and evidence suggest that individuals likely choose demographically similar others as referents, we were unable to directly observe the referent-selection process. Moreover, we cannot observe the underlying psychological mechanisms that connect pay deprivation to voluntary turnover. Although such limitations exist in most field studies of social comparisons (e.g., Obloj and Zenger 2017) and pay inequality, we designed an experimental simulation to address these issues.

Specifically, we recruited 800 working adults from Amazon Mechanical Turk using TurkPrime to test our sex-related hypotheses. We focus on sex because we rely on first names to signal demographic similarity. Given that first names may signal both sex and racio-ethnicity (Tzioumis 2018), there would be significant additional costs and challenges of recruiting sufficient numbers to run separate studies for each racio-ethnic category and the potential for intersectional categories to have unique effects (Hall, Hall, Galinsky, and Phillips 2019). Given this focus, and to address potential confounding factors attributable to racio-ethnicity, we limited participation in the study to individuals who identified as white.

We instructed participants to imagine that they worked for a firm called ABC Corporation and that the company had just announced salaries for the upcoming year. The announcement informed them of their salary, which, unbeknownst to them, varied according to whether they were assigned to a high or low pay-inequality condition. After receiving this information, participants were told that if they wished, they could approach coworkers working alongside them in the same job one at a time to discuss salaries. They were instructed that after approaching the coworker, the coworker would decide whether to share their salary with them. All coworkers shared their salary, although participants were not aware of this.

On the next screen of the simulation, participants saw a list of their eight coworkers at ABC Corporation, whose names they could click on one at a time to discover their salary. After clicking on a coworker's name, participants encountered a loading screen set to 25 seconds to simulate the

time costs associated with seeking pay information. Participants were shown the coworker's salary and were then redirected to the list of names. Participants could continue choosing as many names as they wanted or select the "I am finished speaking to people" option, which redirected them to the post-simulation questionnaire containing the measures listed below.

We randomly assigned participants to either a high or low pay-inequality condition. In the high pay-inequality condition (coefficient of variation = 20.4), salaries ranged between \$24,500 and \$45,500, and participants were randomly assigned a salary within this salary band (\$24,500; \$27,500; \$29,500; \$32,500; \$35,000; \$37,500; \$40,500; \$42,500; or \$45,500). In the low pay-inequality condition (coefficient of variation = 8.6), participants were randomly assigned a salary between \$30,500 and \$39,500 (\$30,500; \$32,000; \$32,500; 34,000; \$35,000; \$36,000; \$37,500; \$38,000; or \$39,500). Thus, although the two salary conditions had the same mean (\$35,000), individuals at the same pay rank in each group (e.g., second-highest paid) experienced different levels of pay deprivation.

To manipulate gender salience, we varied whether participants saw their coworkers' first name and last initial or only the initials. In the high gender-salience condition, we provided participants with first names that clearly indicated four male and four female coworkers: "Adam B.," "Amanda C.," "Ashley D.," "Christopher G.," "Joshua S.," "Brittney F.," "Jessica M.," and "Michael T." Participants in the low gender-salience condition could not determine their coworkers' gender, as they only saw initials: "A.B.," "A.C.," "A.D.," "C.G.," "J.S.," "B.F.," "J.M.," and "M.T."

Because no actual turnover existed in our experiment, we measured *turnover intentions* by adapting a scale of five items from existing research (Chen et al. 2011) ( $\alpha = .94$ ). We operationalized pay deprivation using the Yitzhaki index of relative deprivation. However, we were able to measure the Yitzhaki index based on the salaries that participants actually observed, in contrast to the field study. Hence, we calculate *observed pay deprivation*, which is the Yitzhaki index based on observed salaries (i.e., salaries from selected coworkers) and scaled by the total number of coworkers selected. We asked participants to indicate their *sex*, which we control for in the analysis.<sup>15</sup> Because previous research has theorized that actual pay deprivation affects individual perceptions of relative deprivation and pay fairness (Adjaye-Gbewonyo and Kawachi 2012), we used four items adapted from prior research to measure relative deprivation (Olson, Meen, Roese, and Robertson 1995) ( $\alpha = 0.90$ ) and three items adapted from prior research to measure pay fairness (Masterson 2001) ( $\alpha = 0.96$ ). Table 4 shows the survey items for all measures.

Of our total participants, 42 either failed an attention check or failed to complete the entire study. Our analysis of the 758 completed responses

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<sup>15</sup>We also ran analyses including several individual-level control variables, including *age*, *employment status*, *education*, *income*, *total years of work experience*, *number of referents* the participant selected, and *the salary* the participant received in the experiment, as these may affect the relationship between participants' gender and their selection of referents. The results are consistent when we include control variables.

Table 4. Measures Used in the Experimental Simulation

<i>Variable</i>	<i>M</i>	<i>SD</i>	$\alpha$	<i>Example sample items/measurement</i>
Turnover intentions	3.81	1.54	0.94	<ul style="list-style-type: none"> <li>– I would leave ABC Corporation.</li> <li>– I would look for a new job.</li> <li>– I would NOT stay at ABC Corporation much longer.</li> </ul>
Pay fairness	3.99	1.56	0.96	<ul style="list-style-type: none"> <li>– I believe I am fairly rewarded considering the responsibilities I have at ABC Corporation.</li> <li>– I believe I am fairly rewarded for the stresses and strains that this job at ABC Corporation may create.</li> <li>– I believe I am fairly rewarded at ABC Corporation taking into account of knowledge and skills I need to have.</li> </ul>
Perceived relative deprivation	4.34	1.39	0.90	<ul style="list-style-type: none"> <li>– Generally speaking, I want a better situation than the one I have now at ABC Corporation.</li> <li>– Generally speaking, I am angry or upset about my current job situation at ABC Corporation.</li> <li>– Generally speaking, I resent my current job situation at ABC Corporation.</li> </ul>
Pay deprivation	0.29	0.32	—	Yitzhaki index of relative deprivation on observed salaries.

*Notes:* M, mean; SD, standard deviation;  $\alpha$ , Cronbach's alpha.

suggests that sex strongly influences which pay referents the participants chose. In the gender-salient condition, male participants selected a higher proportion of same-sex others ( $M = 62.52$ ,  $SD = 1.50$ ) than cross-sex others ( $M = 37.48$ ,  $SD = 1.50$ ) as referents:  $t(196) = 8.32$ ,  $p < 0.001$ . Female participants also selected a higher proportion of same-sex others ( $M = 61.90$ ,  $SD = 1.16$ ) than cross-sex others ( $M = 38.10$ ,  $SD = 1.16$ ) as referents:  $t(200) = 10.23$ ,  $p < 0.001$ . As we expected, neither male nor female participants in the non-gender-salient condition selected a significantly higher proportion of same-sex referents. These results further demonstrate that demographic similarity affects referent-selection processes, thus confirming a key assumption of our theory.

We used hierarchical regression analyses to investigate the relationship between pay deprivation and turnover intentions. Consistent with the results of our field study, the results in Table 5 show that pay deprivation has a significant, positive relationship with turnover intentions. Unlike our field study, our experiment allows us to examine the mechanisms through which pay deprivation influences turnover. Specifically, we assessed the indirect positive effect of pay deprivation on turnover intentions through pay fairness and through relative deprivation by running our analyses with 5,000 bootstrap samples and calculating bias-corrected confidence intervals (Hayes 2017). Pay deprivation has a significant, negative relationship with pay fairness and a significant, positive relationship with perceived relative deprivation. We next included these two variables as parallel mediators in

*Table 5. Results of Direct and Indirect Effects of Pay Deprivation on Turnover Intentions*

	<i>Model 1a: Turnover intentions</i>	<i>Model 1b: Turnover intentions</i>	<i>Model 2a: Pay fairness</i>	<i>Model 2b: Perceived relative deprivation</i>	<i>Model 3: Turnover intentions (Indirect)</i>
Female	-0.18 (0.11)	-0.11 (0.094)	0.052 (0.095)	-0.13 (0.088)	-0.021 (0.063)
Pay deprivation		2.55*** (0.15)	-2.54*** (0.15)	2.09*** (0.14)	0.68*** (0.12)
Pay fairness					-0.28*** (0.032)
Perceived relative deprivation					0.55*** (0.034)
$R^2$	0.003	0.28	0.28	0.27	0.67
Indirect effect of pay dispersion on turnover intentions via mediators					
Pay fairness: 95% C.I. [0.53, 0.96]					
Perceived relative deprivation: 95% C.I. [0.94, 1.40]					

*Notes:*  $N = 758$ . Standard errors in parentheses. Model 3 tests for the indirect effect of pay deprivation on turnover intentions via both pay fairness and perceived relative deprivations as parallel mediators. C.I., confidence interval.

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

the regression examining the relationship between pay deprivation and turnover intentions. Pay fairness has a negative, significant association with turnover intentions, and perceived relative deprivation has a positive, significant relationship with turnover intentions. Both the 95% bootstrapped confidence intervals for pay fairness (0.53, 0.96) and relative deprivation (0.94, 1.40) excluded zero. Pay deprivation has a significant, positive indirect effect on turnover intentions through both pay fairness and perceived relative deprivation. These results are largely consistent with those of prior pay-dispersion studies that reveal higher levels of pay dispersion are associated with greater pay-inequity perceptions among lower-paid individuals in a work unit (e.g., Trevor and Wazeter 2006).

## Discussion

Our core argument is that individuals tend to compare themselves to and, thus, have more information about the pay of same-category others. Therefore, social-comparison processes should operate more vigorously when a worker is in a work unit with higher numbers of demographically similar others, as reflected by the workers' propensity to respond more strongly to same-sex/same-race than to other-sex/other-race pay deprivation. Using a unique, single-firm sample of workers employed by a large US firm, we find support for this argument. The results of our supplemental experimental simulation further support our claims: When we made the sex of potential pay referents salient, both male and female participants tended

to select same-sex others as pay referents. Moreover, the experimental results reveal that higher levels of pay deprivation lead participants to experience higher levels of perceived relative deprivation and lower levels of perceived pay fairness, which trigger turnover intentions.

Our study reflects limitations that indicate directions for future research. First, our field data come from a single employer. Much research on workplace pay inequality has relied on publicly available wage data on sports teams (Trevor et al. 2012) and top-management teams (e.g., Bloom and Michel 2002). Thus, our data's inclusion of workers across job levels and in diverse functional areas is a strength of this study. Moreover, our discussions with HealthCo did not reveal that their pay or staffing practices differ from those of other large firms, suggesting that our results likely generalize to other large US organizations. Nonetheless, researchers should extend our analyses to other settings given that we cannot determine whether our results would differ in firms that are smaller, where work is organized differently (i.e., in project-based teams consisting of workers doing very different jobs), that have different wage-setting and performance-evaluation systems, have explicit or implicit pay-secrecy policies, and/or are less proactive about identifying systematic gender and racial pay inequality. We also expect that our results may be somewhat conservative. Because HealthCo is a highly respected employer and often the most prominent employer in their local labor markets, workers may be more tolerant of pay deprivation than they would when external opportunities are more widely available and the non-pecuniary aspects of work less attractive. Each of these features may introduce important boundary conditions that could affect our results. Future studies must also examine whether our results can be replicated in non-US contexts where gender and racial equality norms may differ.

Given our findings, we believe that research on workplace pay inequality would benefit from renewed attention to the referent-formation process. Because we did not have enough groups with the requisite demographic heterogeneity, we could not examine how the combination of sex and race affected our results. An interesting extension to this study would be to examine whether the interaction of racial and sex similarity affects responses to pay inequality. Another fruitful approach would be to examine how other similarities, including immigration status and whether a worker was trained domestically or abroad, affect responses to pay inequality. We also cannot directly capture social-comparison dynamics in our field setting. We argue that if theory about these dynamics is correct, employees' reactions to pay deprivation should differ depending on work-unit demographics. Although this approach is common in field studies on social comparisons (e.g., Obloj and Zenger 2017) and workplace pay inequality (e.g., Shaw 2015), we recognize it as an important limitation. Our supplemental experimental simulation allowed us to isolate many social and psychological mechanisms underlying our theory. However, we could not fully account for how other individual differences, such as social-comparison

orientation (Gibbons and Buunk 1999), neuroticism (Van der Zee, Buunk, and Sanderman 1998), or self-esteem (Wheeler 2000), might affect these dynamics. Future research may be able to incorporate other methods, such as surveys and interviews, to examine how non-demographic differences might interact with demographics to shape reactions to pay inequality.

### **Implications for Research and Practice**

In recent years, scholars have more fully explored the effect of pay inequality on outcomes for firms, groups, and individuals, focusing on contextual factors influencing how individuals react to pay inequality (see Shaw 2014). This research, however, has largely overlooked how comparison processes *within* groups may affect employees' responses to pay inequality. Thus, an unstated assumption in much of this work is that employees compare their pay to all of their colleagues. We challenge the assumption that pay comparison processes operate uniformly within work units by explaining why the choice of pay referents is likely to be contingent on the demographic composition of work units. This study highlights that reactions to pay deprivation depend on whom workers likely see as their referents, which itself is a product of work-unit demography. In doing so, we advance the literature on pay inequality by examining how workplace composition affects employees' responses to pay inequality, a contribution that is amplified by the increasing salience of demographic diversity in many US firms (Ferguson and Koning 2018).

Specifically, we show that the demographic composition of employees' work units affects employees' responses to pay deprivation. Our results derive primarily from individuals' tendency to identify demographically similar others as referents. Yet, studies of intra-organizational pay inequality rarely discuss demographics (see Downes and Choi 2014 for a discussion of common control variables and moderators). Obtaining data that include pay and demographic information is challenging (Strum 2001). Yet, research that does not consider that pay awareness may vary systematically by factors such as demographic similarity leads to incomplete theory and omitted-variable concerns. Thus, we believe that research in this area should attend more closely to referent-selection processes in organizations and work units. Although identifying those to whom individuals compare themselves is a challenge in many field settings, prior research offers guidance on appropriate methods (e.g., Lawrence 2006). Absent such direct methods, accounting for key attributes that affect referent selection, such as demographic similarity, represents an important empirical advance that we encourage future research to adopt.

While the diversity literature has documented the existence of systematic differences in pay by gender and race, as well as their antecedents, questions about how these demographic characteristics shape individuals' awareness of and reaction to these pay differences have received much less attention.

Research has shown, for example, that demographic similarity fosters information sharing, thereby drawing individuals closer (e.g., Dumas, Phillips, and Rothbard 2013). Yet, our findings suggest that if personal disclosures include information that reveals significant pay differentials, they may create friction between workers that leads them to leave organizations. Hence, in light of our findings, research on organizational diversity and demography may benefit from a deeper consideration of how the distribution of economic rewards may facilitate or hinder efforts to maximize the benefits associated with a given demographic composition.

This study also holds important implications for how the systematic underpayment of women and minorities within an organization may or may not come to light. Our findings suggest that demographic heterogeneity may provide managers greater opportunity to provide differential rewards for similar work. It also indicates the potential challenges workers face when determining whether their pay is commensurate to that of demographically dissimilar work-unit peers. Evidence suggests that pay-discrimination charges are rare because workers must have the necessary information to discern whether their rewards are commensurate with those of out-group others (e.g., Lewis 2008). Our work suggests that this lack of awareness can be attributed, in part, to workers' reluctance to compare their pay with demographically dissimilar others. This finding highlights the value of recent policies aimed at increasing pay transparency (Marasi and Bennett 2016). In contexts lacking such transparency, our results underscore the value to workers in fostering cross-race and cross-gender relationships. Though such relationships can be difficult to develop and sustain (Ramarajan and Reid 2020), they play a key role in facilitating the flow of information about the pay of dissimilar others that is central to uncovering and addressing discriminatory pay practices.

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