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Supplement Article: Motivation and Healthy Aging

Motivation and Healthy Aging at Work

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Abstract

The aims of this paper were to review theoretical and empirical research on motivation and healthy aging at work and to outline directions for future research and practical applications in this area. To achieve these goals, we first consider the World Health Organization's (WHO) definition of healthy aging in the context of paid employment and life-span development in the work domain. Second, we describe contemporary theoretical models and cumulative empirical findings on age, motivation, and health and well-being at work, and we critically discuss to what extent they are consistent with the WHO's definition of healthy aging. Finally, we propose several directions for future research in the work context that are aligned with the WHO's definition of healthy aging, and we describe a number of interventions related to the design of work environments and individual strategies to promote the motivation for healthy aging at work.

Keywords: Employment, Healthy aging, Motivation, Organizations, Work

On December 14, 2020, the United Nations General Assembly proclaimed 2021–2030 the "Decade of Healthy Aging," in an effort to promote research and practical activities that help "improve the lives of older people, their families, and the communities in which they live" (World Health Organization [WHO], 2021). *Healthy aging* refers to "the process of developing and maintaining the functional ability that enables well-being in older age" (WHO, 2015, p. 28). The WHO's definition of healthy aging is based on several decades of interdisciplinary and rigorous research on aging and health. As it constitutes the centerpiece of a major global policy framework, it will likely have a significant impact on both science and practice in the future.

A key domain of people's lives, next to family and community engagement, is work in the context of paid employment. Due to demographic (e.g., low birth rates) and government policy changes (e.g., later retirement entry), workforces in most developed and also in many developing countries are, on average, becoming older and more age diverse (Hertel & Zacher, 2018). The WHO's definition of healthy aging seems to overlap in several important ways with contemporary theoretical models and empirical research on age in the work context and differs in others. For instance, both the WHO's definition and most research on age in work and organizational psychology adopt a life-span developmental perspective (Baltes, 1987; Rudolph, 2016). Moreover, motivational processes (e.g., goal selection, pursuit, revision) are important considerations for both healthy aging (as highlighted by this special issue) and for aging in the work context (Kooij & Kanfer, 2019). In contrast, the WHO's definition focuses on well-being in a broad sense and

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as a valuable end in and of itself, whereas work and organizational psychology research and practice often consider worker well-being as a means to achieve higher individual performance, organizational success, and economic growth.

The aims of this paper were to review theoretical and empirical research on motivation and healthy aging at work and to outline directions for future research and practical applications in this area. To achieve these goals, we first consider the WHO's definition of healthy aging in the context of paid employment and workers' life-span development. Second, we describe contemporary theoretical models and cumulative empirical findings on age, motivation, and health and well-being at work, and we critically discuss their similarities with and differences to the WHO's definition of healthy aging. Finally, we propose several directions for future research in the work context that are consistent with the WHO's notion of healthy aging and may extend it in meaningful ways, and we describe a number of interventions related to the design of work environments and individual strategies to promote the motivation for healthy aging at work.

Healthy Aging at Work

The WHO's (2015) definition of healthy aging as "the process of developing and maintaining the functional ability that enables well-being in older age" (p. 28) adopts a broad understanding of well-being that includes individual outcomes such as satisfaction, happiness, and experienced meaningfulness. *Functional ability* refers to "the health-related attributes that enable people to be and to do what they have reason to value" (p. 28). These "beings and doings" differ between people and may include, for example, their role or identity, relationships, autonomy, security, and the potential for personal growth (WHO, 2015). The health-related attributes that influence these outcomes include people's physical and mental capacities (including motivational traits and states), environmental characteristics (ranging from the immediate work and family context to the broader societal context), and the interplay or fit between these individual and environmental characteristics. Functional ability, then, includes the capacities to meet one's basic needs; to build and maintain relationships; to be mobile; to learn, grow, and make decisions; and to contribute to society (WHO, 2015). Finally, the WHO's (2015) notion of healthy aging also entails older people's resilience, or "the ability to maintain or improve a level of functional ability in the face of adversity (either through resistance, recovery, or adaptation)" (p. 29), and such resilience can be fueled by both individual and environmental factors. Importantly, the WHO's (2015) definition of healthy aging does not simply distinguish between healthy and unhealthy older people, because "many individuals may have one or more health conditions that are well controlled and have little influence on their ability to function" (p. 28). In summary, the key aspects of the WHO's (2015) definition of healthy aging are (a) life-span development and older people's well-being; (b) a broad conceptualization of well-being; (c) a process during which functional ability is developed, maintained, or regained; (d) the interplay or fit between individual and environmental characteristics; and (e) older people's resilience.

Applied to the context of paid employment, *healthy aging at work* can be understood as a motivational life-span process during which workers develop, maintain, or regain functional ability, comprised of the interplay, or fit between individual and environmental factors, which enables high well-being and resilience when workers are older. For example, workers might, through self-initiated action and supported by their work context, develop, maintain, or regain specialized knowledge or social (e.g., leadership), emotional (e.g., stress management), or behavioral (e.g., goal regulation) skills (see Soto et al., 2021). This knowledge and skills could help meet their basic needs (e.g., earn an income to pay for food and shelter); to build and maintain relationships (e.g., with supervisors and coworkers); to be mobile (e.g., to switch jobs or organizations); to learn, grow, and make decisions (e.g., to continue working or to retire); and to contribute to society (e.g., by completing relevant work tasks). Motivational characteristics and processes, in combination with environmental factors, play a key role in the development and maintenance of functional ability and, in turn, older workers' well-being (see editorial of this special issue). For instance, within a given work context, workers have to select, pursue, and potentially revise goals related to the acquisition of specialized knowledge and skills.

Regarding the WHO's (2015) emphasis on the broader environment for developing, maintaining, or regaining functional ability, the work context includes various physical and psychological (e.g., technology, work design), social and organizational (e.g., team, firm culture), as well as life course and cultural (e.g., career opportunities, role expectations) aspects that may affect workers' motivation, functional ability, and well-being. In addition, nonwork environmental factors, such as family, legal regulations, and societal age discrimination, may influence their motivation, functional ability, and well-being (Tomlinson et al., 2018; Zacher & Froidevaux, 2021). Consistent with the WHO's (2015) definition and theorizing on motivation and healthy aging, workers' individual characteristics and active self-regulation should interact with these various aspects of the work and nonwork environment in predicting functional ability and, in turn, health and well-being at work.

Age, Motivation, and Health and Well-Being at Work

Over the past two decades, a growing body of theoretical and empirical research has examined the role of age in the work context (for reviews, see Hertel & Zacher, 2018; Rudolph & Zacher, 2020). In this section, we first describe contemporary models of aging at work, followed by a summary of cumulative empirical evidence from meta-analyses

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and systematic reviews on links between age, motivation, and health and well-being. We also compare this research with the WHO's (2015) definition of healthy aging (for a summary, see Table 1).

Theoretical Models of Aging at Work

Theory development in work and organizational psychology has focused on "successful aging at work," based on the broader notion of successful aging in the developmental psychology literature (Freund & Riediger, 2003). In an early paper, Robson and colleagues (2006) argued that older workers are aging successfully at work if they perceive themselves as "successful" with regard to five criteria: adaptability and health, positive relationships, occupational growth, personal security, and continued focus on and achievement of personal goals. A potential problem of this subjective approach and taxonomy is that it focuses on older workers only and does not specify the predictors and processes leading to successful aging at work, such as motivational factors.

Zacher (2015) proposed a theoretical model that suggests that workers are aging successfully if they deviate in increasingly positive ways from average developmental trajectories in subjective and objective work outcomes, such as work motivation, occupational health and well-being, job attitudes, and job performance, across the working life span. For example, Zacher (2015) argued that healthy aging at work exists when, compared to a less successful average trajectory, workers maintain or even increase their well-being with age. In contrast, workers are aging unsuccessfully if they deviate in increasingly negative ways from average developmental trajectories in these work outcomes. The model suggests that these age-related trajectories can be influenced by person-related moderators (e.g., knowledge, skills) and context-related moderators (e.g., work characteristics, life circumstances). Potential problems with this model are that it is quite broad and describes successful aging at work as the exception, deviating from the norm. This notion can be criticized as going against attempts to intervene at the systemic level, which aim to mitigate inequalities, optimize conditions for most workers, and, thus, transform the deviation into the norm. Moreover, the model focuses broadly on person- and context-related factors as predictors of successful aging and does not explicitly delineate more specific motivational or self-regulation processes (see Kooij, 2015; Zacher et al., 2016).

Addressing the problems of previous conceptualizations, Kooij and colleagues (2020) recently proposed a definition of successful aging at work as the proactive maintenance of, or adaptive recovery (after decline) to,

Table 1. Comparison Between WHO (2015) Definition of Healthy Aging and Theoretical and Empirical Research on Aging at Work

Key aspects of WHO's (2015) definition of healthy aging	Robson et al. (2006): subjective criteria of successful aging at work	Zacher (2015): comparative view of successful aging at work	Kooij et al. (2020): process model of successful aging at work	Cumulative empirical research on successful aging at work
1. Focus on life-span development and older people	Focus on older workers	Focus on worker life span	Focus on worker life span and older workers	Research focuses on both worker life span (i.e., age as a continuous variable) and older workers
2. Broad conceptualization of individual well-being	Criteria include subjectively assessed health, positive relationships, occupational growth, and personal security	Criteria include both objectively and subjectively assessed occupational health and well-being	Criteria include workers' ability and motivation to continue working	Research focuses on both objectively and subjectively assessed worker/occupational health and well-being
3. Process during which functional ability is developed, maintained, or regained (including motivational/self-regulation processes)	Process leading to successful aging at work not addressed, but criteria include a "continued focus on and achievement of personal goals"	Model focuses broadly on person- and context-related characteristics as predictors of successful aging, and not specifically on motivational/self-regulation processes	Model focuses on motivational/self-regulation processes (i.e., proactive and adaptive goal engagement and disengagement)	Only very little research on person- and context-related mechanisms and boundary conditions of associations between age and work/worker outcomes
4. Individual and environmental predictors of well-being and their interplay or fit	Individual and environmental predictors are not addressed	Model includes various person and (non-)work environment characteristics	Model focuses on various person and environmental characteristics as distal predictors as well as person–environment fit	Research focuses on age differences in person characteristics and the moderating role of job and organizational characteristics
5. Resilience of older people	Criteria include self-assessed adaptability	Not addressed	Not addressed	Not addressed

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high levels of *ability and motivation to continue working* among older workers. Kooij and colleagues (2020) further outlined a process model that focuses on proactive and adaptive goal engagement and disengagement efforts across the life span in order to maintain, adjust, or restore person–environment (P–E) fit (especially person–job fit) and, in turn, successful aging at work. Thus, at the core of this model are motivational processes including goal selection, pursuit, and revision. When individuals first enter the workforce, and in their early career stages, P–E fit is typically achieved through personnel selection, training, and job changes (Wilk & Sackett, 1996). However, as workers age, two broad domains of P–E fit can become unmatched: First, workers' abilities (e.g., physical strength, knowledge, skills) may become insufficient to meet job demands (e.g., new technology; Charness & Czaja, 2019). Second, workers' needs or preferences for certain activities (e.g., less fast-paced implementation, more management) and work conditions (e.g., more autonomous time management) may change over time and no longer fit the existing job's supplies (e.g., organizational resources; Zacher et al., 2014).

The process model further suggests that anticipated or experienced P–E misfit (i.e., due to age- or work-related changes) are followed by workers' appraisals of these P–E fit misfits in terms of being either manageable or unmanageable (i.e., whether it is possible to change person and/or environment characteristics). If an anticipated P–E misfit is perceived to be manageable, the individual is likely to become proactively goal engaged (e.g., enrolling in a vocational program) to overcome the P–E discrepancy, whereas an unmanageable P–E discrepancy is assumed to lead to proactive goal disengagement (e.g., planning to retire) and, ultimately, improved P–E fit. Importantly, proactive goal engagement and disengagement entail self-initiated and future-oriented efforts *before* P–E misfit has occurred. In the case of experienced P–E misfit, a manageable P–E discrepancy is assumed to lead to adaptive goal engagement and, in turn, improved P–E fit, whereas an unmanageable P–E discrepancy is assumed to lead to adaptive goal disengagement and, ultimately, improved P–E fit. Adaptive goal engagement and disengagement thus involve reactive efforts *after* P–E misfit has occurred.

Finally, Kooij and colleagues (2020) proposed that factors at multiple levels (i.e., person, job, work group, organization, and society) function as distal antecedents of this self-regulation process, with age stereotypes and discrimination conceptualized as predictors cutting across all of these levels. While the model does not explicitly refer to health, it is implicitly included as a person's characteristics and in workers' ability to continue working as an outcome.

Whereas the process model of successful aging at work is more concrete and comprehensive than previous conceptualizations of successful aging, it has been criticized for being "overly agentic" due to its emphasis on self-regulation processes (Rauvola & Rudolph, 2020). For instance, jobs with low resources, such as decision autonomy, may not provide sufficient opportunities to improve P–E fit. Furthermore, it is important to avoid that age (self-) stereotypes instead of actual abilities affect workers' assessment of P-E discrepancies.

Comparison Between the WHO's Definition of Healthy Aging and Models on Aging at Work

The models on aging at work share several key aspects with, but also differ in some ways from, the WHO's (2015) definition of healthy aging (see Table 1). First, the WHO's (2015) definition focuses on both life-span development and older people. In contrast, the successful aging approach by Robson and colleagues (2006) focuses on older workers only. In contrast, the comparative approach by Zacher (2015) adopts a life-span perspective. Only Kooij and colleagues (2020) focus both on life-span development and older workers. Second, Robson and colleagues (2006) and Zacher (2015), similar to the WHO's (2015) definition, adopt broad conceptualizations of occupational health and well-being, including subjective (e.g., feelings of growth, positive relationships) and more objective (e.g., physical health) outcomes. In contrast, Kooij and colleagues (2020) propose a narrower set of criteria (i.e., older workers' ability and motivation to continue working), which emphasizes older workers' productive contributions rather than intrinsic well-being.

Third, the WHO's (2015) definition highlights the process during which functional ability is developed, maintained, or regained, which includes motivational or self-regulation processes. In contrast to the other models, Robson and colleagues (2006) do not address the processes leading to successful aging at work, but one of their criteria is a "continued focus on and achievement of personal goals." Zacher's (2015) model focuses broadly on person- and context-related predictors of successful aging, but not explicitly on motivational processes. Kooij and colleagues' (2020) model includes the motivational processes of proactive and adaptive goal engagement and disengagement. Fourth, the WHO's (2015) definition emphasizes the interplay or fit between individual and environmental predictors of well-being. Whereas Robson and colleagues (2006) do not address predictors, the other models propose interactive effects and fit between various individual and (non-)work environment characteristics as predictors of successful aging at work (Kooij et al., 2020; Zacher, 2015). Finally, and in contrast to the WHO's (2015) definition, all models of successful aging at work do not address older workers' resilience. Notably, however, Robson and colleagues' (2006) criteria include self-assessed adaptability, which may be related to the development and maintenance of functional ability under adverse (work) circumstances.

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Cumulative Empirical Evidence on Age, Motivation, and Health and Well-Being at Work

In this section, consistent with the theme of this special issue and the theoretical models of successful aging reviewed above, we summarize cumulative evidence from meta-analyses and systematic reviews on age, motivation, and health and well-being at work (for reviews, see Baltes et al., 2019; Zacher & Froidevaux, 2021). Table 2 provides an overview of relevant studies. Research on age and work motivation has broadly distinguished between the motivation *to work* (e.g., motives) and the motivation *at work* (e.g., self-regulation, effort; Kanfer et al., 2013). In terms of motivation *to work*, a meta-analysis investigated associations between age- and work-related motives (Kooij et al., 2011). On average, age was weakly and positively related to intrinsic work motives (e.g., interesting work, need for autonomy), and negatively related to extrinsic work motives (e.g., compensation), growth motives, and security motives. A recent meta-analysis reported a positive relationship between age and the generativity motive (i.e., the motive to support and guide younger people; Doerwald et al., 2021). Other meta-analyses found negative associations between age and job search motivation (Wanberg et al., 2016) and an inverted U-shaped relationship between age and career commitment, with higher career commitment among middle-aged as compared to younger and older workers (Katz et al., 2019). Overall, these findings suggest that work and career characteristics that might meet workers' needs and, in consequence, affect their well-being may change with age.

With regard to the motivation *at work*, meta-analyses showed that age is, on average, positively related to various favorable motivational states, including job motivation, job involvement, and job self-efficacy (Ng & Feldman, 2012), as well as favorable attitudes toward work tasks (e.g., job satisfaction), colleagues and supervisors (e.g., interpersonal trust), and the organization (e.g., identification; Ng & Feldman, 2010). Regarding strategies for work goal achievement, a meta-analysis found no significant association between age and the use of selection, optimization, and compensation (SOC) strategies (Freund & Baltes, 2002) in the work context (Moghimi et al., 2017). However, SOC strategy use was positively related to job satisfaction, engagement, and performance. Another meta-analysis reported that age was weakly negatively related to the overall use of job crafting strategies, which involve proactively changing job characteristics (i.e., job demands and resources) to better align them with personal abilities and needs (Rudolph et al., 2017). In contrast, age was very weakly positively related to task and training performance, and somewhat more strongly positively related to citizenship behavior (i.e., helping others or the organization), and negatively related to counterproductive work behavior (e.g., aggression; Ng & Feldman, 2008). Overall, these findings suggest that older workers are generally not less motivated than younger workers, tend to have somewhat more positive work-related attitudes, and, on average, invest more effort toward benefiting others at work and their organization than younger workers.

Research on age and workers' general and occupational health and well-being typically distinguishes between objective (e.g., blood pressure) and subjective (e.g., self-reported mental health) indicators. A meta-analysis found evidence for moderately positive associations between worker age and objective clinical indices of poor physical health, including blood pressure, cholesterol level, and body mass index (Ng & Feldman, 2013). In contrast, the meta-analysis found that older workers, on average, do not report more subjective physical health problems than younger workers, and generally better mental health (e.g., lower fatigue, negative mood, less anger; Ng & Feldman, 2013). Whereas an early meta-analysis found no significant associations between worker age and burnout symptoms, such as emotional exhaustion (Brewer & Shapard, 2004), a more recent meta-analysis reported negative associations between age and burnout symptoms (Ng & Feldman, 2010). Finally, a meta-analysis on worker age and irritation (i.e., a form of perceived work stress) showed that age was not significantly related to emotional irritation, and weakly positively related to cognitive irritation (Rauschenbach et al., 2013).

The relatively weak effect sizes found in meta-analyses might suggest that both individual (e.g., self-regulation) and contextual factors (e.g., work design) buffer potential negative effects of age on health and well-being (Salthouse, 2012). Indeed, systematic reviews have found that certain favorable job characteristics (e.g., knowledge demands, job autonomy, meaningful work) are more beneficial for older as compared to younger workers in terms of health and well-being (Mühlenbrock & Hüffmeier, 2020; Ng & Feldman, 2015; Zacher & Schmitt, 2016). Finally, a meta-analysis showed that associations between "maintenance human resource practices" (e.g., teamwork, flexible work schedules, performance management) and job satisfaction and affective commitment were stronger for older as compared to younger workers. In contrast, the association between promotion, a "development human resource practice," and affective commitment was weaker for older compared to younger workers (Kooij et al., 2010).

Overall, cumulative research suggests that older workers have generally lower levels of objective health than younger workers, whereas they report somewhat higher subjective well-being than younger workers. These average associations are relatively weak and may be moderated by individual factors, such as self-regulation (e.g., SOC strategy use), as well as environmental factors, particularly job characteristics and organizational practices (Salthouse, 2012). An important caveat regarding the cumulative evidence summarized here and in Table 2 is that it is based on cross-sectional data and, thus, does not allow conclusions regarding the aging process, causality, and potential cohort effects. Some of the primary studies included in the meta-analyses used multiwave or longitudinal designs; however, it is common practice in meta-analyses to include only the correlation between age and the respective work outcome at the first measurement wave.

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Table 2. Overview of Results of Meta-Analyses on Age, Motivation, and Health and Well-Being

Work/worker outcomes	Sample-size weighted and reliability-corrected relationships between age and work/worker outcomes	*M* (*SD*), and range of age across samples	References
Motivation to work			
Work-related motives	Age is positively related to intrinsic work-related motives (ρ = .07, *k* = 84, *N* = 48,141), negatively related to extrinsic motives (ρ = –.10, *k* = 35, *N* = 37,054), growth motives (ρ = –.14, *k* = 31, *N* = 31,469), and security motives (ρ = –.08, *k* = 31, *N* = 35,233), and not significantly related to social motives (ρ = –.02, n.s., *k* = 35, *N* = 29,300).	M_{age} = 38.2 (*SD* = 9.4), age range = 17–77	Kooij et al. (2011)
	Age is positively related to the generativity motive (ρ = .10, *k* = 31, *N* = 12,813). This relationship is stronger in samples with a full age range (i.e., 40 years or more; ρ = .16, *k* = 15, *N* = 7,446) than in samples with a restricted age range (i.e., less than 40 years; ρ = .02, n.s., *k* = 16, *N* = 5,367).	n/a	Doerwald et al. (2021)
Job search motivation	Age is negatively related to job search intention (ρ = –.06, *k* = 25, *N* = 14,336), job search self-efficacy (ρ = –.08, *k* = 24, *N* = 10,238), and job search intensity (ρ = –.08, *k* = 57, *N* = 32,160).	n/a	Wanberg et al. (2016)
Career commitment	Age is positively related to career commitment (ρ = .08, *k* = 112, *N* = 54,481); however, this association is qualified by a negative curvilinear (i.e., inverted U-shaped) relationship.	M_{age} = 39.1 (*SD* = n/a), age range = 21–62	Katz et al. (2019)
Motivation at work			
Work and training motivation	Age is positively related to job motivation (ρ = .11, *k* = 19, *N* = 7,427), job involvement (ρ = .12, *k* = 62, *N* = 20,059), and job self-efficacy (ρ = .09, *k* = 53, *N* = 20,384), and negatively related to training motivation (ρ = –.05, *k* = 3, *N* = 426), career development motivation (ρ = –.14, *k* = 3, *N* = 1,056), motivation to learn (ρ = –.14, *k* = 15, *N* = 6,272), and learning self-efficacy (ρ = –.17, *k* = 9, *N* = 3,734).	M_{age} = 38 (*SD* = 8.6), age range = 18–62	Ng and Feldman (2012)
Work attitudes	Age is generally positively related to favorable attitudes toward work tasks (e.g., job satisfaction, ρ = .18, *k* = 388, *N* = 151,105), attitudes toward colleagues and supervisors (e.g., interpersonal trust, ρ = .17, *k* = 12, *N* = 5,456), and attitudes toward the organization (e.g., organizational identification, ρ = .20, *k* = 26, *N* = 9,786).	M_{age} = 37.8 (*SD* = 9.2), age range = n/a	Ng and Feldman (2010)
Self-regulation strategies	Age is not significantly related to the use of selection, optimization, and compensation (SOC) strategies in the work context (ρ = .04, n.s., *k* = 27, *N* = 9,613).	M_{age} = 43.6 (*SD* = 10.5), age range = 16.86	Moghimi et al. (2017)
	Age is negatively related to the overall use of job crafting strategies (ρ = –.10, *k* = 50, *N* = 14,469).	n/a	Rudolph et al. (2017)
Work and training performance	Age is positively related to task performance (ρ = .03, *k* = 118, *N* = 52,048), citizenship behavior directed at others (ρ = .06, *k* = 42, *N* = 10,565) and at the organization (ρ = .08, *k* = 34, *N* = 9,308), and negatively related to counterproductive work behavior (ρ = –.12, *k* = 28, *N* = 7,072) and training performance (ρ = –.04, *k* = 16, *N* = 9,228).	M_{age} = 36.6 (*SD* = 8.8), age range = 17–59	Ng and Feldman (2008)
Worker health and well-being			
Objective indicators of physical health	Worker age is positively related to objective indices of poor physical health, including blood pressure (ρ = .34, *k* = 8, *N* = 8,683), cholesterol (ρ = .20, *k* = 8, *N* = 3,512), body mass index (ρ = .21, *k* = 16, *N* = 13,084), insomnia (ρ = .12, *k* = 6, *N* = 5,191), and muscle pain (ρ = .14, *k* = 5, *N* = 1,618).	M_{age} = 38 (*SD* = 8.6), age range = 18–58	Ng and Feldman (2013)

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Table 2. Continued

Work/worker outcomes	Sample-size weighted and reliability-corrected relationships between age and work/worker outcomes	*M* (*SD*), and range of age across samples	References
Subjective indicators of physical and mental health	Worker age is not significantly related to self-reported physical health, including somatic complaints (ρ = .02, *k* = 59, *N* = 39,420) and subjective poor physical health (ρ = .00, *k* = 16, *N* = 16,016). Worker age is negatively related to symptoms of mental ill-health, including fatigue (ρ = –.10, *k* = 8, *N* = 7,565), negative mental health (ρ = –.05, *k* = 40, *N* = 29,027), negative mood (ρ = –.10, *k* = 21, *N* = 9,027), low positive mood (ρ = –.08, *k* = 32, *N* = 9,069), and anger (ρ = –.09, *k* = 5, *N* = 7,820). However, worker age is positively related to irritation (ρ = .03, *k* = 5, *N* = 7,820) and not significantly related to depression (ρ = –.03, n.s., *k* = 49, *N* = 41,988) and anxiety (ρ = –.01, *k* = 27, *N* = 15,793).	M_{age} = 38 (*SD* = 8.6), age range = 18–58	Ng and Feldman (2013)
Subjective indicators of occupational well-being	Age is not significantly related to overall burnout (ρ = –.13, n.s., *k* = 35, *N* = 10,818) and emotional exhaustion (ρ = –.15, n.s., *k* = 27, *N* = 8,391).	n/a	Brewer and Shapard (2004)
	Age is negatively related to emotional exhaustion (ρ = –.08, *k* = 75, *N* = 26,880), depersonalization (ρ = –.18, *k* = 27, *N* = 11,503), and (perceived) reduced personal accomplishment (ρ = –.14, *k* = 22, *N* = 6,342).	M_{age} = 37.8 (*SD* = 9.2), age range = n/a	Ng and Feldman (2010)
	Age is not significantly related to overall irritation (ρ = .02, n.s., *k* = 60, *N* = 28,695) and emotional irritation (ρ = .01, n.s., *k* = 36, *N* = 18,206), and positively related to cognitive irritation (ρ = .10, *k* = 40, *N* = 18,970).	M_{age} = 38.3 (*SD* = 9.9), age range = 15–87	Rauschenbach et al. (2013)

Note: *k* = number of independent samples; *M* = mean; *N* = total sample size. n/a = not available; n.s. = not significant; ρ = weighted mean corrected correlation.

Whereas cross-sectional studies hold period effects (i.e., time of measurement) constant, they confound age and cohort effects. There may be meaningful cohort effects on certain work outcomes; however, scholars have argued that such effects are generally less likely and weaker than age and period effects (Rudolph & Zacher, 2017). In addition, cross-sectional associations may be biased by the "healthy worker effect," which is a form of selection bias that entails that less healthy workers drop out of the workforce earlier than those with better health and, thus, are not included in empirical studies (Eisen et al., 2006).

Comparison Between the WHO's Definition of Healthy Aging and Empirical Research on Aging at Work

Empirical research on aging at work is consistent with many but not all of the key aspects of the WHO's (2015) definition of healthy aging. First, the WHO (2015) focuses on both life-span development and older people. Whereas some research includes older workers only (e.g., Garcia et al., 2018), most studies conceptualize and operationalize age as a continuous variable across the entire working age range (e.g., 18–70 years, see Table 2). The latter is consistent with the life-span perspective and methodological recommendations, as it allows comparisons across the age range (Bohlmann et al., 2018). Authors of some meta-analyses, however, have noted that the oldest workers included in relevant studies were relatively young (e.g., 58 years; Ng & Feldman, 2013). Second, most empirical studies adopted a narrower focus on well-being than the WHO (2015), with most studies focusing on objectively or subjectively assessed health or job attitudes, whereas psychological well-being outcomes, such as experienced meaningfulness or personal growth (see Ryff, 1989), have been neglected. Fourth, the WHO's (2015) definition focuses on the process in which functional ability is developed, maintained, or regained. In contrast, neither many primary studies nor cumulative research have addressed age-related processes or mechanisms (Zacher & Froidevaux, 2021). Fifth, consistent with the WHO's (2015) definition, a number of meta-analyses and systematic reviews have considered interactive effects of age (but not other individual characteristics) with job characteristics and organizational practices. However, broader environmental characteristics, such as nonwork factors (e.g., family) or legal regulations, have been neglected (Zacher & Froidevaux, 2021). Finally, research on aging and work has not addressed older workers' resilience.

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Directions for Future Research and Practice

Healthy aging at work can be understood as a motivational life-span process during which workers develop, maintain, or regain functional ability, comprised of the interplay or fit between individual factors, including motivational characteristics and self-regulation, and various work and nonwork environmental factors. Functional ability enables high well-being and resilience when workers are older. Based on our literature review, we now discuss directions for future research and practice. We first propose ways in which research on aging at work could benefit from the WHO's (2015) definition of healthy aging. Second, we outline in what ways research on healthy aging could benefit from insights from work and organizational psychology research. Finally, we describe person- and environment-focused interventions to promote the motivation for healthy aging at work.

How Could Research on Aging at Work Benefit From the WHO's Definition of Healthy Aging?

Most research in the work context has adopted a life-span perspective and examined age as a continuous variable in relation to work outcomes. However, based on the WHO's (2015) definition of healthy aging, future research could attempt to better understand how the interplay between individual characteristics, particularly motivational factors and processes, and work and nonwork environmental characteristics across the life span contributes to older workers' resilience, health, and well-being. In the life-span developmental literature, a few studies have examined how characteristics of workers' career jobs and occupations, such as job complexity, relate to cognitive functioning in older age (e.g., Andel et al., 2005; Schooler et al., 1999). Consistent with this line of research, studies could adopt a P–E fit perspective to examine how work-related characteristics interact with individual characteristics and self-regulation in predicting health and well-being in later life (Zacher et al., 2014). For instance, research could examine interactive effects of job characteristics (e.g., demands, resources) and workers' use of proactive and adaptive goal engagement and disengagement (Heckhausen et al., 2019; Kooij et al., 2020) or job crafting strategies (Kooij et al., 2015) on older workers' health and well-being. In this context, the role of educational and skill levels (e.g., contrasts between professional, skilled, and nonskilled careers) and socioeconomic status should be examined as potential moderators of the effectiveness of adaptive goal engagement, disengagement, and job crafting.

Moreover, research in the work context could adopt broader conceptualizations and measures of health and well-being. In addition to performance, the potential utility for organizational success, and "working past traditional retirement age," these conceptualizations and measures could focus on older workers' needs fulfillment, perceived meaningfulness and growth, and the experience that they are able "to be and to do what they have reason to value" (WHO, 2015, p. 28). For instance, some older workers who spent their careers in physically or mentally straining jobs may prefer to retire early and focus on leisure (Wang, 2007). Furthermore, research on aging at work should rely more often on longitudinal study designs to better understand how motivation and health change intraindividually with increasing age, and how individual differences and environmental factors affect such developmental changes. Finally, there is currently a dearth of research on older workers' resilience, or the ability to maintain or improve functional ability in the face of adversity. Future research could investigate how workers can develop functional ability with increasing age that enables them to achieve well-being under adverse work conditions, such as low wages, job insecurity, and limited decision-making opportunities (Leana et al., 2012).

How Could Research on Healthy Aging Benefit From Insights From the Work Context?

Research on healthy aging in the developmental literature should take people's work and career experiences and actions into account when investigating the predictors of health and well-being at higher ages. Life-span development (e.g., personality growth) could be influenced by work-related factors, but many individuals may also actively influence their job characteristics and career development, for instance through SOC strategy use (Zacher et al., 2016), job crafting (Kooij et al., 2015), or goal adjustments (Heckhausen et al., 2017). Further research is needed that examines how the interplay between the work environment and worker characteristics, including self-regulation, may affect well-being across the life span and at higher ages. Moreover, developmental research could benefit from expanding its "construct repertoire" with more specific aspects of the work environment, such as job, team, and organizational characteristics (e.g., technology, coworker support, leadership, human resources practices), as well as more specific work and worker outcomes (e.g., job performance, occupational health, ability and motivation to continue working or to retire). Finally, work can provide individuals with several resources essential for motivation, functional ability, and well-being in older age (e.g., financial security, skills). It should not be neglected, however, that working conditions can also be a significant source of poor well-being in later life (e.g., low-wage, dangerous, stressful work) and, thus, represent an important context in which to examine resilience development.

Interventions to Promote the Motivation for Healthy Aging at Work

Interventions to enhance workers' motivation, functional ability, well-being, and resilience and, thus, to promote healthy aging at work should primarily aim at improving

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P–E fit. The better workers' abilities and needs are matched with their work demands and supplies, the more capable and motivated they should be to maintain, improve, or regain their health and well-being. Importantly, interventions should not only be targeted at older workers but also, consistent with the WHO's (2015) definition of healthy aging, focus on the development, maintenance, and recovery of functional ability as a motivational life-span process that begins when workers are younger and leads to high well-being across the life span, including older age. Accordingly, motivational characteristics and processes play a key role in all of the interventions described next, as the effects of these interventions on well-being are mediated by workers' decisions and the active selection, pursuit, and revision of goals (Heckhausen et al., 2019).

Interventions to improve the work environment and, in turn, P–E fit and worker motivation and well-being include physical workspace (re-)design, psychological work (re-)design, and organizational practices. First, the workplace architecture, technology, and workspaces can be adapted to age-related changes in workers' abilities and needs to promote the motivation for healthy aging (Gonzalez & Morer, 2016). This may involve changing work settings to limit extreme joint movements, unusual postures, heavy lifting, extreme pressure, and repetitive tasks (Roper & Yeh, 2007), or allowing workers to adjust their furniture and equipment to their abilities and needs (Afacan, 2015). The ensuing improved P–E fit should free up motivational resources that support workers' goal achievement and well-being. Second, findings of systematic reviews suggest that improving certain motivational job characteristics, such as job autonomy and task significance, can contribute to healthy aging at work by meeting basic human needs for control, competence, and connection (Mühlenbrock & Hüffmeier, 2020; Zacher & Schmitt, 2016). Third, organizations could rely on nudging, which involves directing people's motivation in a certain direction, but not making certain behaviors mandatory or monetizing them (Thaler & Sunstein, 2008). For example, to promote the motivation for healthy aging, nudging could be used to frame healthy behavior in the team context as normative or to change labels at work stations in a way that is conducive to worker motivation and healthy behavior. Finally, human resource practices, such as personnel development and performance management, should be optimized to improve P–E fit and, in turn, to enhance the motivation for healthy aging at work (Kooij et al., 2010; Vanajan et al., 2020; Zacher et al., 2018).

Individual-focused interventions may enable and motivate workers to proactively change their work environment or to adaptively change their behavior to improve P–E fit and, in turn, the motivation for healthy aging. For example, organizations could train workers in the use of self-regulation strategies such as SOC (Müller et al., 2018). Although not generally related to age (Moghimi et al., 2017), SOC strategy use has been shown to be associated with higher perceived work ability among older workers with high job autonomy (Weigl et al., 2013). Moreover, an intervention study showed that when older workers themselves actively improved the fit between their job and their personal strengths (i.e., strength-based job crafting), they subsequently experienced higher demands–abilities and needs–supplies person–job fit (Kooij et al., 2017).

Based on the process model of successful aging (Kooij et al., 2020), interventions to enhance the motivation for healthy aging could be developed that support workers in anticipating and in dealing with person–job misfit through proactive and adaptive goal engagement and, when goals have become unattainable, goal disengagement (Heckhausen et al., 2017; Wrosch & Scheier, 2020). For revising their goals, workers could practice a self-regulation skill called mental contrasting, which entails combining wishful future fantasies (which give action the direction) with the consideration of critical obstacles (which provides the energy and the solution to overcome the obstacle and to attain the future fantasies; Oettingen et al., 2001; Oettingen & Sevincer, 2018). Mental contrasting can lead to enhanced P–E fit by increasing goal engagement when a desired future is reachable, and to goal disengagement when a desired future is futile to try for. When an obstacle is particularly difficult to overcome, mental contrasting can be combined with implementation intentions, or "if–then" plans, to enhance its effectiveness (Oettingen et al., 2013).

Conclusion

We applied the notion of healthy aging to the work context and outlined its similarities and differences with theoretical and empirical research on age, motivation, and health and well-being in the work context. Whereas research on aging at work has addressed several key aspects of the definition of healthy aging (e.g., life-span perspective, worker health and well-being criteria, P–E fit), other aspects have been neglected (e.g., motivational processes through which functional ability is developed, maintained, or regained; older workers' resilience). We hope that the ideas advanced in this paper stimulate innovative theorizing, rigorous empirical research, and effective practical applications to promote workers' motivation for healthy aging at work.

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