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What's age got to do with it? A primer and review of the workplace aging literature

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Abstract

As populations in the United States and around the world continue to age, it has become increasingly important to understand how organizations can create working conditions that attract, support, and retain workers across the lifespan. In this paper, we provide a primer on current theory and research on age in the workplace. We briefly describe lifespan theories that have guided recent advances in the field, discuss the implications of these theories for an aging workforce, and provide an overview of current research streams that address the work and nonwork factors affecting performance, well-being, and workforce participation among mature workers. Based on this review, we provide recommendations for future research and practice.

KEYWORDS

age differences at work, aging workforce, successful aging at work

1 | INTRODUCTION

As populations in the United States and around the world continue to age, HR scholars and practitioners have focused increasing attention on the policies and practices that promote successful aging in the workplace. Indeed, until the pandemic in spring 2020, workers aged 65 and older represented the fastest growing segment of the

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workforce, as many mature workers delayed retirement or returned to the workforce following retirement (Toosi & Torpey, 2017). Although the gradual exit of the “baby boomer” cohort from the workforce had been long anticipated, the pandemic quickened the speed of exits and retirements among older workers, particularly among part-time workers, low-wage earners, women, and employees in underrepresented groups (Davis, 2021). Indeed, acute worker shortages found in many industries today can be attributed in part to the decline in employment among workers in the 55+ age cohort brought about by the pandemic and continuing age bias when (re)hiring older workers (Bui et al., 2020). Whether organizations can create working conditions, policies, and practices that attract, support, and retain this growing group of workers remains a question of great practical and societal importance.

Fortunately, there has been substantial progress in understanding the dynamics of adult development and how complex forces interact with work and nonwork factors to impact performance, well-being, and workforce participation among older individuals. Performance-centric perspectives, popular in organizational science through much of the 20th century, emphasize worker differences in terms of knowledge, skills, and abilities and their effects on organizational productivity without regard to age-related changes across the lifespan. In contrast, modern approaches adopt a more agentic and person-centric perspective: They highlight employee change over time and the ways in which intra-individual changes influence how employees navigate job tasks and careers in the context of a transforming employment landscape (see e.g., Zacher & Rudolph, 2022a).

The dynamic conceptualization of aging workers has broadened theory and research on work and aging in three ways. First, as delineated in lifespan development theories and research, chronological age is now viewed not as a precise metric but rather as an inexact proxy for employee changes that occur at different rates as a result of biology, cognition, social roles and transitions, work experiences, and normative influences (Baltes et al., 1980; Carstensen et al., 1999; Kanfer & Ackerman, 2004). Practices such as job crafting (i.e., the self-initiated changes that individuals make in their work to improve their person–job fit; Wrzesniewski & Dutton, 2001), flexible scheduling, and bridge retirement allow for work personalization based on changes in the employee’s capacities and motives (Bal et al., 2014) and can occur at different times across the employee’s working lifetime. Second, the successful aging at work paradigm has emerged as a complementary stream of theory and research that highlights the impacts of multiform aging processes as they manifest in the workplace (Zacher, 2014; Zacher et al., 2018a). Research in this paradigm provides evidence for the importance of socio-cultural, organizational, and work design factors as they affect job attitudes and engagement (Zacher & Rudolph, 2022b). Third, a steadily growing body of theory and research has focused on how age bias develops and negatively impacts mature workers’ engagement, wellbeing, and continued workforce participation (Finkelstein et al., 2018).

The goal of *Personnel Psychology*’s special issue on age and age differences in the workplace is to highlight empirical work that explores important phenomena related to age and work. In this review that also functions as an introduction to the special issue, we place this new empirical work in the context of prior research on workplace aging and provide a primer of relevant theory and research progress. Our review is organized as follows. First, we briefly describe the lifespan perspective and related concepts and theories on the nature of human development that have guided recent advances in the field. Second, we discuss the implications of these theories for important work outcomes, such as successful aging at work, performance, work ability, and well-being of mature workers, and their career transitions and retirement. We also provide an overview of several research streams on age at work. We conclude with a brief agenda for research and practice. In that section, we distinguish practical implications and future research needs that occur primarily at the level of individual jobs (job crafting and job design), at the level of the work group or unit (teams/groups and age stereotypes and discrimination), and at the level of organizational policy and practice (training and development, and HR strategies and integrated interventions). Throughout our review, we highlight research on workplace aging that has been published over the long history of *Personnel Psychology*, including the five articles composing this special issue. Given space limitations, our overview is necessarily brief, but we point interested readers to seminal reviews when appropriate.

2 | LIFESPAN DEVELOPMENT: THEORIES AND CONCEPTS

In contrast to life-stage (Erikson, 1950) and career stage (Super, 1953) models that describe discrete phases of development, lifespan development approaches frame aging as a continuous process of growth and decline (Baltes et al., 1980). Lifespan development perspectives recognize the variability in aging such that one person at age 50 might resemble another person aged 35 in terms of ability and motivation, while another might resemble a 65-year-old (Hertzog et al., 2008). As such, an important implication of the lifespan development perspective relevant for workplace aging is that—despite specific age-based protections for older workers in many countries—there is no specific age at which a worker becomes an “older worker.” Rather, the exact time at which the transition to being an older worker occurs will vary as a function of the person’s development, the requirements of the job, and the norms of the organization, industry, and country in which a worker resides.

Lifespan development approaches highlight three distinct, but related classes of influence on individual development over time. First, *normative age-graded influences* refer to biological and environmental factors that influence how people age (Baltes et al., 1980). Biological factors include age-related changes in physical and cognitive abilities, motivation, dispositional tendencies, and personality traits. Although these personal attributes follow an age-graded trajectory, it is important to note that there are important inter-individual differences in these variables. Arguably the most extensively studied of these age-graded personal attributes are cognitive abilities and motivation, which will be discussed below. In contrast to personal attributes, normative, age-graded environmental factors typically refer to cultural events that tend to happen around the same developmental period, such as marriage, the confluence of work–family demands at mid-career/mid-life, and retirement during late-career/relatively older ages.

Second, *normative history-graded influences* refer to influences on development that arise from or are associated with specific historical time periods (e.g., wars, famines, global recessions). These influences are thought to be particularly important when experienced in late adolescence or early adulthood given the criticality of these years for identity formation (National Academies of Sciences, Engineering & Medicine, 2020). Crises like wars and pandemics (e.g., COVID-19) during these formative periods can delay work socialization and reduce work opportunities and/or salaries, that in turn can affect long-term career growth (Härkönen & Bihagen, 2011). Acknowledging the effects of these history-graded influences (which are essentially cohort effects) is not the same as endorsing the concept of “generations.” That is, generational approaches falsely consider everyone born within a certain broad period and thus within a certain broad age group as having similar attitudes, attributes, and behaviors (e.g., Baby Boomers, GenX, Millennials, and GenZ). In addition, generational categories do not recognize that the same event (e.g., COVID19 pandemic) will affect people differently depending on their location in the world, the resources at their disposal, and myriad other factors. Using generational categories in the workplace is not recommended as these categories can give rise to age-related stereotypes and biases that can lead to discrimination (National Academies of Sciences, Engineering & Medicine, 2020). By contrast, the lifespan development perspective acknowledges that the impact of historical events will vary depending on an individual’s attributes and situation (Rudolph & Zacher, 2020).

Third, *non-normative influences* are defined as idiosyncratic, often random or unexpected, but significant life events that are experienced differently by different people. These influences may be positive, such as experiencing a strong sense of community during childhood, or negative, such as suffering a severe illness or the death of a spouse (Wrosch & Freund, 2001). In the context of workplace aging, a chance meeting with an old friend who makes a job offer, or the experience of being robbed while working may exert a unique, non-normative influence on a person’s career trajectory and an employee’s work outcomes and well-being.

It is important to note that normative age-graded, normative history-graded, and non-normative influences on lifespan development are intertwined (Baltes et al., 1980). For example, normative age-graded changes in cognitive abilities and motivation may affect a person’s estimation of how much effort is needed to look for work after pandemic-related job loss, or to reskill for a new job opportunity that pops up (Kanfer & Ackerman, 2004).

2.1 | Cognitive abilities and lifespan development

There are an array of theories related to the structure, growth, and decline of cognitive abilities over the lifespan (see Carroll, 1993; Salthouse, 2010), but research in organizational sciences has tended to focus on general mental ability (GMA) as the main determinant of job and training performance (e.g., Ree et al., 1994). This is unfortunate because abilities change over the lifespan in ways that are not always fully captured by measures of GMA. As such, a lifespan development perspective is better served by a more in-depth consideration of cognitive aging (Salthouse, 2010). Here we focus on two broad abilities most generally relevant to aging and workplace performance and learning: fluid abilities and crystallized abilities. *Fluid abilities* (also known as reasoning abilities) are related to solving novel problems and are most highly related to cognitive processing speed and memory. These abilities decline with age starting in early adulthood and continue to slowly decline throughout the lifespan (Salthouse, 2010). By contrast, *crystallized abilities* (also known as knowledge abilities such as those acquired through education and experience) tend to remain stable and, depending on how they are measured, can even show growth throughout the adult lifespan at least through the working years (Ackerman, 2000). For this reason, age may have no effect on core task performance (Ng & Feldman, 2008), an idea we revisit below.

2.2 | Motivation and lifespan development

A lifespan perspective on motivation recognizes multiple age-related determinants that can affect what choices mature workers make about employment and the strength of their attention and effort to job tasks during work. As discussed above, declines in fluid intellectual abilities (e.g., reasoning; short-term memory) may make some complex tasks more difficult and be associated with lower self-efficacy for new skill training (Davenport et al., 2022; Kanfer & Ackerman, 2004). Across the lifespan, however, normative age-related changes in dispositions/personality traits (Roberts et al., 2006), goals, and motives (Ebner et al., 2006) may contribute to stronger motivation in the workplace and/or to longer working life (Kanfer et al., 2013). New entrants to IT work, for example, may focus on jobs that provide opportunities for new skill learning as a means of advancing one's career, whereas midlife workers may mostly desire jobs that allow for the opportunity to teach others (generativity motives). In later adulthood, satisfaction of intrinsic motives related to self-determination and using skills to one's full potential may loom large in the decision to delay retirement. As such, the impacts of age-graded changes in cognitive abilities on worker decision-making, behavior, and attitudes must be considered in the context of the whole person—the totality of their personal resources (e.g., knowledge, skills, traits, goals, and motives) and the work and life context in which they operate.

2.3 | Integrative theories within the lifespan development perspective

Two theories within the lifespan developmental perspective of particular relevance to organizational science integrate age-related changes in ability and motivation: selection, optimization, and compensation (SOC) theory (e.g., Baltes, 1987) and socioemotional selectivity theory (SST; e.g., Carstensen et al., 1999). A brief review of these formulations below provides the foundation for understanding the concept of successful aging of workers, discussed in the next section.

2.3.1 | Selection, optimization, and compensation (SOC) theory

This broad lifespan development theory (Baltes & Baltes, 1990; Baltes et al., 1999) and the body of accumulating evidence for it provides the basis for several modern theories of motivational change across the lifespan (e.g., Carstensen

et al., 1999; Heckhausen et al., 2010; Rauvola & Rudolph, 2022). In SOC, selection, optimization, and compensation strategies direct goal selection and self-regulation over the lifespan. *Selection* involves goal choice. Across the lifespan, individuals are posited to develop narrower goals that more closely align with established expertise. *Optimization* refers to focus and self-regulatory strategies deployed during task engagement. *Compensation* pertains to strategies that seek to make up for age-related changes and allow individuals to maintain successful performance and achieve desired levels of functioning (Baltes et al., 1999). In the context of workforce aging, SOC theory predicts, for example, that workers will narrow their goals in the direction of already established areas of expertise (selection) and maintain motivation in the face of difficulty by relying on self-efficacy judgments developed in previous mastery experiences (optimization). Goal striving also involves seeking assistance from others, and optimizing performance by arranging one's environment to support personal strengths (compensation). As workers age, there is also a developmental change in the type of goal selected, away from growth goals and toward maintenance and loss-prevention goals (Ebner et al., 2006). In a meta-analysis of work-related motives and goals, Kooij et al. (2011) found a negative relationship between age and extrinsic and growth motives, and a positive age-related relationship for intrinsic motives. Taken together, SOC theories highlight the importance of worker control over job goals and/or the work context as a means of sustaining motivation at work by maximizing person-job fit.

2.3.2 | Socioemotional selectivity theory (SST)

A related formulation by Carstensen and her colleagues (Carstensen, 1993; Carstensen & Lang, 1996; Carstensen et al., 1999; Giasson et al., 2019) is SST. According to SST, motives and goals shift through the lifespan as a function of perceptions of time left in life (*future time perspective* or *FTP*). At younger ages, future time perspective is expansive, and people will gravitate toward achievement goals that focus on building a repertoire of experiences to support development. As people age, however, time perspectives shorten and goals tend to shift away from longer-term goals related to achievement and knowledge/skill acquisition and toward shorter-term, socio-emotional goals (Carstensen et al., 1999).

Findings by Baltes et al. (2014) support the notion that future time perspective affects regulatory focus, which in turn affects the differential use of SOC strategies. Meta-analytic findings of antecedent and outcome relations with future time perspective by Kooij et al. (2018) and occupational future time perspective (time in an employment context) by Rudolph et al. (2018) support the negative association of these variables with age and their positive relationship with work and health outcomes. SST has also been used to explain a number of age differences at work. For example, SST can explain age differences in feedback orientation, specifically, that older workers are more oriented towards feedback that helps them understand the social situation, whereas younger workers are more oriented towards the utility of feedback in their work (Wang et al., 2015). SST can also explain how, in knowledge transfer, younger workers' goal priorities are more oriented towards knowledge receiving, whereas older workers' goal priorities are more oriented towards partner knowledge receiving (Burmeister et al., 2020). Recently, SST and age differences in future time perspective have been used to explain how older workers (i.e., with a shorter time perspective) have a stronger relationship between contact quality and empathic concern (Fasbender et al., 2020). Lifespan theories such as SOC theory and SST underscore the importance of the work context in motivation and self-regulation. Throughout the remaining sections, we discuss implications of these theories for a better understanding of the differential impacts that aging as well as changing job demands, work conditions, social context, training, and organizational culture may have on older worker motivation, behavior, and well-being.

3 | IMPLICATIONS OF AGE FOR RELEVANT WORK OUTCOMES

In this section, we review key findings in the aging workforce literature: successful aging at work, job performance, work ability, and well-being.

3.1 | Successful aging at work

Considering the age-related and environmental changes that most employees experience, an important outcome for mature workers is the concept of *successful aging at work*. Abraham and Hansson (1995) first introduced this concept to challenge the stereotypical view of universal age-related decline and examined strategies that mature workers use to successfully adapt to developmental changes and stay successful in the workplace. They defined successful aging at work as (1) competency maintenance compared to same-aged peers and (2) goal attainment in performance domains that workers consider to be important.

Three prominent conceptualizations of successful aging at work have emerged since then (Zacher & Rudolph, 2017). First, Robson et al. (2006; see also Cheung & Wu, 2013a, 2013b; Robson & Hansson, 2007) proposed five criteria related to workers' self-perceived successful aging at work, which they based on a survey of older workers: adaptability and health, positive relationships, occupational growth, personal security, and continued focus on and achievement of personal goals. Second, Zacher (2015) proposed that successful aging at work refers to positive deviations from the average intra-individual, age-related trajectory of favorable subjective and objective work outcomes across the working lifespan. Third, Kooij (2015) conceptualized successful aging at work as maintaining health, motivation, and work ability in present and future work lives and emphasized that mature workers play an active role in these processes.

Although there is still debate about how to conceptualize successful aging at work (Zacher, 2015), there is growing agreement that mature workers play an active role in successful aging at work (see also Zacher & Rudolph, 2017). This active role involves self-regulatory behaviors aimed at optimizing the fit between an individual and their (work) environment by actively creating and reacting to this environment (Heckhausen et al., 2010; Jopp & Smith, 2006). Relatedly, there is an emerging consensus that (continuous) *person-environment fit* plays a crucial role in successful aging at work (De Vos et al., 2018; Van der Klink et al., 2016). Person-environment fit refers both to a fit between needs and values of the individual employee and what the organization offers, and to a fit between the knowledge, skills, and abilities of the individual employee and what the organization and job require (Edwards, 1991). When the work environment requires mature workers to use their knowledge, skills, and abilities, they are more likely to be able to continue working (Beier, Torres, Fisher, et al., 2020). In addition, older workers are more likely to want to work longer when the work environment fulfills salient motives. Furthermore, most researchers agree that successful aging at work is a multilevel and multi-actor issue that requires study at the individual, team, organizational, work sector, and national levels (Kooij et al., 2020). This is because proactive actions and adaptation should occur at all levels of the organization (e.g., job, team, organization) and at the societal level (e.g., involving governments or trade unions) in order to combat age discrimination and to improve the situation of older workers. For example, Shao et al. (2022; this special issue) demonstrated that health expenditure per capita mitigates the negative effects of age on sickness absences and a number of physical health issues.

Finally, researchers agree that successful aging at work involves high levels of ability and motivation to continue working throughout the working lifespan (Kooij et al., 2020). *Ability to continue working* refers to being physically and psychologically capable of working, indicated by job performance and work ability (defined as a person's ability to meet the mental and physical demands of their work; e.g., Ilmarinen et al., 1991). *Motivation to continue working* refers to wanting to work (Kanfer et al., 2013), indicated by worker well-being. We review the literature on age and these important worker outcomes (i.e., job performance, work ability, and well-being) below, after highlighting some suggestions for future research.

Despite the significant progress made on the conceptualization of successful aging at work, many questions remain. Most pressing is the fact that many studies on successful aging at work treat older workers as a homogeneous group. However, we know that older workers are a very heterogeneous group (e.g., Light et al., 1996): Older workers with the same chronological age may differ in terms of occupational future time perspective (employees' perceptions of their future in the employment context; Zacher & Frese, 2009), health status, and work centrality, and as a result,

their attitudes and behaviors at work develop differently over time. To address this, person-centered approaches are recommended to identify subgroups of (un)successful older workers (e.g., Beier, Lopilato, et al., 2018). Such studies might increase our understanding of why some older workers age more successfully than others and aid in developing interventions that help vulnerable older workers to age successfully at work.

3.2 | Job performance

Results from multiple meta-analytic studies show no significant relationship between age and core task performance (McEvoy & Cascio, 1989; Ng & Feldman, 2008; Sturman, 2003; Waldman & Avolio, 1986). This may seem somewhat surprising given the significant relationship between abilities and job performance (Hunter & Hunter, 1984) and the negative relationship between fluid abilities and age (Salthouse, 2010). Recall, however, that age-related declines in fluid abilities are offset by stability/gains in crystallized abilities. Thus, age-related declines in performance would not be expected for jobs that require performance of well-learned tasks. Moreover, only a few jobs have high fluid cognitive ability demands, and these jobs tend to also have high crystallized ability demands. For example, the performance of air traffic controllers benefits from both the ability to handle unforeseen problems and knowledge of a particular sector (Beier, Torres, & Beal, 2020). Despite multiple studies on the relationship between job performance and age, there is still much to be learned about how fluid and crystallized abilities mediate the relationship between age and job performance. For example, studies on the measurement of job knowledge—an important influence of job performance for older workers—is lacking (Beier, Young, et al., 2018) perhaps due to an outsized focus on GMA in organizational science (Ree et al., 1994). Moreover, although tools describing job demands and attributes—such as the Occupational Information Network (O*NET; Peterson et al., 1999)—have been used to identify fluid and crystallized ability demands for specific jobs (Beier, Torres, & Beal, 2020), these provide only coarse assessments of these abilities. Thus, these tools do not permit the type of nuanced analysis needed to understand how idiosyncratic knowledge profiles match job-specific demands. As a remedy, some researchers have proposed a whole-person ability assessment that aligns with specific ability job demands to identify areas of overlap and future development (see Ackerman & Kanfer, 2020), but these types of assessments have yet to be explored in research or practice.

Meta-analyses have also shown that age has a slight positive relationship with performance dimensions such as organizational citizenship behaviors (OCBs) and safety behavior, and a negative relationship with counterproductive work behavior (CWBs; Ng & Feldman, 2008). Although the mediating mechanisms for these performance differences are not yet well understood and need further study, they may include age-related changes in personality (Roberts et al., 2006) or emotion regulation (Urry & Gross, 2010).

3.3 | Work ability

The concept of work ability (a person's ability or perceived ability to meet their job requirements; e.g., Ilmarinen et al., 1991) was developed in the occupational medicine literature as a predictor of disability and retirement. Recently, the work ability concept has seen increased interest in the organizational sciences and older worker literature (e.g., Cadiz et al., 2019; McGonagle et al., 2015). A recent meta-analysis (Brady et al., 2020) used the job-demands resources model (Bakker & Demerouti, 2007) to examine the antecedents and outcomes of work ability. They found that age had a negative but small relationship with work ability. That stronger negative relationships have not been found between age and work ability may be partly explained by the healthy worker effect in which the unhealthiest workers may have already withdrawn from the workforce. As expected, work ability was related to both retirement intentions and retirement behavior, a confirmation of the relevance of work ability in the aging workforce literature.

3.4 | Worker well-being

The relationship between age and well-being (e.g., job satisfaction, health) has also been of interest to organizational psychologists for some time. In fact, one early study in *Personnel Psychology* (Bernberg, 1954) observed the association between employee morale and age. Two meta-analyses are helpful to summarize much of the current literature on age and well-being. Ng and Feldman (2010) found small-to-moderate differences between older and younger workers on most job attitude measures, including psychosocial well-being measures such as job satisfaction, role conflict, role ambiguity, and commitment, with older workers having more positive well-being outcomes than their younger counterparts. Ng and Feldman attributed these differences to the positive emotions experienced by older people as posited by SST theory (Carstensen et al., 1999). Other mechanisms that may explain these findings include changes in personality (e.g., Roberts et al., 2006) and increased person–job fit over the lifespan.

With regard to physical health, another meta-analysis (Ng & Feldman, 2013) found that whereas clinical measures of physical health (e.g., blood pressure) worsen with age, self-reported physical and mental health do not. The authors postulated that this may again be explained by the positive emotions experienced by older people as proposed by SST, or by the adaptive mechanisms used by older people as explained by SOC theory (Baltes & Baltes, 1990) to cope with negative changes in physical health.

One of the most challenging issues in the field pertains to understanding the mediating processes by which age is associated with work-related well-being outcomes. Some studies (e.g., Yaldiz et al., 2018) suggest that when resources (e.g., support from leaders, fair treatment) are low, older workers experience greater stress than their younger counterparts. Zacher and Rudolph (2022a) argue that both strengths (e.g., emotion regulation) and vulnerabilities (e.g., physical disease) associated with age may explain the complex relationships between age and well-being measures, such as satisfaction and emotional exhaustion. In this special issue, Shao et al. (2022) take a similar but elaborated approach to understanding the relationship between age and sickness absence, examining two opposing processes: A negative effect of age on health and sickness absence; and a positive relation between age and work engagement (leading to reduced sickness absence). Examining broader contextual antecedents, they found that countries' health care spending reduced the negative effects of age on health and sickness absence; and that countries' labor participation rate enhanced the positive relationship between age and work engagement and reduced sickness absence. Clearly, understanding these societal-level pathways between chronological age and employee well-being is key to developing interventions and practices that support workers across the lifespan.

4 | LATE CAREER TRANSITIONS AND RETIREMENT

Research on late-life career transitions, including the transition to retirement, has grown exponentially since early calls for research on the topic were published in *Personnel Psychology* (Beehr, 1986; Payne, 1953). An extensive review of career transition research is beyond the scope of this paper (see Wang & Shi, 2014); here we focus on two overarching themes. First, late-life career transitions are qualitatively different from transitions that happen at earlier ages. That is, all other things equal, the factors that influence a young adult (with an expansive career trajectory) to leave a job are often not the same as the factors that influence an older employee (Adams & Beehr, 1998). Second, career transitions and retirement decisions in later life often involve a different weighting of individual and environmental factors (e.g., motivation, financial considerations, health) that affect decision-making, and this variability is reflected in the myriad ways workers retire, including bridge employment, volunteering, and complete post-retirement return to work arrangements. Although complexity in late-career transitions is sometimes considered a function of modern times, early research suggests that even in the 1950s, when people often worked and retired from a single company, many retirees continued working either part- or full-time after retirement (Payne, 1953).

Late career transitions run the gamut, from turnover and full retirement to bridge employment (employment after a person leaves a full-time position but before a complete exit from the workforce; Kim & Feldman, 2000) to encore careers (reentry into the workforce into a second career post-retirement; Boveda & Metz, 2016) and gig work (a temporary contract between a self-employed worker and clients; Spreitzer et al., 2017). Gig work can involve the performance of tasks associated with one's previous work role or involve new performance tasks. For example, a high school teacher might tutor students privately, or begin a new career as a baker's assistant. The initiation of a transition process is a function of both personal (e.g., preference for autonomy) and environmental (e.g., voluntary or involuntary turnover/retirement) factors. The direction of a transition pathway at later ages will further importantly depend on worker health, knowledge, skills, experience, and wealth.

Career transitions are possible at any point in the career, but retirement—that is, a complete exit from the workforce—is generally accompanied by psychological and behavioral detachment from work (Wang & Shi, 2014). Normative, age-graded systems in most developed countries provide economic support for retirement in the mid-60s. Whether employees choose to retire before or after the age-graded norm for their culture can also be affected by an employee's occupational future time perspective. For example, the risks of leaving a job for another opportunity are relatively lower for a younger person with an expansive time perspective given future opportunities to craft one's career (Kooij et al., 2017). By contrast, older workers may think that they have relatively fewer career transitions left in their future and as such may consider each transition more carefully. Or they may choose to retire due to a shortened time perspective and the desire to spend their time with family. Moreover, job search and reemployment are more difficult for older people compared to younger people, making it more challenging to recover from a premature exit from the labor market (Wanberg et al., 2016). Further, the same antecedents of job search success found generally—job search self-efficacy and search intensity—are important antecedents for job search success for the bridge jobs engaged in by older workers (Adams & Rau, 2004), which are likely to put older workers at a disadvantage in the job search process (Wanberg et al., 2016).

There are many theoretical models describing the process of late-career transitions (see Wang & Shi, 2014). Across all models, emphasis has been given to the employee's circumstances (i.e., health, wealth, and family situation), and these factors are arguably the most consistent and extensively studied antecedents of retirement. Findings show general agreement that workers who are relatively less healthy and wealthier are likely to retire earlier and that people are more likely to retire when their spouse is retired (Kim & Feldman, 1998). Indeed, family influence on retirement was apparent in the 1950s when male retirees identified that one reason for retirement discontent was that their wives and children did not want them around the house (Payne, 1953)!

In addition to health, wealth, and family, the decision to retire is often influenced by the perceived psychosocial and psychological costs and benefits associated with work, including for example the social interactions experienced during work, feelings of personal control, accomplishment, and efficacy associated with working, self-image, and the attachment to work relative to family roles (Barnes-Farrell, 2003). In addition, contextual factors, such as HR policies and practices (Jiang et al., 2022, in this special issue), organizational norms regarding retirement, job characteristics, age-related bias, and organizational climates toward age have been shown to influence older worker job transitions (see also Fisher et al., 2016, for a review of retirement timing).

Much has also been written about the influence of the COVID-19 pandemic on career transitions among older workers. Research during the first few months of the pandemic (March through June 2020) suggested that the global pandemic disproportionately affected older workers' (aged 55–77) exit from the workforce in the United States and that many of the older workers who left the labor force gave up looking for work and officially retired (Papadopoulos et al., 2020). Subsequent research suggests, however, that the global pandemic has not disproportionately affected older versus younger workers (Munnell & Chen, 2021). Indeed, at the time of this writing (summer, 2022), the effects of the pandemic on career transitions are in flux, a topic we revisit in the section on future research directions.

Although career transitions have garnered extensive research attention throughout the years, with seminal work published in *Personnel Psychology* (Adams & Beehr, 1998; Adams & Rau, 2004; Beehr, 1986; Kim & Feldman, 1998; Payne, 1953), future research is needed to situate career transitions within the modern workplace. For example,

technology affects workers' abilities to engage remotely with work and has reduced some of the physical demands of certain jobs. However, there has been very little research to date examining how technology can support worker career transitions. And although there are elaborate theoretical models describing the individual and contextual factors that influence retirement timing, wellbeing in retirement, and/or the return to work post-retirement (Wang & Shi, 2014), there remains very little empirical research that addresses these questions beyond general themes (e.g., health, wealth, and so on). For instance, it would be interesting to examine the effect of job fit and task characteristics (such as fluid ability demands; Beier, Torres, Fisher, et al., 2020) and social environments of the exiting job on career transitions. This research could identify targeted interventions to support worker transitions and to support keeping experienced older workers engaged in work beyond normal retirement ages.

5 | ADDITIONAL RESEARCH STREAMS ON THE AGING WORKFORCE IN ORGANIZATIONAL SCIENCE

Over the past few decades, there has been a steady increase in the application of theory and empirical research on workforce aging. In addition to advances in long-standing topics such as age discrimination, new streams of research have emerged, such as job crafting and job/work design. Another major topic that has received growing scholarly attention pertains to HR strategies and integrated interventions to benefit older workers. We provide an overview of each topic, its coverage historically in *Personnel Psychology*, relevant pieces from this special issue, and future research directions.

5.1 | Age stereotypes and age discrimination: The social context for age

Some of the earliest research on workplace aging involved workplace age stereotypes and discrimination, including research published in *Personnel Psychology*. In an early piece, Smith (1952) argued that employers should reevaluate policies restricting the hiring of older workers given their documented value to the organization. Soon after, Kirchner and Dunnette (1954) found that supervisors in a naval ordnance plant tended to have more negative attitudes toward older workers than rank-and-file employees. Although a relatively simple study by today's standards, it is notable that three concepts emerged in this study that still have currency in workplace age discrimination research today: *relative age* (a person's age relative to others in the group), the *job-age stereotype* (the age associated with a job), and the recognition that age discrimination can play a part in the underutilization of older people in the workforce. Later, Kirchner (1961) critiqued a paper also published in *Personnel Psychology* (Oberg, 1960) that recommended the hiring of only young (under age 30) R&D (i.e., research and development) employees. Kirchner (1961) countered this recommendation, noting that there is a very wide range of abilities among older workers (more so than among younger people), that any small differences in supervisor ratings between older and younger employees may themselves be due to stereotyping rather than actual performance differences, and older workers who need skills updating should be offered it—all arguments that resonate 60 years later. Some influential findings also appeared in *Personnel Psychology* starting in the 1980s. These include the findings of differences in the actual performance ratings of older and younger workers (older workers generally rated lower; Cleveland & Landy, 1981; Ferris et al., 1985); and the effects of providing age-positive information on simulated hiring decisions (some effects for some decision makers on some jobs; Singer & Sewell, 1989).

In reaction to the implementation of the Age Discrimination in Employment Act (ADEA) in 1967, two papers in *Personnel Psychology* reviewed subsequent U.S. court cases on age discrimination. These focused on how organizations can avoid or defend such cases (e.g., Faley et al., 1984) and noted that rulings of age discrimination in performance appraisals were more likely when employees were over 50 (rather than 40–49; Miller et al., 1990).

Laboratory studies published in other outlets found that most older worker stereotypes (e.g., lower performance capacity and potential for development) are negative and that these stereotypes can affect personnel decisions (e.g.,

Rosen & Jerdee, 1976a, 1976b). Since that time, research has continued apace and drawn some key conclusions. First, there are a number of stereotypes associated with both older and younger workers, and although most of the older-worker stereotypes are negative (e.g., lower performance and ability to learn; resistant to change; more costly), not all are (e.g., more dependable than younger employees; see review by Posthuma & Campion, 2009). In addition, meta-analytic work has shown that most of these common older-worker stereotypes are not true (Ng & Feldman, 2012) though older workers may be slightly less willing to participate in development activities. Third, other research (e.g., Finkelstein et al., 1995) has found that at least in simulated employment situations, more negative decisions are sometimes made about older workers compared to their younger counterparts (e.g., job qualifications, potential for development), but that this effect is reduced when decision-makers are given more information about a target than just their age. This last finding is a key point to understand when and why age may or may not affect actual personnel decisions at work. Specifically, true discrimination against actual older job applicants is consistent with “correspondence studies” (i.e., when organizations are sent hypothetical job applications) from the field of Economics that suggests that call-backs are lower for older job applicants than younger applicants (e.g., Neumark et al., 2019); compared to other HR decisions, selection decisions may be particularly susceptible to age stereotyping because little else is known about a person at the initial application stage compared to after they have become an organizational member (i.e., when job performance judgments are made).

In addition, research has demonstrated that certain jobs are associated with certain age groups (the job age stereotype; e.g., Perry et al., 1996). Recent work (e.g., Finkelstein, King, et al., 2015) has also begun to examine the concept of *age meta-stereotypes*, or what workers of different age groups (younger, middle-aged, older) believe that others think about their group, with the idea that such beliefs affect workers' decisions and behavior. For example, such expectations of stereotyping and discrimination could explain meta-analytic findings of lower job search intensity and self-efficacy and longer reemployment times of older people after job loss (Wanberg et al., 2016). Other authors (e.g., Rudolph et al., 2021) have argued that the discussion of workplace differences between generations in the popular press has done little to reduce age stereotyping and discrimination, and may have actually exacerbated it. Finally, who is considered an older worker depends on many factors besides age (McCarthy et al., 2014).

Murphy and Denisi (2021) have recently argued that there is limited evidence that age and age stereotypes actually affect personnel decisions in the field. In other words, although age stereotypes do seem to exist (e.g., Posthuma & Campion, 2009), whether (or at least how much) these stereotypes translate into actual discriminatory decisions is not well understood. A number of explanations have been offered for this finding: that studies have largely ignored contextual factors such as culture (Marcus, 2022) and that other demographic factors (e.g., gender, ethnicity; Thrasher, 2022) mask the effects of age stereotypes on decisions. Other authors (Cadiz et al., 2022) have also argued that the link between age stereotypes and important but subtle, insidious workplace behaviors such as microaggressions (e.g., exclusion) has not been studied. Moreover, Rudolph et al. (2022) have pointed out that few studies have actually measured stereotypes to link them to personnel decisions. Although the existence of conscious (explicit) and unconscious (implicit) stereotypes is well accepted in the social psychology literature, only one laboratory study (Zaniboni et al., 2019) has measured conscious and unconscious stereotypes and tried to link them to hiring decisions. Those results were promising: Zaniboni et al. (2019) found that explicit age stereotypes had a positive effect on the ratings of younger (but not older) applicants' resumes, whereas implicit stereotypes had a negative effect on older (but not younger) workers' resumes. In other words, explicit and implicit stereotypes each had negative, but different effects on the hiring of older applicants.

Two papers in the special issue examine issues related to age in the social context of work, each using different research approaches to help understand age discrimination and inclusion processes. Li et al. (2022) look at how these processes unfold differently on a daily basis for older and younger workers, showing the cascading effects of inclusion on worker engagement. De Meulenaere et al. (2022) use a firm-level analysis to show how age separation (clustering into age groups in organizations) leads to different perceptions of older and younger workers. Specifically, older workers experienced decreased belongingness and subsequent increased turnover compared to their younger counterparts. Together, these papers illustrate the different experiences of

inclusion for older workers, the personal and organizational factors that affect it, and its cascading effects over time.

In summary, one of the biggest knowledge gaps in the workplace age literature is understanding the process of age discrimination. Under what circumstances does discrimination occur (moderators)? How does discrimination unfold in the workplace (mediating processes)? And what specific outcomes are most affected (e.g., performance appraisals, microaggressions, older worker health and wellbeing)? Addressing this knowledge gap with empirical data is especially important to understand the cascading effects of age bias and ways to overcome it.

5.2 | Teams, groups, and age diversity

Workforce aging is happening at the same time that organizations are increasingly relying on teams to solve the complex problems confronting many organizations (Salas et al., 2018). As such, work teams are, and will continue to be, age diverse. Team age diversity simply describes differences with respect to age among team-members working on interdependent tasks (Jackson et al., 2003). Social identity theory (Tajfel & Turner, 2004) suggests that age diversity will be negatively related to performance because of in-group/out-group biases related to age that negatively impact team communication, cohesion, and ultimately performance. And indeed, meta-analytic research has shown that age diversity in teams tends to lead to worse team performance (Joshi & Roh, 2009). In contrast to social identity theory, however, information theories tend to highlight the benefit of age-diverse perspectives in terms of team creativity and performance (Cox & Blake, 1991). But reasons for the benefits of team age diversity (i.e., increased knowledge and experience associated with age for some team members balanced with more achievement-oriented younger team members) appear more related to tenure than age per se (e.g., Wegge et al., 2012). Notably, the Joshi and Roh (2009) meta-analysis did not examine the nuanced relationship between age and organizational tenure, and indeed these factors tend to be confounded across much workplace aging research.

Another meta-analysis on age diversity and team performance did examine types of team diversity related to separation (i.e., distance between team members on a continuous variable such as age), variety (i.e., differences in the backgrounds of team members on a categorical basis such as expertise), and disparity (i.e., differences among team members on a valued attribute such as job tenure). This study found no effect of age or tenure diversity on team performance (Bell et al., 2011). Moreover, in a review of research on team age diversity, Wegge et al. (2012) report that, in support of information theorizing, age-diverse teams tend to perform better on complex—versus simple—tasks. However, Wegge et al. (2012) also note that, consistent with social identity theory (Tajfel & Turner, 2004), the salience of age-differences among team members, and negative age-related team climate can negatively affect team performance. Wegge et al. (2012) further provide suggestions for how organizations can successfully deploy age-diverse teams by reducing time pressure for complex task performances, reducing age-salience among team members, and promoting an organizational climate devoid of age-related bias. Although these suggestions make theoretical sense, empirical research for their support is lacking and represents an area ripe for future research.

Despite the ubiquity of teams in the workplace and the importance of understanding team composition, the empirical study of teams, particularly team performance over time, is methodologically complex, and much more research in this area is needed (Bell et al., 2011). For example, most published team research is limited to relatively short-term duration teams operating in educational or laboratory environments even though the duration of a team's lifecycle in an organization can be over years (Salas et al., 2018). As such, we know little about how team age diversity affects team outcomes such as cohesion and performance over time. Moreover, teams are just one level in multilevel systems in which age diversity is relevant. Other levels include, but are not limited to, the larger organization, geographic sector, and even country. The theoretical frameworks for the benefits of age diversity in each of these contexts discussed above—social identity theory and information theory (Cox & Blake, 1991; Tajfel & Turner, 2004)—should also be expected to affect both attitude and performance-related outcomes at these levels. In particular, age diversity should be positively related to complex performance across these contexts when performance benefits from the input of

an array of diverse perspectives. However, age diversity should hinder performance when cultural climates endorse negative age-related stereotypes and age differences are made salient.

5.3 | Age, job crafting, and job design

To age successfully at work, employees themselves can proactively act and adapt through job crafting behavior. As mentioned above, job crafting refers to the self-initiated changes that individuals make in their work to improve their person–job fit, such as a bus driver who takes on the role of tour guide to increase the meaningfulness of her work. As highlighted above, previous research on aging at work has shown that motives (Kooij et al., 2011) and physical and cognitive abilities (e.g., Salthouse, 2010) change with age. In addition, the literature shows that preferred job characteristics and the effect of job characteristics on worker outcomes change with age (Truxillo et al., 2012; Zaniboni et al., 2013). For example, Zaniboni et al. (2013) found that increased skill variety led to lower turnover intentions for older workers than for younger workers. This suggests that organizations may need to rethink job design for mature workers to ensure continued person–job fit as workers age. In addition, to accommodate increased inter-individual differences, organizations can stimulate mature workers to engage in job crafting behavior (Kooij et al., 2022). The job crafting literature indeed demonstrates that job crafting behavior has numerous positive effects on employee outcomes, such as person–job fit, work engagement, and job performance (Rudolph et al., 2017). In addition, it is important to consider the type of job crafting. Job crafting may include strengths and interests crafting (self-initiated changes in task boundaries to make better use of strengths and match interests; Kooij et al., 2017); increasing or decreasing job demands and resources (changing job demands and job resources to balance them with personal abilities and needs; Tims et al., 2012); and increasing structural resources to increase opportunities for learning, which also ties into re- and upskilling as discussed below (see Zhang & Parker, 2019 for an overview).

Although the literature on job crafting is extensive, there is limited research on whether, how, and why job crafting behavior and its outcomes change with age. According to De Bloom et al. (2020), individual factors such as age influence job crafting in two ways; directly by impacting the salience of needs and perceived needs discrepancy and indirectly by impacting the relationships between needs discrepancy and job crafting behavior. Rudolph et al. (2017) found in their meta-analysis that older workers engage in less job crafting behavior aimed at increasing social job resources and challenging demands, and at decreasing hindering demands, but in more job crafting behavior aimed at increasing structural resources. Kooij et al. (2017) showed that age moderated the relationship between participating in a job crafting intervention and job crafting behavior, such that participating in a job crafting intervention increased strengths crafting behavior, and in turn person–job fit, only among older workers. Finally, Kooij and Kanfer (2022) showed that older workers engage more in job crafting for accommodative motives (e.g., to decrease physical demands or cope with work pressure). Furthermore, they found that different crafting motives trigger different job crafting types among older and younger workers. For example, younger workers engage in avoidance demands behavioral crafting to accommodate themselves, whereas older workers do not. Nevertheless, although crafting across the lifespan may benefit workers, there seem to be relatively few age differences in job crafting types and motives (e.g., Vignoli et al., 2021) and their interconnections.

There is also limited research on other self-regulation behaviors or strategies that mature workers use to adapt to developmental changes and stay successful in the workplace. Future research should use qualitative studies to examine the specific self-regulation behaviors or strategies mature workers engage in to maintain or restore their person–environment fit by changing individual or job factors. Experience sampling studies could also further our understanding of self-regulation behaviors (e.g., Dello Russo et al., 2021). For example, examining mature workers' behavioral responses to daily stressors and changes at work, such as technological developments and changes in the way of working (e.g., hybrid working), may advance our understanding about how their self-regulation behaviors and strategies develop and play out in different workplaces. With regards to self-regulation behaviors aimed at changing individual factors, personal development and lifelong learning are very relevant for successful aging at work

(Commission of the European Communities [CEC], 2002). However, growth work motives related to learning, development, and advancement have been found to decrease with age (Kooij et al., 2011). On the other hand, previous research also shows that intrinsic motives related to accomplishment and use of skills increase with age (Kooij et al., 2011) and that developmental HR practices are very important for mature workers (Pak et al., 2021). Future research should investigate these seemingly contradictory findings by examining self-initiated development based on using existing skills and interests rather than development based on advancement and combating deficiencies.

5.4 | Training and development

Organizational training and employee development is an important HR practice focused on providing employees the skills to do their jobs and to envision future roles associated with continuous career development; organizational training and development practices are also critical activities by which organizations invest in, and retain, talented employees (see Kraiger & Ford, 2021 for a recent review). In addition to organizationally focused training and development programs aimed at providing skills and retaining talent, a person-centric focus on training and development typically supports an individual's desire to increase their own skills to either remain productive in the same/similar role or to enable a change to a new role. Here we align with convention and use the term *upskilling* to describe an individual's efforts to acquire skills to remain productive in the same role and *reskilling* to describe an individual's efforts to acquire skills to obtain a new job (ATD Research & DeVry Works, 2018). These terms—upskilling and reskilling—tend to be used to describe self-directed development activity, but we acknowledge that these terms can also be used to describe employee participation in organizational training. That is, there is not a clear distinction between reskilling/upskilling and organizational training and development.

Despite potential construct confusion, a person-centric approach is relevant, for instance, to capture the training and development needs of people unaffiliated with any particular organization such as gig workers and unemployed people seeking work. In these cases, reskilling and upskilling activities may look identical to those offered within organizations; that is, they can include both informal and formal learning opportunities. Both individually driven and organizationally driven training and development activities will likely be more difficult for older learners given age-related changes in abilities discussed earlier. Indeed, research suggests that older workers take longer and do not do as well in training relative to younger workers (Kubeck et al., 1996), a finding replicated and extended in the Davenport et al. (2022) paper in this special issue. Specifically, Davenport et al. expand the set of outcomes examined beyond task mastery and training time. They find that age is negatively related to post-training self-efficacy, but unrelated to trainee reactions. They further propose and examine a set of moderators of the age and training relationship derived from lifespan development theory and find mixed support for the benefits of training alone (vs. with others), suggesting that although these moderators might improve training for older learners, they are not likely to close the performance gap between older and younger learners.

Nonetheless, research also suggests that, despite age-related stereotypes about the inability and unwillingness to learn (Posthuma & Campion, 2009), people can and do learn throughout the lifespan (Carter & Beier, 2010), particularly when the content to be learned is somewhat related to what they already know (Beier, 2022). Learning, however, tends to be more effortful as people age (Torres & Beier, 2018) and this increased effort—and the perception of increased effort—will potentially negatively impact worker motivation for, and persistence in, training and development activities (Kanfer & Ackerman, 2004). Indeed, research suggests that age is negatively related to participation in development activities and intentions to participate (Maurer et al., 2003). Nonetheless, this same research also suggests that reduced motivation for training and development with age is far from universal given that all workers—regardless of age—appreciate the intrinsic benefits associated with learning and development, even if the value of learning to achieve an extrinsic outcome (e.g., promotion) is reduced with age (Kooij et al., 2011). Moreover, workers continue to appreciate opportunities for organizationally sponsored continuous development activities as they age, regardless of whether they take advantage of these opportunities or not (Armstrong-Stassen & Ursel, 2009).

TABLE 1 Practical implications and future research issues across individual, work group, organizational, and societal levels

Topic	Practical implications	Future research
Individual level Within-person aging processes	Create awareness of aging processes and their implications for motivation, wellbeing, and performance of older workers. Understand the range of individual and environmental factors that influence late-stage career transitions.	Examine the heterogeneity of older workers using person-centered approaches. Examine processes by which aging is associated with well-being outcomes. Examine the influence of the COVID-19 pandemic and similar disruptions on career transitions among older workers.
Job level Job crafting and job design	Tailor job design to (older) worker strengths and stimulate workers' job crafting behavior.	Examine self-regulation strategies in the workplace and the moderating influence of age.
Work group level Teams Stereotypes	Facilitate an age-inclusive climate to reap the benefits of age diversity. Create awareness that age and generational stereotypes exist and are mostly false. Provide individuating information about older workers that goes beyond age.	Examine the effect of age diversity on team performance. Examine the process of age discrimination. Understand how age-related stereotypes are internalized by older workers and how to mitigate their effects.
Organizational level Training (HR) interventions	Workers can and do continue to learn and develop throughout their careers, despite changes in cognitive abilities. Implement three meta-HR strategies; include, individualize, and integrate.	Examine and design training using new technologies that address the unique needs of older trainees. Examine when and why specific workplace interventions are effective for older workers and how to personalize interventions.
Societal level Cross-cultural and international issues Impact of pandemics and other natural disasters	Create national retirement systems that support high-quality, longer, and more balanced working lives. Pandemics and other disasters differentially affect different age groups.	Investigate the effects of remote work arrangements on older worker attitudes and performance. Examine new working arrangements post-pandemic and their age-related effects.

Person-centric training and development might typically involve independent training and education programs such as massive open online courses (MOOCs) or other industry certification programs. Given the self-directed nature of these experiences, motivation is likely to be more important—both in terms of goal choice and goal striving—for person-centric training and development activities relative to organization-sponsored training and development. So far, however, little is known about development activities that take place outside of organizations. However, research on self-directed learning suggests that self-efficacy for development activities does decline with age, but that prior participation is an important factor in intentions to engage in employee development (Maurer et al., 2003).

Despite the importance of organizational training and employee development, research on this topic in general has actually decreased in recent years (Kraiger & Ford, 2021) and thus age-focused research in this area is even less likely. Organizations, however, are continuing to develop new approaches to both organizational training and individual instruction that capitalize on new technologies and the eagerness of workers to update their knowledge and skills. The result is that the impact of many new approaches to organizational training—involving, for example, remote learning, microlearning, augmented, and virtual reality training—remain largely unexamined by organizational scientists, and thus their ramifications for older workers are less known (Beier, 2019). We urge researchers to work with organizations to inform the development of these important interventions. The first place to start would be to understand—and design training for—the unique needs of older trainees because it is likely, as highlighted by Davenport et al. (2022) in this special issue, that training designed for older workers is likely also to benefit workers of all ages and ability levels (Torres et al., 2019).

5.5 | HR Strategies and integrated interventions

Research on aging at work has recently focused more on HR strategies for mature workers (Zacher et al., 2018a). Parker and Andrei (2020) distinguish three organizational meta-strategies for mature workers based on a literature review, they describe them as Include, Individualize, and Integrate. The meta-strategy *Include* refers to organizational strategies aimed at creating an inclusive or age diversity climate in which mature workers are included and provided equal opportunities. This meta-strategy is based on theories related to diversity, such as optimal distinctiveness theory and the similarity–attraction perspective. One example of an include strategy is inclusive HR practices, or practices that foster all employees' (irrespective of their age) knowledge, skills, and abilities; motivation and effort; and opportunities to contribute (e.g., Burmeister et al., 2018; Fasbender & Gerpott, 2021). Boehm et al. (2014) found that inclusive HR practices trigger a positive age-diversity climate for workers of all ages. In addition, Li et al. (2022, this special issue) found that workers experiencing inclusion on a daily basis were more important for positive affective changes and work engagement among older workers compared to younger workers because older workers placed a higher value on social relationships. The meta-strategy *Individualize* refers to organizational strategies aimed at adapting or tailoring work and the work environment to the individual needs and preferences of mature workers (Parker & Andrei, 2020). This meta-strategy is based on theories about how people change over the life span, such as the SOC model and the socio-emotional selectivity theory. An example of individualize strategies is the four bundles of HR practices for aging workers (i.e., development, maintenance, utilization, and accommodative HR practices), whose effectiveness has been found to change with age (Kooij et al., 2013, 2014). Finally, the meta-strategy *Integrate* refers to organizational strategies aimed at reaping the benefits of the greater age diversity that comes with an aging workforce. This meta-strategy is also based on theories related to diversity, such as the information/decision-making perspective on diversity. One example of integrate strategies is age diversity training programs as examined by Burmeister et al. (2021). They distinguished two training programs: an identity-oriented training aimed at overcoming the challenges related to age diversity by facilitating contact quality, and a knowledge-oriented training aimed at realizing the benefits of age diversity by increasing knowledge transfer.

In addition to tailoring HR strategies to mature workers, previous research shows that the impact of HR practices on worker attitudes, well-being, and performance changes with age (Kooij et al., 2010, 2013; Korff et al., 2017; Tordera

TABLE 2 Summary of future research needs in areas of the aging workforce literature

Job performance	Examine the mechanisms (e.g., cognitive, motivational, personality changes) that explain the relationship between age and job performance outcomes.
Work ability	Identify mechanisms for supporting work ability across the work lifespan and continued workforce participation later in life.
Wellbeing	Identify the processes/mechanisms by which age is associated with well-being outcomes to develop interventions and practices to support workers across the lifespan.
Successful aging at work	Use person-centered approaches to identify groups of successfully/unsuccessfully aging workers and individual and organizational factors that predict subgroup membership to prescribe tailored interventions.
Retirement and career transitions	Understand the effect of technology and remote work on career transitions. Examine the antecedents of career transitions (e.g., retirement, unretirement) at the job and worker level, including job characteristics (demands and resources) and the social environment of work.
Job crafting	Examine the specific self-regulation behaviors used by older workers to maintain or restore person-environment fit. Examine older workers' responses to day-to-day stressors to understand age differences in self-regulation behaviors at work. Examine growth motives for older workers in terms of development rather than deficiencies.
Teams, groups, and age diversity	Examine team-based interventions to improve the performance of age-diverse teams. Examine the effect of team age diversity in longstanding teams and team development over time. Understand the influence of identity theory and information theory on age diversity across multiple levels. Examine moderators (e.g., organizational climate, task complexity) of the age diversity-performance relationship.
Age stereotypes and discrimination	Identify roles of conscious (explicit) and unconscious (implicit) stereotypes in discriminatory behavior against workers in different age groups. Understand when discrimination occurs (moderators), processes that lead from stereotypes to discrimination, and specific outcomes affected (e.g., hiring, microaggressions, wellbeing).
Training and development	Examine age differences in reactions (e.g., motivation, performance) to new training approaches, e.g., remote learning, micro learning, augmented, and virtual reality training. Understand and design training for the unique needs of older trainees.
HR practices and interventions	Identify psychological processes explaining which interventions work for which age groups and in which circumstances. Examine when and why workplace interventions are effective for workers of different ages and how to personalize interventions. Identify which HR practices are effective in maintaining continuous person-environment fit or stimulate older workers' self-regulation behaviors. Examine the participatory role of older workers as potential co-creators of HR practices and their implementation to fulfill their unmet needs in the workplace.

et al., 2020). Here, the line of reasoning is that changing motives and abilities affect the salience and utility of HR practices, and thus the relationship of these HR practices with employee attitudes, well-being, and performance. For example, Kooij et al. (2013) found that development HR practices (i.e., HR practices that help individuals reach higher levels of functioning such as training) are less important for mature worker attitudes and well-being, whereas maintenance HR practices (i.e., HR practices that help individual workers maintain their current levels of functioning in the face of new challenges such as ergonomic measures) are more important for these workers. Jiang et al. (2022, this special issue) demonstrate that organizational practices influence successful aging at work. Specifically, they found that older workers' experience of high involvement work practices (HIWPs) was negatively related to their retirement intentions, particularly among older men, older workers aged 50–59 years, older workers without a bachelor's degree, and nonmanagerial older workers.

Besides HR strategies, workplace interventions are important for successful aging at work as highlighted by the Burmeister et al. (2021) study as well as by a number of studies in this special issue (e.g., De Meulenaere et al., 2022; Li et al., 2022). However, there are not many intervention studies specifically targeting aging employees or older workers (Cloostermans et al., 2015; Truxillo et al., 2015). Although previous research has shown that offering a job crafting workshop stimulates job crafting behavior among (mature) workers (Kooij et al., 2017; Oprea et al., 2019), these and other intervention studies found weak effects of workplace interventions, or that interventions only work for specific subgroups and in particular contexts (Kuijpers et al., 2020). These findings might be due to the dynamics of the work context, the difficulty of transferring training content to the workplace, and/or the participatory role of individual workers in the intervention. Hence, it is crucial to identify the psychological processes that govern what works for whom in which circumstances (Nielsen & Miraglia, 2017) and to personalize and adapt interventions to individual circumstances (Knight et al., 2017). Future studies are needed to examine when and why workplace interventions are effective for workers of different ages, for example using a realist evaluation (seeking to answer the questions of what works for whom in which circumstances; Nielsen & Miraglia, 2017). Such studies can also help in personalizing interventions. In addition, intervention research could work to provide a long-term perspective, differentiating those interventions implemented for younger workers to prevent the onset of difficulties later in their work life and those developed to address existing losses among older workers (Truxillo et al., 2015). Finally, intervention studies could be useful to examine HR practices that are effective in maintaining the continuous person–environment fit over the working lifespan or help mature workers to engage in self-regulation behaviors and strategies at work. These studies should also pay explicit attention to the participatory role of older workers as potential co-creators of HR practices and their implementation to fulfill their unmet needs in the workplace (Hewett & Shantz, 2021).

6 | PRACTICAL RECOMMENDATIONS AND FUTURE RESEARCH

Industrialized workforces are growing older and more age-diverse, with people of different ages working side-by-side as never before. Our review and the papers in this special issue demonstrate that worker age has moved from being simply a control variable in the organizational sciences to a research focus in itself. A growing number of publications, journal special issues (e.g., Zacher et al., 2018b), and books (Finkelstein, Truxillo, et al., 2015; Parry & McCarthy, 2017; Zacher & Rudolph, 2022b) on understanding and managing an aging and age-diverse workforce has identified a number of practical implications for individuals, organizations, and policy-makers. We summarize these practical implications and associated research that is still needed in Table 1.

With regard to research, the use of the lifespan development perspective has not only advanced theory development but has also brought greater cohesion to the field. Methodologically, a growing number of studies have employed multilevel designs (e.g., Boehm et al., 2014), experience sampling methods (Burmeister et al., 2022), advanced measurement techniques (e.g., Thomas & Finkelstein, 2022), and intervention experiments (e.g., Kooij et al., 2017) to more precisely identify the nexus and nature of challenges that organizations and older workers confront.

Nonetheless, much remains to be done. Throughout this review, we have identified a number of critical gaps in our knowledge associated with areas of the aging workforce literature. A summary of these gaps is provided in Table 2. In addition to these specific research issues raised in Table 2, we wish to make several general observations regarding

research. First, although the use of longitudinal studies has increased, most of the extant aging workforce literature continues to employ cross-sectional or between-subjects designs to study within-person changes. Second, given the multiplicity of forces (e.g., economic, political, social) that shape the lived experiences of workers as they age, future progress will require greater input from multiple disciplines including medicine, economics, and sociology to better understand how forces operating within the worker's environment affect within-person changes and successful aging at work. Third, as noted previously, it is critical that researchers recognize the inaccuracy of treating "aging workers" as a homogeneous group given the reality that within-group heterogeneity increases with age. Fourth, our review suggests that it is crucial that researchers continue to go beyond chronological age. For example, a growing body of literature suggests that factors such as subjective age (e.g., how old a person feels; Laguerre et al., 2022) play an important role in work and retirement decisions (Stephan et al., 2013; Ye & Post, 2020).

Finally, we wish to highlight a number of issues that will likely face organizations and the aging workforce in coming years. Many are a consequence of recent disruptions brought about by the pandemic, climate change, and the introduction of new technologies. Theories of adult development to date have assumed a relatively stable post-industrial work context and a human motive hierarchy oriented toward intrinsic motives. Recent economic, technological, and employment turbulence highlights the importance of greater research attention to understanding the impact of these changes and the growing demands for new skill learning on older worker well-being, career trajectories, and work histories. For example, although new technologies are often viewed as detrimental to older workers, they might also be used to improve employee skill learning, health, and safety. For example, new training modalities and virtual assistant technologies are being explored as a means of creating more efficient methods of new skill learning across the lifespan (Torres & Beier, 2018). The growth of online, asynchronous skill training opportunities during the pandemic has also reduced long-standing career transition barriers, particularly into high-demand jobs, such as data analyst or programmer.

Demographic and socio-cultural trends have led public policy-makers and organizational leaders to focus greater attention on employee health and well-being as a critical work outcome. At the broadest level, little is known about the behavioral, attitudinal, and mental health impacts of pandemics and other calamities (e.g., fires, floods) on older workers. Yet, this may be the new reality in which organizations need to manage their workers in the coming decades. Innovative organizational policies are needed to mitigate the negative effects of these events and sustain older worker commitment. For example, the development of organizational programs that pay particular attention to older worker strategies for coping constructively with workplace accidents, violence, and employee deaths that can raise mortality concerns or spur disruptive negative emotions may be needed. Perhaps the most obvious and immediate question pertains to the impact of remote and virtually-mediated work design on older workers, since these new working arrangements may make it more difficult to support specific worker needs across the lifespan. Looking to the future, we will need age-inclusive practices that support physical and mental health, well-being, and performance across the work lifespan.

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