



Gender composition and share of management: Tipping points in US workplaces, 1980–2005

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ABSTRACT

This paper examines how concepts of gendered organizations, tokenism and the glass escalator affect women's share of management. Specifically, we examine how the gender composition of workplaces affects women's share of management in 195,534 workplaces using EEO-1 report data collected from the US Equal Employment Opportunity Commission from 1980 until 2005. The EEO-1 data allow us to explore the effects of gender composition on women's share of management net of labor market change, industrial change, organizational determinants, and changes in workplace segregation using workplace-level data. We draw on past research to identify potential composition levels—tipping points—in which women have more or less share of management. Our findings suggest that across all compositions, ranging from women comprising less than 15% to over 85% of the workplace, larger percentages of the non-management women are associated with greater shares of women in management. Findings offer little support for the glass escalators hypothesis extended to workplaces, but once further contextualized, the findings do suggest that workplaces are gendered in such a way that tokenism works differently for men and women. Thus, our paper adds to the body of research on gender composition and further illustrates the need to determine under which conditions these social processes operate.

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1. Introduction

Women's share of management has long been regarded as a yardstick for progress towards gender equality in workplaces. Researchers have examined organizational factors ranging from workplace size to industry as they affect women's access to management. One factor that

remains under-explored is the gender composition of workplaces. While theorists and researchers have suggested the gender composition of workplaces is important for determining women's share of management, no large-scale workplace-level studies currently investigate how the gender composition of workplaces affects women's share of management. In this paper, we use EEO-1 data collected by the US Equal Employment Opportunity Commission to explore the relationship between the gender composition of workplaces and women's share of management in workplaces. Specifically, we test hypotheses derived from four theoretical perspectives on the significance of gender compositional tipping points and test how each of these

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¹ Tiffany Taylor has access to EEOC data through a government Interpersonal Act agreement with the EEOC.

perspectives explains the effects of gender composition of workplaces on women's access to management.

In 1977, Kanter published her groundbreaking book *Men and Women of the Corporation*. In this book she argued composition matters because workplace power comes from strength in numbers. Specifically, she argued numeric minorities faced structural and interactional barriers to getting ahead in the workplace regardless of the gender or race of the minority. Kanter also identified compositional tipping points—a compositional proportion at which a numeric minority gain strength to overcome structural and interactional barriers. Subsequent scholarship has addressed two limitations in Kanter's argument. First, her assumption that workplaces are gender neutral (Acker, 1990, 2006; Britton, 2000; Zimmer, 1988) and second, that token status works the same for men and women (Budig, 2002; Williams, 1992, 2013).

Zimmer (1988), Acker (1990, 2006), and Britton (2000) argue that workplaces are not gender neutral. Zimmer (1988) focuses on tokenism and men's active role in discriminating against women. She argues that rising proportions of women may not lead to increased power, but instead may lead to greater tension. Further, Zimmer asserts that Kanter's analysis of workplace inequality does not hold men accountable for discriminating against women. Additionally, Acker (1990) argues that scholars of organizations need to critically analyze gender because organizations are not gender-neutral. The "universal worker" remains a man, and the workplace was designed around this man. Britton (2000) further urges researchers to investigate whether and how occupations and organizations are gendered, rather than taking this as given.

In this article, we build on existing research on the gender composition of workplaces in two key ways. First, using large dataset of private workplaces in the USA (EEO-1 reports collected by the Equal Employment Opportunity Commission), we examine precisely how gender composition matters in workplaces. Specifically, we analyze if tokenism, works differently for men than it does for women. Additionally, the theories detailed in this research do little to identify important contextual factors that might influence how compositional tipping points operate in workplaces. Overall, our findings illustrate how support for theories of workplace gender composition tipping points and gender progress in management vary based on the gender and race composition of labor markets, workplace size, the size of management, and workplace segregation. Given this, we argue for the need to refine and further contextualize gender composition tipping point theories to better understand the conditions under which gender inequality is more or less prevalent in workplaces.

2. The importance of composition

Despite considerable scholarship, the precise effects of the gender composition of workplaces on various forms of gender inequality, including gender workplace segregation and the gender share of management, remain unclear (Di Tomaso, Post, & Parks-Yancy, 2007; Reskin, 1993; Reskin, McBrier, & Kmec, 1999). One line of research suggests

that as more women enter a labor market, gender segregation declines (Abrahamson & Sigelman, 1987; Lorence 1992). For instance, Jones and Rosenfeld (1989) find that increases in labor force participation have positive effects on women's share of all but professional occupational categories. This line of research often cites population growth and a subsequently more normatively progressive social context as the main causes for decreases in gender segregation.

When women compose only a token percentage of a group, they are too isolated to resist dominant culture attempts to stereotype women and exaggerate gender differences. Consequently, women must either accept stereotypes that limit their mobility, resist stereotypes and risk isolation, or distance themselves from other women and paint themselves as exceptions (Kanter, 1977; Roth, 2004). Men in man-dominated¹ workplaces may portray and perceive women co-workers as less capable (Padavic, 1991; Williams, Muller, & Kilanski, 2012), as nurturers who are too kind or sensitive to compete and lead (Kanter, 1977), or as sexual objects (Kanter, 1977; Padavic, 1991). When women in man-dominated contexts adopt masculine behaviors to fit in, however, they increase their risk of gendered harassment (Leskinen, Caridad Rabelo, & Cortina, 2015). According to Kanter (1977), women's situation improves as they begin to compose more of the work group. Through interactions with women, men will be less likely to stereotype or job type women and will feel more comfortable communicating with them. As women's numbers increase, they are more likely to share membership in other groups, such as churches or alumni associations, with the men they work with (Blau, 1977). Consequently, these identities may overshadow gender as bases for association and interaction. Further, as women begin to enter management they will promote other women into management through homosocial reproduction (Kanter, 1977).

A complementary set of studies (Carrington & Troske, 1998; Cohen & Huffman, 2003; Smith, 2002; Smith & Elliott, 2002; Stainback & Tomaskovic-Devey, 2012) have found that women are more likely to supervise other women in a process of "bottom-up ascription," creating a "sex-specific" demand for women managers to supervise women subordinates (Reskin & McBrier, 2000). This literature suggests that homosocial preferences lead to less conflict between supervisors and workers when they share ascribed characteristics. In addition, when women begin to comprise a larger proportion of managerial ranks, they are more likely to promote other women into managerial jobs (Beckman & Phillips, 2005; Cohen & Broschak, 2013; Cohen, Broschak, & Haveman, 1998; Kurtulus & Tomaskovic-Devey, 2012). This body of literature suggests that as organizations employ more women, in-group preferences of women employees may lead to bottom-up and/or top-down pressures for more women supervisors.

¹ We use "woman-dominated" and "man-dominated" rather than "male-" and "female-dominated." While both biological sex categories and gender categories are socially-constructed, women and men are sorted into different jobs and workplaces on the basis of perceived gender, rather than biological sex. Conflating gender and biological sex essentializes this sorting process (West & Zimmerman, 1987).

H₁. Women's share of management in a workplace will increase as women's share of non-managerial employment increases.

A related theoretical take on gender composition suggests that the effect of gender composition on workplace inequality varies based on more specific tipping points. Kanter (1977) defines a tipping point as a compositional proportion at which a minority gains strength. For her, "strength in numbers" only occurred when a token made up more than fifteen percent of the organization. Below this point, minority group members are too diffuse to form effective alliances. Past this point, women become numerous enough to form alliances and affect organizational and workgroup culture (p. 209).

However, the exact composition that serves as the tipping point and the contexts under which this happens continues to be debated. We offer three competing hypotheses reflecting three major theoretical strains within this debate. Gender composition and gendering of jobs may often, though not always, coincide. Woman-dominated jobs tend to be lower-status and in devalued industries (Hegewich & Hartmann, 2014; Petersen & Morgan, 1995; Tharenou, 2013; Tomaskovic-Devey, 1993). Meanwhile, women are often socially isolated in man-dominated jobs or workplaces (Kanter, 1977; Pierce, 1995; Roth, 2004). Therefore, women in gender-balanced environments have enough organizational power to minimize gender differences and move towards de-gendering jobs and workplaces or to redefine gender differences as inconsistent with unequal abilities. For instance, Allmendinger and Hackman (1995) and Pfeffer and Davis-Blake (1987) suggest conditions for women tokens worsen as they compose more of the group, but these disadvantages to women decline once thirty to forty percent of jobholders are women. In addition, Blau (1977) argues that strength in numbers increases with increasing heterogeneity. We test these competing tipping point theories, first using Kanter's (1977) fifteen percent:

H_{2a}. Women's share of management in a workplace increases only after women comprise 15% or more of non-managerial employment in workplaces.

Additionally, we test a hypothesis about increasing workplace heterogeneity using thirty-five percent as a midpoint between the thirty to forty percent women gender composition suggested by Allmendinger and Hackman (1995) and Pfeffer and Davis-Blake (1987):

H_{2b}. Women's share of management in a workplace increases only after women comprise 35% or more of non-managerial employment in workplaces.

Further, Kanter predicted that real advances towards equality occur when women are 40–60% of the total group. Again, taking the midpoint, and extending this argument to predict women's share of management as a measure of "advances towards equality", we hypothesize that:

H_{2c}. Women's share of management in a workplace increases only after women comprise 50% or more of non-managerial employment in workplaces

3. Too many women and glass escalators

Some research (Hegewich & Hartmann, 2014; Reskin & Roos, 1990; Strober, 1984) suggests a tipping point with negative consequences for women. Case studies of token men illustrate that there is little evidence that men face wage or promotion penalties as compared to women (Floge & Merrill, 1986; Heikes, 1991; Hultin, 2003). Williams (1992) argues that men in woman-dominated occupations, such as librarians and nurses, experience a glass escalator (an accelerated promotion trajectory arising from gendered assumptions) instead of the glass ceiling (a point after which gendered assumptions prevent further promotion) that women face in occupations dominated by men. Maume (1999) finds support for this argument, showing that in the 1980s, the greater the proportion of women in an occupation, the more likely men were promoted.

However, there is some research that fails to find evidence of a glass escalator for men in women-dominated occupations (Budig, 2002; Snyder & Green, 2008). Snyder and Green (2008) find more horizontal gender sorting into different specialties among nurses than a disproportionate movement of men into head nursing or administrative positions. While Budig (2002) finds that men are advantaged in women-dominated occupations, balanced occupations, and men-dominated occupations, somewhat contrary to the glass escalator hypothesis, the advantage over women in promotions is narrowest in women-dominated occupations.

Williams, in her 2013 Sociologists for Women in Society Feminist Lecture, calls for researchers to test and update the glass escalator as it applies to workplaces in the new economy. In the current paper, we answer this call by examining whether the glass ceiling/glass escalator hypothesis about gender-dominated occupations holds true in the private sector workplaces. Therefore, extending this occupation theory to workplaces, using tipping points of 65% and 85% (inversing prior hypotheses such that men are at token percentages) we hypothesize that:

H₃. In women-dominated workplaces, women have less share of management while men experience the glass escalator.

4. Gender segregation and management

The gender composition of workplaces may mean little in working towards workplace equality if men and women work in different occupations. While some recent research examines the relationship between gender segregation and wage inequality (c.f. Gauchat, Kelly, & Wallace, 2012), less research examines how gender segregation might affect women's share of management. We do, however, have some empirical and theoretical guides to our inquiry. For instance, a substantial body of literature (for a review see Reskin, 1993 and, more recently, Stainback & Tomaskovic-Devey, 2012) suggests that integration or desegregation of workplaces will lead to greater equality in workplaces. Like Kanter's (1977) strength in numbers argument, as women and men become more evenly distributed across non-managerial occupations in workplaces, the

normative change could increase women's share of management. Under this assumption, we can view segregation trends as social contexts in which share of management are embedded. Given this, industries, geographic regions, and workplaces with less gender segregation should have larger numbers of women in management.

Most trend data on segregation are national occupation-level estimates of labor markets. These measures of segregation focus more broadly on occupations, rather than workplaces. A comparison of the time series available on changes in gender segregation shows very little change in occupational gender segregation between 1960 and 1970, a decline between 1970 and 1980 and little change between 1980 and 1990 (Albeda, 1986; Baunach, 2002; Beller, 1985; Bianchi & Rytina, 1986; Carlson, 1992; Jacobs, 1989; Jacobsen, 1994; Wells, 1999). Cotter et al. (2004) also find little change between 1990 and 2000. Blau, Brummund, and Yung-Hsu Liu (2013) find virtually no reduction in segregation from 2000 until 2009. Similarly, Stainback and Tomaskovic-Devey (2012) demonstrate that not only has change slowed since the 1980s, but that, high-wage occupations show signs of re-segregation. In short, women's progress in terms of desegregation has been partial and limited.

Still, gender (de)segregation may be related to women's share of management. Some research (Stainback, Kleiner, & Skaggs, 2016) examines the effect of gender composition of management on non-managerial segregation, finding women's share of different levels of management is related to lower levels of gender segregation in Texas workplaces. Other research (Huffman, Cohen, & Pearlman, 2010) finds that the effects of women in management on segregation are varied and that this effect weakens over time. As Huffman (2016) points out, a greater share of management for women represents greater progress when women supervise more integrated workplaces. We envision the relationship between segregation and management could be circular whereby lower segregation leads to women's greater share of management. Then, in turn, women in management may create changes that reduce levels of non-managerial workplace segregation. Therefore, we build on existing research by examining how non-managerial gender segregation in workplaces affects women's share of management. Our final hypothesis, then, states:

H₄. Lower non-managerial gender workplace segregation is related to women's greater share of management in workplaces

5. Building on prior research

The theories discussed above vary in terms of their clarity in naming tipping points in which workplace composition is influential for other workplace inequality measures. We build on prior research by testing specific tipping points that are implied or stated in this research using a large dataset. In doing so, we hope to increase our understanding of precisely how gender composition matters in workplaces and how composition, specifically tokenism, works differently for men than it does for women. Additionally, the theories detailed above do lit-

tle to identify important contextual factors that might influence how compositional tipping points work in workplaces. Therefore, to build on prior research, we attempt to contextualize the theories by also examining labor market supply, workplace industry, workplace size, and the number of managers in workplaces.

First, an extensive body of literature (for a review see Reskin 1993; Tomaskovic-Devey et al., 2006) suggests the race and gender characteristics of local labor markets might influence workplaces within those labor markets. We conceptualize local labor markets as "commuting zones", which are calculated based upon decennial census survey data on county-to-county commuting patterns (Tolbert & Sizer, 1996). Therefore, they describe social and geographic contexts that constitute the "local labor markets" of workplaces. Second, prior research suggests a gender-specific demand for worker's in certain industries, especially a demand for women in the service industries (Cotter, DeFiore, Hermesen, Marsteller Kowalewski, & Vanneman, 1995; Reskin, 1993). Third, workplace size has been shown to be related to women's opportunities for progress since larger workplaces are more likely to have formalized personnel systems and policies that may lessen discrimination (Anderson and Tomaskovic-Devey, 1995; Reskin & McBrier, 2000; Stainback et al., 2016; Tomaskovic-Tomaskovic-Devey & Skaggs, 1999). Finally, if a workplace does not have many managers then opportunities and demand for management positions are limited (Reskin & McBrier, 2000). Conversely, workplaces with many managers have increased potential for job title proliferation and social distinctions among managers. Therefore, the size of management in the workplace might be an important contextual factor for workplace gender compositional tipping points.

6. Methods

We use workplace data (EEO-1 reports) collected by the U.S. Equal Employment Opportunity Commission (EEOC). The data have been collected from individual workplaces since 1966. The EEOC requires private-sector workplaces to file annual reports. Each workplace must report their employment gender and race/ethnic composition in nine occupational categories—officials and managers, professionals, technicians, sales workers, office and clerical workers, craft workers, operatives, laborers, and service workers. EEO-1 reports also include information on the workplace's parent company, industry, and geographic location (for a more detailed discussion of the data see Robinson, Taylor, Tomaskovic-Devey, Zimmer, & Irwin, 2005). From this core data, we can compute a number of composition-based variables.

There were over 4.5 million accumulated workplace observations by the year 2005. Following the sampling technique of Tomaskovic-Devey et al. (2006), we take a 20% simple random sample starting with 1980 and then in five-year increments that include 1985, 1990, 1995, 2000, and 2005. This creates a more manageable dataset without jeopardizing reliability. The final sample size is 195,534 workplaces. Descriptive statistics for our sample are reported in Table 1. We focus on this time period for

Table 1
Univariate descriptive statistics.

	Mean	Standard deviation
Dependent variable:		
Women's share of management	28.88	26.24
Women's share of management (Ln)	−2.22	3.69
Explanatory variables:		
Women's share of workplace non-managerial employment	48.69	26.48
Non-manager <i>D</i> (gender segregation)	35.71	24.04
Control variables		
Women's share of employment in commuting zone	39.20	5.93
Blacks' share of employment in commuting zone	14.40	12.31
Blacks' share of employment in commuting zone (Sqrt)	3.43	1.63
Hispanics' share of employment in commuting zone	7.65	9.50
Hispanics' share of employment in commuting zone (Ln)	1.26	1.42
Industry (3-digit SIC)	–	–
Workplace size	221	521
Workplace size (Ln)	4.82	0.96
Percentage of employment that is managerial	12.13	11.15
Percentage of employment that is managerial (Sqrt)	3.20	1.37
Year		
1980	0.17	0.38
1985	0.13	0.33
1990	0.16	0.36
1995	0.18	0.38
2000	0.20	0.40
2005	0.17	0.37
N = 195,534 workplaces		

methodological and substantive reasons. First, we end our analysis with 2005 since afterwards the EEOC transitioned from Standard Industrial Codes (SIC) to the North American Industry Classification System (NAICS). This was a substantial change in industry codes. Secondly, we wanted to avoid the potential unique changes in workplaces due to the 2008 Great Recession, a topic worthy of an analysis all its own. Thirdly, we start with the year 1980, because research indicates that previous years may have overrepresented gender and racial progress (Smith & Welch, 1984), and the quality of the data improves across time (Robinson et al., 2005). Finally, the period between 1980 and 2005 is a period in which women's share of the labor force stabilizes. By 1980 women had become 42.5% of the labor force, increasing to 44.2% in 1985 on to 46.4% in 2005 (Department of Labor, 2018, n.d.).

The strength of the EEOC's EEO-1 report data is that they allow us to explore compositional changes 1) within occupations and 2) within workplaces. If women managers are crowded in certain industries or workplaces this raises concerns about the progress women have achieved in breaking the glass ceiling. Finally, that these data are workplace-level data is of particular significance because they more accurately capture gender work inequality, such as gender segregation (Bielby & Baron, 1986; Tomaskovic-Devey

et al., 2006) relative to occupation-based estimates that are not linked to workplaces.

There are some limitations to these data, the greatest being the use of nine occupation categories to describe “within workplace employment”. Ideally, we would have job-level data so we could show differences in types of managers. Research has shown that job title proliferation is widespread and that women mostly have share of management positions with lower status, responsibility, and fewer opportunities for mobility (DiPrete & Soule, 1988; Strang & Baron, 1990). Additionally, the EEOC only differentiated levels of management after 2007 (Kmec & Skaggs, 2014), which as mentioned above, occurs just before the Great Recession. Another limitation is that K-12 educational institutions and state and local government file different EEO reports and are not included in EEO-1 reports which means that these types of establishments are excluded from our analysis.

6.1. Measures

For all variables, the level of skewness determined our transformation strategy. We transformed variables by taking the square-root if they were moderately skewed and taking the natural log if they were substantially skewed.

6.2. Dependent variable

6.2.1. Women's share of management

We take women's share of management as a proxy for progress in achieving equality in workplaces. We measure this dependent variable as the percentage of managers that are women in a workplace. The distribution of this variable is substantially skewed, with clustering at lower proportions of management. To adjust for the skewness, we took the natural log of this measure.

6.3. Explanatory variables

6.3.1. Percent women non-manager

The first independent variable influencing women's share of management is the percentage of non-managerial employees who are women in a workplace. We follow Reskin and McBrier (2000) and use the woman composition of non-managers to represent the gender composition of the workplace.

6.3.2. Non-managerial gender segregation

To measure gender segregation in the workplace we use the index of dissimilarity (*D*). This index measures the evenness of the distribution of workers in a bounded area (in our analysis, it is for non-managers in a workplace). Further, including this in our models helps us uncover inequality in terms of the gender distribution of women that might remain hidden if we only examined non-managerial composition. *D* is calculated:

$$D_{\text{Non-Managers in Workplace}} = 100 \times [.5 * (\sum |((n_1/N_1) - (n_2/N_2))|)]$$

where n_1 and n_2 refer to the number of status groups (men and women) 1 and 2 employed in each occupational

group (the 9 EEOC categories) and N_1 and N_2 refer to the number of status groups 1 and 2 employed by the whole workplace. The index of dissimilarity ranges from 0 to 100, from total integration to total segregation. The value of D represents the percentage of people who would have to change jobs in order to have equal representation of status groups in a workplace. The interpretation of the measure for workplace non-manager gender segregation is simple. For instance, a value of $D=48$ would mean that 48 percent of non-managerial men or women in that workplace would have to change occupations for the workplace to be completely integrated.

6.4. Contextual variables

Based on prior research, we also include a series of variables in the models that contextualize the analysis. These include labor market supply, industry, workplace size, and the percentage of workplace employment that is managers.

6.4.1. Labor market supply

To measure the supply of women in a labor market we add an aggregate measure for women's share of employment in all EEO-1 reporting workplaces in the commuting zone. Commuting zones were first calculated in 1980 from the annual census with minor modifications made to these geographies in 1990 (Tolbert & Sizer, 1996). Based on Tolbert and Sizer's (1996) analyses and discussion of these analytic spaces, we impose 1990 commuting zones on all years of data in these analyses by merging them in with the five-digit Federal Information Processing Standard (FIPS) code. In addition to the proportion of workplace employment that held by women in the commuting zone, it is also possible that the labor market supply of those who are racially marginalized may affect women's share of management. Therefore, we include measure of the percentage of Blacks and Hispanics employed in all EEO-1 reporting workplaces within commuting zones. These variables are substantially skewed, requiring us to use the square root of percentile Black and the natural log of percentile Hispanic.

6.4.2. Industry

Prior research suggests a gender-specific demand for worker's in certain industries, especially a demand for women in the service industries (Cotter et al., 1995; Reskin, 1993). Greater industrial detail increases the amount of variance explained; therefore, we use three-digit industry classifications as fixed effects in our analysis.

6.4.3. Workplace size

Workplace size is measured by number of employees in a workplace. This variable is substantially skewed; therefore, we take the natural log for our analysis.

6.4.4. Percent total managers

We include a measure for the size of management (as a percentage of total employment) in the workplace. This variable is moderately skewed, so we use the square root in our analysis.

6.5. Control variable

6.5.1. Time

As mentioned above, we select a time period, 1980–2005, in which there is relative stability in women's labor force participation and to avoid the potentially confounding effects of the Great Recession. Consistent with prior research (Tomaskovic-Devey et al., 2006), we further control for time by creating dummy variables for each year in the data (1980 as the reference since it is the earliest year).

6.6. Analytic approach

Organizations may respond to the composition of women non-managers in different ways. We define compositional “tipping” points as specific points in workplace gender composition in which women's share of management in the workplace significantly improves or worsens. We select various compositional tipping points (under 15, 35, and 50%) based on prior literature (Allmendinger & Hackman, 1995; Blau, 1977; Kanter, 1977; Pfeffer & Davis-Blake, 1987). We then add to this literature by adding a few additional points (65 and 85%, the inverse of our 15 and 35% tipping points such that men are more so tokens) to further examine how women non-managerial workplace composition affects women's share of management in woman-dominated workplaces. Samples are split such that workplaces where women's share of non-managerial employment is either *under* or *equal to and above* the compositional point (15, 35, 50, 65, 85). We thus create ten samples total (e.g., below and above 15; below and above 35, etc.). By splitting the sample instead of using “dummy thresholds” or interaction effects, we allow women's non-manager composition to interact fully with all other variables in our models as theorized in the literature.

To examine the relationship between women's composition for non-managers and managers at these tipping points, we first run a series of multiple regression analyses. Specifically, for each sample, we examine how our explanatory variables predicts women's share of management above and below gender compositional tipping points (see Table 2). Then, we use slope-tests to determine if the slopes are significantly different for each split sample. Conducting these slope tests provides insight into whether the compositional point represents a “tipping” point, or a point at which women's representation in management significantly improves or worsens.

7. Results

The results of the multiple regression analyses are provided in Table 2, which shows the results of our analyses of various tipping points predicting women's share of management. Additionally, Table 3 provides significance tests of differences in slopes to determine if coefficients have meaningful differences below and above tipping points. Looking first at Table 2, we call the reader's attention to the sample sizes. While women make up nearly half the labor force throughout the time period (US Department

Table 2

Fixed-effect regression models of women's share of management for split samples at compositional points.

	Under 15	Over 15	Under 35	Over 35	Under 50	Over 50	Under 65	Over 65	Under 85	Over 85
% women non-managers	0.099***	0.040***	0.070***	0.040***	0.055***	0.043***	0.047***	0.051***	0.044***	0.059***
Non-manager <i>D</i>	−0.024***	−0.012***	−0.013***	−0.014***	−0.013***	−0.016***	−0.014***	−0.015***	−0.016***	−0.007***
% women in CZ	−0.019***	0.003	−0.016***	0.006**	−0.011***	0.005*	−0.008***	0.006*	−0.006***	0.012
Sqrt (% Black in CZ)	−0.017	−0.009	−0.033***	0.001	−0.021**	0.002	−0.017**	0.006	−0.015**	0.021
Ln (% Hispanic in CZ)	0.082***	0.043	0.094***	0.028***	0.072***	0.038***	0.057***	0.064	0.058***	0.071***
Industry (3-digit n SIC)	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect
Ln (workplace size)	0.380***	0.532***	0.603***	0.472***	0.610***	0.420***	0.592***	0.342***	0.532***	0.318***
Sqrt (% total manager)	0.041*	0.262***	0.299***	0.218***	0.390***	0.137***	0.397***	−0.002	0.325***	−0.183***
Year:										
1985	0.226**	0.603***	0.464***	0.552***	0.563***	0.478***	0.570***	0.452***	0.535***	0.621***
1990	0.619***	0.998***	0.950***	0.913***	1.063***	0.778***	1.025***	0.727***	0.954***	0.900***
1995	0.987***	1.208***	1.309***	1.094***	1.364***	0.949***	1.299***	0.860***	1.196***	1.065***
2000	1.277***	1.458***	1.581***	1.332***	1.646***	1.167***	1.553***	1.051***	1.435***	1.260***
2005	1.537***	1.596***	1.906***	1.422***	1.877***	1.286***	1.759***	1.196***	1.637***	1.320***
N	28,182	167,352	63,430	132,104	96,480	99,054	135,840	59,694	177,047	18,487
R-square	0.15	0.27	0.22	0.23	0.25	0.22	0.27	0.20	0.32	0.20

¹“Under ____” indicates that women's share of non-managerial employment in the workplace is less than that percentage. “Over ____” indicates that women's share of non-managerial employment in the workplace is greater than or equal to that percentage.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Table 3

Slope comparison tests for split samples at compositional points.

	15	35	50	65	85
% women non-managers	11.94***	3.33***	7.86***	−1.92	2.85**
Non-manager <i>D</i>	−10.15***	0.00	12.80***	0.00	−6.37***
% women in CZ	−6.38***	−7.21***	−5.30***	−4.43***	−2.97**
Sqrt (% Black in CZ)	−0.98	−3.29**	−2.59**	−2.76**	1.16
Ln (% Hispanic in CZ)	3.17**	5.55***	3.03*	−0.92	−0.49
Industry (3-digit SIC)	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect
Ln (workplace size)	−6.84***	9.19***	13.44***	17.68***	5.15***
Sqrt (% total manager)	−10.54***	6.55***	21.93***	35.26***	23.95***
Year:					
1985	2.12*	−1.54	1.41	2.40*	−0.85
1990	−5.06***	0.69	4.95***	5.80***	0.53
1995	−3.07**	3.77***	7.25***	7.55***	1.48
2000	−2.39*	4.29***	8.49***	8.75***	1.63
2005	−0.80	8.40***	10.43***	9.78***	3.07**

¹“Under ____” indicates that women's share of non-managerial employment in the workplace is less than that percentage. “Over ____” indicates that women's share of non-managerial employment in the workplace is greater than or equal to that percentage.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

of Labor, n.d.) there are 28,182 workplaces in which less than fifteen percent of employees are women. In contrast, there are only 18,487 workplaces in which less than fifteen percent of employees are men.

First, we turn to our explanatory variables, percentage of non-managers that are women and non-manager gender segregation. Our modeling strategy imposes constraints, which may weaken the effects of composition, because we split our samples by the workplace composition of non-managerial women. Therefore, when examining the effects of composition within these constrained samples, our results may be conservative estimates. First, we turn our attention to the percentage of non-managers that are women. Consistent with H_1 , Table 2 shows that a larger percentage of women non-managers predicts women's

greater share of management above and below all tipping points. The coefficient is positive above and below all tipping points, which is inconsistent with H_{2a} , H_{2b} , and H_{2c} . Turning to Table 3, statistical significance tests of differences in slopes also reveal that the effects are significantly different at every tipping point except 65. Among tipping points with statistically significant differences in slopes, Table 2 shows that the coefficients are larger below the tipping points for the following tipping points: 15, 35, and 50. Whereas, the coefficient above the 85 tipping point is larger than the coefficient below. In sum, at the tipping points of 50 and below, the percentage of women non-managers predicts a larger share of women managers in workplaces below the tipping points. In contrast, in workplaces where women hold the highest percentage of non-management

employment (85%), women hold a larger share of management above the tipping point. This is inconsistent with H_3 , which predicted that women's share of management would be smaller in places dominated by women.

Our second explanatory measure examines the effect of non-managerial gender segregation net of other effects. Consistent with H_4 , Table 2 shows that across all tipping points, greater gender segregation predicts a lesser share of management for women. However, the significance of slope tests (Table 3) indicate that the magnitude of these effects differs at the 15, 50, and 85 tipping points. As Table 2 indicates, at the 50 tipping point, gender segregation has a larger negative association *above* the tipping point in comparison to below the tipping point. This finding shows that lower segregation is more important for women's share of management in workplaces dominated by women than in workplaces in which women are a minority. In contrast, at the 15 and 85 tipping points, gender segregation has a larger negative association with management *below* the tipping point in comparison to above the tipping point. This suggests further that lower gender segregation matter more in workplaces where women are tokens and less in workplaces that are dominated by women.

Next, we examined how contextual factors affect women's share of management. Looking at Table 2, we find that an increase in the percentage of women in the commuting zone has negative effects on women's share of management in workplaces *below* the tipping points. *Above* the tipping points, with the exception of workplaces over 15 (not statistically significant), more women in the commuting zone are associated with increases in women's share of management, with the largest effect above 85. Interestingly, if the theories had predicted the effects of gender composition of labor markets, instead of workplaces, on women's share of management in workplaces, then we would have found support for hypotheses 1b, 1c, and 1d.

The percentage of Black workers in the commuting zone has minimal effect on women's share of management and fails to reach statistical significance above all tipping points and below 15. Below the 35, 50, 65 and 85 tipping points, increases in the Black workers' share of workplace employment in commuting zones is associated with women's lesser share of management. In contrast, increases in the Hispanics' share of workplace employment in a commuting zone predicts women's greater share of management below all tipping points and above 35, 50, and 85 (above other tipping points not significant). Additionally, workplace size is positively associated with women's share of management across all tipping points. However, slope tests (Table 3) indicate that the magnitude of the positive coefficient differs above and below various tipping points. At the 15 tipping point, the size of the coefficient is greater above the tipping point compared to the effect below the tipping point. At all other tipping points, increases in workplace size predict a larger coefficient below the tipping points.

Next, we examined the effect of the percentage of total management (the percentage of workplace employment held by managers, which is a measure for the potential management opportunity in a workplace) on women's share of management in workplaces. Looking at Table 2, we

find greater total management predicts women's greater share of management below all tipping points. Increases in total management predict an increasing share of women's management above the 15, 35, and 50 tipping points. Above the 65 tipping point, the coefficient is not statistically significant and above the 85 tipping point, an increase in total management is actually negatively associated with women's share of management. Thus, in contrast to men-dominated and more gender-balanced workplaces, in women-dominated workplaces, an increase in the number of management positions does not necessarily lead to women's greater share of management.

Finally, we controlled for the year that the sample was taken. Looking at Table 2, compared to 1980, women make up a greater share of management both below and above tipping points in all years, illustrating increases overall in women's share of management. The coefficients become larger with each additional time point, with 2005 predicting the largest increase in women's share of management. Further, in 2005, slope tests (see Table 3) indicate that coefficients above and below the 35, 50, 65, and 85% tipping points are all statistically significantly different from one another.

8. Discussion and conclusions

In this paper we examine the research question, "How does the gender composition in workplaces affect women's share of management?" Our results indicate that the gender composition of workplaces is crucial to understanding the creation and recreation of inequality in workplaces. The findings we present here illustrate the continued relevance of Kanter's (1977) "strength in numbers" hypothesis and the importance of workplace gender composition, especially when operationalized as a series of tipping points. Our first hypothesis drew from Kanter's (1977) "strength in numbers" theory. We predicted that women's share of management would increase as women's share of non-managerial composition increases. Our results offer support for this hypothesis. At each tipping point, increases in women's share of the workplace composition resulted in women's greater share of management.

Next, we examined 3 competing hypotheses (H_{2a} , H_{2b} , and H_{2c}) which made varying predictions regarding which tipping point would matter most for predicting women's share of management: 15, 35, or 50. Ultimately, none of the hypotheses were supported. H_{2a} drew from Kanter's (1977) hypothesis that "strength in numbers" would occur when women made up more than fifteen percent of the organization. We posited that women's share of management would increase only after women surpassed a tipping point of 15%. This hypothesis was not supported. While increases in women's composition did predict increased women's share of management above the 15% tipping point, increases in women's composition was also associated with a greater share of management below 15%. Further, slope tests indicate that increases in women's composition of non-management has an even *larger* affect in workplaces with less than 15% of the workforce being women compared to those with greater than 15%.

H_{2b} was also not supported in the data. Drawing from Pfeffer and Davis-Blake (1987) and Allmendinger and Hackman (1995) we predicted that workplaces must approach heterogeneity before women really gain acceptance. Blau's (1977) and other scholars (Allmendinger & Hackman, 1995; Pfeffer & Davis-Blake, 1987) see the point of heterogeneity less as an ideal progressive normative plateau, but rather as the point where women are accepted enough that their conditions stop getting worse. Specifically, H₃ predicted that women's share of management would only increase when women's workplace composition surpassed 35%. Since the coefficients for women's non-managerial employment in workplaces are positive below and above each tipping point, there is not support for this hypothesis. Strength in numbers is associated with a greater share of management regardless of the composition. Additionally, similar to the 15% tipping point, increasing women's composition of non-management workers has a larger effect on share of management in workplaces with less than 35% when compared to those above 35%.

Similar to our findings for H_{2a} and H_{2b}, we do not find support for H_{2c}. Kanter (1977) suggests that normative change occurs among men when women reach near equal proportions with them in workplaces. Further, she argues that in relatively gender-balanced groups, women have enough potential allies and men have enough exposure to them that gender ceases to be a key point of contention. From this, we tested the hypothesis that women's share of management in a workplace increases only after women comprise 50% or more of non-managerial employment in workplaces. We did not find support for this hypothesis. Importantly, as we noted in the results, H_{2a}, H_{2b}, and H_{2c} would have been supported if the theories had predicted how women's share of management in workplaces is affected by gender composition tipping points of labor markets instead of workplaces.

What is the tipping point in which gender differences lessen in importance and women have enough strength in numbers, and normative change has occurred in workplaces? Contrary to our expectations in H_{2a}, H_{2b}, and H_{2c}, these findings suggest that increases in the number of women in workplaces has an even greater effect on women's share of management in workplaces that have fewer women non-managers. This pattern holds until the 65% tipping point, where the effect of women's share of non-managerial workplace employment is not significantly different below or above the 65% tipping point. Following and building on the literature about gender composition of workplaces, we therefore find that the 65% tipping point appears to be the normative "strength in numbers" gender composition tipping point.

Drawing from, and extending, research on the "glass escalator" (Williams, 1992), H₃ predicted that in women-dominated workplaces, men would have a greater share of management. In contrast to the prediction, increases in women's workplace composition predicts women's higher share of management positions above the 85% tipping point. Further, slope tests show that the higher coefficient for women's composition above 85% is statistically significantly different from the coefficient below 85%. While

some workplaces may be gendered in such a way (Britton, 2000) that men who are tokens ride the "glass escalator" into management positions (Williams, 1992), the overall pattern in the EEO-1 data indicates that women still benefit from greater numbers in women-dominated workplaces. On the other hand, the inclusion of K-12 educational and state and local government establishments (which are excluded from our analysis) might produce a different result.

Our fourth hypothesis draws on more recent research examining the relationship of management on non-managerial gender segregation (e.g. Huffman et al., 2010; Stainback et al., 2016). We expect this relationship could be circular and therefore we build on the above studies by examining how segregation might affect management composition, versus how management affects segregation. H₄ states that workplaces with lower levels of non-managerial segregation will correlate to women's greater share of management. The data support this hypothesis. We found lower segregation was associated with women's greater share of management across composition tipping points, but the strength of the effect varied. For instance, differences for the segregation effects above and below tipping points are statistically significant at the 15, 50, and 85 tipping points. At 15 and 85, the effect of segregation is stronger in workplaces with gender compositions below the tipping point than those above; while the opposite is true at the 50 tipping point. The coefficients for segregation are the same at the 35 and 50 tipping points, indicating that there is not a statistically significant difference in the effect of segregation on management above and below those tipping points. Our findings also indicate that segregation is a much more significant predictor of women's share of management in workplaces when women are tokens (under 15%), but is much less powerful a predictor when men are tokens (women are over 85%). This again suggests that men and women have different experiences with tokenism. Taken together, our findings on the effects of segregation on women's share of management at various gender workplace composition tipping points suggest the need to refine and contextualize H_{2a}, H_{2b}, and H_{2c} and gender composition tipping theories.

The findings for our contextual variables illustrate the importance of incorporating race and gender characteristics of the labor market into explanations of how tipping points affect women's share of management. Though the effects are modest, an increase in the percentage of women in the commuting zone has negative effects on women's share of management in workplaces below the tipping points. Additionally, the percentage of workplace employment held by Blacks in the commuting zone is negatively related to women's share of management in workplaces below most tipping points (35, 50, 65, and 85). Below these same tipping points (35, 50, 65, and 85) and above all tipping points, we find that Hispanic's share of employment is positively related to women's share of management. These findings lend support to the assertion that some workplaces are resistant or slow to change to Civil Rights legislation, while others are not (Tomaskovic-Devey et al., 2006). Larger numbers of racialized minorities and women in the labor force may be viewed as a threat to those in

power who respond through various mechanisms of social closure to maintain privileges in management positions (Reskin, 1988; Tomaskovic-Devey, 1993). This interpretation is consistent with research that finds white men often work in different workplaces than all women and men of color (Stainback & Tomaskovic-Devey, 2012; Tomaskovic-Devey et al., 2006). Our findings show that, overall, women have greater shares of management in gender and racially diverse labor markets.

Our data limit our ability to closely examine organizational processes that may reduce workplace inequality, but a few findings are suggestive of some practical implications of our findings. Previous research finds that large workplaces and workplaces with large managerial workforces are more likely to have formalized personnel systems and policies may lessen discrimination (Anderson & Tomaskovic-Devey, 1995; Reskin & McBrier, 2000; Stainback et al., 2016; Tomaskovic-Devey & Skaggs, 1999). These policies should create a greater share of management for women. Our findings concerning workplace size and the relative size of the managerial workers in a workplace are somewhat consistent with previous literature in terms of women having greater shares of management. However, we find the magnitude of the effect of workplace size (large workplaces) differs. Specifically, the magnitude of workplace size is much larger, and significantly different, for workplaces below all the tipping points, compared with those above. There is one exception to this pattern, however. The effect of workplace size is greater in workplaces in which women hold 15% or more of employment compared to workplaces in which women are less than 15% of employment. This again shows the need for greater contextualization of these hypotheses as this finding provides additional support for our second hypothesis in which we predicted that to achieve “strength in numbers” women had to surpass being tokens (15% of employment). It is possible then, that support for a glass escalator or a glass ceiling in workplaces might vary based on the size of workplaces.

Prior research suggests that tokenism does not work the same for men and women (Acker, 1990; Budig, 2002; Zimmer, 1988), however we find that the size of management might be an important factor in this relationship. Consistent with Kanter's (1977) strength in numbers, of the magnitude of the effect of the number of management positions (%Total Manager) on women's share of management is greater in workplaces in which where women comprise more than 15% of the non-managerial employees compared to workplaces in which women make up less than 15% of employment. However, interestingly, in workplaces dominated by women (women hold more than 85% of employment), having a larger pool of managers is negatively related to women's share of management. Meaning, the prevalence of glass escalators might be more common in workplaces with larger pools of management. Future research, especially research with data that better captures organizational processes, should explore this relationship further in order to increase our understanding of the glass escalator phenomenon.

Our findings document the importance of gender composition in workplaces. We find support for theory that contends workplaces are gendered (Acker, 1990; Britton,

2000; Budig, 2002; Zimmer, 1988). We also find support for Kanter's (1977) composition arguments regarding strength in numbers. However, we have argued future research focused on gender composition and tipping points must refine and contextualize these hypotheses and theories. Additional refinement and contextualizing is also necessary in terms of incorporating a more intersectional lens to these theories. While an adequate intersectional analysis was beyond the focus/space limitations of this paper, future studies should build on research showing that token status plays out differently, for instance, for Black men and white men in women-dominated professions (Wingfield, 2009). Future studies should incorporate a focus on different outcomes of workplace composition for men and women by race, sexuality, and/or disability status.

But what do these findings mean for lessening gender inequality in workplaces? Our results support arguments for strong affirmative action measures and aggressive enforcement. Since women are still underrepresented in management, hiring and promotion policies that explicitly consider gender should positively affect women's share of management. Affirmative action refers to a set of presidential mandates, federal regulations, court orders, and voluntary measures intended to combat workplace discrimination (Stainback & Tomaskovic-Devey, 2012). Executive orders mandating affirmative action just target government contractors and federal agencies, but voluntary policies, court orders, and state laws extend affirmative action to a substantial portion of private industry (Kmec & Skaggs, 2014). Our findings illustrate that effective affirmative action programs that increase women's overall composition in workplaces should also increase women's share of management, therefore reducing other gender inequalities in workplaces. Finally, it is also clear that women hold a greater share of management in more gender and racially diverse labor markets. While the EEOC is constrained to regulating workplaces, greater Affirmative Action regulations at the local and state government level could greatly improve women's progress in workplaces.

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