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The Effects of Occupational Flexibility Constraints on Gender Pay Gap

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ABSTRACT

The Effects of Occupational Flexibility Constraints on Gender Pay Gap

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Extant literature on gender pay gap argues that structural factors such as occupational contexts may determine the gender pay gap by shaping workplace flexibility. Yet, few studies have directly examined how flexibility characteristics of occupations influence the gap between women's and men's earnings. This study investigates the impacts of occupational flexibility constraints on the gender wage inequality at the occupational level. Based on the theory of compensating differentials, the literature on employee mobility, and the rational view of work-family conflict, I expect that the earnings difference between women and men is larger for inflexible occupations than flexible occupations. Also, the study examines the roles of three occupational factors—gender composition, occupational growth, and occupational licensing/certification—as moderators of the relationship between the flexibility constraints and the gender pay gap. Using an occupational information database as well as a nationally representative database of employees in South Korea, I investigate how flexibility constraints predict the gender wage differences at the occupational level. Analyses of 840,016 employees in 78 occupations reveal that the flexibility constraints indicator is

positively related to gender pay gap at the occupation level. The results suggest that women experience a significant disadvantage in terms of overall and monthly pay relative to men in inflexible occupations. Also, the female penalty of flexibility constraints decreases in fast-growing occupations. The regression analyses using three sub-indicators find that overtime work and time pressure exacerbate gender wage inequality, whereas interpersonal interactions are not related to gender pay gap. The effect of overtime work on gender wage difference is stronger in highly male-dominated occupations, but occupational licensing unexpectedly strengthens the link between interpersonal interactions and gender pay gap. Additional analyses show that occupational flexibility constraints are more likely to penalize female employees in the context of low education requirements, non-union membership, and age thirties and forties. The current study's findings demonstrate that the cost of flexibility differs by occupation and that the differential cost penalizes women in inflexible occupations.

Keywords: gender pay gap, occupational characteristics, workplace flexibility

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1. INTRODUCTION

Research on the gender pay gap has consistently documented that women earn less than men even after controlling for demographics, human capital, attitudes, and industry differences (e.g., Blau & Kahn, 2007; Stroh, Brett, & Reilly, 1992). Although the gap between men and women has narrowed substantially over the years due to women's extended qualifications and labor force attachment, scholars have noted that the gender wage inequality still persists and the convergence has slowed down in recent decades (Blau & Kahn, 2006; Goldin, 1990). To provide a more complete picture of the gender pay gap, social scientists have investigated both traditional explanations and newer perspectives, including human capital model, compensating differentials, labor market discrimination, the family division of labor, social capital, negotiations, and psychological attributes (see Blau & Kahn, 2007, 2017, for a review). Considering the prevalence and significance of gender differences in employment outcomes (e.g., Appold, Siengthai, & Kasarda, 1998; Joshi, Son, & Roh, 2015; Post & Byron, 2015; Weichselbaumer & Winter-Ebmer, 2005), it is crucial to understand what is "the last chapter" to close the remaining gap (Goldin, 2014).

A notable feature of gender pay gap is that while women and men earn similar pay at the time of labor force entrance, the gap grows over the life course (Cheng, 2014; Goldin, Kerr, Olivetti, & Barth, 2017). While there are many potential reasons behind this phenomenon such as unbalanced career opportunities and bias in evaluation (Castilla, 2008; Ohlott, Ruderman, & McCauley, 1994), recent literature has highlighted the role of workplace flexibility in determining gender earnings gap (e.g., Cha, 2010; Cha & Weeden, 2014; Gerstel & Clawson, 2014;

Goldin, 2014 ; Goldin & Katz, 2011). Workplace flexibility is defined as “the ability of workers to make choices influencing when, where, and for how long they engage in work-related tasks” (Hill et al., 2008, p.152). Women tend to spend more time in family domain managing household chores, childcare, and/or eldercare compared with men, which creates conflicts with jobs without flexibility (Collins, Landivar, Ruppanner, & Scarborough, 2021; Goldin, 2014; Shockley, Shen, DeNunzio, Arvan, & Knudsen, 2017). For example, previous studies have suggested that overwork, a type of low flexibility situation, generates a pay penalty for women and even pushes them out of the jobs due to the time constraint (Cha & Weeden, 2014; Cortes & Pan, 2017).

Since occupations define the work activities and contexts, occupational characteristics can be a type of flexibility constraints and subsequently influence gender pay gap. These work constraints include attributes such as additional hours, frequent deadlines, structured work, irregular schedules, required in-office work, “on call” duties, and face time with coworkers and clients. Goldin (2014) argued that inflexible occupations aggravate the gender wage inequality by differentially rewarding men and women based on their sacrifices of flexibility. For instance, the relationship between hours worked and wages is nonlinear in some occupations such that the reward escalates exponentially as the number of working hours increases (Goldin, 2014). Denning, Jacob, Lefgren, and Vom Lehn (2019) also reported that wage returns on average hours worked vary significantly at the occupation level, which implies that occupations compensate for time differentially depending on work demands.

While the literature has learned a lot about workplace flexibility and gender differences (Goldin, 2021), there is still a lack of studies testing the occupational

characteristics as flexibility factors to predict the gap between men and women. Previous reviews on gender inequality have emphasized the need to identify structural factors that lie outside of women's control (Joshi, Neely, Emrich, Griffiths, & George, 2015) and argued that the gender gap can be seriously misunderstood when occupational contexts are not taken into account (Weichselbaumer & Winter-Ebmer, 2005). Examining the impacts of objective work characteristics not only identifies the structural determinants of the gender gap but also builds actionable evidence (Joshi, Neely, et al., 2015). Furthermore, scant attention has been paid to how the effects of workplace flexibility on gender wage gap might differ depending on labor market situations and other occupational contexts.

The purpose of this study is to investigate how occupational flexibility and other occupational contexts influence the gender pay gap. First of all, I examine occupational flexibility constraints as determinants of gender pay gap. Based on the theory of compensating differentials (Rosen, 1986), the literature on employee mobility (e.g., Loprest, 1992), and the rational view of work-family conflict (Gutek, Searle, & Klepa, 1991), I expect that occupational flexibility constraints are positively associated with gender pay gap at the occupational level. Women are more likely to choose flexible jobs in a same occupational category due to family reasons than men (Fuller, 2008; Loprest, 1992), which creates severe penalties especially in occupations emphasizing heavy time investment and presence at work (Goldin, 2014). This is consistent with the theory of compensating differentials (Rosen, 1986) suggesting that employers must compensate workers for undesirable job contexts such as a lack of flexibility. Also, research on employee mobility argues that women may face the discrimination in the external labor market

(Dreher & Cox, 2000), which implies the existence of penalty for women who change jobs to pursue flexibility (Fuller, 2008). Moreover, even when women stay in the same inflexible jobs with men, they tend to experience more time-based conflicts between work and family roles since women spend more time in family domain (Shockley et al., 2017), which may lead to emotional distress and decreased performance (Carlson, Thompson, & Kacmar, 2019).

Second, I investigate the moderating role of occupational gender composition on the relationship between occupational flexibility constraints and gender pay gap. When the proportion of men in an occupational category is high, the flexible jobs are more likely to be in conflict with occupational norms (Cialdini & Trost, 1998; Cha, 2013). In contrast, women as a majority group in an occupation not only create flexibility-friendly norms but also build coalitions to influence management practices in organizations (Blau, 1977; Ingram & Simons, 1995; Kanter, 1977; Tolbert, Graham, & Andrews, 1999). Thus, I predict that the influence of work constraints on gender wage gap is stronger when the proportion of men in an occupational category is high rather than low.

Third, I expect that occupational growth suppresses the positive relationship between occupational flexibility constraints and gender earnings gap. The labor market discrimination literature (Becker, 1957; Baert, Cockx, Gheyle, & Vandamme, 2015) suggests that employers are more likely to offer flexible jobs without severe penalties in the context of strong labor demand as represented by high occupational growth rate because it is expensive for them to search for other applicants. On the other hand, female workers are more likely to have a hard time finding quality jobs in flexibility-limiting occupations when market situation is unfavorable.

Lastly, the present study explores the moderating effect of another labor market factor—occupational licensing/certification. Based on the occupational licensing literature (Kleiner, 2000), I hypothesize that licensing/certification weakens the positive association between occupational flexibility constraints and gender pay gap. As occupational licensing/certification tends to constrict labor supply, it allows employees to have bargaining power to reject low wages and negotiate idiosyncratic deals, which benefits women more than men. Furthermore, job market signaling theory (Spence, 1973; Phelps, 1972) argues that licensing/certification reduces wage penalties for women changing employers to get flexible jobs since it signals a high level of competency and commitment, thereby correcting for information asymmetry (Blair & Chung, 2018).

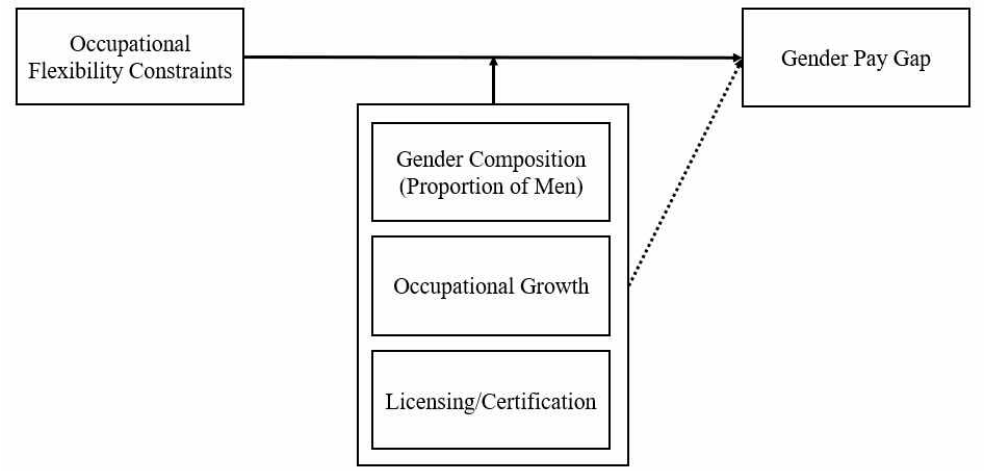
To test these arguments, I use three public databases (i.e., the Korea Network for Occupations and Workers, the Medium and Long-term Labor Force and Employment Projections, and the Survey on Labor Conditions by Employment Type) that provide occupational characteristics and pay information at the occupational level in South Korea. Following the prior research (Goldin, 2014), I create a composite indicator to test the overall effect of different occupational flexibility constraints on gender pay gap. I also analyze sub-indicators separately to understand the phenomenon accurately.

The current study provides a number of major research contributions. First of all, by empirically examining the impact of occupational factors on gender pay gap, I respond to the recent calls for research on the structural determinants of gender inequality (Joshi, Neely, et al., 2015). Second, adding to the prior research on occupational flexibility (Goldin, 2014; Yu & Kuo, 2017), I build on the theoretical frameworks such as compensating differentials and work-family conflicts and

explain why occupational flexibility constraints lead to gender pay gap in South Korean context. Lastly, this study advances the understanding of workplace flexibility by highlighting occupational characteristics as a source of flexibility. Although previous research has largely focused on the individual-level flexibility (Baltes, Briggs, Huff, Wright, & Neuman, 1999) and the organizational initiatives (Putnam, Myers, & Gailliard, 2014), it is important to consider occupational contexts because occupations largely influence workplace flexibility by determining job demands, task characteristics, and other work-related environments (e.g., Goldin & Katz, 2016; Yu & Kuo, 2017). Taken together, the current research helps address structural barriers to women's advancement and contributes to discussions on gender inequality and workplace flexibility.

FIGURE 1

Theoretical Model



Note. All variables are measured at the occupational level.

II. THEORETICAL BACKGROUND AND HYPOTHESES

2.1. Literature on Gender Pay Gap

Economists have traditionally distinguished two primary determinants of gender pay gap—human capital and labor market discrimination (Becker, 1957, 1964; Mincer & Polachek, 1974). Human capital model suggests that women gain lower earnings because they tend to acquire less education, have more career interruptions, choose jobs requiring lower skills, and work for shorter hours (Becker, 1985; Mincer & Polachek, 1974). The gender differences in human capital and job choices have been found to accelerate the gender segregation such that women are more likely to occupy low-quality jobs (Bergmann, 1974; Blau & Kahn, 1981). Yet, research tend to find the residual gender gap even after the human capital factors are controlled for, which leads to the labor market discrimination explanations (Aigner & Cain, 1977; Becker, 1957). While Becker's (1957) idea is that employers, coworkers, and customers prefer to keep social distance from discriminated groups, the statistical discrimination model suggests that employers discriminate because the expected value of productivity is lower for women and minorities (Aigner & Cain, 1977).

Apart from the economic perspective, sociologists and psychologists have also provided the supply-side explanations. These explanations involve diverse influential factors such as differences in occupational aspirations, gender role orientations, social networks, and negotiation skills (e.g., Fottler & Bain, 1980; Granovetter, 1974; Judge & Livingston, 2008; Stevens, Bavetta, & Gist, 1993). In addition, the roles of management practices and supervisors have received

considerable attention (e.g., Abraham, 2017; Briscoe & Joshi, 2017).

On the demand-side, the wage structure and discrimination have contributed a lot explaining the gender wage inequality. The wage structure is different from gender-specific factors such that it concentrates on how workers gain different returns on same factors such as jobs, skills, and employers. For example, structural factors such as occupational characteristics and industry environments have been found to determine the gender pay gap (e.g., Joshi, Son, & Roh, 2015). Other contexts such as labor market situation, technological development, and religious environment can also shape the gender differences in career outcomes (Blau & Kahn, 2007; Cortes & Pan, 2019; Sitzmann & Campbell, 2021). For example, Leslie, Manchester, and Dahm (2017) showed that the demands for high-potential women can reverse the gender pay gap.

Recent studies reported the slowdown of convergence in gender pay gap (Blau & Kahn, 2006; Goldin, 1990), which attracted the scholars' attention to the remaining gap. Among the explanations is workplace flexibility (Hill et al., 2008) which is shaped by a broad range of factors, including organizational practices, idiosyncratic deals, non-work contexts, and industry and occupational environments (e.g., Allen, Johnson, Kiburz, & Shockley, 2013; Briscoe, 2007; Gajendran & Harrison, 2007; Hornung, Rousseau, & Glaser, 2008; Leslie, Manchester, Park, & Mehng, 2012; Ranganathan & Pedulla, 2021). Previous research has shown that workplace flexibility enables employees to manage family demands and helps to close the gender gap in career outcomes (e.g., Briscoe, 2006; Goldin & Katz, 2016). On the other hand, work contexts with less flexibility have been found to contribute to gender inequality (Goldin, 2014).

2.2. Occupational Flexibility Constraints and Gender Pay Gap

The extent to which workers can have flexible work conditions depends on their occupational activities and contexts. While some occupations offer limited flexibility because they require employees to work extra hours (e.g., machine operators), other occupations restrict flexible schedule as they need workers to synchronize time and place with other people (e.g., professional service workers). In this study, occupational flexibility constraints refer to the aspects of occupations that limit worker's control over when, where, for how long, and how much work is done (Kossek & Lautsch, 2018). These constraints can arise from different job characteristics, social and technological environment, and other work contexts surrounding the occupations.

Following the prior research (Goldin, 2014), I construct a composite indicator measuring different occupational characteristics that determine occupational flexibility. While Goldin (2014) focused on professional service workers, flexibility constraints can hinder female workers in all types of occupations since the need for flexibility is based on the work-family issue, a universal phenomenon across occupations (Williams, Blair-Loy, & Berdahl, 2013). The current study used three occupational characteristics—overtime work, time pressure, and interpersonal interactions—as sub-indicators of flexibility constraints.

First of all, working overtime hours deprives employees of their time and energy outside of work because time and energy are finite resources (Edwards & Rothbard, 2000; Sparks, Cooper, Fried, & Shirom, 1997). More time at work tends to cause conflicts with other role activities such as household chores and childcare (Ford, Heinen, & Langkamer, 2007; O'Driscoll, Ilgen, & Hildreth, 1992; Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011), and occupations with extreme work hours are

inhospitable to women in particular (Cortes & Pan, 2017). Previous research has found that work hours increase work-family interference (Geurts, Beckers, Taris, Kompier, & Smulders, 2009). Overtime work also indicates the unpredictability of schedules since it refers to hours worked beyond the contractual working hours by definition, which decreases workers' control over their time and schedules (Gerstel & Clawson, 2018). As women tend to take a major role of family caretaker compared with men (Shockley et al., 2017), it is harder for female workers to meet the overtime demands of inflexible occupations.

Second, the jobs with frequent deadlines (i.e., high time pressure) reduce flexibility since they require employees to be present at particular times (Caverley, Cunningham, & MacGregor, 2007; Perlow, 1998). Workers in these jobs have less freedom to change schedules since finding substitutes to deal with work deadlines generally increases costs. For example, Caverley and her collegues (2007) found that employees tend to come to work even when they are sick if they feel the need to meet deadlines. Similarly, time pressure caused by frequent deadlines requires workers to sacrifice their demands outside work and their control over time.

Lastly, frequent interpersonal interactions at work entail time synchronization with others, which prevents employees from deciding their work time independently. Temporal availability to others is particularly important in occupations that emphasize relationship-building because workers have to spend enough time with other people such as clients and coworkers. Goldin (2014) argued that occupations requiring frequent contacts with others allow less temporal flexibility for job holders, and Yu and Kuo (2017) analyzed the U.S. female workers to show that teamwork importance of an occupation decreases wages for women and this penalty is even greater for mothers.

The flexibility differences among occupations reflect the differential values that occupations place on work time and presence at work. For example, while more hours worked generally increase the total value created from work and subsequent rewards, the same one hour can have different values depending on the occupational contexts. Some occupations appreciate spending additional hours or working specific hours more, which leads to nonlinear wage per hour. The relationship between hours worked and pay is nonlinear (i.e., convex) if an occupation places emphasis on meeting time demands (Goldin, 2014). Managers and consultants are known to have extreme work hours, and previous studies have reported that these occupations exhibit exponentially increasing rewards as work hours mount (Blagoev & Schreyögg, 2019; Brett & Stroh, 2003).

There are two reasons why the occupational flexibility constraints may increase the gender pay gap. First, women tend to move to flexible jobs to meet family demands, and pursuing flexibility generates substantial wage penalty for them especially in occupations that emphasize long hours, frequent meetings, tight schedules, and "on call" duties (Goldin, 2014). The literature on employee mobility (e.g., Fuller, 2008; Loprest, 1992) has illustrated that gender-related obligations influence women's careers more than men's and that female workers tend to change their jobs frequently to work under flexible conditions. Researchers have found that women not only spend greater time in family domain and take a primary role as a caregiver (Shockley et al., 2017) but also sacrifice their careers for the sake of husbands' careers (Markham, 1987). Loprest (1992) suggested that wage disadvantage of women compared with men is partially because females often move from full-time jobs to part-time jobs. Similarly, Fuller (2008) showed that female workers experience family-related job separations more frequently and gain

less from the job changes than male workers.

The theory of compensating differentials (Rosen, 1986) indicates that the more an occupation requires the sacrifice of flexibility, the greater wage penalty is for women seeking flexible jobs. The theory states that employers must compensate for unfavorable work conditions such as lack of flexibility. In other words, workers ask for additional amount of income to accept a job with unpleasant situations, risks, or other undesirable characteristics of the job. In contrast, when employing organizations provide jobs with favorable amenities such as flexible work conditions, employees are willing to work for lower pay. However, as mentioned above, the value of workplace flexibility differs by work activities and contexts, so employers decide on offering workplace flexibility to workers after considering both costs and benefits. Employing firms are willing to pay higher wages for employees performing "on call" duties if this pay raise enhances productivity in the occupational context. For occupations with flexibility constraints, it is costly for employers to offer workplace flexibility, so those who move to flexible jobs (e.g., women taking a part-time job) face severe wage penalty (Goldin & Katz, 2011).

In addition, the possibility of discrimination against women using the external labor market cannot be disregarded. In theory, employees should be able to rearrange the contracts with employers to accommodate changing preferences regarding work conditions (e.g., flexibility). Yet, in reality, the working conditions are largely determined by employers, and employees tend to change employers to adjust their work conditions (Altonji & Paxson, 1990). Since female workers have been found to gain nothing or even lose in external labor market (e.g., Brett & Stroh, 1997; Dreher & Cox, 2000; Fuller, 2008; Valcour & Tolbert, 2003), the external moves to find flexible jobs can penalize women. Previous research has

suggested several explanations for women's career disadvantage in external labor market, including a lack of social capital, information asymmetry, negotiation skills, and bias against women (e.g., Dreher, Lee, Clerkin, 2011; Gerhart & Rynes, 1991; Petersen & Saporta 2004; Quintana-Garcia & Elvira, 2017).

Second, women's productivity and consequent rewards may suffer in the context of flexibility constraints because female workers in this situation are more likely to experience inter-role conflicts and have difficulties accommodating work demands. Based on the role theory (Katz & Kahn, 1978) and conflict theory (Evans & Bartolome, 1984; Zedeck & Mosier, 1990), the work-family conflict literature contends that different roles in work and family domains entail distinct norms and requirements and that it might be mutually incompatible to fulfill role expectations from both sides (Edwards & Rothbard, 2000; Greenhaus & Beutell, 1985). Enacting multiple roles can drain limited resources such as time and energy and increases stress for the actor. For example, when employees are mentally preoccupied or physically absent due to the one domain's demands, they might not be able to meet the other domain's demands sufficiently (i.e., time-based conflict).

The rational view of work-family conflict (Gutek et al., 1991) argues that women spend more family hours and experience higher family-interference-with-work than men (Shockley et al., 2017). Since time and energy are scarce resources, women may suffer from resource exhaustion when they engage in managing family demands such as domestic chores and childcare. Since women are even less able to manage role expectations from both sides in the context of strict occupational demands, it is reasonable to assume that occupational flexibility constraints aggravate work-family conflicts for women (e.g., Stoner, Hartman, & Arora, 1990). Scholars have argued that work-family conflict escalates psychological distress

(e.g., Major, Klein, & Ehrhart, 2002; O'Driscoll et al., 1992; Parasuraman, Purohit, Godshalk, & Beutell, 1996) and found some evidence that work-family conflict and stress hinder job performance (e.g., Bragger, Rodriguez-Srednicki, Kutcher, Indovino, & Rosner, 2005; Carlson et al., 2019; Netemeyer, Maxham, & Pullig, 2005). Considering that rewards are highly contingent on performance (Gerhart & Rynes, 2003), occupations without flexibility may penalize women by exacerbating work-family conflict and hampering their performance.

Previous studies have investigated how workplace flexibility influences women's earnings and gender wage inequality (Bertrand, Goldin, & Katz, 2010; Cha, 2013; Cha & Weeden, 2014; Cortes & Pan, 2017, 2019; Gerstel & Clawson, 2014; Goldin, 2014; Goldin & Katz, 2016; Padavic, Ely, & Reid, 2020; Yu & Kuo, 2017). Goldin and her colleagues have conducted a series of research to show that occupation with low temporal flexibility increase gender wage gap for professional service workers in particular (Bertrand et al., 2010; Goldin, 2014, 2021; Goldin & Katz, 2016). They argued that frequent contacts with others, building relationships, time pressure, structured work, and freedom to make decisions increase the gender wage inequality, whereas the substitutability of workers resulting from occupation-wise standardized processes and training reduces the gap (Goldin, 2014). Similarly, overwork has been found to affect women's career detrimentally at the occupational level (Cha, 2013; Cha & Weeden, 2014; Cortes & Pan, 2017; Cortes & Pan, 2019; Padavic et al., 2020). Yu and Kuo (2017) analyzed female workers in the U.S. and found that mothers experience wage penalty in occupations with low autonomy, high teamwork, and high competition, compared with non-mothers. Gerstel and Clawson's (2014) qualitative research argued that schedule control helps women to manage work-family interfaces. In addition, it was also reported

that occupational interdependence, a concept similar to interpersonal interactions, accelerates work-family conflict (Dierdorff & Ellington, 2008).

Therefore, I expect that occupational flexibility constraints are positively associated with the gender pay gap.

Hypothesis 1. *Occupational flexibility constraints are positively associated with gender pay gap such that men receive higher pay than women in occupations with a high level of occupational flexibility constraints.*

2.3. The Moderating Effect of Gender Composition

Gender composition can determine group norms and opportunity structures as well as subgroups' influences on practices in an occupational category, thereby moderating the effect of occupational flexibility constraints on gender pay gap. First of all, women's struggles in inflexible occupations may face greater penalty in the context of male-dominated occupational norms (Cha, 2013). The conformity literature (Asch, 1956; Cialdini & Trost, 1998; Morris, Hong, Chiu, & Liu, 2015) describes how majorities can shape the appropriateness of behaviors and how group members conform to the majority's viewpoint. Since group norms promise rewards and punishments depending on the appropriateness of behaviors, members seek social approval by accepting the normative influences. When the proportion of men in an occupation is high, male workers as majorities largely shape the occupational norms. Since men are less likely to experience family-work conflicts and to pursue flexibility (e.g., Loprest, 1992; Shockley et al., 2017), a male-dominated occupation may form norms that disapprove and penalize women when female workers pursue flexible jobs or underperform due to time-based conflicts. In other words, these occupational norms may force women to accept greater wage

penalty in exchange for falling short of work demands.

In contrast, the economists suggest that increases in female proportion would raise the price of flexibility due to larger demands, which widens the gender pay gap in an occupation (Goldin & Katz, 2016). While the contention holds some validity, previous research on gender composition has strongly argued that minorities become less disadvantaged and gain more economic resources (i.e., pay) as the minority group size increases (Blau, 1977; Kanter, 1977; Lawrence & Tolber, 2007). Accordingly, I expect that the proportion of men in an occupation accelerates the gender pay gap caused by occupational flexibility constraints since women experience greater negative reactions and subsequent wage penalties with male-gendered norms.

Second, women have higher chance of influencing practices to promote workplace flexibility as the ratio of females in an occupation increases. Previous research has claimed that the larger the proportion of minority members, the higher likelihood of them influencing management practices (Acker 1990; Dreher, 2003). It has also been noted that the majority group has greater bargaining power to negotiate with employers (Coff, 1999). When there is a lot of females in an occupation, women in the same occupation can become allies of each other and build coalitions to exert leverage and change existing practices. Furthermore, employers might be willing to change management practices because it allows them to access a broad pool of potential employees. For example, when female workers account for a large portion of occupation holders, they might be able to facilitate the introduction of new technology (e.g., remote working system) or family-responsive practices (e.g., on-site childcare), enabling them to counter rigid occupational demands. To put it another way, gender composition may support

women to influence practices to accommodate family demands, which is especially beneficial to women in inflexible occupations.

Thus, I argue that the proportion of men in an occupational category reinforces the positive relationship between occupational flexibility constraints and gender wage inequality.

Hypothesis 2. *The proportion of men in an occupational category strengthens the positive relationship between occupational flexibility constraints and gender pay gap.*

2.4. The Moderating Effect of Occupational Growth

Occupational growth is defined as the percentage change of employment in an occupation within a specific time period. A high level of occupational growth generally denotes the tight labor market in which employers have difficulties finding employees and compete for workers. In a fast-growing occupation, workers tend to have a lot of alternative positions to consider since it is easy for them to get employed.

Research on labor market discrimination (Becker, 1957) argues that the imperfection in the labor market leads to the discrimination of minority groups. If the market is competitive, the discriminating employers are driven out of the labor market due to low productivity and both minorities and majorities earn the exact price reflecting their productivity. In reality, market participants face imperfectly competitive labor market with search costs and employers generally have greater power over employees, which may entail discrimination against minority groups. However, as the demand of labor increases, the costs of discrimination escalate because employers have to bear the output losses if they do not fill the vacancies in

time. Indeed, Baert and his colleagues (2015) found that ethnic minorities had to send twice as many applications than majorities, while they were not discriminated in occupations lacking labor force. Similarly, Cha (2014) showed that women experience the wage penalty relative to men after quitting the job during the recession, but not during the pre-recession.

Women may encounter discrimination when changing jobs (e.g., Dreher & Cox, 2000), but increased competition among employers can narrow the gender wage gap by strengthening the market force. Consequently, female workers who change jobs due to occupational flexibility constraints may benefit from a high level of labor demand in an occupational category. A qualitative study done by Gerstel and Clawson (2014) described that nurses have access to flexible jobs such as part-timers partially because of the favorable market situation. On the contrary, when there are few new positions and low labor demand in an occupation (i.e., low occupational growth), employers may rank the job applicants based on the minority status and shun away from hiring female workers. The likelihood of pay cut increases for women who attempt to stay in the labor market and find flexible jobs because they are positioned in lower ranks than men queuing for jobs.

Hence, I hypothesize that women are less likely to experience wage penalty caused by occupational flexibility constraints than men when occupational growth is high rather than low.

Hypothesis 3. *Occupational growth weakens the positive relationship between occupational flexibility constraints and gender pay gap.*

2.5. The Moderating Effect of Occupational Licensing and Certification

Occupational licensing refers to a process in which the government or a private,

non-profit agency administers training and an examination to validate a minimum degree of competency and permits individuals who have passed to perform the tasks (Kleiner, 2000). A certification is similar to licensing such that it guarantees a certain level of skills and knowledge with an examination, but contrary to licensing, it does not forbid people without a credential to carry out the occupational tasks (Kleiner, 2000). Both occupational licensing and certification constricts the supply of labor, which results in wage premium for licensed or certified workers (Kleiner & Krueger, 2010, 2013; Kleiner & Kudrie, 2000). On the labor demand side, licensing and certification standardize workers' skills, knowledge, and abilities such that the average quality of labor is higher. This is because these processes prevent less competent people from entering the occupations.

As occupational licensing/certification reduces labor supply, workers have greater bargaining power and extract higher rent, while employers face higher costs of substituting employees (Coff, 1999; Gittleman, Klee, & Kleiner, 2018). In addition, a high level of skills and knowledge accompanying occupational licensing/certification increase individuals' bargaining power even more (Cahuc, Postel-Vinay, & Robin, 2006; Campbell, Coff, & Kryscynski, 2012). High bargaining power allows credential holders to reject low wages and negotiate favorable conditions such as idiosyncratic deals (Rousseau, 2005), which benefits women more than men since female workers face the risk of low wages and career interruptions frequently.

Moreover, the job market signaling theory (Spence, 1973; Phelps, 1972) contends that employers utilize visible attributes of job applicants (e.g., gender, race, age, etc.) as proxies for productivity when they do not have complete information. The phenomenon might be due to employers' past negative

experiences with the disadvantaged groups or biases against them. While traditional human capital factors such as the level of education and work experiences function as job market signals for applicants' competency and commitment, information asymmetry in the labor market prevents employing organizations from determining unobserved ability accurately (Spence, 1973). As a result, potential employers tend to discriminate women and minorities applicants more when information about competency is scarce (Tosi & Einbender, 1985).

Occupational licensing and certification can eliminate the wage penalty for women who change employers to get flexible jobs by correcting for information asymmetry. Since licensing and certification standardize the quality of credential holders and guarantee a certain degree of knowledge, skills, and abilities (Kleiner, 2000), these credentials help employers assess women's competence accurately. For instance, objective qualification tests such as job testing have been found to decrease the discrimination against discriminated groups (Autor & Scarborough, 2008). In addition to signaling women's qualifications equivalent to men's abilities, women's entrance to licensed occupation indicates a high level of career commitment since licensing/certification requires individuals to invest a large amount of time and efforts in training and development. Previous research noted that employers worry more about women's career commitment relative to men's and qualifications can alleviate these concerns (Campbell & Hahl, 2022). Goldin (2014b) also argued that credentials in occupations can eliminate the negative signals penalizing women.

Previous research has showed mixed empirical results on the effect of occupational licensing on gender wage gap (Blair & Chung, 2018; Gittleman & Kleiner, 2016; Witte & Haupt, 2020). For example, Witte and Haupt (2020)

reported that German female workers benefited from licensing in 1993 but not in 2015. Gittleman and Kleiner (2016) found that licensing closes the gender gap for high paid workers but not for low paid workers. Yet, Blair and Chung (2018) showed that the job market signaling effect of occupational licensing benefits females and racial minorities.

Therefore, I expect that the effects of occupational flexibility constraints on gender pay gap are weaker when the extent of occupational licensing/certification is high rather than low.

Hypothesis 4. *Occupational licensing/certification weakens the positive relationship between occupational flexibility constraints and gender pay gap.*

3. METHODS

3.1. Data Description

The current study used three databases—the Korea Network for Occupations and Workers (KNOW), the Medium and Long-term Labor Force and Employment Projections, and the Survey on Labor Conditions by Employment Type—to test the proposed hypotheses. First, the Korea Network for Occupations and Workers (KNOW) data from the Korea Employment Information Service collects occupational information from workers in each occupation to provide detailed information about occupations in South Korea. The questionnaires benchmark the O*Net in the U.S and include items about occupational information, including knowledge, skills, and abilities (KSA), interests, work contexts and activities, and work values. The number of occupations surveyed changes each year (e.g., 632 in 2017 and 600 in 2018), but the database collects responses from 30 workers in each occupation every year, and the respondents from different years do not overlap. Investigators randomly contact organizations in which occupation holders may belong to, and no more than five workers in an occupation are investigated from a same organization. All respondents have at least one year of work experience in their occupations.

Second, the Medium and Long-term Labor Force and Employment Projections is a yearly data jointly offered by Korea Employment Information Service and South Korea's Ministry of Employment and Labor. Based on the Regional Employment Survey conducted by Statistics Korea, it includes current and projected employment statistics by gender, age, education, industry, and occupation. From this database, I utilize the number of employees in each occupational category

surveyed from 200,000 households across the nation to calculate the occupational growth rates.

Lastly, the Survey on Labor Conditions by Employment Type is a yearly survey database managed by South Korea's Ministry of Employment and Labor. The purpose of database is to support government employment policies. The sample consists of about 33,000 establishments with one or more permanent employees from all industries except Agriculture, Forestry and Fishing, Public Administration and Defense, Compulsory Social Security, Activities of Households, and Activities of Extraterritorial Organizations and Bodies. At the individual level, the database provides information of employees from establishments with five or more permanent employees. The individual data contains background information (e.g., demographics, education, occupations, and work hours) as well as the wage data of permanent employees. It should be noted that the sample of database includes full-time and part-time permanent workers but not the self-employed and temporary workers. The sample of two government-managed databases— the Medium and Long-term Labor Force and Employment Projections and the Survey on Labor Conditions by Employment Type—can be regarded as a representative of nation-wide population in South Korea.

3.2. Measures

All variables were measured at the occupational level. The classification of occupations largely followed the Survey on Labor Conditions by Employment Type that had the most upper category of occupations among the datasets. Among 95 occupations, I eliminated occupations that did not have enough members (i.e., required greater than five employees for males and females each) and that did not

have matched occupational characteristics or occupational growth rate. Previous research on occupational characteristics has also conducted regressions using the relatively small number of occupations (e.g., 118 occupations from Bhave & Glomb, 2016). To eliminate the reverse causality effect, I used independent and moderating variables mostly from 2017 and 2018 surveys and dependent variable from 2019 survey.

Dependent variable. To measure the *gender pay gap* at the occupational level, I used the 2019 Survey on Labor Conditions by Employment Type data. Specifically, I performed the regressions of log earnings at the individual level to estimate the coefficients of gender × occupations interactions and used these coefficients as the residual gender gap for each occupation (Goldin, 2014). The regression equation incorporated various explanatory variables, including gender, age, quadratic age, education, firm tenure, work experience, log of hours worked, firm size, types of shift (e.g., full-time, changing shifts, or part-time), union member status, occupations, and gender × occupations interactions. Categorical variables were included using dummy variables for each category. The final sample included 840,016 employees from 78 occupations. The full list of gender pay gap coefficients can be found in Appendix A.

Independent variables. Following the prior research (Goldin, 2014), I constructed a composite indicator of flexibility constraints by averaging z-scores of sub-indicators representing different dimensions of occupational flexibility. A composite indicator summarizes a multi-dimensional phenomenon in a single scale, which enhances interpretability of aggregated effect (Bollen & Bauldry, 2011; Fornell & Bookstein, 1982; Saisana & Tarantola, 2002). It does not necessarily need to measure one latent variable, but it is rather an explanatory combination of

TABLE 1

Comparison between Goldin (2014)'s Score and Current Study's Flexibility Constraints Indicator

Sub-Indicator Variables[a]	Goldin's (2014) Score	Flexibility Constraints Indicator	Changes Made
Overtime Work	Not Included	Included	Added
Time Pressure (Frequent Deadlines)	Included	Included	No Change
Contact with Others	Included	Created a scale measuring overall interpersonal interactions with four items (including two new items[b])	Adjusted
Establishing and Maintaining Interpersonal Relationships	Included		
Structured Work	Included	Not Included	Deleted
Freedom to Make Decisions	Included	Not Included	Deleted

Groups[c]	Goldin's (2014) Score		Flexibility Constraints Indicator	
	B[e]	SE	B[e]	SE
Full-time College Graduates in Top 25 Highest (Male) Pay Occupations[d]	.121*	.054	-.035	.067
Workers in All Occupations	.000	.024	.049*	.017

Note. The level of analysis is the occupation. The dependent variables of regression analyses are gender pay gap (overall pay) calculated from individual-level regression analyses of pay on male × occupation interactions after controlling for individual and firm characteristics. Only the occupational categories that had greater than five employees for men and women each were included for analyses. Regression models included constants, and unstandardized regression coefficients were reported.

[a] The higher values of sub-indicator variables, the higher scores of Goldin (2014) (or flexibility constraints indicator). [b] Two new items are "Work with Work Group or Team" and "Communicating with Supervisors, Peers, or Subordinates." [c] While Goldin's (2014) sample included self-employed, the current study's sample included employees only since the data did not provide wage information for non-employees. [d] Goldin (2014) analyzed full-time college graduates in top 95 highest (male) pay occupations (about 20% of all 469 occupations). As the number of occupational categories in the current study was smaller (N = 78), I used about top 30% highest (male) pay occupations for comparison.

*$p < .05$.

dissimilar variables. Table 1 shows the comparison between both Goldin's (2014) original score and the current study's flexibility constraints indicator. While Goldin (2014) focused on professional service workers, the current study incorporated all occupations as the sample. Although some occupations may put emphases on flexibility constraints more than the others, the constraints themselves always limit employee flexibility since the need for flexibility have its roots in the work-life balance issue, a universal phenomenon across occupations (Williams et al., 2013).

Sub-indicators were measured as follows. To reflect the literature on flexibility and consider the difference in data, I made some changes to the indicator. First of all, I included *overtime work* as a sub-indicator. Based on the theory of occupational pay differences (Goldin, 2014), a high level of occupational overtime indicates that employers value working additional, non-standard hours, which restricts flexibility and increases the price of these hours. Overtime work was measured by the average hours worked beyond the contract hours (e.g., extended and holiday hours) per week in each occupation. I used the Survey on Labor Conditions by Employment Type to calculate the occupational overtime hours for each year and averaged the values for three years (2017-2019).

In addition, I included *time pressure (frequent deadlines)* as a sub-indicator as Goldin (2014) did. It was measured with an item "[Time Pressure] How often does this job require the worker to meet strict deadlines?" from 2018 KNOW survey using 5-point Likert scale from 1 (not at all) to 5 (everyday).

Moreover, I measured a scale of *interpersonal interactions* by averaging four items from the 2017 and 2018 Korea Network for Occupations and Workers (KNOW) surveys. In addition to Goldin's (2014) two items representing interactions with external people, I included two items representing interactions

with internal organizational members. Restriction on time and place due to the synchronization applies to interaction with internal members as well as external members. Although Goldin (2014) excluded “work with work group or team”, other research has used this item to measure the importance of interdependent teamwork and a lack of temporal flexibility (Yu & Kuo, 2017).

Two items for external interactions were “[Contact with others] How much does this job require the worker to be in contact with others (face-to-face, by telephone, or otherwise) in order to perform it?” and “[Establishing and Maintaining Interpersonal Relationships] How important is this activity to performance on this job? Developing constructive and cooperative working relationships with others, and maintaining them over time.” Two items for internal interactions were “[Work With Work Group or Team] How important is it to work with others in a group or team in this job?” and “[Communicating with Supervisors, Peers, or Subordinates] How important is this activity to performance on this job? Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.” All four items used 5-point Likert scale from 1 (not at all; not important) to 5 (everyday; extremely important). I averaged these four items to calculate the score measuring the extent to which occupations involve interpersonal interactions.

Contrary to Goldin (2014), I did not include “structured work” and “freedom to make decisions” as sub-indicators. For “structured work,” the survey item was phrased differently from the O*NET item, so I excluded it after reviewing it. For “freedom to make decisions,” Goldin (2014) used this item as a proxy variable to represent the difficulty of substituting the worker. Yet, other researchers have used the same item to measure autonomy that functions as a resource and increases

flexibility for workers (Hook, Ruppanner, Casper, 2021; Yang, Giddings, Glomb, & Kammeyer-Mueller, 2020; Yu & Kuo, 2017). Due to this disagreement, I excluded this item from the occupational flexibility constraints indicator.

Consequently, I calculated z-scores for three variables and averaged these z-scores to make a composite indicator that represents overall flexibility constraints.

Moderating variables. *Gender composition* was calculated by the number of male workers divided by the number of total workers for each occupational category from the Survey on Labor Conditions by Employment Type data. I averaged three years' male ratios to calculate the value for the variable (2017-2019). Using the Medium and Long-term Labor Force and Employment Projections, *occupational growth* was calculated by the change of employment from 2018 to 2019 for each occupational category. *Occupational licensing/certification* was measured with an item that asked "Does your job require any license or certification to perform the tasks?" from the 2017 and 2018 KNOW data. It was coded 1 if a respondent answered "yes" and 0 if "no". Then, the scores for each occupation were calculated by averaging all individual responses in each occupational category.

Other variables. *Required education* was measured with an item "[Education Level] What level of education does your job typically require to perform the tasks?" from the 2017 and 2018 KNOW data. The respondents answered with a scale from 1 (middle school or lower) to 7 (doctoral degree). As individual and firm characteristics were already controlled for when calculating the gender pay gap, I included two occupational characteristics that could influence gender pay gap aside from moderators. *Emotional labor* was measured with an item "[Emotional Labor] How much percentage of your work involve hiding your

feelings or smiling when you are angry with clients (e.g., customers, patients, business clients) or colleagues?" from the 2019 KNOW data using 5-point Likert scale ranging from 1 (Zero) to 5 (more than 75%). *Competitiveness* was measured with an item "[Extreme Competition] To what extent does this job require the worker to compete with coworkers or other people?" from the 2018 KNOW data using 5-point Likert scale ranging from 1 (not at all competitive) to 5 (extremely competitive).

3.3. Analytical Strategy

To calculate the gender pay gap coefficients, I first conducted individual-level regressions to estimate the gender pay gap coefficients using the 2019 Survey on Labor Conditions by Employment Type data. The regressions were performed separately for overall pay, monthly pay, and annual incentives. When the target group changes (e.g., union members), the individual-level regression models were estimated again with individuals satisfying the criteria. Before performing each individual-level regression, I excluded the occupational categories that did not have enough individual members (i.e., required greater than five employees for men and women each) and that did not have matched occupational characteristics or occupational growth rate. The original number of occupational categories was 95, and after the exclusion, the final full sample included 840,016 employees from 78 occupations. To test the hypothesized model, I performed multiple regressions of gender pay gap on the explanatory and interaction variables at the occupational level. Aside from the key regression results, I conducted supplement analyses to investigate the effect of occupational flexibility constraints on gender pay gap more in detail.

4. RESULTS

4.1. Descriptive Statistics and Correlations

Table 2 and 3 exhibit descriptive statistics and correlations of the individual-level study variables. Table 2 shows that men earned more overall pay, monthly pay, and annual incentives than women on average. Age, union membership, firm size, and work hours also had positive correlations with pay. In addition, human capital variables such as education, work experience, and firm tenure were all positively correlated with pay level. In Table 3, average overall pay gap between men and women was 20,273 thousand won. Women's overall pay was only 64.9% of men's overall pay. For annual incentives, women earned less than half as much as men (i.e., 41.7%). Compared with male employees, female employees had much shorter firm tenure (i.e., 5.6 years versus 9.1 years) and work shorter hours (i.e., 36.5 hours versus 39.1 hours). These statistics indicate that women tend to change jobs frequently and work in more flexible jobs than men.

Table 4 shows descriptive statistics of the study variables at the occupational level. As explained earlier, gender pay gap was calculated with individual-level regression coefficients of pay on male × occupation interactions after controlling for individual and firm characteristics (see Appendix A for the full list). The correlations of variables were generally in expected directions with some exceptions. The flexibility constraints indicator was positively correlated with overall gender pay gap. Monthly pay gap exhibited a statistically significant, positive correlation with flexibility constraints indicator, while annual incentives gap did not. Among the three flexibility constraint variables, overtime work and time pressure were positively correlated with overall and monthly gender pay gap,

TABLE 2

Descriptive Statistics and Correlations (Individual Level)

	Variables	*Mean*	*SD*	*Min*	*Max*	1	2	3	4	5	6	7	8	9	10	11
1	Gender[a]	.61	.49	0	1											
2	Age[b]	42.14	12.12	16	97	.10										
3	Education[c]	3.18	1.08	1	5	.08	-.29									
4	Work Experienced[d]	4.96	2.21	1	7	.18	.33	.06								
5	Firm Tenure[b]	7.76	8.37	1	56.8	.20	.33	.03	.65							
6	Union Membership[a]	.21	.41	0	1	.12	.02	-.08	.20	.31						
7	Firm Size[e]	5.17	1.61	2	7	.06	-.16	.20	.05	.20	.20					
8	Weekly Work Hours[f]	38.13	7.95	1.17	107.1	.16	-.04	-.14	.09	.07	.09	.03				
9	Weekly Overtime Hours[f]	2.68	4.84	.00	57.63	.14	-.03	-.19	.04	.06	.14	.10	.66			
10	Overall Pay (per year)[g]	4,998	3,449	74	208,000	.29	.09	.33	.40	.50	.15	.31	.14	.07		
11	Monthly Pay (per month)[g]	352	221	6	16,000	.27	.09	.35	.34	.40	.07	.23	.16	.07	.92	
12	Annual Incentives[g]	779	1,424	0	49,500	.20	.03	.15	.32	.45	.24	.32	.05	.05	.70	.38

Note. N=840,016. The level of analysis is the individual. All correlations are statistically significant at the .001 level.

[a] These variables were dummy coded. Gender: male=1, female=0; Union Membership: Member=1, Not a Member=0. [b] Age and firm tenure were measured in years. [c] Education was measured on a scale ranging from 1 (*middle school or lower*) to 5 (*graduate degree or higher*). [d] Work experience was measured on a scale ranging from 1 (*less than a year*) to 7 (*more than 10 years*). [e] Firm size was measured on a scale ranging from 1 (*5~9 employees*) to 7 (*more than 500 employees*). [f] Work hours were measured in hours. [g] Pay variables were measured in 10,000 won. Monthly pay includes monthly base salary, overtime pay, and other allowances. Annual incentives include bonuses and other incentives. Overall pay = monthly pay × 12 + annual incentives.

TABLE 3

Data Summary by Gender (Individual Level)

Variables	Male	Female
Number of Observations	514,858	325,158
Age[a]	43.10	40.63
Education[b]	3.24	3.07
Work Experience[c]	5.27	4.45
Firm Tenure[a]	9.12	5.62
Union Membership[d]	.25	.15
Firm Size[e]	5.25	5.05
Weekly Work Hours[f]	39.12	36.54
Weekly Overtime Hours[f]	3.20	1.85
Overall Pay[g]	5,783	3,755
Monthly Pay[g]	398	278
Annual Incentives[g]	1,006	420

Note. All differences are statistically significant at the .001 level (due to large sample size). [a] Age and firm tenure were measured in years. [b] Education was measured on a scale ranging from 1 (*middle school or lower*) to 5 (*graduate degree or higher*). [c] Work experience was measured on a scale ranging from 1 (*less than a year*) to 7 (*more than 10 years*). [d] Union Membership was dummy coded: Member=1, Not a Member=0. [e] Firm size was measured on a scale ranging from 1 (*5~9 employees*) to 7 (*more than 500 employees*). [f] Work hours were measured in hours. [g] Pay variables were measured in 10,000 won. Monthly pay includes monthly base salary, overtime pay, and other allowances. Annual incentives include bonuses and other incentives. Overall pay = monthly pay × 12 + annual incentives.

TABLE 4

Descriptive Statistics and Correlations (Occupational Level)

	Variables	*Mean*	*SD*	*Min*	*Max*	1	2	3	4	5	6	7	8	9	10	11	12
1	Flexibility Constraints[a]	.00	.54	-2.63	1.10												
2	Overtime Work (hours/month)	3.86	2.91	.08	9.75	.32											
3	Time Pressure	3.25	.41	2.07	4.30	.80	.18										
4	Interpersonal Interactions	.00	.83	-1.94	1.53	.34	-.56	.12	(.84)								
5	Gender Composition (Male Ratio)[b]	.71	.28	.01	.99	.29	.37	.03	-.08								
6	Occupational Growth[b]	.01	.10	-.23	.46	-.22	-.34	-.18	.29	-.01							
7	Licensing/Certification	.36	.27	.00	1.00	-.08	-.13	-.19	.21	.31	.23						
8	Required Education[c]	2.72	1.02	1.28	5.55	.04	-.43	-.16	.71	-.05	.17	.26					
9	Emotional Labor	2.94	.50	1.60	4.05	-.05	-.43	.13	.35	-.52	.05	.04	.19				
10	Competitiveness	2.24	.41	1.48	3.46	.16	-.23	.04	.40	.03	-.04	.18	.24	.25			
11	Gender Pay Gap (Overall Pay)[d]	.15	.09	-.05	.39	.31	.34	.29	-.04	.05	-.13	-.20	-.03	-.29	-.01		
12	Gender Pay Gap (Monthly Pay)[d]	.12	.08	-.08	.40	.25	.33	.24	-.13	-.06	-.28	-.25	-.10	-.27	.07	.93	
13	Gender Pay Gap (Annual Incentives)[d]	1.28	1.54	-3.82	4.87	.01	-.07	-.06	.26	.07	.44	.19	.19	-.02	.11	.27	.10

Note. N=78. The level of analysis is the occupation. All correlations greater than $|r| > .22$ are statistically significant at the .05 level. The reliability coefficient is on the diagonal in parenthesis.

[a] The composite indicator was calculated by averaging z-scores of three flexibility constraint variables. [b] Gender composition and occupational growth were measured in percent. [c] Required education level was measured on a scale ranging from 1 *(middle school or lower)* to 7 *(doctoral degree)*. [d] Gender pay gap was calculated from individual-level regression coefficients of pay on male × occupation interactions after controlling for individual and firm characteristics. To be precise, the coefficients refer to the extent of "residual" gender pay gap after ruling out the portion of gap explained by other factors such as education.

while having negative correlations with annual incentives. In contrast, interpersonal interactions had a negative correlation with overall gender pay gap and a positive correlation with annual incentives. In both cases, negative correlations were not statistically significant. Interpersonal interactions, a multiple-item measure, showed a good internal consistency with Cronbach's (1951) alpha reliability estimate of .84.

4.2. Hypotheses Testing

To test the hypotheses, I conducted multiple regression analyses on gender pay gap. All variables except the flexibility constraints indicator and interpersonal interactions were standardized before analyses to address the potential multicollinearity. As the flexibility constraints indicator and interpersonal interactions were created by averaging z-scores of sub-factors, I did not standardize it again. Variance inflation factors (VIFs) were all below 10 and most of them were below 2, which indicates that the multicollinearity was not severe.

Table 5, 6, and 7 show results of the regression analyses on gender pay gap using overall pay, monthly pay, and annual incentives. Hypothesis 1 predicted that flexibility constraints are positively related to gender pay gap such that male workers earn higher pay than female workers in occupations with a high level of flexibility constraints. In Model 2 of Table 5, flexibility constraints had a significant, positive relationship with overall gender pay gap ($b = .053$, $p < .05$). Therefore, Hypothesis 1 was supported. The flexibility constraints indicator was also positively associated with gender difference in monthly pay (Model 2 of Table 6, $b = .037$, $p < .05$), though it did not have a significant relationship with gender gap in annual incentives (Model 2 of Table 7, $b = .267$, n.s.). To examine the effects

TABLE 5

Multiple Regressions Predicting Gender Pay Gap (Overall Pay)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	b	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***
Constant	.148***	.009	.148***	.009	.148***	.009	.146***	.009	.148***	.009	.149***	.009	.147***	.009
Controls														
Male Ratio	-.007	.012	-.020	.012	-.020	.012	-.017	.012	-.019	.012	-.018	.012	-.011	.013
Occupational Growth	-.007	.010	-.001	.009	-.001	.010	-.008	.010	-.001	.010	.001	.010	-.006	.010
Licensing/Certification	-.015	.011	-.009	.011	-.009	.011	-.009	.010	-.009	.011	-.010	.011	-.015	.011
Required Education	.006	.010	.003	.010	.003	.010	.006	.010	.003	.010	.000	.010	.004	.010
Emotional Labor	-.030*	.012	-.035**	.011	-.035**	.012	-.029*	.012	-.035**	.011	-.032**	.012	-.020	.013
Competitiveness	.008	.010	.005	.010	.005	.010	.003	.010	.005	.010	.006	.010	.001	.010
Main Effect														
Flexibility Constraints (FC)			.053**	.018	.053*	.020	.066**	.020	.053**	.019	.043*	.020	.052*	.022
Interactions														
FC × Male Ratio					.001	.013							-.006	.015
FC × Occupational Growth							-.022	.014					-.036*	.016
FC × Licensing/Certification									.005	.017			.030	.021
FC × Required Education											-.022	.020	-.042+	.023
Overall *F*	1.951+		3.005**		2.592*		2.983**		2.604*		2.781**		2.602**	
R^2	.142		.231		.231		.257		.232		.244		.302	
Adjusted R^2	.069		.154		.142		.171		.143		.156		.186	

Note. N = 78. The level of analysis is the occupation. All variables were standardized before entered into the models. Gender pay gap was calculated from individual-level regression coefficients of pay on male × occupation interactions after controlling for individual and firm characteristics.

$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

TABLE 6

Multiple Regressions Predicting Gender Pay Gap (Monthly Pay)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	b	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***
Constant	.121***	.008	.121***	.008	.123***	.008	.119***	.008	.121***	.008	.122***	.008	.121***	.008
Controls														
Male Ratio	-.020+	.010	-.029**	.011	-.029**	.011	-.027*	.011	-.029**	.011	-.027*	.011	-.023*	.011
Occupational Growth	-.017*	.008	-.013	.008	-.013	.008	-.018+	.009	-.014	.008	-.010	.008	-.017+	.009
Licensing/Certification	-.011	.009	-.006	.009	-.007	.009	-.007	.009	-.006	.009	-.009	.009	-.011	.009
Required Education	.000	.009	-.002	.008	-.003	.008	.000	.008	-.003	.008	-.006	.009	-.004	.009
Emotional Labor	-.034**	.010	-.037***	.010	-.034**	.010	-.033**	.010	-.037***	.010	-.034**	.010	-.024*	.011
Competitiveness	.016+	.009	.014	.008	.012	.009	.012	.008	.014+	.008	.015	.008	.011	.009
Main Effect														
Flexibility Constraints (FC)			.037*	.016	.031+	.018	.047**	.018	.038*	.016	.024	.018	.030	.019
Interactions														
FC × Male Ratio					-.010	.011							-.009	.013
FC × Occupational Growth							-.016	.013					-.026+	.014
FC × Licensing/Certification									-.012	.015			.012	.018
FC × Required Education											-.031+	.017	-.038+	.020
Overall *F*	3.911**		4.340***		3.893**		4.053**		3.868**		4.292***		3.493**	
R^2	.248		.303		.311		.320		.310		.332		.368	
Adjusted R^2	.185		.233		.231		.241		.230		.255		.263	

Note. N = 78. The level of analysis is the occupation. All variables were standardized before analyses. Monthly pay includes monthly base salary, overtime pay, and other allowances.

$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

TABLE 7

Multiple Regressions Predicting Gender Pay Gap (Annual Incentives)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	b	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***
Constant	1.278***	.160	1.278***	.160	1.214***	.161	1.241***	.163	1.298***	.159	1.282***	.161	1.219***	.162
Controls														
Male Ratio	.043	.208	-.021	.223	-.023	.220	.011	.224	.009	.222	-.006	.226	.125	.222
Occupational Growth	.655***	.168	.682***	.172	.695***	.169	.594**	.187	.712***	.171	.701***	.176	.653**	.182
Licensing/Certification	.057	.186	.89	.190	.103	.188	.081	.190	.067	.189	.072	.194	-.011	.189
Required Education	.155	.174	.142	.175	.168	.173	.182	.178	.168	.174	.114	.182	.164	.176
Emotional Labor	-.110	.204	-.132	.206	-.250	.213	-.055	.216	-.136	.204	-.110	.211	.001	.234
Competitiveness	.164	.174	.148	.176	.209	.176	.116	.177	.139	.174	.153	.177	.138	.178
Main Effect														
Flexibility Constraints (FC)			.267	.334	.538	.361	.452	.369	.258	.331	.172	.373	.408	.395
Interactions														
FC × Male Ratio					.409+	.335							.267	.263
FC × Occupational Growth							-.310	.263					-.538+	.283
FC × Licensing/Certification									.480	.304			.682+	.377
FC × Required Education											-.218	.373	-.794+	.402
Overall *F*	3.495**		3.071**		3.188**		2.876**		3.056**		2.705*		3.029**	
R^2	.228		.235		.270		.250		.262		.239		.336	
Adjusted R^2	.163		.158		.185		.163		.176		.150		.225	

Note. N = 78. The level of analysis is the occupation. All variables were standardized before analyses. Annual incentives include bonuses and other incentives.
$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

of sub-indicators, I performed another set of regressions in Table 8. Model 2 of Table 8 indicates that gender pay gap had a positive relationship with overtime work (b = .030, p < .05) and time pressure (b = .023, p < .05) but not with interpersonal interactions (b = .010, n.s.).

In Hypothesis 2, I expected that the proportion of men in an occupational category strengthens the positive relationship between occupational flexibility constraints and gender pay gap. Although the interaction term between flexibility constraints and male ratio on overall gender pay gap was positive, it was not statistically significant, thus failing to support Hypothesis 2 (Model 3 of Table 5, b = .001, n.s.). While Model 3 of Table 7 shows a marginally significant interaction term, Model 7 of Table 7 suggests that it became insignificant after controlling for other interactions.

In Table 8, Model 3 and Model 15 indicates that overtime work lead to greater pay disadvantage for women relative to men when the male ratio is high rather than low (Model 15, b = .030, p < .05). Following Aiken and West's (1991) procedure, I plotted the high and low levels of male ratio (i.e., one standard deviation below and above the mean). Figure 2 and the simple slope analysis suggests that the relationship between overtime work and gender wage gap was significantly positive for occupations with high male ratio (b = .033, t = 2.178, p < .05) but not significant for occupations with low male ratio (b = -.027, t = -1.235, n.s.). This result suggests that gender composition interacts with overtime work to determine gender pay gap in the hypothesized direction.

Hypothesis 3 stated that occupational growth attenuates the positive association between flexibility constraints and gender pay gap. Controlling for other interactions, occupational growth significantly weakened the relationship between

TABLE 8

Multiple Regressions with Sub-Indicators – Moderating Effects of Male Ratio

Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	b	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***
Constant	.148***	.009	.148***	.009	.138***	.009	.148***	.009	.147***	.009
Controls										
Male Ratio	-.007	.012	-.021+	.012	-.014	.012	-.021+	.012	-.021+	.012
Occupational Growth	-.007	.010	.003	.010	.003	.010	.002	.010	.004	.010
Licensing/Certification	-.015	.011	-.008	.010	-.009	.010	-.008	.010	-.009	.010
Required Education	.006	.010	.012	.013	.011	.013	.013	.013	.012	.013
Emotional Labor	-.030*	.012	-.033**	.012	-.041**	.012	-.032**	.012	-.033**	.012
Competitiveness	.008	.010	.009	.010	.014	.010	.009	.010	.010	.010
Main Effect										
Overtime Work (OVT)			.030*	.012	.019	.013	.030*	.012	.027*	.013
Time Pressure (TP)			.023*	.010	.027**	.010	.023*	.010	.024*	.010
Interpersonal Interactions (INT)			.010	.019	.011	.019	.010	.020	.007	.020
Interactions										
OVT × Male Ratio					.028*	.013				
TP × Male Ratio							-.003	.008		
INT × Male Ratio									-.012	.010
Overall *F*	1.951+		3.265**		3.583**		2.919**		3.089**	
R^2	.142		.302		.348		.303		.316	
Adjusted R^2	.069		.209		.209		.200		.213	

Note. N = 78. The level of analysis is the occupation. Dependent variable is gender pay gap (overall pay). Gender pay gap was calculated from individual-level regression coefficients of pay on male × occupation interactions after controlling for individual and firm characteristics. All variables were standardized.
$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

TABLE 8 (Continued)

Multiple Regressions with Sub-Indicators – Moderating Effects of Occupational Growth

Variables	Model 1		Model 2		Model 6		Model 7		Model 8	
	b	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***
Constant	.148***	.009	.148***	.009	.151***	.009	.146***	.009	.152***	.009
Controls										
Male Ratio	-.007	.012	-.021+	.012	-.022+	.012	-.019	.012	-.020+	.012
Occupational Growth	-.007	.010	.003	.010	.007	.011	-.004	.011	.005	.010
Licensing/Certification	-.015	.011	-.008	.010	-.010	.010	-.009	.010	-.012	.010
Required Education	.006	.010	.012	.013	.013	.013	.015	.013	.013	.013
Emotional Labor	-.030*	.012	-.033**	.012	-.036**	.012	-.029*	.012	-.037**	.012
Competitiveness	.008	.010	.009	.010	.011	.010	.008	.010	.012	.010
Main Effect										
Overtime Work (OVT)			.030*	.012	.033*	.013	.031*	.012	.029*	.012
Time Pressure (TP)			.023*	.010	.022*	.010	.026*	.010	.025*	.010
Interpersonal Interactions (INT)			.010	.019	.012	.020	.011	.019	.013	.019
Interactions										
OVT × Occupational Growth					.010	.011				
TP × Occupational Growth							-.011	.007		
INT × Occupational Growth									-.018	.013
Overall *F*	1.951+		3.265**		3.011**		3.230**		3.146**	
R^2	.142		.302		.302		.325		.320	
Adjusted R^2	.069		.209		.209		.225		.218	

Note. N = 78. The level of analysis is the occupation. Dependent variable is gender pay gap (overall pay). Gender pay gap was calculated from individual-level regression coefficients of pay on male × occupation interactions after controlling for individual and firm characteristics. All variables were standardized.
$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

TABLE 8 (Continued)

Multiple Regressions with Sub-Indicators – Moderating Effects of Licensing/Certification

Variables	Model 1		Model 2		Model 9		Model 10		Model 11	
	b	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***
Constant	.148***	.009	.148***	.009	.147***	.009	.148***	.009	.145***	.009
Controls										
Male Ratio	-.007	.012	-.021+	.012	-.020	.012	-.021+	.012	-.014	.012
Occupational Growth	-.007	.010	.003	.010	.002	.010	.003	.010	.005	.010
Licensing/Certification	-.015	.011	-.008	.010	-.009	.010	-.008	.010	-.010	.010
Required Education	.006	.010	.012	.013	.010	.014	.013	.014	.015	.013
Emotional Labor	-.030*	.012	-.033**	.012	-.031*	.012	-.033**	.012	-.025*	.012
Competitiveness	.008	.010	.009	.010	.009	.010	.009	.010	.007	.010
Main Effect										
Overtime Work (OVT)			.030*	.012	.027*	.013	.030*	.012	.029*	.012
Time Pressure (TP)			.023*	.010	.022*	.010	.024*	.010	.022*	.010
Interpersonal Interactions (INT)			.010	.019	.012	.019	.010	.020	.006	.019
Interactions										
OVT × Licensing/Certification					-.010	.012				
TP × Licensing/Certification							.001	.008		
INT × Licensing/Certification									.022*	.011
Overall *F*	1.951+		3.265**		3.012**		2.899**		3.489**	
R^2	.142		.302		.310		.302		.342	
Adjusted R^2	.069		.209		.207		.198		.244	

Note. N = 78. The level of analysis is the occupation. Dependent variable is gender pay gap (overall pay). Gender pay gap was calculated from individual-level regression coefficients of pay on male × occupation interactions after controlling for individual and firm characteristics. All variables were standardized.
$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

TABLE 8 (Continued)

Multiple Regressions with Sub-Indicators – Moderating Effects of Required Education

Variables	Model 1		Model 2		Model 12		Model 13		Model 14		Model 15 (Final Model)	
	b	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***
Constant	.148***	.009	.148***	.009	.135***	.011	.146***	.009	.136***	.012	.120***	.011
Controls												
Male Ratio	-.007	.012	-.021^{+}	.012	-.021^{+}	.012	-.019	.012	-.022^{+}	.012	-.006	.012
Occupational Growth	-.007	.010	.003	.010	-.002	.010	.004	.010	.000	.010	.001	.009
Licensing/Certification	-.015	.011	-.008	.010	-.005	.010	-.010	.010	-.004	.010	-.008	.010
Required Education	.006	.010	.012	.013	-.013	.019	.006	.014	-.001	.016	-.013	.018
Emotional Labor	-.030*	.012	-.033**	.012	-.035**	.011	-.032**	.012	-.035**	.012	-.036**	.012
Competitiveness	.008	.010	.009	.010	.006	.010	.011	.010	.008	.010	.009	.010
Main Effect												
Overtime Work (OVT)			.030*	.012	.016	.014	.030*	.012	.034*	.013	.003	.014
Time Pressure (TP)			.023*	.010	.020*	.010	.018	.011	.021*	.010	.022*	.010
Interpersonal Interactions (INT)			.010	.019	.017	.019	.015	.020	.023	.021	.014	.018
Interactions												
OVT × Male Ratio											.030*	.012
INT × Licensing/Certification											.021*	.010
OVT × Required Education					-.031^{+}	.016					-.032*	.015
TP × Required Education							-.014	.010				
INT × Required Education									.022	.015		
Overall *F*	1.951^{+}		3.265**		3.409**		3.144**		3.207**		4.054***	
R^2	.142		.302		.337		.319		.324		.428	
Adjusted R^2	.069		.209		.238		.218		.223		.322	

Note. N = 78. The level of analysis is the occupation. Dependent variable is gender pay gap (overall pay). Gender pay gap was calculated from individual-level regression coefficients of pay on male × occupation interactions after controlling for individual and firm characteristics. All variables were standardized.
$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

FIGURE 2

The Moderating Effect of Male Ratio on the Relationship

between Overtime Work and Gender Pay Gap

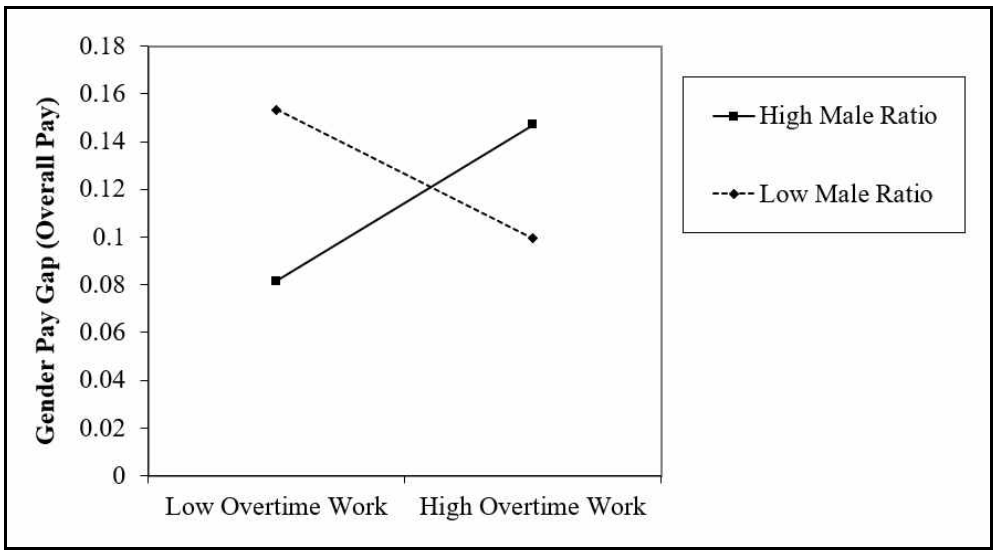
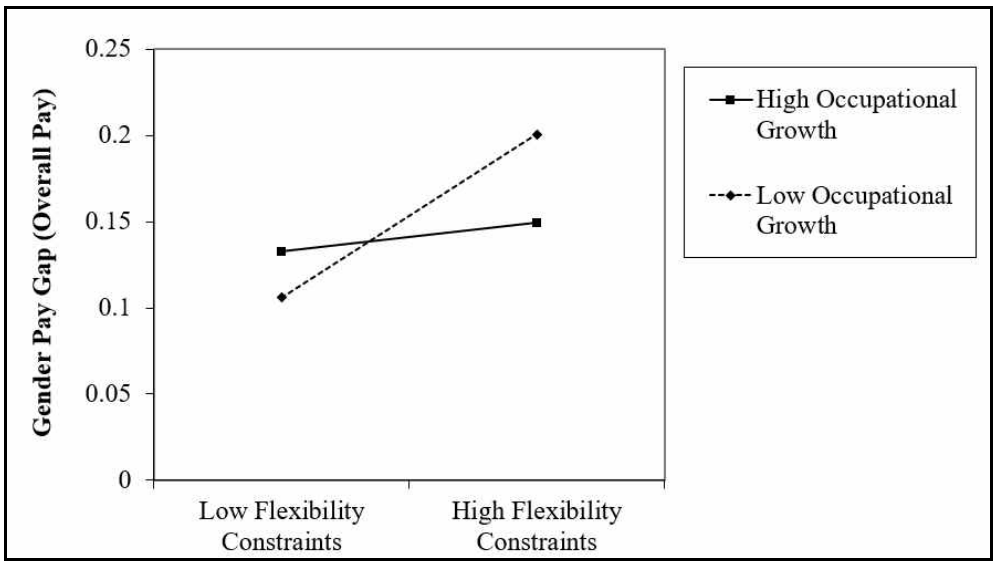


FIGURE 3

The Moderating Effect of Occupational Growth on the Relationship

between Flexibility Constraints and Gender Pay Gap



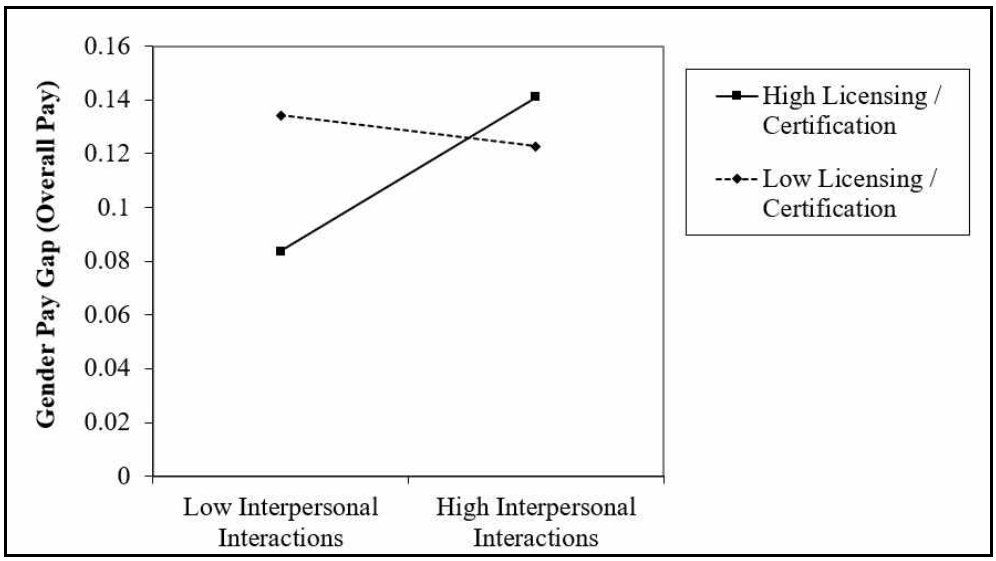
flexibility constraints and gender pay gap in Model 7 of Table 5 (b = -.036, p < .05). As shown in Figure 3, high occupational growth suppressed the female penalty in inflexible occupations. The link between occupational flexibility constraints and gender pay gap was positive and significant for low occupational growth (b = .088, t = 2.933, p < .01) but not significant for high occupational growth (b = .016, t = .631, n.s.). Therefore, Hypothesis 3 was supported. The moderating effect of occupational growth was marginally significant for monthly pay (Model 7 of Table 6, b = -.026, p < .10) and annual incentives (Model 7 of Table 7, b = -.538, p < .10). Yet, it should be noted that the main effect of occupational growth was positive and significant for annual incentives (Model 7 of Table 7, b = .653, p < .001). The interaction patterns were similar to that of overall pay gap.

In Hypothesis 4, I argued that occupational licensing/certification weakens the positive relationship between flexibility constraints and gender pay gap. Table 5 and 6 indicates that the moderating effects of occupational licensing/certification were not significant for overall and monthly pay (Model 7 of Table 5, b = .030, n.s.; Model 7 of Table 6, b = .012, n.s.). Hence, Hypothesis 4 was not supported. On the other hand, the relationship between flexibility constraints and gender incentives gap was marginally stronger with a high level of occupational licensing/certification rather than low (Model 7 of Table 7, b = .682, p < .10). This moderation was mainly driven by interpersonal interactions (Model 15 of Table 8, b = .021, p < .05). Figure 4 and the simple slope analysis show that the slope was marginally significant for high licensing/certification (b = .035, t = 1.74, p < .10) but not significant for low licensing/certification (b = -.007, t = -.312, n.s.).

In addition to occupational licensing/certification, I analyzed the moderating effects of required education level to supplement Hypothesis 4. Since the current

FIGURE 4

The Moderating Effect of Licensing/Certification on the Relationship between Interpersonal Interactions and Gender Pay Gap



study's licensing measure does not differentiate the level of difficulty to acquire the credentials, I introduced required education level as a similar variable to licensing/certification in terms of investments such as learning skills and knowledge the occupations require. In Model 7 of Table 5 and 6, the findings show limited evidence that the female pay disadvantage created by occupational flexibility constraints declined when required education level was high in an occupation (for overall pay, b = -.042, p < .10; for monthly pay, b = -.038, p < .10). As illustrated in Figure 5, the relationship between flexibility constraints and gender pay gap was significantly positive in occupations with low education requirements (b = .094, t = 3.466, p < .01) but not significant in occupations with high education requirements (b = -.009, t = .258, n.s.). The interaction pattern for monthly pay and annual incentives were similar with Figure 5. Among the sub-indicators, overtime work significantly interacted with required education to

FIGURE 5

The Moderating Effect of Required Education on the Relationship between Flexibility Constraints and Gender Pay Gap

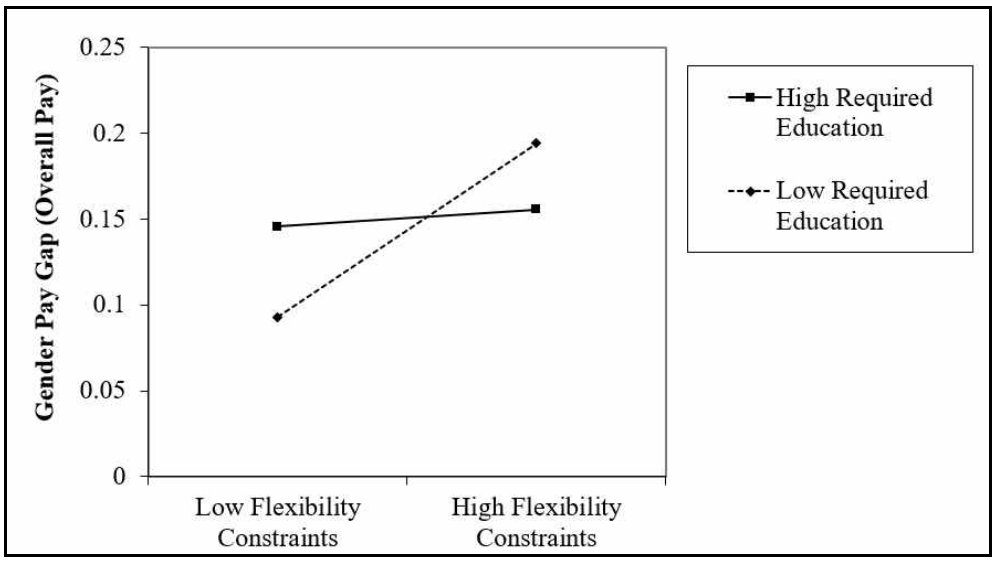
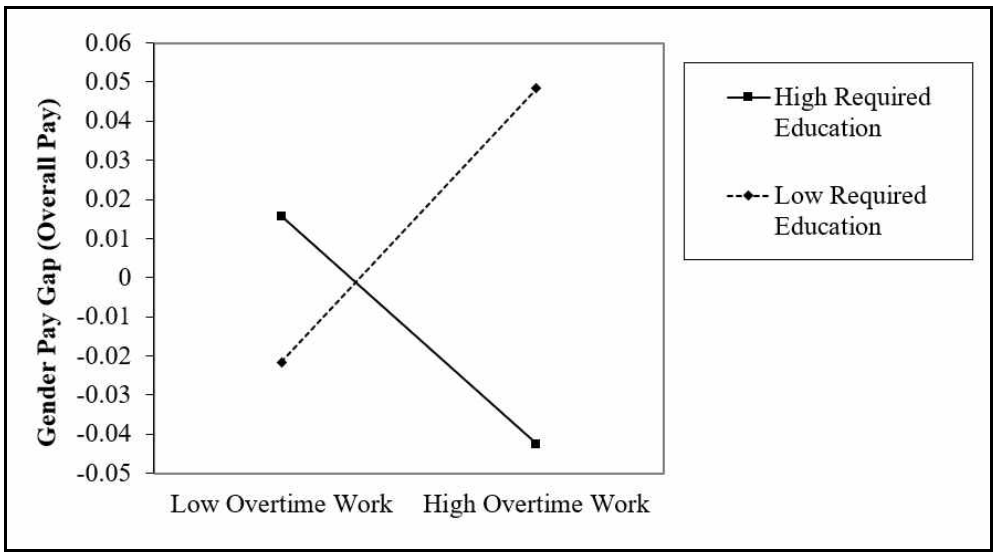


FIGURE 6

The Moderating Effect of Required Education on the Relationship between Overtime Work and Gender Pay Gap



influence gender pay gap (Model 15 of Table 8, b = -.032, p < .05; see Figure 6). That is to say, high education requirements of occupations can suppress the effect of flexibility constraints, especially overtime work, on gender wage inequality.

4.3. Supplementary Analyses

While the above-mentioned findings focused on the occupational contexts, flexibility constraints may exhibit differential effects on gender pay gap depending on the sample's characteristics as well. To explore the effects of flexibility constraints on gender wage inequality more in details, I performed regression analyses for different sub-samples.

First, I compared the union members and non-members to investigate whether the union membership can shield women from the penalty in occupations with flexibility constraints. Scholars have noted that unions decrease the inequality among employees through political practices considering preferences of whole employees rather than those of marginal workers with high marketability (Freeman & Medoff, 1984). As unions tend to reduce the gap among employees, union members may experience less compensating differential between flexible jobs and inflexible jobs in the occupations. Even among those in the same inflexible jobs, low performance caused by work-family conflicts is less likely to result in a penalty since unions limit the performance-related pay differences. Indeed, the first two regression models in Table 9 show that the relationship between flexibility constraints and gender pay gap was positive and significant for non-members (b = .054, p < .05), but negative and marginally significant for union members (b = -.050, n.s.). The result suggests that female workers experience greater pay penalty relative to male workers as non-members of unions rather than as union members.

TABLE 9

The Main Effects of Flexibility Constraints on Gender Pay Gap in Different Subgroups

Variables	Union Membership (n = 66)		No Union Membership (n = 78)		10s, 20s (n = 63)		30s, 40s (n = 75)		50s (n = 72)	
	b	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***	***b***	***SE***
Constant	-.029*	.012	.159***	.009	.089***	.010	.161***	.009	.197***	.013
Controls										
Male Ratio	-.004	.016	-.027*	.013	.006	.014	-.020	.013	-.048**	.018
Occupational Growth	.009	.013	-.013	.010	.000	.011	-.009	.010	-.034*	.014
Licensing/Certification	-.045**	.015	.005	.011	-.008	.013	.000	.011	.020	.016
Required Education	.026^{+}	.014	.003	.010	.003	.012	-.005	.010	.027^{+}	.014
Emotional Labor	-.143	.105	-.050***	.012	-.002	.013	-.041**	.012	-.071***	.017
Competitiveness	.001	.014	.006	.010	-.003	.012	.001	.010	.002	.015
Main Effect										
Flexibility Constraints (FC)	-.050^{+}	.029	.054**	.020	.033	.025	.054**	.020	.041	.032
Overall F	2.767*		3.984**		.512		3.512**		3.731**	
R^2	.250		.285		.144		.268		.290	
Adjusted R^2	.160		.213		-.041		.192		.212	

Note. The level of analysis is the occupation. n indicates the number of occupational categories of sub-samples used in each regression model. All variables were standardized.

$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Second, I divided the sample into different age groups to collect more evidence supporting that the female disadvantage of occupational flexibility constraints is rooted in the family demands. If it is true that flexibility constraints penalize women because women have a hard time balancing work and family demands—and subsequently choose flexible jobs or experience work-family conflicts—the effects of flexibility constraints on gender pay gap should be conspicuous for workers in their thirties or forties relative to twenties. In Table 9, the positive relationship between flexibility constraints and gender pay gap was positive and significant for employees in their thirties and forties ($b = .054$, $p < .01$), whereas the effect was not significant for those in their twenties or younger ($b = .033$, n.s.) and fifties or older ($b = .041$, n.s.). The pattern corresponds with the trend in gender pay gap (Goldin, 2014), which illustrates that the gender pay gap continues to widen until the mid-forties and then closes up again during later stage of lives.

Another important question related to occupational flexibility constraints is which explanation is plausible for the phenomenon (see Hypothesis 1). One of the possible explanations is that women may exhibit lower performance in the same inflexible jobs due to greater work-family conflicts relative to men, which subsequently results in lower pay level. To test this possibility, I created occupational level work-family conflicts for men and women each and performed regressions predicting these variables using occupational flexibility constraints. Work-family conflict was measured with four items from respondents of 2019 Korea Network for Occupations and Workers (KNOW). As can be seen in Table 10, flexibility constraints indicator was not significantly related to either work-family conflict of men ($b = -.028$, n.s.) or that of women ($b = .124$, n.s.). Therefore, I did not find the support for the work-family conflict and performance explanation.

TABLE 10

Multiple Regressions Predicting Work-Family Conflict

Variables	Men's Work-Family Conflict		Women's Work-Family Conflict	
	b	***SE***	***b***	***SE***
Constant	2.571***	.022	2.295***	.101
Controls				
Male Ratio	.079**	.029	-.306*	.137
Emotional Labor	.072*	.028	-.064	.126
Competitiveness	.049*	.024	.285*	.110
Log Pay	.013	.026	.044	.121
Main Effect				
Flexibility Constraints	-.028	.051	.124	.206
Overall *F*	4.309**		2.699*	
R^2	.235		.158	
Adjusted R^2	.181		.099	

Note. N = 78. The level of analysis is the occupation. All variables were standardized. Work-family conflicts were calculated by averaging the work-family conflicts of men (or women) in each occupation using 2019 KNOW data.

$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$.

However, it should be noted that the result does not imply that the occupational flexibility constraints do not cause work-family conflicts at all. Female workers who experience the most severe work-family conflicts may have moved to more flexible jobs in the same occupations. Moreover, the result should be interpreted with caution due to data limitations. I did not control for family-related variables, which can bias the outcomes. In addition, while the KNOW data offered high-quality occupational characteristics, but the respondents did not represent the population as the Survey Report on Labor Conditions by Employment Type did.

5. DISCUSSION

This study aimed to analyze the effect of occupational flexibility constraints on the gender pay gap. Although previous research has identified various determinants of gender wage inequality (Blau & Kahn, 2007), relatively few studies have examined the possibility that occupational characteristics may penalize women. Using the nationally representative databases, the findings suggested that women experience greater pay disadvantage relative to men in occupations characterized by low flexibility. In addition, I showed that occupational growth weakens the female penalty in inflexible occupations. Among the sub-indicators of flexibility constraints, overtime work and time pressure were positively associated with gender pay gap, whereas interpersonal interactions did not have a significant relationship with gender pay gap. Moreover, the relationship between overtime work and gender wage inequality was positive and significant when the proportion of men in the occupation was high but not significant when the male ratio was low. Contrary to the hypothesis, interpersonal interactions led to higher female penalty when occupational licensing/certification was high rather than low. Furthermore, additional analyses showed that a high level of required education weakened the association between overtime work and gender pay gap.

The present study's findings argue that workplace flexibility, especially occupational flexibility, is a major source of the remaining gender pay gap. While overtime work and frequent deadlines involve two different types of flexibility, they both penalize women relative to men. On the other hand, the non-significant relationship between interpersonal interactions and gender pay gap suggests that interpersonal interactions do not function as a hurdle for female workers in

common. However, Goldin's (2014) study showed that interpersonal interactions limit flexibility for professionals and managerial workers. A first potential explanation is that interpersonal interactions in professional and managerial occupations are valued more because it involves idiosyncratic time demands. A second possibility is that the other occupations may allow different types of flexibility to buffer the disadvantage caused by interpersonal interactions. For example, the other occupations may follow the standardized processes (e.g., service workers) or work as a team with possible substitutes (e.g., white-collar workers), which allows them to enjoy enough flexibility. A third possible explanation is that interpersonal interactions in other occupations (e.g., service work) are regarded as gender-role consistent work, whereas interactions in professional and managerial jobs are not. Although I could not investigate these possibilities due to the data limitation, it is interesting that occupational groups may put different emphases on different flexibility constraints.

One noticeable pattern is that the female penalty of occupational flexibility constraints aggravates for the disadvantaged. When a female employee is a highly educated, a union-member, or a worker in fast-growing occupations, the individual suffers relatively less compared with women in unfavorable positions. The results are consistent with previous studies arguing that class and gender interact to determine the outcomes of workplace flexibility such that the female penalty is more severe for those who are poor and have low-level jobs (Gerstel & Clawson, 2014; Williams et al., 2013). This is highly problematic because members of lower class tend to already lack other personal resources such as monetary resources, family resources, and other social capital resources that can be used to buffer the effects of low flexibility (Gerstel & Clawson, 2018).

What does this mean for the workers in the “new normal”? Although working mothers had a hard time during the pandemic dealing with childcare at home and the shock on female-dominated industries, these situations will recover back to normal eventually. The most noteworthy change is that the pandemic has forced individuals and organizations to get used to flexible work arrangements such as teleworking, which made it easier for employees to take advantage of the practices and equipment. Lower costs of flexible work arrangements imply that women can deal with flexibility constraints more effectively (Goldin, 2022). Therefore, the “new normal” is likely to reduce the costs of flexibility and the consequent gender pay gap.

However, as the pattern in the findings has shown, the provision of flexible work arrangements does not benefit all women equally and those in low class gain less from these practices relative to high-class women. This is partly because low-paying jobs (e.g., service workers) are less likely to be performed remotely compared with high-paying jobs (e.g., white-collar professionals). Moreover, even when teleworking is available, low-class women may face greater family-work interferences as they have less resources to care for their children while working at home. Thus, while the “new normal” may narrow the gender pay gap, the class gap is likely to widen.

Among the results, the only moderating effect that did not follow the pattern was the one between interpersonal interactions and occupational licensing/certification. Contrary to the expectation, the link between interpersonal interactions and gender pay gap was positive and significant when occupational licensing/certification was high but not significant when licensing/certification was low. Thus, occupational licensing/certification did not prevent women from the penalty of flexibility

constraints. Rather, the co-existence of licensing/certification and interpersonal interactions led to greater disadvantage for women relative to men.

A typical example of this case is lawyers (Wood, Corcoran, & Courant, 1993). Wood and his coauthors (1993) found that female lawyers, compared with their male counterparts, tend to work less hours, take part-time jobs, and have career interruptions to care for children, which explained a large portion of gender pay gap. The wage difference is caused not only by the non-linear return to hours but also by low human capital accumulation throughout women's career. Since the licensed occupations have greater opportunities to develop expertise and extract rent, the costs of lawyers' sacrificed experiences are much greater than those of other occupation holders. In other words, female lawyers have to sacrifice greater rewards compared with other occupation-holders when they decide to take the flexible jobs. Thus, occupational licensing/certification is related to greater costs for women when combined with occupational flexibility constraints, even though it signals high-quality human capital for women in labor market (Blair & Chung, 2018),

5.1. Theoretical Implications

Theoretically, the study contributes to the gender inequality literature by examining the impacts of a structural factor (i.e., occupational contexts) on the gender wage gap. Following previous studies (Goldin, 2014; Yu & Kuo, 2017), the findings confirmed the argument that women are penalized in occupations that restrict flexibility. The literature has repeatedly pointed out that the gender disparity still exists after controlling for major determinants such as demographics, human capital, attitudes, and industry differences and that structural explanations may

suggest the way to close the remaining gap (e.g., Joshi, Neely, et al., 2015; Mandel & Semyonov, 2005). The current study echoed this argument such that the gender gap within occupations plays a key role in explaining the male advantage in pay. Although I did not include the details in this paper, the significance of gender variable disappeared after the interaction terms of gender × occupations were entered at the individual-level regression models on pay, which indicates the criticality of considering within-occupation gender gap. Among various occupational factors (e.g., Joshi, Son, & Roh, 2015), I focused on the flexibility-related characteristics as determinants of within-occupation gender gap. By confirming the fact that occupational flexibility constraints penalize women relative to men, this study advances the understanding of how occupational contexts determine gender wage disparity.

The findings of this paper also extend research on workplace flexibility by emphasizing how occupational factors can become a source of flexibility. Although organizational initiatives and individual-level flexibility have received the majority of attention in prior research (Baltes et al., 1999; Putnam et al., 2014), it is crucial to take occupational contexts into account because occupations heavily impact flexibility by defining job activities and work environments. Furthermore, it is possible that occupational flexibility may interact with organizational initiatives to determine the overall workplace flexibility for workers (Kossek & Lautsch, 2018). For example, providing on-site childcare and teleworking arrangements improves flexibility experiences for employees who need to work overtime and be “on-call” duty.

In addition, I showed that the composition of occupational group (i.e., gender composition) and labor market situations (i.e., occupational growth,

licensing/certification) moderate the effects of occupational contexts on the gender pay gap. These findings indicate the supplementary roles of group norms and corrections for discriminatory factors to close the remaining gender gap.

5.2. Practical Implications

The present study also offers important implications for managers, policy makers, and employees. First of all, managers should take into account that the flexibility structure of occupations may deter women from achieving rewards equivalent to men regardless of women's competency. Although the phenomenon cannot be fully regarded as a discrimination (e.g., compensating differentials versus discrimination in external labor market), female workers may still feel injustice especially when it is hard to clearly differentiate their contributions from male workers' contributions. For example, many of South Korean companies do not formally distinguish jobs in the same occupation with detailed job descriptions. Even if male workers are compensated more because they perform different tasks in reality (e.g., being "on-call," performing unofficial overtime work), the pay disparity can still lead to perceived unfairness and subsequent negative outcomes for female workers (Cohen-Charash & Spector, 2001; Colquitt et al., 2013) unless employees have enough information about differences in two jobs. As Miller (1992) explained, "If you are told that several people have made different contributions…but are not told how big those contributions are…you may opt for equality as the fairest distribution in the circumstances" (pp. 560). Therefore, managers should pay serious attention to setting fair process criteria and improving internal communication about reward decisions to minimize the unintended consequences of compensating differentials (Folger & Konovsky, 1989; Lind, 2001).

Moreover, the findings imply that many female workers might exit from the inflexible occupations entirely if they cannot find appropriate flexible jobs or other ways to deal with work-family conflicts (e.g., Cha, 2013). As the exit from an occupation generally indicates employee turnover for organizations, it can lead to increased costs such as a loss of accumulated human capital and replacement costs (Park & Shaw, 2013). Reduced women in an occupation also signals lower diversity, which deteriorates performance for jobs requiring diverse knowledge and experiences (Joshi & Roh, 2009; Post & Byron, 2015). Thus, to facilitate the utilization of female labor force, it is critical to find ways to either rearrange the flexibility structure of occupations or alleviate family demands for female workers. Previous research has illustrated several ways to cope with a lack of flexibility, including the standardization of work processes to enhance substitutability (Briscoe, 2007; Goldin & Katz, 2016), the implementation of work-family initiatives (Gonsalves, 2020; Lyness, Gornick, Stone, & Grotto, 2012), and the increased supply of affordable household services (Cortés & Pan, 2019).

In 2018, South Korea introduced a new regulation (i.e., the revision of the Labor Standards Act) to restrict an employee's maximum work hours from 68 hours to 52 hours per week, which was a divisive issue among workers, business leaders, media, politicians, and other stakeholders. The current study's findings suggest that the regulation may play a role in closing the gender gap in occupations emphasizing a high level of overtime work. Although the regulation itself was not intended for the gender equality issue, policy makers should take account of its effect on female workers in occupations with different levels of flexibility aside from the outcomes on economic growth and social well-being.

On the other hand, women should acknowledge that occupations with flexibility

constraints (i.e., overtime work and time pressure) may reward them disproportionately in the later stage of their lives. The present study provides some evidence that finding the occupations with a high level of required education and a high level of growth rate buffers the female penalty of flexibility constraints. As this female penalty is rooted in work-family issues, adopting effective negotiation strategies (Bowles, Thomason, & Bear, 2019) and having supportive mentors (Nielson, Carlson, & Lankau, 2001) can also help them deal with the problem effectively.

5.3. Limitations and Future Research

Despite the theoretical and practical contributions, the study has several limitations that should be noted. First of all, the study does not definitively answer why occupational flexibility constraints influence the gender pay gap. Although the study attempted to provide some evidence, it does not verify whether the hypothesized effects are due to compensating differentials, discriminations against women seeking flexibility, or lower performance due to work-family conflicts. Future research could address this issue by comparing the rewards of women and men pursing the same level of flexibility with job-level data and controlling for employee performance.

Another limitation is the relatively small number of occupational categories the study used (i.e., 78 occupations). Due to the existence of different sub-categories (i.e., narrow occupations) in each occupational category, the findings may have been influenced by between-occupations differences rather than within-occupation differences. To collect some evidence on the within-group homogeneity, I calculated work hours, time pressure, and interpersonal interactions variables for

381 occupations in the 2018-2020 KNOW data and conducted one-way ANOVA for the current study's 78 occupational categories. The results showed that the within-group variances were significantly smaller than the between-group variances for work hours, time pressure, and interpersonal interactions ($p < .001$). Therefore, there was no evidence of sub-occupations having problematic differences in flexibility constraints.

Also, the current study did not include temporary workers, self-employed, and individuals in occupations without enough sample size due to the data limitation. The findings should be interpreted with caution because these excluded samples may represent extreme cases of occupational flexibility constraints. For example, one of the excluded occupations was ship crews, a highly gender-biased occupation with low flexibility. On the other hand, temporary workers may involve a high level of flexibility. Future studies should incorporate broader types of workers to investigate the effects of occupational flexibility on gender pay gap.

While this study used three sub-indicators to construct a flexibility constraints indicator, there is a possibility that the indicator can be improved by including other occupational characteristics. For instance, Kossek and Lautsch (2018) identified four dimensions of flexibility—variability, location, volume, and continuity. Future research could develop an indicator representing four dimensions of occupational flexibility to further investigate the overall effect of occupational flexibility on gender pay gap and the roles of specific flexibility dimensions for different types of occupations.

Lastly, the findings may have been influenced by the South Korean culture. Although the hypotheses were based on theoretical grounds, future research needs to examine the impacts of flexibility constraints in other cultural contexts as well.

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APPENDIX A

Gender Pay Gap by Occupational Category

Occupational Category [a]	Average Age	Difference between Men's and Women's Average Pay (in 10,000 won)	Gender Pay Gap (coefficients) [b]
*12 Administrative and Business Support Management Occupations (행정 및 경영지원 관리직)	52.0	2,144	.075**
*13 Professional Services Management Occupations (전문서비스 관리직)	51.7	3,504	.273***
*14 Construction, Electricity and Production Related Managers (건설전기 및 생산 관련 관리직)	51.6	895	-.046
*15 Sales and Customer Service Managers (판매 및 고객서비스 관리직)	50.4	2,893	.216***
*21 Science Professionals and Related Occupations (과학 전문가 및 관련직)	38.0	1,997	.206***
*22 Information and Communication Professionals and Technical Occupations (정보통신 전문가 및 기술직)	37.2	1,354	.143***
*23 Engineering Professionals and Technical Occupations (공학 전문가 및 기술직)	40.4	1,320	.113***
*24 Health, Social Welfare and Religion Related Occupations (보건사회복지 및 종교관련직)	38.1	2,737	.262***
*25 Education Professionals and Related Occupations (교육 전문가 및 관련직)	45.8	2,393	.168***
*26 Legal and Administration Professional Occupations (법률 및 행정 전문직)	38.9	1,493	.124***
*27 Business and Finance Professionals and Related Occupations (경영금융 전문가 및 관련직)	38.0	1,874	.171***

APPENDIX A (Continued)

Gender Pay Gap by Occupational Category

Occupational Category [a]	Average Age	Difference between Men's and Women's Average Pay (in 10,000 won)	Gender Pay Gap (coefficients) [b]
*28 Culture, Arts and Sports Professionals and Related Occupations (문화예술스포츠 전문가 및 관련직)	35.6	958	.060***
*311 Administration Clerks (행정 사무원)	39.7	1,267	.110***
*312 Administration Related Clerks (경영관련 사무원)	40.4	1,716	.184***
*313 Accounting Related Clerks (회계 및 경리 사무원)	38.1	2,386	.249***
*314 Secretaries and Assistant Clerks (비서 및 사무보조원)	32.2	588	.110***
*320 Finance and Insurance Related Clerks (금융 및 보험 관련 사무종사자)	39.3	2,357	.231***
*330 Legal and Inspection Clerks (법률 및 감사 사무 종사자)	41.1	1,929	.149***
*391 Statistics Related Clerks (통계관련 사무원)	37.4	1,088	.122*
*392 Travel, Information and Reception Clerks (여행안내 및 접수 사무원)	34.6	627	.095***
399 Customer Service and Workers n.e.c. (고객상담 및 기타 사무원)	37.0	918	.131***
*41 Police, Fire Fight and Security Related Service Occupations (경찰소방 및 보안 관련 서비스직)	39.9	696	.079**
*42 Hairdressing, Wedding and Medical Assistance Service Workers (이미용예식 및 의료보조 서비스직)	52.8	1,005	.089***
*43 Transport and Leisure Services Occupations (운송 및 여가 서비스직)	34.5	391	.000

APPENDIX A (Continued)

Gender Pay Gap by Occupational Category

Occupational Category [a]	Average Age	Difference between Men's and Women's Average Pay (in 10,000 won)	Gender Pay Gap (coefficients) [b]
*44 Cooking and Food Service Occupations (조리 및 음식 서비스직)	42.4	2,693	.128***
*51 Sales Occupations (영업직)	40.0	1,155	.167***
*52 Store Sales Occupations (매장 판매직)	41.9	842	.255***
*53 Door to Door, Street and Telecommunications Sales Related Occupations (방문노점 및 통신판매 관련직)	37.4	497	.099***
*61 Agricultural, Livestock Related Skilled Occupations (농축산 숙련직)	43.2	997	.176***
*62 Skilled Forestry Occupations (임업 숙련직)	51.9	356	.200**
*63 Skilled Fishery Occupations (어업 숙련직)	39.3	209	.067
*710 Food Processing Related Trades Workers (식품가공관련 기능 종사자)	42.2	608	.151***
*721 Textile and Leather Related Workers (섬유 및 가죽관련 기능 종사자)	50.2	1,816	.388***
*722 Garment Related Workers (의복 제조관련 기능 종사자)	53.2	494	.110*
*730 Wood and Furniture, Musical Instrument and Signboard Related Trade Occupations (목재가구악기 및 간판 관련 기능 종사자)	47.3	799	.247***
*741 Die and Mold Makers, Metal Casting Workers and Forge Hammersmiths (금형주조 및 단조원)	42.7	1,971	.233***
742 Pipe and Sheet Metal Makers (제관원 및 판금원)	45.9	580	.440***
*743 Welders (용접원)	44.3	1,630	.180***

APPENDIX A (Continued)

Gender Pay Gap by Occupational Category

Occupational Category [a]	Average Age	Difference between Men's and Women's Average Pay (in 10,000 won)	Gender Pay Gap (coefficients) [b]
*751 Automobile Mechanics (자동차 정비원)	43.9	1,403	.234***
*752 Transport Equipment Mechanics (운송장비 정비원)	44.2	1,246	.105**
*753 Machinery Equipment Fitters and Mechanics (기계장비 설치 및 정비원)	41.0	471	.036
*761 Electric and Electronic Machine Fitters and Repairers (전기 및 전자기기 설치 및 수리원)	37.9	1,053	.165***
*762 Electrician (전기공)	44.1	494	.054+
*771 Construction Structure Related Workers (건설구조 관련 기능 종사자)	48.4	1,185	.244*
*772 Construction Related Technical Workers (건설 관련 기능 종사자)	46.5	1,152	.191***
*773 Construction Finishing Related Technical Workers (건축마감관련 기능 종사자)	48.9	617	.103**
774 Mining and Civil Engineering Related Technical Workers (채굴 및 토목관련 기능 종사자)	51.7	1,599	.167*
*780 Video and Telecommunications Equipment Related Fitters and Repairers (영상 및 통신 장비 관련 설치 및 수리원)	42.5	683	.080*
*791 Handcraft Workers and Precious Metalsmiths (공예 및 귀금속 세공원)	42.2	-107	.008
*792 Plumbers (배관공)	45.3	1,345	.175**
799 Other Technical Workers (기타 기능관련 종사자)	41.7	1,539	.293***

APPENDIX A (Continued)

Gender Pay Gap by Occupational Category

Occupational Category [a]	Average Age	Difference between Men's and Women's Average Pay (in 10,000 won)	Gender Pay Gap (coefficients) [b]
*811 Food Processing Related Machine Operating Occupations (식품가공관련 기계조작원)	44.6	1,006	.208***
812 Beverage Processing Machine Operators (음료 제조관련 기계조작원)	42.8	1,844	.198***
819 Other Food Processing Related Machine Operators (기타 식품가공관련 기계조작원)	40.6	1,398	.185***
*821 Textile Production and Processing Machine Operators (섬유제조 및 가공 기계조작원)	47.0	1,263	.222***
*822 Textile and Shoe Related Machine Operators and Assemblers (직물 및 신발 관련 기계조작원 및 조립원)	48.9	770	.199***
*823 Laundry Related Machine Operators (세탁관련 기계조작원)	50.2	411	.136***
*831 Petroleum and Chemical Material Processing Machine Operators (석유 및 화학물 가공장치 조작원)	40.6	3,895	.245***
*832 Chemical, Rubber and Plastic Production Machine Operators (화학고무 및 플라스틱 제품 생산기 조작원)	41.6	1,964	.170***
*841 Metal Casting and Metal Processing Related Operators (주조 및 금속 가공관련 기계조작원)	43.0	2,475	.279***
*842 Painting and Coating Machine Operators (도장 및 도금기 조작원)	43.2	1,711	.230***
*843 Nonmetal Products Production Machine Operators (비금속 제품 생산기 조작원)	44.2	1,343	.240***

APPENDIX A (Continued)

Gender Pay Gap by Occupational Category

Occupational Category [a]	Average Age	Difference between Men's and Women's Average Pay (in 10,000 won)	Gender Pay Gap (coefficients) [b]
*851 Machine Tool Operators (금속공작기계 조작원)	42.4	1,543	.252***
*852 Cooling and Heating Related Equipment Operators (냉난방 관련 설비 조작원)	46.9	753	.058
853 Factory Automation and Industrial Robot Operators (자동조립라인 및 산업용 로봇 조작원)	37.0	535	.085
*854 Transport Vehicle and Machine Related Assemblers (운송차량 및 기계 관련 조립원)	44.3	2,787	.278***
855 Metal Machinery Parts Assemblers (금속기계부품 조립원)	42.3	1,225	.232***
*861 Power Generation and Distribution Equipment Operators (발전 및 배전 장치 조작원)	40.6	2,045	.129***
*862 Electrical and Electronic Equipment Operators (전기 및 전자 설비 조작원)	44.8	-15	-.004
*863 Electrical, Electronic Parts and Products Production Equipment Operators (전기전자 부품 및 제품 제조장치 조작원)	35.9	765	.069***
*864 Electrical, Electronic Parts and Products Assembler (전기전자 부품 및 제품 조립원)	36.6	678	.064***
871 Locomotive Drivers (철도 및 전동차 기관사)	45.2	924	.146**
872 Freight Train Director and Related Workers (화물열차 차장 및 관련 종사원)	45.7	807	-.010
*873 Automobile Drivers (자동차 운전원)	53.6	433	.037+

APPENDIX A (Continued)

Gender Pay Gap by Occupational Category

Occupational Category [a]	Average Age	Difference between Men's and Women's Average Pay (in 10,000 won)	Gender Pay Gap (coefficients) [b]
*874 Handling Equipment Operators (물품이동 장비 조작원)	46.1	1,525	.173***
*881 Water Treatment Plant Operators (상하수도 처리장치 조작원)	42.9	2,005	.210***
*882 Recycling Machine and Incinerator Operators (재활용 처리 및 소각로 조작원)	46.3	1,200	.124
*891 Wood and Paper Related Operators (목재 및 종이 관련 기계조작원)	44.7	2,052	.266***
*892 Print and Photo Development Related Machine Operators (인쇄 및 사진현상 관련 기계조작원)	46.0	665	.133***
899 Other Production Related Machine Operators (기타 제조관련 기계조작원)	42.2	1,331	.184***
*910 Construction and Mining Elementary Workers (건설 및 광업 단순 종사원)	48.5	1,315	.207***
*921 Loading and Lifting Elementary Workers (하역 및 적재 단순 종사원)	42.8	1,192	.099***
*922 Deliverers (배달원)	42.7	261	.065
930 Production Related Elementary Workers (제조관련 단순 종사원)	43.1	736	.143***
*941 Cleaner and Sanitation Workers (청소 및 환경 미화원)	59.0	594	.140***
*942 Guards and Ticket Examiners (경비원 및 검표원)	56.3	296	.017
*951 Domestic Chores and Infant Rearing Helpers (가사 및 육아 도우미)	46.6	266	-.031

APPENDIX A (Continued)

Gender Pay Gap by Occupational Category

Occupational Category [a]	Average Age	Difference between Men's and Women's Average Pay (in 10,000 won)	Gender Pay Gap (coefficients) [b]
*952 Food Related Elementary Workers (음식관련 단순 종사원)	46.9	-217	.096***
*953 Sales Related Elementary Workers (판매관련 단순 종사원)	45.2	739	.232***
991 Agriculture, Forestry and Fishing Related Elementary Workers (농림어업관련 단순 종사원)	47.9	518	.104**
*992 Meter Reading, Money Collecting and Parking Controlling Related Workers (계기검침수금 및 주차관련 종사원)	47.6	187	.041+
999 Other Service Related Elementary Workers (기타 서비스관련 단순 종사원)	49.8	182	N/A [c]

Note. The number of occupational categories is 92. The gender pay gap coefficients for 92 occupations (i.e., occupations that had greater than five employees for males and females each) were all estimated, but only coefficients for 78 occupations (marked with asterisks in the occupational category column) were used in the occupation-level regression because some occupations did not have matched values for independent or moderator variables. [a] The classification of occupational categories is based on the 2007 Korean Standard Classification of Occupations (KSCO; 6th version), which was used in the 2019 Survey on Labor Conditions by Employment Type. The 2019 Survey on Labor Conditions by Employment Type used 2-digit code for major groups 1, 2, 4, 5, and 6, and 3-digit code for major groups 3, 7, 8, and 9. [b] Gender pay gap (coefficients) are individual-level regression coefficients of pay on male × occupation interactions after controlling for individual and firm characteristics. To be precise, the coefficients refer to the extent of "residual" gender pay gap after ruling out the portion of gap explained by other factors such as education. Asterisks next to coefficients denote the significance of coefficients from the individual-level regression of pay on male × occupation interactions. [c] This occupational category was used as the base category for the regression to estimate the gender pay gap coefficients. $^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

국 문 초 록

직업적 유연성 제약이 성별 임금격차에 미치는 영향

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유 미 리

성별 임금격차(gender pay gap)에 대한 기존 연구는 직업적 맥락에 따라서 작업환경의 유연성이 형성되므로 결과적으로 직업의 특성이 성별 임금격차에 영향을 미칠 것이라고 주장한 바 있다. 그러나 유연성과 관련된 직업적 특성들이 남녀 임금 격차에 어떤 영향을 미치는지에 대해서는 아직 직접적인 연구 결과가 부족한 실정이다. 본 연구는 직업적 유연성 제약이 직업수준의 성별 임금격차에 미치는 효과에 대해 살펴본다. 구체적으로는 보상적 임금격차 이론, 직원의 일자리 이동 관련 문헌, 일-가정 갈등의 합리적 관점에 기반하여 직업적 유연성 제약이 증가할수록 성별 임금격차도 증가할 것으로 기대한다. 더 나아가서 조절변수로서 성별 구성(gender composition), 직업 성장(occupational growth), 자격증(occupational licensing/certification)의 역할을 확인한다. 한국의 직업별 특성 관련 정보와 중장기 인력수급전망 및 고용형태별 근로실태조사 데이터를 사용하여, 직업수준에서 유연성 제약들이 남녀간 임금격차에 영향을 미치는지를 분석한다. 총 78개의 직업에 종사하는 840,016명의 근로자를 분석한 결과 직업적 유연성 제약이 성별 임금격차와 양(+)의 관계를 가지는 것으로 나타났다. 즉, 직업적 유연성 제약은 여성이 동일 직업에 종사하는 남성에 비해 총 임금과 월 급여 총액에서 유의미하게 낮은 금액을 받는 것에 기여했다. 또한 직업적 유연성 제약으로 인해 여성이 받는 패널티는 성장률이 높은 직업일수록 약화되는 경향을 보였다. 구체적으로는 초과근무(overtime work)와 엄격한 마감

시간으로 인한 시간압박(time pressure)이 많은 직업일수록 성별 임금격차가 심해졌고, 대인 상호작용(interpersonal interactions)은 성별 임금격차와 유의한 관계를 나타내지 않았다. 초과근무가 성별 임금격차에 미치는 효과는 남성비율이 높은 직업일수록 더 강화되면서 예상과 일치하였고, 반면 자격증은 대인 상호작용과 성별 임금격차의 관계를 긍정적으로 강화하면서 가설과 반대의 결과를 보였다. 추가적인 분석 결과 직업적 유연성 제약의 효과는 필요 교육수준이 낮은 직업의 종사자, 비노동조합원, 3~40대의 경우 더 강하게 나타났다. 본 연구의 결과는 직업에 따라 유연성을 얻기 위해 포기해야 하는 임금의 수준이 다를 수 있다는 것을 나타내며, 여성은 직업적 유연성 제약이 클수록 남성대비 적은 임금을 얻게 됨을 제시한다.

주요어: 성별 임금격차, 직업 특성, 작업환경 유연성
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