

ORIGINAL ARTICLE

Retirement intention of older workers: The influences of high-involvement work practices, individual characteristics, and economic environment

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Abstract

Research on retirement decisions has invited studies to examine how personal, work-related, and environmental factors interplay to affect older workers' retirement decisions. Drawing upon the person-environment fit framework, we proposed a negative relationship between high-involvement work practices (HIWPs) and older workers' retirement intention. We further developed hypotheses regarding the moderating effects of gender, age, educational level, managerial status, and external economic environment on the relationship between HIWPs and retirement intention. We tested the hypotheses using a sample of 754,856 employees aged 50 and over from 360 U.S. government agencies participating in the Federal Employee Viewpoint Survey from 2006 to 2015. The results, based on mixed effect logit regressions and cross-classified modeling, indicated that older workers' experience of HIWPs had a negative relationship with their retirement intention, and the negative relationship was stronger for older male workers, older workers aged 50–59 years, older workers without a bachelor's degree, and non-managerial older workers than for older female workers, those aged 60 years or over, those with a bachelor's degree, and those with managerial responsibilities, respectively. Moreover, the results showed that

the negative HIWPs-retirement intention relationship has become stronger since the Great Recession of 2008. We discussed the theoretical and practical implications of older workers' retirement decisions by considering the interactions between human resource management practices and personal and environmental factors.

KEYWORDS

aging, high-involvement work practices, person-environment fit, retirement

1 | INTRODUCTION

The worldwide labor force is growing older (Truxillo et al., 2015). In the United States, adults aged 55 or older are likely to make up about 26% of the labor force in 2022, up from 12% in 1990 (Mather et al., 2015). In the European Union, the share of the labor force over 55 years of age increased from 12.1% in 2003 to 19.7% in 2018 (Eurostat, 2019). In the Asia-Pacific region, on average, the share of adults aged 55 and older in the total labor force is also likely to increase from 14% in 2015 to 19% in 2030 (International Labor Organization, 2018). The aging labor force brings both opportunities and challenges to organizations. On the one hand, older workers are valuable assets to their employers because older workers tend to have more experiential knowledge (Beier & Kanfer, 2013) and higher emotional competence (Beitler et al., 2018), be more loyal and reliable (Loretto & White, 2006), and have more social connections (Kanfer et al., 2013). On the other hand, it is challenging to engage and retain older workers in employment, as they may have different needs and pursue different life goals towards the end of their career paths compared with younger workers. Organizations may become vulnerable to the loss of human capital resources that older workers have, and even a skill shortage, when older workers decide to retire (Kooij et al., 2014).

To address this concern, scholars from different disciplines have paid increasing attention to understanding the factors influencing older workers' retirement decisions (Adams et al., 2002; Beehr et al., 2000; Knoll, 2011; Wang & Shultz, 2010). For example, Beehr (1986) categorized predictors of retirement decisions into personal factors and environmental forces in his comprehensive review. Wang and Shultz (2010) provided an updated review of the retirement literature and suggested that one can classify predictors of retirement decisions into personal factors (e.g., age, gender, and educational level), work-related factors (e.g., job characteristics), and macro-level environmental factors (e.g., social norms and economic environment). Relatedly, Kanfer et al. (2013) proposed that personal characteristics and person-context transaction variables, local work conditions, and sociocultural and economic conditions influence employees' goals to retire. Guided by these theoretical frameworks, scholars have provided empirical evidence for the relationships between different types of predictors and retirement decisions. For example, in a meta-analytic review, Topa et al. (2009) found that poor health and negative work conditions are positively related, and work involvement and job satisfaction are negatively related to retirement decisions. Zhan et al.'s (2009a) meta-analysis also examined the relationships between individual factors and retirement intention and found that employees who are less educated, are less healthy, feel more positive about retirement, are married, and have fewer dependents are more likely to retire.

Despite the progress in previous work, there are at least three ways to advance the literature. First, much of the research on retirement decisions focuses on individual demographic and economic characteristics, which are beyond the direct influence of management (Bamberger & Bacharach, 2014). When examining what organizations can do to influence older employees' retirement decisions, prior studies have primarily focused on isolated human resource

management (HRM) practices, such as job demands (Gobeski & Beehr, 2009; Oakman & Wells, 2013) and training and development opportunities (de Grip et al., 2020; van Solinge & Henkens, 2014). However, the strategic HRM literature suggests that employees encounter multiple HRM practices that may jointly influence work attitudes and behaviors (Jackson et al., 2014; Wright & Boswell, 2002). Therefore, a systems perspective is critical to understand how HRM systems consisting of multiple practices can help to retain older workers and to predict their retirement decisions (Kooij & van de Voorde, 2015; Kooij et al., 2014; van Dalen et al., 2015).

Second, extant research has looked at different types of antecedents (e.g., individual, job, and environmental factors) of retirement decisions separately, but little attention has been paid to integrating these perspectives and exploring how those factors might jointly influence retirement decisions. Examining interaction effects is important because it helps to advance our understanding of the conditions under which or for whom organizational practices are likely to play a more important role in retirement decision making (Barnes-Farrell, 2003). More specifically, scholars have suggested that a person-environment (P-E) fit framework would be helpful to understand how the interactions between individual characteristics and work-related factors influence retirement decisions (e.g., Kanfer et al., 2013; Wang & Shultz, 2010).

Third, research on retirement decisions has heavily relied on a static approach (Topa et al., 2009; Topa et al., 2018). Measuring retirement decision and its predictors at one time point or during a short time period cannot capture changes in the external environment. The static approach makes it challenging to examine how the changing external environment (e.g., social norms and economic condition) may influence older workers' retirement decisions and shape the relationships between work-related predictors and retirement decisions. Therefore, retirement decisions research can benefit from careful consideration of the boundary effect of changing environment over time.

We aim to contribute to the retirement decisions literature by addressing these three research needs. First, we integrate strategic HRM and retirement literatures to relate high-involvement work practices (HIWPs) to older workers' retirement decisions. HIWPs represent an employee-centered HRM system that provides employees with skills, information, motivation, and latitude (Guthrie, 2001). Prior strategic HRM research has widely examined this type of HRM system as an antecedent of employee attitudes and behaviors as well as organizational performance (e.g., Jiang et al., 2012), but researchers have not fully incorporated it into retirement decisions research or research on older workers in general (Kooij et al., 2010). In the current study, we use an overarching P-E fit framework to argue that HIWPs can meet older workers' work-related needs and thus reduce their retirement intention. Second, we draw upon the P-E fit framework and other related theories to investigate how relevant individual characteristics (i.e., gender, age, educational level, and managerial status) and an external contextual factor (i.e., external economic situation) moderate the relationship between perceived HIWPs and retirement intention. Organizational researchers have yet to develop an integrative framework explaining the interactive influences of personal factors and work environment characteristics on employees' retirement decisions (Wang & Shultz, 2010). Our research thus offers a broader, clearer view of their influences on retirement decision making. Third, deviating from prior research with a relatively static perspective, we provide a theoretical and empirical account of the influences of HIWPs on retirement intention over time. We test our hypotheses by using the Federal Employee Viewpoint Survey data collected by the United States Office of Personnel Management. As our data cover a period of 10 years from 2006 to 2015, we incorporate time as a meaningful moderator that alters the relationship between HIWPs and retirement intention. Figure 1 shows our theoretical model.

2 | THEORETICAL BACKGROUND AND HYPOTHESES

Researchers have traditionally examined retirement decisions in the fields of economics and gerontology (Adams & Beehr, 1998; Talaga & Beehr, 1989). From an economic point of view, retirement is a result of rational decision-making processes by which the costs and benefits associated with retirement are thoroughly considered. Workers are likely to retire when they feel that their accumulated financial resources can support their consumption needs in retirement by taking future economic conditions into account (Hatcher, 2003; Hurd, 1990; Quinn et al., 1990). From the perspective

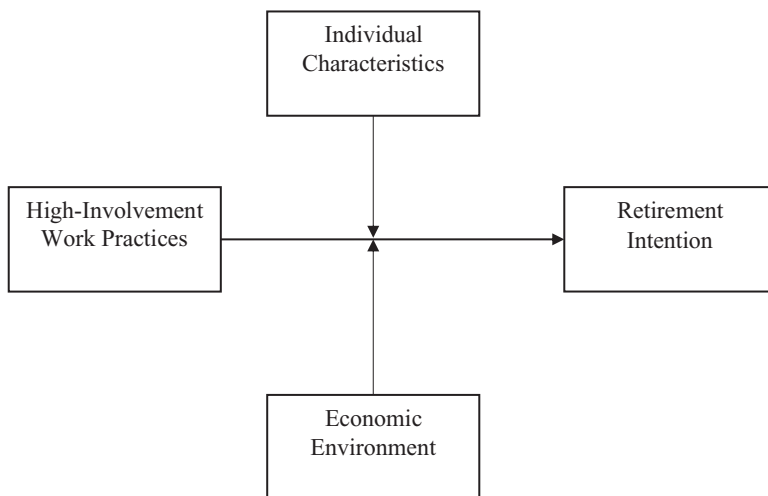


FIGURE 1 Theoretical model

of gerontology, researchers view retirement decision as a step of lifespan development and adjustment (Baltes et al., 1999) and pay attention to how personal factors, such as gender (Talaga & Beehr, 1995), educational level (von Bonsdorff et al., 2009), health status (Bidewell et al., 2006), and psychological well-being (Kim & Moen, 2002) influence retirement decisions. Research findings from these perspectives are helpful for understanding why and when older workers decide to retire, but they do not provide much insight into what organizations can do to influence retirement decisions.

To emphasize organizations' role in affecting retirement decisions, management scholars initially categorized predictor variables in terms of work and non-work factors (Beehr et al., 2000) or push and pull factors (e.g., Beehr, 1986; Feldman, 1994). Recent development in this literature has incorporated the broader external environment and suggested that more studies are necessary to examine how personal factors, work-related factors, and macro-level environmental factors can jointly affect older workers' retirement decision-making (e.g., Kanfer et al., 2013; Wang & Shultz, 2010). We attempt to actively respond to these calls by examining how HIWPs relate to retirement decisions and how personal and environmental factors moderate this relationship. We place the main focus on the relationship between HIWPs and retirement decisions because compared with individual and environmental factors, we know relatively little about the role of HRM practices, especially bundles or systems of HRM practices, in influencing retirement decisions (Kooij et al., 2014). This omission is critical for both theoretical and practical reasons. Theoretically, HIWPs are shown to be an important factor in determining employees' work-related decisions (Kehoe & Wright, 2013; Sikora et al., 2015) and practically, organizations have more control over work practices than personal and environmental factors (Bamberger & Bacharach, 2014; van Dalen et al., 2015). In this research, we not only examine whether there is a main relationship between HIWPs and retirement decisions above and beyond the effects of personal and environmental factors, but also explore how the main relationship may change under boundary conditions due to individual and environmental factors.

2.1 | HIWPs and retirement decisions

We examine retirement intention as the dependent variable to reflect older workers' retirement decisions. Retirement intention refers to older workers' willingness to reduce their mental, emotional, and behavioral involvement in their existing work arrangements, their careers, or the total workforce in the near future (Kanfer et al., 2013; Soleimanof

et al., 2015). On this definition, retirement may indicate decreased motivation to work or cessation of all work activities (Kanfer et al., 2013). Even though retired workers can still enter bridge employment positions or search for alternative job opportunities (Wang, 2007; Zhan et al., 2009b), retirement intention is often followed by decreased commitment to work in general rather than continued interests in regular employment. Therefore, retirement intention is conceptually different from other types of withdraw intentions from organizations, such as turnover intention (Adams & Beehr, 1998).

Many theories can help to explain the relationship between work-related practices and retirement decisions. For example, Feldman and Beehr (2011) reviewed 12 theories researchers commonly use to understand different stages of retirement decision making (e.g., image theory, social-normative theory, and economic theory). From the perspective of HRM, scholars have also used the job demands-resources model (van Solinge & Henkens, 2014), embeddedness theory (Bamberger & Bacharach, 2014), social exchange theory (Bentley et al., 2019), and the theory of planned behavior (van Dam et al., 2009). Although these theories provide useful explanations for the relationships between work practices and employee outcomes in general, they may not take account of older workers' unique characteristics and needs (Kanfer et al., 2013) and thus they cannot directly speak to why older workers may react differently to the same practices (Wang & Shultz, 2010).

To have a more complete understanding of retirement decisions, it is important to identify the unique attributes of older workers and to examine the match between personal characteristics and work practices. The P-E fit theory is particularly well-suited to explain people's interactions with their work environments, including both work environments (e.g., organizations and jobs) and external environments beyond organizations (Chatman, 1989; Kristof-Brown et al., 2005; Ostroff & Schulte, 2007). It thus provides an overarching framework to theorize how retirement decisions are jointly influenced by individual characteristics, HIWPs, and external contextual factors (Feldman, 2013; Perry et al., 2012).

The P-E fit research suggests that employees' work attitudes and behaviors result from the fit between employees and various aspects of their environmental situations (Chatman, 1989; Pervin, 1989). P-E fit researchers have distinguished between two types of fit: complementary fit and supplementary fit (Kristof-Brown et al., 2005). Complementary fit is based on need fulfillment. Employees are more likely to exhibit positive attitudes and behaviors when their work environment (e.g., work practices) fulfills employees' needs (Edwards, 2008; Kristof-Brown et al., 2005). By contrast, when the work environment does not meet employees' needs, they are most likely to experience negative outcomes (Edwards & Shipp, 2007). Supplementary fit is based on similarity between individual and environmental characteristics. Employees are also likely to have positive attitudes and behaviors when they have characteristics (e.g., values, interests, and personality) that are similar to others (Cable & Edwards, 2004). Although both types of fit can help explain individual attitudes and behaviors in the workplace, we use complementary fit as an overarching framework in this study. More specifically, we draw upon research on need fulfillment (Edwards, 1991) or needs-supplies fit (Caplan, 1987) to explain the relationship between HIWPs and older workers' retirement intention. As suggested by Cable and Edwards (2004), employees are primarily concerned about the extent to which their needs are fulfilled by their organizations' rewards and inducements. Therefore, comparing what work environment provides and what employees desire is especially relevant to study employment relationship. Several scholars have applied complementary fit of the P-E fit paradigm to age-related phenomena at work and suggested that it is necessary to identify older workers' needs to understand how to engage, motivate, and retain them at work (Feldman, 2013; Kooij et al., 2017; Krumm et al., 2013; Perry et al., 2012; Zacher et al., 2014).

Pertaining to personal characteristics (i.e., the "P" in P-E fit), lifespan development research has examined how individual attributes (e.g., intellectual abilities, personality traits, emotion regulation, and physical abilities) may change over the adult life course (e.g., Ackerman, 1996; Charles & Carstensen, 2009; Roberts et al., 2006). For example, Kanfer et al. (2013) stated that people may experience declines in fluid intellectual abilities (e.g., novel problem solving) but have more crystallized intellectual abilities (e.g., knowledge learnt from prior education and past experience) as they age. Therefore, compared with younger workers, older workers may have a stronger need to work on tasks using their knowledge, skills, and experiences rather than those making high demands on cognitive control and

problem solving. Kanfer and Ackerman (2004) also argued that age-related changes in personality and affect may enhance older workers' preference for work activities that support positive affect, enhance self-concept, and encourage generativity.

Scholars have also examined older workers' psychological needs and motivation at work. For example, Mor-Barak (1995) developed a scale on the meaning of work for older adults and found four factors including social contact (e.g., receiving respect from others), personal (e.g., self-esteem and personal satisfaction), finance (e.g., enough money to live on), and generativity (e.g., an opportunity to teach the younger generation). Kooij et al. (2008) reviewed 33 studies on older workers' motivation to continue to work and suggested that organizations can encourage older people to work longer by redesigning jobs and providing continuing career development. Kooij et al. (2011) conducted a follow-up meta-analysis of the relationship between age and work-related motives. They found that age has a positive relationship with intrinsic motives but a negative relationship with extrinsic motives and strength of growth. More specifically, the results showed that as people age, they are more likely to be motivated by accomplishment or achievement, use of skills and interesting work, autonomy, helping people or contributing to society, and job security in general. These findings are consistent with an investigation by the American Association of Retired Persons (AARP, 2014) of 1,419 older workers about their ideal jobs. The most important factors included the chance to use skills and talents (92%), a friendly work environment (91%), the chance to do something worthwhile (88%), feeling respected by coworkers and boss (82%), the chance to help others (79%), competitive pay (79%), and opportunities to learn something new (74%).

We expect that HIWPs would help to meet older workers' needs and motives and thus to reduce their retirement intention. HIWPs are a specific type of HRM system that has been extensively studied in the strategic HRM literature (Batt, 2002; Guthrie, 2001; Lawler, 1992). This type of HRM systems typically include HRM practices that are intended to offer employees the opportunities to better perform tasks, such as job design, job autonomy, participation in decision-making, and information sharing. It also includes HRM practices that can enhance employees' abilities and motivation to complete their tasks, such as staffing, training and development, performance management and appraisal, and compensation and benefits. All these practices are commonly used in previous strategic HRM research to measure HRM systems (Boon et al., 2019; Posthuma et al., 2013).

Older workers' retirement intention is negatively related to their experiences of HIWPs for the following reasons. First, HIWPs give employees discretion to perform their tasks and opportunities to participate in management decision-making (Wood et al., 2012). For example, organizations may design jobs to ensure that they use employees' talents well and provide sufficient resources for employees to get the job done. Organizations may encourage employees to make suggestions for better ways of doing things and share job and organizational information with employees. The use of these practices can directly promote older workers' intrinsic motives and make them feel that they can use skills and talents at work, do something meaningful and interesting, and receive respect from their organizations (e.g., Boxall et al., 2015; Butts et al., 2009; Wood & Ogbonnaya, 2018).

HIWPs can also provide older workers with training and development opportunities to enhance their abilities to continue working (Armstrong-Stassen & Stassen, 2013). Although older workers may be less concerned with development and growth than younger workers (Kooij et al., 2010), training can still improve older workers' future employability and help retain them at work (Picchio & van Ours, 2013). In addition, performance-based compensation can enhance the fairness perceptions of pay systems and make older workers feel that they can rely on such pay systems to get fair treatment (Wu & Chaturvedi, 2009) and to secure their financial goals (Nyberg et al., 2016). Together, HIWPs represent a significant investment in employees. The use of HIWPs can help to fulfill older workers' multiple needs at work and thus retain them to work longer for their current organizations. Therefore, we propose that:

Hypothesis 1: HIWPs have a negative relationship with older workers' retirement intention.

2.2 | Moderating effects of individual characteristics

While the above argument is applicable to older workers in general, some individual differences among older workers are likely to moderate the relationship. Applying complementary fit of the P-E fit paradigm to understand retirement decisions, we expect HIWPs to relate to older workers' retirement intention to different extents depending on four individual characteristics (i.e., gender, age, educational level, and managerial status). We focus on these individual characteristics because they are theoretically relevant to retirement intention and they have received the most attention in prior research on retirement decisions (Wang & Shultz, 2010). Drawing on the P-E fit framework, we contend that those personal factors may shape individuals' expectations and needs (i.e., affecting "P" component), which in turn alter the extent to which HIWPs (the "E" component) may fulfill individuals' needs and influence their retirement intention.

We first propose gender as a moderator of the relationship between HIWPs and older workers' retirement intention and argue that the relationship would be more negative for men than for women. Gender role theory (Eagly, 1987) suggests that men and women have different job needs because society socializes them differently. It is expected that men are the breadwinners of their families and thus they need more achievement, autonomy, recognition, and challenges from their jobs than women do (Eagly & Wood, 1999; Williams & Best, 1990). Even though female labor force participation rate has been rising steadily in the past two decades, the traditional gender role expectations still exist and can help explain why male and female older workers who are close to retirement age may react differently to management practices at work. By giving autonomy and participation opportunities and enhancing skills and motivation, HIWPs fulfill several job attributes that men commonly desire (e.g., autonomy, recognition, promotion opportunity, and earnings). Therefore, it is reasonable to expect that compared to older female workers, older male workers have a stronger reaction to the use of HIWPs and thus are more likely to continue to work.

The gendered life course model also suggests that women are more likely to delay their entry into the labor force and have more interrupted career histories because of their family responsibilities (Moen, 2001). Even when they are working, women take more responsibilities for housework (Anson et al., 1989) and caring for children and aging relatives (Greenhaus & Beutell, 1985; Moen, 2005). For example, the Survey of Health, Ageing, and Retirement in Europe found that grandmothers are more likely to provide grandchild care than grandfathers across 10 continental European countries, and on average 61% of grandmothers and 51% of grandfathers provided grandchild care during last 12 months (Hank & Buber, 2009). The National Survey of Families and Households conducted in the United States also found that among grandparents living near grandchildren under age 13, 64% of employed grandmothers and 43% of employed grandfathers provided childcare (Guzman, 2004). Lumsdaine and Vermeer (2015) also examined the relationship between childcare giving and retirement and found that the arrival of a new grandchild increases the probability of women's retirement by more than 8% after controlling for other factors. In addition, research has shown that eldercare work remains strongly gendered (Pavalko & Henderson, 2006). Compared with men, women are more likely to provide eldercare (Grossman & Webb, 2016) and contribute more hours of care (Hammer & Neal, 2008). In this case, even though HIWPs provide a positive environment to retain employees at work, older female workers may still gravitate toward retirement to fulfill their non-work needs (de Preter et al., 2013; Frieze et al., 2011). Taken together, we posit that:

Hypothesis 2: Gender moderates the negative relationship between HIWPs and older workers' retirement intention such that the relationship is more negative for men than for women.

Age is another individual factor that can not only have a direct effect on retirement decisions (Kanfer & Ackerman, 2004; Wang & Shultz, 2010), but also moderate the relationships between situational factors and employee outcomes (Kooij et al., 2010). In the current research, we develop our hypotheses regarding older workers' retirement decisions and restrict their age to 50 years and over. Using 50 years old as a cut-off value to select older workers is consistent

with previous research on older workers' retirement decisions (e.g., e.g., Bamberger & Bacharach, 2014; Wang, 2007) and determined by how age is measured in our sample as discussed in the Method section. Previous research has shown that, even within the cohort of older workers, relatively younger and older workers may face different financial, social, and health situations and thus have different motives and interests that may affect their reactions to the use of management practices (Adams et al., 2002; Bamberger & Bacharach, 2014; Zacher & Griffin, 2015). Consistent with this logic, we propose that age would attenuate the negative relationship between HIWPs and retirement intention.

First, research in lifespan psychology suggests that age relates to people's perceptions of remaining time (Lang & Carstensen, 2002). Within the cohort of older workers, relatively older ones are more likely to perceive that they do not have much time left to pursue work-related goals than their younger counterparts (Zacher & Frese, 2009). For example, even though HIWPs provide training and participation opportunities to the relatively older workers, they may find those practices less needed. Zacher and Griffin (2015) provided indirect evidence for this argument by showing that career adaptability (e.g., resources and competencies for employees to manage their careers proactively) has a positive relationship with job satisfaction for younger workers (around 57 years old) but not older workers (around 62 years old).

Researchers have also found that age has a positive relationship with the financial resources that make retirement possible (Adams et al., 2002). When older workers feel financially secure, their motivation to continue working may reduce (Frieze et al., 2011; Kanfer et al., 2013). In contrast, when older workers have financial concerns, they may remain motivated to learn new skills and to take the opportunities HIWPs offer to secure their financial saving for retirement (Schlosser et al., 2012). In addition, the probability of ill health is likely to increase as people age, which may make retirement necessary (Fisher & Ryan, 2018). In this case, older workers may have to retire even though they still enjoy the positive work environment HIWPs create. Finally, age also relates to social norms regarding retirement age. For example, Radl (2012) used a sample of respondents in 14 Western European countries to study age-related norms and found that social norms regarding when workers should retire existed and varied across countries. As older workers approach the age of being too old to work, they may feel pressure to retire and care less about whether their work needs are fulfilled by management practices (Settersten & Hagestad, 1996). Accordingly, we propose that:

Hypothesis 3: Age moderates the negative relationship between HIWPs and older workers' retirement intention such that the relationship is more negative for relatively younger workers than for relatively older workers.

Education can also be a personal factor relating to retirement decisions. Theoretical and empirical reviews (e.g., Wang & Shultz, 2010; Zhan et al., 2009a) showed that educational level has a negative relationship with retirement decisions. Beier et al. (2016) also viewed education as a cognitive resource and found that those with higher educational attainment are more likely to continue to work after age 65. Based on these findings, we argue that education can not only predict older workers' retirement decisions, but also moderate the relationship between HIWPs and retirement decisions. More specifically, we posit that educational level weakens the negative relationship between HIWPs and older workers' retirement intention.

First, workers with higher education rely less on HIWPs to fulfill their work needs. According to the conservation of resources perspective (Hobfoll, 1989), people strive to obtain and protect resources (e.g., personal resources, job resources, and social resources) to meet their motivational goals. When different resources fit environmental demands, resources may substitute for one another in meeting people's goals (Hobfoll et al., 1990). We argue that education as an important personal resource can help to fulfill older workers' motivational goals at work and thus substitute for the influence of HIWPs. For example, Rudolph et al. (2017a) conducted a meta-analysis of job crafting and found that workers with higher education are more likely to change the characteristics of their jobs actively. In another meta-analysis on career adaptability, Rudolph et al. (2017b) found a positive relationship between educational level

and career adaptability, which is a form of a psychological resource for managing career-related tasks. In addition, a meta-analysis by Huang et al. (2009) found that educational level has a strong correlation with individual social participation. These findings suggest that older workers with higher levels of education may be in a better position to utilize personal resources and opportunities to meet work needs than those with lower levels of education, who may benefit more from formal HRM systems.

Moreover, education has a relationship with individuals' chance of working on high quality jobs. For example, research has shown that compared with those with higher education, workers with lower education are less likely to work on high-quality jobs featuring learning opportunities, fair compensation, and job autonomy (e.g., Aspøy, 2020; Wicht et al., 2019). When organizations do provide such kinds of high-quality jobs using HIWPs, older workers with a lower educational level are more likely to take the opportunity and more positively react to HIWPs. In contrast, better educated older workers may have more experience with high quality jobs throughout their career span (Damman et al., 2011; Rutledge et al., 2017), and thus be less likely to make their retirement decisions based on the availability of HIWPs. Therefore, we posit that:

Hypothesis 4: Educational level moderates the negative relationship between HIWPs and older workers' retirement decisions such that the relationship is more negative for workers with lower levels of education than for workers with higher levels of education.

Finally, we propose that managerial status mitigates the negative relationship between HIWPs and older workers' retirement intention. One of the major differences between managerial and non-managerial workers is that workers in managerial positions have more opportunities to make work-related decisions. Because those opportunities are derived from the formal positions of power and authority in organizations, older workers with managerial status may take the decision-making opportunities for granted and be less likely to consider them when making retirement decisions. In contrast, non-managerial positions typically do not give workers the opportunity to lead others or make important decisions that may influence others. Therefore, HIWPs are more likely to meet non-managerial older workers' needs to participate in decision-making and keep them motivated at work.

Moreover, like the moderating effect of educational level, older workers in managerial positions generally work on higher-quality jobs with more resources and opportunities than those in non-managerial positions (Lain et al., 2020; Schreurs et al., 2011). The less favorable work conditions of non-managerial older workers in general may lower their expectations about what their organizations can offer to them. When organizations do provide HIWPs to non-managerial older workers, they are more likely to value organizations' investment in them and thus they are less likely to consider retiring from their jobs. Schreurs et al. (2011) provided support for this argument by showing that providing job resources (e.g., job control and social support) results in more work enjoyment and consequently lower retirement intention for blue-collar workers than for white-collar workers.

In addition, compared with non-managerial workers, managerial workers tend to accumulate more financial resources nearing retirement because of their higher earnings and better retirement benefits (Hogan et al., 1997; Mears et al., 2004). Financial readiness for retirement may lead to more positive attitudes toward retirement (Beehr et al., 2000; Topa et al., 2011), and reduce the motivation to continue working (Wanberg et al., 1999). In this case, older managers may be less likely to take work-related practices into account when making their retirement decisions. In contrast, older workers in non-managerial positions may experience higher financial stress, want more opportunities to engage in meaningful work roles (Kanfer & Fletcher, 2020), and thus react more positively to HIWPs. Taken together, we propose that:

Hypothesis 5: Managerial status moderates the negative relationship between HIWPs and older workers' retirement intention such that the relationship is more negative for non-managerial workers than for managerial workers.

2.3 | Moderating effect of economic environment

In addition to the moderating effects of individual characteristics, prior research has suggested that macro-level social and economic conditions also influence older workers' retirement decisions (Kanfer et al., 2013; Wang & Shultz, 2010). More specifically, many studies have examined the Great Recession (December 2007 to June 2009) as a critical event influencing older workers' retirement plans because the external economic conditions may change older workers' needs and priorities (e.g., Helppie McFall, 2011; Munnell & Rutledge, 2013; Szinovacz et al., 2015). In other words, these studies suggest that the macro economic conditions can influence older workers' characteristics (motives and needs, i.e., the "P" factor) and therefore, older workers can respond differently to HIWPs provided by the organization (the "E" factor) before and after the Great Recession.

The effect of the Great Recession on changing older worker's needs and priorities may manifest in several ways. First, the stock market crash during the Great Recession wiped out trillions of dollars in retirement accounts and largely reduced the retirement security of older workers. For example, by the first quarter of 2009, retirement accounts in the United States had lost about 31% of their peak 2007 value (Butrica, 2013). Second, many older workers experienced job loss during the recession. For example, the average monthly unemployment rate was just 3.9% for workers aged 50 to 61 during the 24 months spanning 2004 and 2005, but it increased to 8.3% in mid-2010 (Johnson & Butrica, 2012). Older workers who were unemployed during the Great Recession also experienced significant pay cuts when they became reemployed. For instance, the median monthly income declined 23% for workers aged 50 to 61 and 47% for those aged 62 and older (Johnson & Butrica, 2012). Third, the slow recovery may also have had a lasting impact on older workers' retirement decisions by reducing their confidence in their future economic status and making them more careful with money (Glei et al., 2019). Overall, the Great Recession is likely to have reduced the financial security older workers feel and increased their responsiveness to HIWPs provided by the organization.

Specifically, we expect the relationship between HIWPs and older workers' retirement intention to become more negative after the Great Recession. The increased financial pressure may make the motive to work more salient (Kanfer et al., 2013). Given the high unemployment rate, workers may find it challenging to keep their current jobs or to find new jobs. In this situation, HIWPs can not only meet older workers' short-term economic needs, but also prepare them for future changes in the external environment. Therefore, as compared with before the Great Recession, HIWPs will be more likely to reduce retirement intention among older workers after the Great Recession. We also posit that the negative HIWPs – retirement intention relationship will become stronger as the slowdown endures in the years following the Great Recession. This is because the consequences of the Great Recession may increase the uncertainty surrounding older workers' retirement plans (Feldman & Beehr, 2011). Even though the economic situation may improve gradually, older workers may still be concerned about the future economic volatility and these changed motives and priorities make older workers more responsive to HIWPs in the years following the Great Recession. Therefore, we posit that:

Hypothesis 6: The relationship between HIWPs and older workers' retirement intention becomes more negative as economic recession endures over time.

3 | METHOD

3.1 | Data and sample

To examine the hypotheses, we used the Federal Employee Viewpoint Survey (FEVS) data the U.S. Office of Personnel Management (OPM) collected. The FEVS includes questions about employees' perceptions of their jobs and organizations as well as demographic information. The OPM first administered the survey in 2002 as the Federal Human

Capital Survey (FHCS), and then again in 2004, 2006, and 2008. The OPM renamed the FHCS the FEVS in 2010 and began administering the FEVS annually starting in 2010. Respondents of the FEVS included employees from hundreds of government agencies with an average response rate of 50% over the years across all agencies¹. At the individual level, employee responses are not trackable over time. However, the survey responses included 4-character agency code, which allowed us to link individual respondents to their work agencies for a given year.

The OPM provides open access to the FEVS data of 2006, 2008, and every year since 2010². The FEVS data allowed us to separate older workers from the rest according to the age information. The survey measured age with five categories (i.e., 29 and under, 30–39, 40–49, 50–59, or 60 or older) from 2006 to 2011 and with four categories (i.e., under 40, 40–49, 50–59, or 60 or older) from 2013 to 2015. The survey only measured age with two categories (i.e., under 40 versus 40 or older) in 2012 and 2016 and did not collect any age information after 2016. Because our research focuses on older employees' retirement decisions, we limited our sample to respondents aged 50 years and older. Using the age 50 to include older workers is consistent with previous research on retirement (e.g., Bamberger & Bacharach, 2014; Kanfer et al., 2013; Talaga & Beehr, 1995; Wang, 2007) and AARP's definition of older workers³. In addition, federal employees are eligible for early option retirement and voluntary retirement when they reach age 50 and have 20 years of service⁴. Therefore, we included the respondents aged 50 years and older in our sample to examine hypotheses about their retirement intention.

As FEVS only collected the detailed age information in 2006, 2008, 2010, 2011, 2013, 2014, and 2015, our final sample included 754,856 older employees from 360 government agencies in those years. More specifically, the sample size of each year was 45,153 (2006), 40,946 (2008), 124,080 (2010), 118,854 (2011), 138,133 (2013), 139,075 (2014), and 148,615 (2015). On average, the number of older workers per agency was 2,097. As explained in our analytic strategy section, we used various ways (mixed effect logit regressions and cross-classified modeling) to account for the unique data structure.

The use of FEVS data provides several advantages for testing our hypotheses. First, the sample can help to control for other variables that may influence older workers' retirement decisions. For example, economic incentives may influence when older workers decide to retire (Quinn et al., 1990). As federal government employees tend to experience similar pay structure, pension system, and benefit programs⁵, we can partial out the potential influences of these variables on our findings. Second, the OPM uses a carefully-designed weighing process to select participants from each agency. Therefore, the sample we used was not only large but also representative of the Federal employee population⁶. Third, the longitudinal nature of the data allows us to examine how the relationship between HIWPs and retirement decisions changes over time. Admittedly, one weakness of the FEVS data is that individual workers are not trackable across time, although the agencies are. In order to better utilize the repeated-measures, panel data structure at the agency level, we performed supplementary analyses to examine our predicted relationship of Hypothesis 1 at the agency level (more details are provided in the Supplementary Analysis section).

3.2 | Measures

HIWPs. The FEVS measured employees' perceptions of job and organizational characteristics in several aspects on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). As shown in the Appendix, we identified 29 questions reflecting seven HRM practices, including staffing, training and development, performance management and appraisal, compensation and benefits, job design, participation and autonomy, and information sharing. Strategic HRM scholars frequently use these practices to measure HIWPs (Boon et al., 2019; Posthuma et al., 2013). In particular, the HIWPs questions included in the FEVS are similar to those used to measure employees' perceptions of HRM systems in recent studies (e.g., Gong et al., 2009; Liao et al., 2009; Shaw et al., 1998; Zacharatos et al., 2005). We conferred with five subject matter experts on strategic HRM and they reached a high agreement that the 29-item measure has satisfactory content validity to assess HIWPs (Anderson & Gerbing, 1991). The Cronbach's alpha values for each of

these practices exceeded .70, suggesting high internal reliability for each practice. In addition, we found a high internal reliability of .96 for the seven HRM practices together.

To examine the construct validity of this measure, we conducted a second-order confirmatory factor analysis (CFA). In this analysis, we combined data from all 7 years and examined HIWPs as a second-order factor reflected by the seven first-order HRM practices which were in turn reflected by their respective items (as shown in the Appendix). The results indicated that the second-order CFA model fit the data reasonably well ($\chi^2 = 1421111.79$, $df = 370$, $p = .00$; RMSEA = .071; SRMR = .059; CFI = .85; TLI = .84), with both the root mean square error of approximation (RMSEA) and standardized root mean squared residual (SRMR) lower than the recommended values (Hu & Bentler, 1999). Although comparative fit index (CFI) and Tucker–Lewis index (TLI) values are below the recommended value of .90, the values were similar to those reported in previous strategic HRM research which combined all HRM practices in one aggregated HRM system measure (e.g., Collins & Kehoe, 2017; Den Hartog et al., 2013). In addition, some strategic HRM scholars have argued that HRM systems is a formative rather than reflective construct (e.g., Shaw et al., 2009). Therefore, reliability assessments and factor analyses that require strong internal consistency among all practices may not be necessary to justify the construct validity of a measure of HRM systems. In our online supplementary materials, we reported additional second-order CFA results for each of the 7 years (Table S1), as well as results of measurement invariance testing in support of metric invariance for HIWPs across the years (Table S2).

As also shown in the online supplementary materials, we further examined the convergent, discriminant, and criterion-related validities of the 29-item HIWPs measure by collecting a sample of 100 employees who were 50 years old or older and worked in government and public administration jobs in the United States via Prolific⁷. The results provided strong validity evidence for the 29-item HIWPs measure (see Table S3). We thus used the average score of the 29 items to represent HIWPs in the main study. This additive approach also allows different ways to achieve a high system score and strategic HRM scholars have commonly used this approach in the literature (Boon et al., 2019).

Retirement Intention. The OPM used two types of response options to measure employees' retirement intention. From 2006 to 2011, it asked employees whether they were planning to retire "within 1 year", "between 1 and 3 years", "between 3 and 5 years", or "five or more years". But from 2013 and 2015, it only asked employees to choose whether they were planning to retire "within 5 years" or "not within 5 years". We combined the different response options and used one dichotomous variable to reflect employees' retirement intention. More specifically, we used 0 to represent employees with no plan to retire within 5 years and 1 to represent those planning to retire within 5 years. The FEVS also included a question asking whether employees consider leaving their organization within the next year (0 = No; 1 = Yes). This variable had only a relatively weak relationship with retirement intention ($r = .15$, $p = .00$), suggesting that retirement intention is conceptually different from turnover intention.

Moderators. According to the FEVS codebooks, we coded *gender* as a dichotomous variable using 0 to represent men and 1 to represent women. In terms of *age*, older employees were categorized into two groups with 0 representing those aged 50–59 and 1 representing those aged 60 years or older. *Educational level* was also coded as a dichotomous variable (0 = education less than a bachelor's degree, 1 = bachelor's degree or post-bachelor's degree). Finally, the FEVS data measured managerial status with five levels (i.e., non-supervisor, team leader, supervisor, manager, and executive) in 2006 and 2008, three levels (i.e., non-supervisor/team leader, supervisor, and manager/executive) in 2010 and 2011, and two levels (i.e., non-supervisor/team leader and supervisor/manager/executive) from 2013 to 2015. To include more employees in our final sample, we measured *managerial status* using 0 to represent those without formal managerial responsibilities (e.g., non-managerial employees or team leaders) and 1 to represent those taking supervisory responsibilities (e.g., supervisor, manager, or senior leader)⁸. Educational level was only available from the FEVSs of 2014 and 2015 (thus the sample size is substantially smaller when examining education as a moderator), while the other individual characteristics were collected in all the years included in our sample.

Previous research has coded "time after recession" to indicate when the economic recession occurred and how it influenced the effects of HRM practices on outcome variables (e.g., Kim & Ployhart, 2014). Ideally, we hoped to have more observation years before the Great Recession (prior to 2008) to establish the baseline estimate of the growth rate in retirement decisions over time and then examine how the growth rate changed after the recession. However,

the FEVS data were only available for 2006, 2008, and every year since 2010. Therefore, we used the year of 2008 as a reference point and coded it as 0. We then assigned this variable a value of t for the t^{th} year before and after 2008. For example, we coded the year of 2006 as -2, coded 2010 as 2, and coded 2015 as 7. Conceptually, this variable “time after recession” represents the linear effect of time that is before and after the onset of the Great Recession. This coding scheme is consistent with coding time-related variables in random coefficient growth models (e.g., Kim & Ployhart, 2014; Lang & Bliese, 2009). Using the year of 2008 as a reference point also makes it convenient to interpret the intercepts of the analyses introduced below.

3.3 | Control variables

We controlled for the four above-mentioned individual characteristics (i.e., gender, age, educational level, and managerial status) and time after recession when examining the main effect of HIWPs on retirement intention. We also included these variables when we examined the moderating effect of each of them.

3.4 | Analytic strategy

Given that the outcome variable is dichotomous and employee observations are nested under government agencies, we used mixed-effect logit regression to analyze the data and test our hypotheses. Specifically, we used the *melogit* command in STATA (StataCorp, 2019) to examine logit regressions that consider the nestedness of observations under level-2 units (i.e., agencies). We used the *margins* function to calculate and plot effects at different values of the moderators (gender, age, education, managerial status, and time after recession). Due to missing data in the education variable (measured in only two years, rather than 7 years for other variables), we performed separate analyses with and without education included (more details are provided in the Results section). We used listwise deletion for missing values that happened randomly.

As noted above, because employees are not trackable over time, our individual-level data structure does not resemble the conventional repeated-measures panel data. In other words, we have multiple years' cross-sectional panels nested under each of the government agencies, but employees in each panel are not linked across years. As such, we performed several robustness checks, one of which uses cross-classified mixed effect logit regression so that employee observations are simultaneously nested under agencies and year of measurement. We conducted this analysis in SAS. Because we treated “year” as a crossed-classified level-2 unit, we could not examine the moderating effect of time after recession in a traditional fashion (i.e., focusing on the interaction coefficient). Instead, we obtained the model estimated year-specific effect of HIWPs by combining its estimated coefficient at the lower level and the random effect of HIWPs across level-2 units of “year”. If such a model-estimated year-specific effect of HIWPs decreases (becoming more negative) as year increases, then we receive support for Hypothesis 6. In both the main analyses and the robustness checks, we did not center the predictor variables nor the outcome variable since retirement intention and HIWPs have close to zero ICC1 values (ICC1 = .02 and .04, respectively) due to the very large unit size (on average 2,097 observations per agency).

4 | RESULTS

4.1 | Main analysis results

Table 1 reports the means, standard deviations, and correlations between variables. As noted earlier, educational level has a smaller sample size because it was only measured in 2 years, whereas all other variables had 7 years of data. We

TABLE 1 Means, standard deviations, and correlations among variables

Variable	M	SD	1	2	3	4	5	6
1. Gender	0.45	0.50						
2. Age	0.26	0.44	-.05					
3. Educational level	0.61	0.49	-.14	.01				
4. Managerial status	0.29	0.45	-.13	-.05	.12			
5. Time after recession	4.08	2.55	.03	.09	.01	-.15		
6. HIWPs	3.50	0.73	-.03	.03	.02	.15	-.03	
7. Retirement intention	0.48	0.50	.00	.33	-.05	.07	-.08	-.01

Notes. $N = 754,856$ employee observations nested under 360 agencies for all variables except educational level, which has $N = 286,149$ observations nested under 118 agencies.

All correlations have $p < .001$ except the correlation between female and retirement decisions, which has $p = .03$.

HIWPs = high-involvement work practices.

report hypothesis testing results in Table 2 based on mixed effect logit regression analyses. The coefficients in Table 2 are associated with the outcome variable on the logit scale (i.e., log odds of retirement intention where intending to retire within 5 years = 1) and a positive (or negative) coefficient means that an increase in the focal predictor variable increases (or decreases) the log odds of retirement intention.

Hypothesis 1 predicted a negative relationship between HIWPs and retirement intention. As shown in Model 1 of Table 2, after including the demographic variables (excluding educational level) and time after recession, HIWPs has a significant and negative coefficient ($-.12$, $SE = .004$, $p = .00$). For every one unit increase in HIWPs (e.g., from 3.0 to 4.0), the log odds of retirement intention (versus not intending to retire) decreases by the value of .12. Converting this coefficient to the more interpretable odds ratio ($OR = .89$, $SE = .003$, $p = .00$), this means that for every one unit increase in HIWPs, the odds of retirement intention (versus not intending to retire) decreases by 11% ($= 100\% - 89\%$). In Model 1' of Table 2, we included educational level as an additional control variable. Despite a smaller sample size, we obtained nearly identical results for HIWPs. Therefore, Hypothesis 1 was supported. It is notable that the effect of time after recession becomes non-significant in Model 1'. This is expected because Model 1' was based on 2 years of measurement and thus had limited variability.

To test our hypotheses involving moderating effects, we first examined each moderator separately (Models 2–6 of Table 2) and then we entered all moderators in the same logit regression (Models 7 and 7'). The difference between Models 7 and 7' is that Model 7 excluded educational level and thus used the full dataset whereas Model 7' added educational level but had a smaller sample size. Overall, the separate moderator analyses showed interaction effects that are highly similar to those in Model 7 and Model 7' in terms of magnitude, sign, and significance level. The only exception is that in Model 7' (2 years of data), the moderating effect of time after recession became non-significant due to its limited variability. Therefore, we explain the findings based on the separate moderator analysis results and our conclusions are the same based on Models 7 and 7'.

Hypothesis 2 predicted a moderating effect of gender such that the negative effect of HIWPs is stronger for male versus female older employees. Model 2 of Table 2 shows a significant negative interaction coefficient for gender and HIWPs. We convert these findings to odds ratio for ease of interpretation. For male employees (gender = 0), for every one unit of increase in HIWPs, the odds of retirement intention decreases by 16.5% ($\exp(-.18) = .835$ and $100\% - 83.5\% = 16.5\%$). In contrast, for female employees (gender = 1), every one unit increase in HIWPs is associated with a decrease in odds of retirement intention by 3.9% ($\exp(-.18 + .14) = .961$ and $100\% - 96.1\% = 3.9\%$). To further examine the interactive pattern, we used STATA *margins* function to calculate the marginal effects of HIWPs for male versus female older employees. These "marginal effects" can be interpreted in a similar fashion to simple slopes in conventional regression-based interaction plots. For male employees, HIWPs has an effect $b = -.038$ (95% CI = $-.039$,

TABLE 2 Mixed-effect logistic regression results

Variable	Model 1 b (SE)	Model 1' b (SE)	Model 2 b (SE)	Model 3 b (SE)	Model 4 b (SE)	Model 5 b (SE)	Model 6 b (SE)	Model 7 b (SE)	Model 7' b (SE)
Intercept	-.04 (.02)	-.36*** (.07)	.26*** (.03)	.11*** (.02)	-.29*** (.07)	.09*** (.02)	-.01 (.03)	.38*** (.03)	.43 (.26)
Gender	.20*** (.01)	.16*** (.01)	-.29*** (.02)	.20*** (.01)	.16*** (.01)	.20*** (.01)	.20*** (.01)	-.34*** (.02)	-.33*** (.04)
Age	1.81*** (.01)	1.86*** (.01)	1.81*** (.01)	1.49*** (.03)	1.86*** (.01)	1.81*** (.01)	1.81*** (.01)	1.41*** (.03)	1.35*** (.05)
Educational level	—	-.25*** (.01)	—	—	-.36*** (.04)	—	—	—	-.37*** (.04)
Managerial status	.41*** (.01)	.40*** (.01)	.41*** (.01)	.41*** (.01)	.40*** (.01)	.21*** (.03)	.41*** (.01)	.12*** (.03)	.24*** (.05)
Time after recession	-.10*** (.001)	.00 (.01)	-.10*** (.001)	-.10*** (.001)	.00 (.01)	-.10*** (.001)	-.09*** (.005)	-.08*** (.01)	-.05 (.04)
HIWPs	-.12*** (.004)	-.12*** (.01)	-.18*** (.005)	-.14*** (.004)	-.13*** (.01)	-.13*** (.004)	-.10*** (.01)	-.21*** (.01)	-.35*** (.07)
HIWPs x Gender			.14*** (.01)					.16*** (.01)	.14*** (.01)
HIWPs x Age				.09*** (.01)				.12*** (.01)	.15*** (.01)
HIWPs x Education					.03* (.01)			—	.04** (.01)
HIWPs x Managerial status						.06*** (.01)		.08*** (.01)	.05** (.01)
HIWPs x Time after recession							-.004** (.001)	-.005** (.001)	.01 (.01)
-2 Log Likelihood	928,958	345,488	928,540	928,836	345,482	928,908	928,952	928,256	345,198
Diff. in -2LL from Model 1 or 1'			-418	-122	-6	-50	-6	-702	-290

Notes. N = 754,856 employee observations nested under 360 agencies for all models, except Model 1', Model 4, and Model 7', where N = 286,149 nested under 118 agencies.
HIWPs = high-involvement work practices.
* $p < .05$, ** $p < .01$, *** $p < .001$.

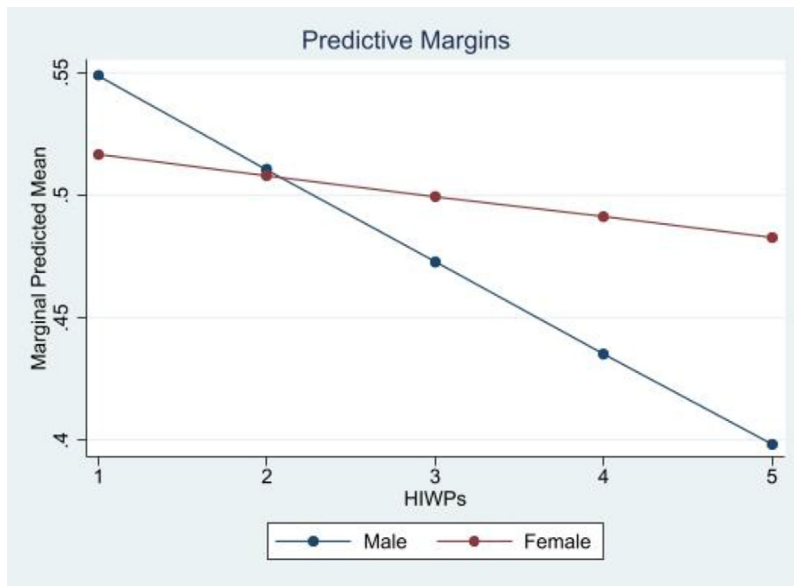


FIGURE 2 Moderating effect of gender on the relationship between high-involvement work practices (HIWPs) and retirement intention

−.036) whereas for female employees the effect is $b = -.008$ (95% CI = −.011, −.006). We plot the interaction pattern in Figure 2, where the y-axis represents the model-estimated logit (i.e., log odds of retirement intention). Overall, the results provided support for Hypothesis 2.

Hypothesis 3 suggested a moderating effect of age such that the negative effect of HIWPs is weaker for employees aged 60 years and above than for those aged 50–59. Model 3 of Table 2 shows a significant interaction term for age and the predictor. Converting to odds ratios, for employees in the 50–59 range (age = 0), for every one unit of increase in HIWPs, the odds of retirement intention decreases by 12.7% ($\exp(-.14) = .873$ and $100\% - 87.3\% = 12.7\%$). In contrast, for employees 60 or older (age = 1), every one unit increase in HIWPs is associated with a decrease in odds of retirement intention by 4.2% ($\exp(-.14 + .09) = .958$ and $100\% - 95.8\% = 4.2\%$). The marginal effects were estimated such that for employees aged between 50 and 59, HIWPs has an effect $b = -.030$ (95% CI = −.032, −.028) whereas for employees aged 60 or above, the effect is $b = -.007$ (95% CI = −.010, −.005). Figure 3 shows these effects. Therefore, Hypothesis 3 was supported.

Hypotheses 4 and 5 predicted moderating effects of educational level and managerial status. As shown in Model 4 and 5, the respective interaction terms were significant. Interpreting the results using odds ratios, for employees without a bachelor's degree (educational level = 0), every one unit of increase in HIWPs is associated with a decrease in the odds of retirement intention by 12.6% ($\exp(-.13) = .874$ and $100\% - 87.4\% = 12.6\%$). In contrast, for employees with a bachelor's degree or higher (education = 1), every one unit increase in HIWPs is associated with a decrease in odds of retirement intention by 10.0% ($\exp(-.13 + .03) = .900$ and $100\% - 90.0\% = 10.0\%$). Similarly, for every one unit increase in HIWPs, the decrease in odds of retirement intention was 12.2% for non-managerial employees, but was 7.2% for managerial employees. The marginal effects are plotted in Figure 4 and 5. Specifically, for employees without a bachelor's degree, the effect of HIWPs is $b = -.028$ (95% CI = −.0317, −.0245) whereas for employees with a bachelor's degree or higher, the effect is $b = -.021$ (95% CI = −.0243, −.0185). The two CIs do not overlap. For non-managerial employees, the effect of HIWPs is $b = -.027$ (95% CI = −.029, −.026) whereas for managerial employees, the effect is $b = -.016$ (95% CI = −.019, −.013). Therefore, both Hypotheses 4 and 5 were supported.

Hypothesis 6 predicted that the relationship between HIWPs and older workers' retirement intention becomes more negative as the economic recession endures over time. Model 6 and Model 7 provided highly similar results for

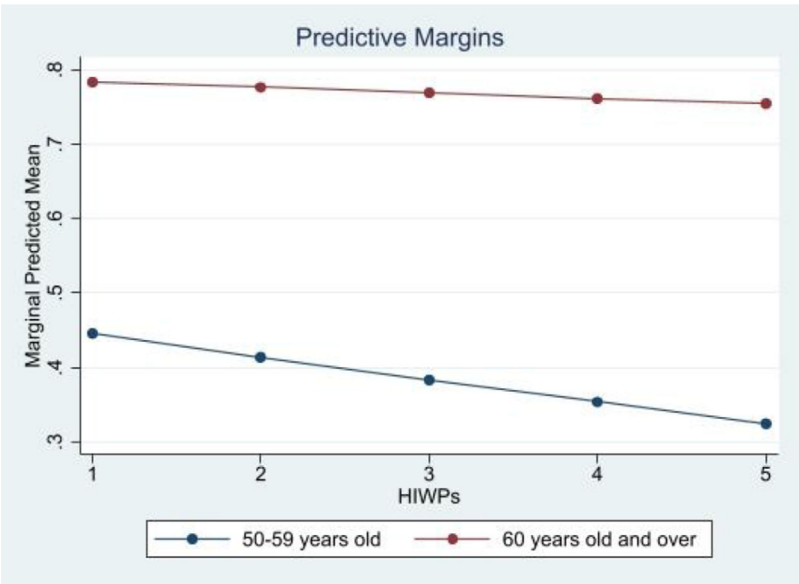


FIGURE 3 Moderating effect of age on the relationship between high-involvement work practices (HIWPs) and retirement intention

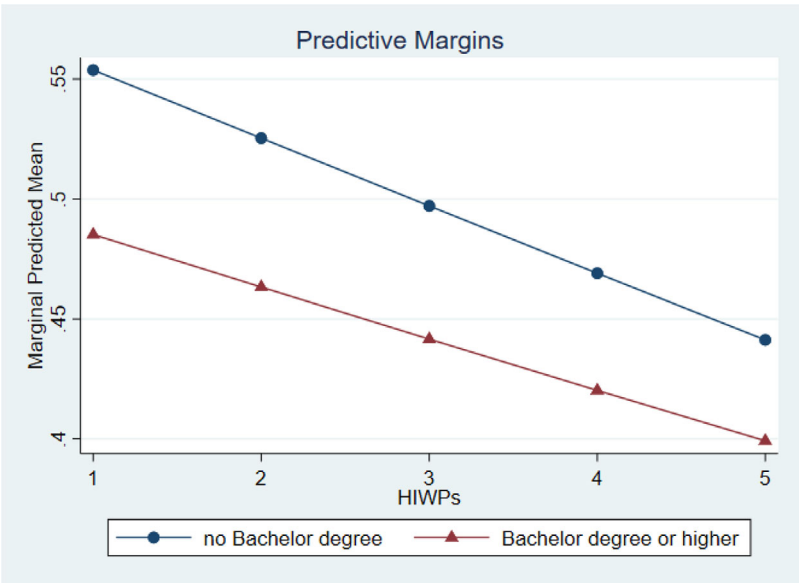


FIGURE 4 Moderating effect of education on the relationship between high-involvement work practices (HIWPs) and retirement intention

the interaction term between time after recession and HIWPs. Based on Model 6's interaction results, we interpreted the findings using odds ratios. For every one unit increase in HIWPs, the odds of retirement intention decreases by 9.5% in year 2008 ($\exp(-.10) = .905$ and $100\% - 90.5\% = 9.5\%$), 10.2% in year 2010 ($\exp(-.10 - .004 * 2) = .898$ and $100\% - 89.8\% = 10.2\%$), and 11.8% in year 2015 ($\exp(-.10 - .004 * 7) = .882$ and $100\% - 88.2\% = 11.8\%$). Moreover, we calculated the marginal effects of HIWPs at each available year and plot them in Figure 6. It is notable that Figure 6

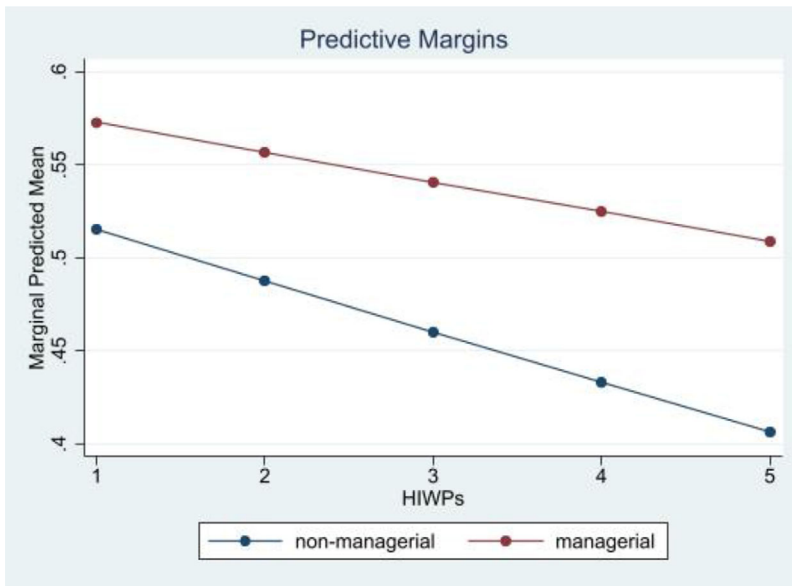


FIGURE 5 Moderating effect of managerial status on the relationship between high-involvement work Practices (HIWPs) and retirement intention

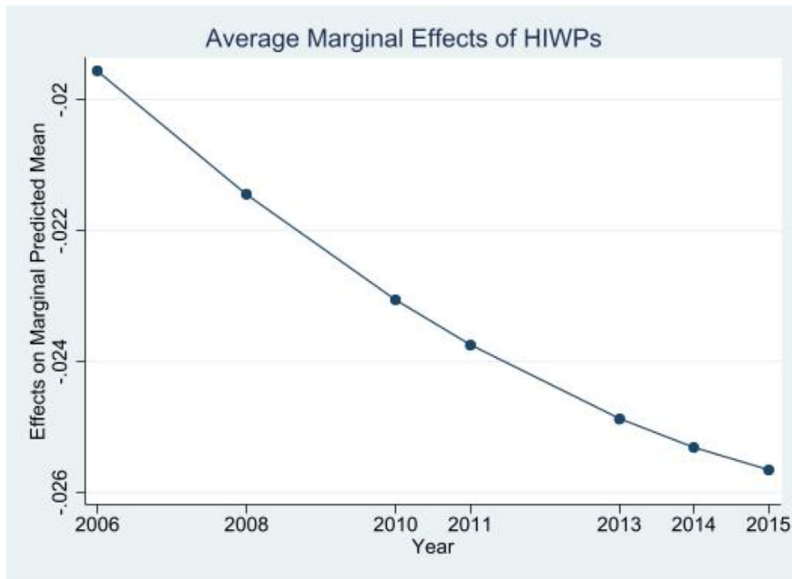


FIGURE 6 Moderating effect of time on the relationship between high-involvement work practices (HIWPs) and retirement intention

differs from other figures because the y-axis is not the model predicted logit; rather, Figure 6's y-axis is the "effect size" of HIWPS in predicting the log odds of retirement intention. As shown in Figure 6, the effect of HIWPS decreased over the years (2006, 2008, 2010, ... and 2015). Based on the significant interaction term and the pattern shown in Figure 6, Hypothesis 6 was supported.

4.2 | Robustness check

We conducted a series of supplementary analyses to ensure the robustness of our findings and included all the analysis results in the online supplementary materials. First, as explained above, we performed a robustness check using cross-classified mixed effect logit regression that considers both agency and “year” as crossed level-2 units under which employee observations are simultaneously nested. We allowed the effect of HIWPS to randomly vary across the “year” units and treated this as an alternative approach to testing the moderating effect of time after recession. In this analysis, we excluded education as a control/moderator variable because the resulting data has only 2 years, limiting the statistical power to test the effect of time after recession. This analysis is therefore parallel to Model 7 of Table 2 but it operationalized “time after recession” in a different way. As presented in Table S4 in the online supplementary material, the cross-classified analysis results showed highly similar interaction effect for time after recession. The model-estimated year-specific total effect (i.e., fixed effect plus random effect across year) of HIWPS became more negative over the years, such that the year-varying coefficients of HIWPs for predicting log odds of retirement intention is estimated at $-.080$ ($SE = .014, p = .00$) for year 2006, $-.108$ ($SE = .011, p = .00$) for year 2010, $-.122$ ($SE = .013, p = .00$) for year 2013, etc. This pattern of increasingly stronger negative effects over the years is similar to that depicted in Figure 6.

Second, previous research has considered economic status an important factor of retirement decisions (Beehr, 1986; Wang & Shultz, 2010). To ensure that our findings still hold after considering older workers’ economic status, we coded pay category from the FEVS data (only available in years 2006, 2008, 2010, and 2011) and used it as a control variable. As explained in the online supplementary material S5, we coded pay category as an ordinal variable with four levels based on the response options used by the FEVS. A higher value of this variable represents a higher pay grade. After adding the main effect of pay grade and its interaction effect with HIWPs, all of our findings and conclusions remain unchanged. It is notable that pay grade has a positive interaction coefficient itself, indicating that the HIWPs – retirement intention relationship is less negative for those with higher pay grade.

Third, because the FEVS collected both HIWPs and retirement intention from the same source, common method variance (CMV) could potentially influence our main-effect findings (Podsakoff et al., 2003). Although using different anchor points (i.e., 5-point Likert scale for HIWPs and Yes/No dichotomous scale for retirement intention) could reduce CMV bias (Podsakoff et al., 2013) and the interaction effects are not likely to be artifacts of CMV (Siemsen et al., 2010), we examined the HIWPs – retirement relationship at the agency level to triangulate our findings on this main-effect relationship. Specifically, we calculated the voluntary retirement rate among employees aged 50 or older for each agency from the FedScope Federal Workforce Data provided by the U.S. OPM. The voluntary retirement rate is the ratio of the total number of employees aged 50 or older who took voluntary retirement or early retirement to the total number of employees aged 50 or older of the agency in a given year. In addition, for each year we coded the total number of employees, the percentage of female older employees, the percentage of employees aged 60 or older for the agency, the percentage of older employees with bachelor’s degree or higher, and the percentage of older employees with managerial responsibilities of each agency and used them as time-varying control variables at the agency level analyses. We then matched the aggregated HIWPs scores with the newly coded agency-level variables using the agency names and assigned codes. In total, we obtained a sample of 1029 agency-year observations for 223 agencies. We found high ICC2 (.92 to .98) and high median rwg(j) (.83 to .85) values for HIWPs for each of the 7 years considered in our main study, suggesting that there were high interrater reliability and interrater agreement to support the aggregation of HIWPs from the individual level to the agency level (LeBreton & Senter, 2008). Because multiple years of observations are nested under agencies (e.g., the log rate of voluntary turnover has an ICC1 value of .57, $p = .00$), we conducted multilevel modeling analyses and used agency-mean centering for predictors and control variables at the level 1.

As shown in Tables S6 and S7 in the online supplementary material, we found that the aggregated HIWPs had a negative relationship with voluntary retirement rate beyond all control variables. The regression coefficient was $-.37$

($SE = .12$, $p = .00$) and $-.49$ ($SE = .12$, $p = .00$) when prior year's voluntary retirement rate was excluded and included in the analyses, respectively. Because the OPM typically launches FEVS in the middle of a year (e.g., 2015 FEVS was administered from April 27, 2015 to June 12, 2015⁹), the voluntary retirement rate, which includes the information for the whole year, can be considered a time-lagged outcome of HIWPs from an objective source. This finding suggests that the main effect of HIWPs on actual retirement decision (not just intention to retire) holds at the agency level.

5 | DISCUSSION

Retirement research has accumulated substantial knowledge about how older workers' retirement decisions relate to personal factors, work-related factors, and broader environmental factors (Kanfer et al., 2013; Wang & Shultz, 2010). However, there has been relatively fewer investigations of how those factors interact in affecting older workers' retirement decisions. We attempted to address this research need by using the P-E fit theory as an overarching framework. More specifically, we proposed a negative relationship between HIWPs and retirement intention, and we expected gender, age, educational level, managerial status, and external economic conditions to moderate the negative relationship. We used a large longitudinal dataset of federal government agency employees to test the hypotheses and found support for the hypothesized relationships. Our findings provide important theoretical and practical implications for understanding older workers' retirement decisions as discussed below.

5.1 | Theoretical implications

Our research makes several contributions to the retirement decisions literature. First, we incorporate strategic HRM research into the retirement decision literature by examining how HIWPs relate to older workers' retirement decisions. Although the systems perspective is well recognized in strategic HRM research, very few studies have adopted it to examine how HRM systems may influence older workers' outcomes including retirement decisions (Kooij et al., 2010, 2014; Kooij & van de Voorde, 2015). We argue that it is important to adopt a systems perspective to understand how work-related practices have links with older workers' decisions to retire. This is because workers simultaneously undergo influence from multiple HRM practices and examining individual practices in isolation cannot provide a full picture of how organizations can use HRM practices to manage older workers' retirement decisions. Using logic grounded in the P-E fit theory (Kristof-Brown et al., 2005) and psychological needs and motives relating to older workers (Kanfer et al., 2013), we theorize that HIWPs can help fulfill older workers' work needs and thus reduce their retirement intention. Our findings support this theoretical argument and offer a new direction for future research on retirement decisions.

Second, we provide a more nuanced understanding of older workers' retirement decisions by examining the moderating effects of individual characteristics and external economic conditions on the relationship of HIWPs and retirement intention. As Wang and Shultz (2010) pointed out, most studies failed to capture how variables from different perspectives (personal, organizational, and societal) interact in influencing retirement decisions, which constitutes an "important conceptual gap" (Wang & Shultz, 2010, p. 195). Our research thus helps to fill this gap. Consistent with the P-E fit framework, we found that HIWPs are more likely to retain older employees at work when they are male, are relatively younger, have low educational levels, and have no managerial status. Even though the specific reasons for their moderating roles may vary, a common underlying logic is that HIWPs are more likely to fulfill work role expectations or meet the needs of older workers with these characteristics. For example, work role is more salient for both male older workers and those in their 50s than for female older workers and those aged 60 or over. Therefore, the perceived HIWPs may fit their work role expectations and reduce their retirement intention. Moreover, older workers with low education and no managerial status typically work on demanding jobs and experience more economic stress than those with high education and managerial status. In this case, they are more likely to value the job opportunities

with HIWPs. These findings advance the literature beyond studies focusing only on main effects and show that HIWPs are more likely to keep some kinds of older workers more interested in continuing employment with their organizations than others.

Moreover, we explore the moderating effect of economic condition on the relationship between HIWPs and retirement intention by examining how this relationship changed over time before and after the Great Recession. Although researchers have recognized the important role of social and economic conditions on older workers' retirement decisions (Kanfer et al., 2013; Wang & Shultz, 2010), few studies have directly examined the environmental effects. In our research, we used time as a variable to reflect the external economic conditions relating to the Great Recession and found that the relationship between HIWPs and retirement decisions has become more negative since the Great Recession. This finding indicates that retirement decision-making is a dynamic process in which older workers may integrate information from both their workplaces and the external environment into their retirement decisions.

5.2 | Practical implications

One of the practical implications of our results is the way organizations can enable older workers to continue to work. Our findings show that for every one unit increase in HIWPs, the odds of retirement (versus non-retirement) decreases by 11% on average, suggesting that implementing HIWPs is an important way to retain older workers. More specifically, organizations can help older workers to enhance their skills and abilities, recognize and reward their contributions, and involve them in decision-making and give them job control and autonomy. Our findings also suggest that HIWPs are less likely to influence the retirement decisions of female older workers and those in their 60s, those with high educational levels, and those with managerial status. Especially, HIWPs play a very weak role in affecting the retirement intention of female older workers and those in their 60s. Organizations may consider using other ways to motivate and retain those employees. In addition, our results suggest that it has become more effective to use HIWPs to retain older workers during economic recessions, which is highly relevant to the current economic situation due to COVID-19. The stronger negative relationship between HIWPs and retirement intention suggests that organizations need to invest more in HIWPs to retain older workers. Otherwise, the low level of HIWPs may increase the odds of retirement of older workers. Perhaps, older workers may find it difficult to deal with the economic challenges while working on the low HIWPs jobs. Therefore, they may consider retiring from their current jobs and searching for other job opportunities (e.g., bridge employment).

5.3 | Limitations and future directions

The large longitudinal survey dataset we used in current research offered several advantages. For example, the large sample size allowed us to find reliable results with greater precision and power. In addition, the dataset across multiple years allowed us to examine how the main relationship between HIWPs and retirement intention changed over time. However, there are several limitations to our results. First, as the OPM collected the data, all the participants were federal government agency employees. This may limit the generalizability of our findings. It is possible that older workers in other types of organizations (e.g., private firms and non-profit organizations) have different motivations and expectations towards the end of their careers and thus have different reactions to HIWPs. Therefore, we encourage future researchers to replicate our results by using samples that are more diverse.

Second, we used the questions included in the FEVS to measure HIWPs. Even though our HIWPs questions are similar to those in previous HRM systems studies (e.g., Liao et al., 2009; Zacharatos et al., 2005), they are not directly adapted from a well-established measure. Therefore, we expect future research to replicate our findings by measuring HIWPs with a validated scale. In addition, researchers have suggested that older workers may experience different types of HRM systems used by their organizations (Kooij et al., 2010, 2014). Future research can explore whether

different types of HRM systems may provide differentiated explanations for older workers' retirement decisions and how older workers react to multiple types of HRM systems differently depending on their individual characteristics. Researchers can also examine other practices (e.g., family friendly practices) as antecedents of retirement decisions in the future.

Third, even though the survey data are trackable over time at the agency level, the survey was cross-sectional in each year. Therefore, our findings could only indicate how older workers' perceptions of HIWPs are related to their short-term retirement intentions and how the hypothesized moderators influence this relationship. However, retirement scholars have suggested that retirement decision-making is a long-term process (Feldman & Beehr, 2011; Wang, 2007). We encourage future research to collect longitudinal data at the individual level to obtain a more complete understanding of how HRM systems influence older workers' retirement intention over time.

Fourth, prior research has suggested other variables that may influence older workers' retirement decisions but that our data did not include, such as individual dispositions, social support, marital status, and health (e.g., Barnes-Farrell, 2003; Beehr, 1986; Wang & Shultz, 2010). Therefore, we encourage scholars to extend our research findings by examining the moderating effects of other variables. In addition, we used time as a proxy measure of economic conditions before and after the Great Recession. However, it is possible that other time-dependent variables (e.g., social norms about retirement timing) can also help to explain the strength of the increase in the negative relationship between HIWPs and retirement intention. We hope future researchers can measure the macro-level social, economic, and political variables directly and examine whether they can alter the relationship between HRM systems and retirement decisions.

Fifth, because FEVSs did not collect the age information after 2016, we were not able to examine how HIWPs are related to older workers' retirement intention after 2016. It is possible that federal government employees' work needs and motivation might have also been influenced by the new government administration from 2017 to 2020. Therefore, we encourage researchers to explore how the administration transition may influence the relationship between HIWPs and older workers' retirement intention in the future.

6 | CONCLUSION

Understanding and predicting retirement decisions is important for organizations to retain older workers in the workplace. Based on a large longitudinal survey dataset of older workers of federal government agencies, our results suggest that the use of HIWPs has a negative relationship with older workers' retirement intention and that both individual characteristics such as gender, age, educational level, and managerial status, and external economic conditions reflected by the time passed since the Great Recession moderate this relationship. Our study highlights the importance of examining the systems of HRM practices as an antecedent of retirement decisions. We also investigate the intriguing, yet overlooked, interactions between work-related factors and personal and environmental factors on older workers' retirement decisions. We hope our findings can encourage more researchers to adopt the P-E fit framework to understand retirement decisions in the future.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ENDNOTES

¹ <https://www.opm.gov/fevs/reports/data-reports>

² Data can be downloaded from <https://www.opm.gov/fevs/>.

³ https://assets.aarp.org/www.aarp.org/_articles/money/employers/phased_retirement.pdf

⁴ <https://www.opm.gov/retirement-services/publications-forms/pamphlets/ri90-1.pdf>

⁵ <https://www.usa.gov/benefits-for-federal-employees>

⁶ <https://www.opm.gov/fevs/about/>

⁷ The data collection was approved by the institutional review board (IRB approval#: 2021E0198; protocol title: Validation of Human Resource Management Systems Measure) at The Ohio State University.

⁸ We also coded managerial status into three levels (i.e., 0 = non-supervisor/team leader; 1 = supervisor; 2 = manager/executive) when such information is available in years 2006, 2008, 2010, and 2011. We found similar results of the moderating effect of managerial status using this alternative measure of managerial status. These results are available upon request.

⁹ This information was based on 2015 FEVS Results Technical Report available from https://www.opm.gov/fevs/archive/2015FILES/2015_OPM_Technical_Report.pdf.

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SUPPORTING INFORMATION

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APPENDIX

Items of high-involvement work practices

Staffing ($\alpha = .74$)

1. My work unit is able to recruit people with the right skills.
2. The skill level in my work unit has improved in the past year.
3. The workforce has the job-relevant knowledge and skills necessary to accomplish organizational goals.

Training and Development ($\alpha = .76$)

4. I am given a real opportunity to improve my skills in my organization.
5. My training needs are assessed.

Performance Management and Appraisal ($\alpha = .72$)

6. My performance appraisal is a fair reflection of my performance.
7. In my most recent performance appraisal, I understood what I had to do to be rated at different performance levels (for example, Fully Successful, Outstanding).
8. In my work unit, steps are taken to deal with a poor performer who cannot or will not improve.

Compensation and Benefits ($\alpha = .93$)

9. Promotions in my work unit are based on merit.
10. In my work unit, differences in performance are recognized in a meaningful way.

11. Awards in my work unit depend on how well employees perform their jobs.
12. Employees are recognized for providing high quality products and services.
13. Creativity and innovation are rewarded.
14. Pay raises depend on how well employees perform their jobs.

Job Design ($\alpha = .73$)

15. I have sufficient resources (for example, people, materials, budget) to get my job done.
16. My workload is reasonable.
17. My talents are used well in the workplace.
18. The work I do is important.
19. Physical conditions (for example, noise level, temperature, lighting, cleanliness in the workplace) allow employees to perform their jobs well.
20. I am held accountable for achieving results.

Participation and Autonomy ($\alpha = .83$)

21. I feel encouraged to come up with new and better ways of doing things.
22. My work gives me a feeling of personal accomplishment.
23. I can disclose a suspected violation of any law, rule or regulation without fear of reprisal.
24. The people I work with cooperate to get the job done.
25. Employees have a feeling of personal empowerment with respect to work processes.

Information Sharing ($\alpha = .76$)

26. I have enough information to do my job well.
27. I know what is expected of me on the job.
28. I know how my work relates to the agency's goals and priorities.
29. Employees in my work unit share job knowledge with each other.