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Chapter 15

Lifespan Perspectives on Occupational Health

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In recent years, organizations face two challenges at the same time. While occupational health is an on-going pressing issue, organizations in many countries also deal with an increasingly aging population. Thus, it is necessary for organizations to adapt a lifespan perspective if they want to foster the well-being of their aging workforce effectively. In this chapter, we provide an overview of the literature on occupational health across the lifespan and thereby integrate theoretical perspectives and empirical findings from different research perspectives: the domains of occupational health psychology and lifespan psychology (Aldwin, Spiro, Park, & Birren, 2006; Scheibe & Zacher, 2013). Across the working lifespan, individuals are confronted with different vocational demands and tasks, and they experience changes in cognitive, motivational, emotional, and physical states. We refer to successful aging at work (Zacher, 2015) from a lifespan perspective that should be applied to the domain of occupational health. Figure 15.1 depicts the conceptual model and provides an overview of the variables and relationships specified in this chapter.

In this chapter, we aim to explain how and why occupational well-being develops differently for individuals across the working lifespan (see Fig. 15.1). We refer to the occurrence of age-related changes in terms of losses and gains and how these relate to occupational health outcomes (see Fig. 15.1). Next, one main focus is on the role of personal factors and work characteristics that function as boundary conditions explaining why individuals' occupational health develops differently across the working lifespan. Moreover, a person-environment fit perspective (Shultz & Adams, 2007; Zacher, 2015) is presented. It states that across age, worker's physical, cognitive, emotional, and motivational resources need to be matched with job demands to provide opportunities for successful aging at work (see De Jonge

FIGURE 15.1 Conceptual and schematic overview of the relationships on occupational health across the lifespan.

& Dormann, 2003; Zacher, Feldman, & Schulz, 2014). Finally, we finish the chapter by indicating some implications for future research.

OCCUPATIONAL HEALTH

Health is a multidimensional construct, defined as a state of physical, mental, and social well-being, and not merely the absence of disease (World Health Organization, 2004). Antonovsky (1979) proposes the distinction between a pathogenic and the salutogenic approach to health. The pathogenic approach is focused on identifying risk factors that result in ill-health, whereas the salutogenic approach emphasizes the role of health-promoting or health-maintaining factors. With regard to occupational well-being, we adopt a broad definition that includes indicators of physical, mental, and social well-being described in the work context (World Health Organization, 2004; Zacher & Schmitt, 2016). This conceptualization also includes both positive (e.g., good physical health, job satisfaction) and negative (e.g., ill-health, strain, emotional exhaustion) aspects of occupational well-being. It further comprises subjective indicators (e.g., self-reports on people’s functional¹ health or mental well-being) as well as objective indicators (e.g., physiological indicators such as cortisol, blood pressure). Occupational health aims at

1. Functional health refers to the degree to which people feel they are healthy enough to perform their necessary and usual activities in life (e.g., housework, socializing) (e.g., Bryant, et al., 2001).

identifying and controlling the risks that arise from hazards at work to establish and maintain a healthy work environment. Based on this knowledge, policy instruments and interventions for workers' health can be developed and implemented.

THE CONCEPT OF AGE IN THE WORKING LIFESPAN

Health develops across the lifespan based on interactions between genetic and environmental factors (Aldwin, et al., 2006; Rowe & Kahn, 1997). A person's development across the lifespan is usually represented by his or her chronological age. Chronological age is best conceptualized as a continuous variable (Bohlmann, Rudolph, & Zacher, 2017; Schwall, 2012; Warr, 2001). Researchers have become increasingly interested in understanding the role of age in the workplace (Truxillo, Cadiz, Rineer, Zaniboni, & Fraccaroli, 2012). The chronological age range in the active workforce differs from the range in the general population. An older adult in the general population is older than 65 or 70 years of age (Ng & Feldman, 2013) whereas the typical age range in studies on age and worker well-being is between 18 and 65 years (Bohlmann, et al., 2017; Doerwald, Scheibe, Zacher, & Van Yperen, 2016; Scheibe & Zacher, 2013).

Chronological age does not contain information on an individual's development over time. Therefore, Neugarten (1977, p. 633) names it an "empty variable" (cf., Bohlmann, et al., 2017). To draw conclusions on the relationship between age and well-being and on how well-being changes with age, we need to know more about the specific developments and changes in workers' physiological and psychological states, abilities, and motives (Doerwald, et al., 2016; Scheibe & Zacher, 2013; Schroots & Birren, 1990). Furthermore, we need to take into account that life phase-specific roles, developmental tasks, and demands change across the working age-range (Almeida & Horn, 2004; Kanfer & Ackerman, 2004). In the literature on career development, Super (1980) refers to these changes that people experience as they age by portioning working life into broader stages (see Chapter 10 in this volume). Each stage outlines the typical vocational tasks and behaviors depending on people's life roles. Super's focus is on whether an individual has completed stage-appropriate career developmental tasks in comparison with other people of the same age. The four stages that are key for studying occupational health across the working lifespan refer to exploration in younger adulthood (ages 18–30), establishment in middle adulthood (ages around 25–49), the maintenance phase in late adulthood (ages 45–65), and decline when individuals withdraw from work and shift into retirement (age 65 and older) (Huffman, Culbertson, Henning, & Goh, 2013; Super, 1980) (see Fig. 15.1). The stages are not static, but may overlap, and the age categories related to these stages should not be strictly interpreted. According to the approach by Super, the stages are chronologically ordered,

but it is also possible to re-enter a certain stage at different points in one's working lifespan.

OCCUPATIONAL HEALTH IN YOUNGER, MIDDLE-AGED, AND OLDER WORKERS

In the exploration phase, younger workers between approximately 18 to 30 years (Super, 1980) (see Fig. 15.1) figure out how they fit with different occupations, specify and implement occupational choices, and start their careers. When starting their careers, younger workers face challenges in terms of developmental tasks that might affect their occupational health. They have to make important vocational decisions, adopt new roles, and manage their time and efforts while still in the process of establishing a personal identity (Evans & Bartolomé, 1984; McDaniels & Gysbers, 1992). Emerging adulthood is an unstable period with frequent changes in social relationships, residence, and work. This instability can be troubling, resulting in adverse health outcomes, such as anxiety and depressive symptoms (Aldinger et al., 2014; Arnett, 2007). However, especially younger workers, who are right at the beginning of the working lifespan, usually face only little strain due to work-family conflict as they are less likely to have started a family or care for elderly relatives. Hence, work-family conflict is usually not at its peak in emerging adulthood (Arnett, Žukauskienė, & Sugimura, 2014).

Over the course of time, when they enter the establishment stage (aged around 25 to 49), workers stabilize their professional skills, they experience career transitions, and tend to face more work-related responsibilities. Also, with further life events, such as marriage and childbirth, employees take on more responsibilities and duties in both the work and family domains. At this career stage, people often juggle work and family demands at the same time. Research has revealed that strain and work-life conflict are highest in middle-aged workers (aged 36 to 50 years), relative to younger or older workers, which may be a result of increased work and nonwork related demands during midlife (Blanchflower & Oswald, 2008; Rauschenbach & Hertel, 2011; Warr, 1992). These middle-aged workers sometimes find themselves in a sandwich position with their children still being dependent on them and their parents experiencing the first aging-related problems (Burke, 2017).

Numerous studies have examined specifically the association between older workers and their physical and mental health (Zacher et al., 2014). A usual cut-off of what constitutes an older worker differs in the range of 40 to 50 years and older. This refers to the late establishment and the maintenance phase according to Super (1980) (Fig. 15.1). These ranges, however, vary across studies (Kooij, De Lange, Jansen, & Dijkers, 2008; Zacher & Schmitt, 2016). Recent research from lifespan developmental psychology has

created some knowledge with respect to general age-related changes across the lifespan. Such changes refer to physical, cognitive, motivational, emotional, and personality changes and influence workers' occupational strain and well-being (Kanfer, Beier, & Ackerman, 2013; Ng & Feldman, 2013; Scheibe & Zacher, 2013) (see Fig. 15.1).

CHANGES IN TERMS OF LOSSES AND GAINS ACROSS THE WORKING LIFESPAN AND CONSEQUENCES FOR OCCUPATIONAL HEALTH

At least in Western societies, there are negative stereotypes concerning aging suggesting that aging is primarily related to deficiencies and losses. For example, it is often assumed that older workers suffer from greater health problems and have poorer well-being compared to younger workers (cf. Aldwin et al., 2006; von Hippel, Kalokerinos, & Henry, 2012). Accordingly, older workers face increased age discrimination.

Some aspects do indeed deteriorate with age. These refer to more general physiological processes and clinical indicators of physical health (e.g., blood pressure, cholesterol level, body mass index), whereas mental health and self-reported functional health are not so much affected (Ng & Feldman, 2013). Workers' physical work capacity and their physical fitness decline with age, sensory capabilities in terms of eyesight and hearing are becoming more limited, and muscle strength and cardiac capacity tend to diminish. These changes are, in turn, linked to occupational injuries, especially among older workers who hold jobs that require these physical capacities (cf., Truxillo et al., 2012).

Further, there is a broad literature showing that workers' cognitive abilities change with age (see Chapter 2 in this volume). On the one hand, crystallized intelligence (i.e., accumulated experience-based knowledge, skills, and wisdom) tends to increase as individuals mature with a peak at about age 60 and then slowly declines later in life (Aldwin et al., 2006; Baltes, Staudinger, & Lindenberger, 1999). On the other hand, people's fluid intelligence (i.e., short-term information processing as well as the capability to solve problems, think logically, and retrieve memory information) tends to decline with age and this decline even starts at age 25 (Schaie, 1994; Truxillo, Cadiz, & Hammer, 2015). Relatedly, older workers should experience more stress when processing a lot of information at work than their younger counterparts (Kanfer & Ackerman, 2004). In fact, lower cognitive functioning has been found to be related to poorer mental health in older people (Wilson, De Leon, Bennett, Bienias, & Evans, 2004; Yaffe et al., 1999).

Despite these physiological constraints and losses, most workers seem to maintain their well-being across the working lifespan even though work responsibilities increase with age (see Scheibe & Zacher, 2013). Meta-

analytic evidence mostly rejects negative age-stereotypes (Ng & Feldman, 2010, 2012, 2013). For instance, older workers tend to report lower levels of unfavorable job attitudes, such as job dissatisfaction, less daily hassles, and lower levels of strain symptoms (e.g., emotional exhaustion, anxiety) as compared to younger workers (Ng & Feldman, 2010). There are numerous reasons for the absence of overall negative effects. First, most losses and constraints related to health do not strongly affect individuals in their *working* lifespan, but may appear after people have left the active workforce. A decline in people's self-reported health status is more strongly evident in people older than 75 years (Ng & Feldman, 2013; Pinguart, 2001). Second, people who remain in the active workforce are, on average, healthier than those who are not working anymore (Richardson, Wing, Steenland, & McKelvey, 2004). This so-called healthy-worker effect states that individuals who leave employment and become unemployed or retire early may do so simply because they are not healthy enough. Individuals who retire "before time" are then also likely to experience a decline in well-being after retirement followed by a recovery phase (Wang, 2007). Furthermore, work itself may have health-maintaining or enhancing effects; it stimulates cognitive processing, promotes learning, personal identity, and growth in the short and long-run (Jahoda, 1982; Parker, 2017). Third, and most importantly, people experience developmental gains over the working lifespan that may positively influence their health and well-being and, in turn, outweigh the losses (Scheibe & Zacher, 2013). For instance, workers in this later career-development stage of maintenance show an extended tenure and work experience that may provide resources such as professional knowledge, expertise, and status (Aldwin, et al., 2006). However, as people's characteristics (e.g., cognitive abilities, motives) may change across the working lifespan, this health-maintaining effect of work may only be assured given that workers are able steadily and proactively to improve the fit between their abilities, motives, and the demands of their job (Kanfer & Ackerman, 2004; Kooij, 2015).

According to the socioemotional selectivity theory (Carstensen, 2006; see Chapter 6 in this volume), workers experience age-related changes in their perception of the remaining time in life, which in turn determines their goals and their emotional orientation (Carstensen, 2006; Doerwald, et al., 2016; Rohr, John, Fung, & Lang, 2017; Scheibe & Zacher, 2013). Specifically, when perceiving time in life as open-ended, younger people prioritize future-oriented professional goals focused on learning and development-strivings for career accomplishments. In contrast, when their remaining lifetime seems to be limited, individuals prioritize present-oriented goals that are within their reach; they aim to maintain resources and prevent resource loss when they have only limited expectations of their occupational future (Rohr et al., 2017; Zacher & Frese, 2009). Moreover, older adults are more motivated to experience positive affective states and reduce negative affective states

(Scheibe & Zacher, 2013). Accordingly, research suggests that older workers tend to focus more on past accomplishments, meaningful social connections with others, and generativity motives such as helping others and contributing to society (Kanfer & Ackerman, 2004; Truxillo, et al., 2015). These factors may help them to maintain emotional well-being and job satisfaction at higher ages (Doerwald et al., 2016; Ebner, Freund, & Baltes, 2006; Lang & Carstensen, 2002). Relatedly, older workers may remember rather positive than negative work characteristics and they also would appraise ambiguous aspects more positively (see Charles & Carstensen, 2010). This may result in more positive ratings of their job satisfaction. In line with the arguments offered by socioemotional selectivity theory, research from the domain of lifespan psychology has found moderate support for the proposed age-related advantage in emotional competencies, such as perceiving, understanding, and regulating one's own emotions and understanding others' emotions (cf., Doerwald, et al., 2016). There is also evidence for a normative age-related increase in the quality and stability of emotional experience and emotional abilities. Older workers experience lower mood fluctuations and an improved ability to regulate positive and negative emotions more efficiently (Morgan & Scheibe, 2014). Older workers were found to value emotionally positive events and meaningful relationships more highly than their younger colleagues and are more motivated to avoid experiencing negative emotions. This positive emotional capacity of older workers helps them to fulfill emotional job demands and may benefit their occupational health and well-being (cf., Doerwald et al., 2016; Scheibe & Zacher, 2013). Interestingly, however, differences across age ranges in emotional competencies are at least partly determined by boundary conditions. Previous research, for example, indicates that jobs that are highly complex and resource-demanding and that require high levels of information processing, are perceived as more stressful for older workers than for younger workers (cf., Kanfer & Ackerman, 2004; Wrzus, Müller, Wagner, Lindenberger, & Riediger, 2013).

Also, meta-analyses and large representative panel studies, demonstrate that the Big Five personality traits gradually change across the working lifespan (Chopik & Kitayama, 2017; Roberts & Mroczek, 2008; Specht, 2017; see Chapter 3 in this volume). Personality trait changes can occur at any age (Roberts & Mroczek, 2008), but some evidence suggests that whereas personality is relatively stable in middle adulthood, this development is most likely to occur during young adulthood and older age (Specht, 2017). Specifically, emotional stability and conscientiousness tend to increase throughout the lifespan until old age. Agreeableness changes most during the age of 30 (Srivastava, John, Gosling, & Potter, 2003) and remains relatively stable or slightly increases until old age (Specht, 2017). Openness to experience increases during young adulthood and decreases afterwards. An age-related decrease is also evident in extraversion (Roberts & Mroczek, 2008; Specht, 2017). Studies on personality trait changes have usually been

conducted in Western societies and there is first evidence for systematic cross-cultural differences in how personality changes across the lifespan (Chopik & Kitayama, 2017), but more research is needed here.

Personality trait changes over time relate to individual health outcomes (Letzring, Edmonds, & Hampson, 2014; Magee, Heaven, & Miller, 2013; Mroczek & Spiro, 2007; Roberts & Mroczek, 2008). For instance, positive changes, such as increases in agreeableness, conscientiousness, and extraversion, were found to relate to better physical and mental health (Letzring, et al., 2014; Magee et al., 2013). In contrast, personality trait changes that are socially undesirable (e.g., becoming less emotionally stable over time) are related to poorer health outcomes (Letzring et al., 2014; Mroczek & Spiro, 2007).

Occupational Health in Retirement

Workers typically retire at around 65 years (Organisation for Economic Co-operation and Development, 2011), which corresponds to Super's (1980) final career stage of decline (Fig. 15.1). However, workforce participation among people aged 65 and older has increased in many OECD countries because individuals often decide to remain in the active workforce after retirement (Fisher, Chaffee, & Sonnega, 2016). The phenomenon of individuals' continued involvement in paid work after they have officially retired is called bridge employment (Wang, Zhan, Liu, & Shultz, 2008; see Zhan & Wang, Chapter 25: Lifespan Perspectives on the Work-to-Retirement Transition). Continued workforce participation is, on average, beneficial to people's self-reported mental well-being (e.g., negatively related to depressive symptoms) and physical health (Wang et al., 2008). Findings indicate that retirees who are engaged in bridge employment are better able to maintain their preretirement levels of well-being than those without bridge employment (Wang, 2007). The outcomes of bridge employment for well-being of older adults are especially evident in those who retired involuntarily or earlier than is socially prescribed or personally expected (Van Solinge & Henkens, 2008).

The transition to full retirement is considered a major role change, with some people being at risk of losing purpose, structure, and status (Wang & Shultz, 2010). On average, different theoretical perspectives exist that may explain the relationships between retirement and individual health outcomes. Empirical research based on samples from different countries shows that multiple patterns or profiles of change in well-being after retirement exist (Heybroek, Haynes, & Baxter, 2015; Pinquart & Schindler, 2007; Wang, 2007). Wang (2007) identified a "maintaining pattern" indicating that people's well-being after retirement does not change much; a "recovery pattern" indicating positive changes in psychological well-being over time; and finally, a "U-shape" pattern such that individuals experience an initial

decline in psychological well-being at the beginning of the retirement process, followed by a later increase such that they were able to adjust to retirement over time (Wang, 2007).

Interestingly, these change patterns can be differentially predicted by personal factors (e.g., level of retirement planning, previous health status) and contextual influences (e.g., type of previous job; family status) (Wang, 2007). For instance, the “recovery pattern” is especially evident in people engaged in highly demanding jobs and those who exit early from working life due to psychological job strain. For such people, retirement provides relief from the pressure, stress, and high performance expectations experienced at work.

INTER-INDIVIDUAL DIFFERENCES IN CHANGES IN OCCUPATIONAL HEALTH ACROSS THE WORKING LIFESPAN

There is considerable heterogeneity both in individuals’ patterns of, and changes in patterns of occupational health across the working lifespan. Whereas some individuals become ill, incapable of working, and have to face a passive lifestyle, others stay active and engaged (Aldwin et al., 2006; Freund & Riediger, 2001). Inter-individual differences in work- and nonwork-related outcomes become even more prevalent when people age (Bohlmann et al., 2017).

The relationship between age and health deterioration or improvement across the working lifespan depends on boundary conditions (see Fig. 15.1). There is an increasing literature that demonstrates the moderating function of personal factors and contextual factors in terms of work characteristics (Truxillo et al., 2015; Zacher & Schmitt, 2016; Zacher, 2015) (Fig. 15.1). This literature is largely based on two broader perspectives that both emphasize the role of access to personal resources and contextual factors: The framework of *successful aging* (Kooij, 2015; Zacher, 2015; see Shultz & Olson, Chapter 9: Lifespan Perspectives on Successful Aging at Work) and the *person–environment fit* (P–E fit) approach (Truxillo et al., 2015; Zacher et al., 2014). Kooij (2015, p. 309) defined successful aging at work as the “maintenance of workers’ health, motivation, and working capacity or work ability” across age, and Zacher (2015, p. 9) states that “employees whose trajectories deviate positively from the average trajectory are aging successfully at work, whereas employees whose trajectories deviate negatively are aging unsuccessfully at work.” Research on successful aging emphasizes the interplay of age, changes across age and personal resources (e.g., self-action regulation strategies), and/or contextual factors (e.g., work characteristics) as determinants of occupational health outcomes (Rowe & Kahn, 1997; Zacher & Schmitt, 2016).

The person–environment fit (P–E fit) approach emphasizes that job design should aim at matching the workers’ current physical, cognitive, and

emotional resources with the demands of the job. This approach may explain differential relationships between work characteristics and occupational health among workers of different age groups by proposing that job design should aim at matching workers' resources (i.e., physical, cognitive, emotional) that vary with age (Baltes, 1987). In the following, we provide a review of personal factors and of work characteristics that have been discussed in the lifespan developmental and occupational health literature as determinants of changes in occupational health across the age groups (see Fig. 15.1).

Personal Factors

Personal factors that may explain heterogeneity in occupational health trajectories across the working lifespan are demographics (e.g., socioeconomic status), health-related variables (e.g., earlier health status), personality (e.g., proactive personality), and motivational characteristics of the employee (i.e., selective optimization with compensation as well as primary and secondary control). There is a considerable amount of research with respect to the relevance of the latter motivational factors for aging at work, whereas we need more studies that explicitly examine whether the other factors explain inter-individual differences in occupational health trajectories.

Demographics. Research underlining the relevance of demographic variables for the development of occupational health is scarce, whereas we have evidence that these variables matter in terms of general health. First, socioeconomic status has crucial effects on employees' health (Aldwin et al., 2006): Poorer people die younger, show reduced well-being, are more inclined to engage in negative health-related behaviors such as smoking and benefit less from health care than the rich. Analyzing two representative U.S. samples, Crimmins, Kim, and Seeman (2009) found that poverty was associated with higher mortality, particularly among middle-aged individuals. Later in life, mortality rates were more similar, most likely because the fittest of the poor had survived. Similarly, those with a better education have a higher life expectancy and show more positive health-behaviors (Cutler & Lleras-Muney, 2010). This so-called education gradient becomes evident by the age of 30 (Conti, Heckman, & Urzua, 2010) and its reasons are manifold. Cutler and Lleras-Muney (2010) discuss financial resources along with the access to health care as being relevant. Further, these authors allude to cognitive ability and social integration to explain the link between education and health-behaviors (Cutler & Lleras-Muney, 2010). Higher education is also the gatekeeper for better jobs with higher resources. However, a causal relationship between health on one hand and education and work on the other hand might be even more complicated. For example, Veldman, Reijneveld, Ortiz, Verhulst, and Bültmann (2015) found that previous health trajectories

of younger adults predicted their education and job outcomes. Thus, reciprocal causality seems to be occurring between education, work, and health.

Second, gender might be relevant for the development of occupational health as well. The gender gap in life expectancy is a global phenomenon (Barford, Dorling, Smith, & Shaw, 2006). More precisely, in 2015, women were likely to outlive men by 4.6 years (World Health Organization, 2017). Gendered health-behaviors could explain this difference at least partially. According to Umberson (1992), women possess more health-related knowledge, monitor their own health more, and engage less in risky health-behaviors and more in prevention-behaviors than do men. These behaviors might also buffer a negative development of occupational health and, thus, contribute to successful aging at work.

Health-related variables. The life-course approach (Wink & James, 2013) argues that it is important to take on a temporal perspective to understand individuals' current patterns of occupational health by paying attention to their past experiences. Thus, it is not surprising that past experiences of physical and psychological illness go along with subsequent changes in perceived health (Bryant, Corbett, & Kutner, 2001). Importantly, one's attitude with respect to age-related changes in health is crucial as well. Bryant et al. (2001) examined factors that contributed to successful aging, and found that having a positive self-attitude (i.e., thinking of oneself as healthy) was related to greater perceived health also when health conditions were present. In contrast, having a '*poor me* attitude' was related to poor perceived health even though no or only minor illnesses were experienced before.

Personality. It is conceivable that employees with a proactive personality will experience more successful aging in terms of their occupational health. In their proactivity model of successful aging in late life, Kahana and Kahana (1996) hint at this idea, as they describe personal proactivity strategies to deal with and adapt to stressors associated with aging. A proactive personality is a main determinant of these proactive strategies, that is self-initiated behaviors that aim at changing the environment (see Fay & Frese, 2001). Age-related losses may be smaller or delayed if employees deal with aging proactively (e.g., planning future events such as the transition from work to retirement and preventive health promotion).

In her comprehensive review, Kooij (2015) compiles a multitude of these so-called proactive behaviors that are adaptive for aging workers who are dealing with an increasingly poor P-E job. Job crafting (Wrzesniewski & Dutton, 2001)—a form of proactive behavior that is predicted by a proactive personality (Bakker, Tims, & Derks, 2012; Rudolph, Katz, Lavigne, & Zacher, 2017)—received special attention as being helpful in the process of successful aging (Wong & Tetrick, 2017). Bakker et al. (2012) conceptualize job crafting as increasing challenging demands, decreasing hindering demands, as well as increasing structural and social resources. Thus, aging workers with a proactive personality, who experience losses in terms of a

deteriorating physical health (Aldwin, et al., 2006; Ng & Feldman, 2013), would aim at reducing hindering stressors and increasing their resources to cope better with the demands at work. Consequently, those with a proactive personality would have an advantage over those who are not so proactive. More in-depth research on this rationale is needed (for further details on personality see Chapter 3 in this volume).

Motivational processes. Occupational health trajectories depend on employees' motivation. A latent profile analysis by Thrasher, Zabel, Bramble, Baltes, and Kooij (2017) alludes to motivational differences of so-called healthy and classic agers. The authors found that healthy agers reported higher levels of promotion and development motives than the classic agers, whereas there were no differences in terms of security and social motives. Two motivational perspectives are particularly relevant as they inform us about the boundary conditions of successful aging at work that stem from the person: the lifespan theory of control (Heckhausen & Schulz, 1995; Schulz, Wrosch, & Heckhausen, 2002) and the conceptualization of selective optimization with compensation (Baltes & Baltes, 1990).

The lifespan theory of control (Heckhausen & Schulz, 1995; see Chapter 5 in this volume) states that individuals need to adapt their behavioral strategies to the opportunities and constraints encountered in their environment, such as the workplace, in order to age successfully. Controlling one's environment is most important to adaptive functioning throughout the lifespan. Furthermore, both the ability and opportunity actively to engage in goal pursuit (i.e., primary control) and being able to disengage from unattainable goals (i.e., secondary control) are important for individual well-being (Haase, Heckhausen, & Wrosch, 2013; Wrosch, Heckhausen, & Lachman, 2000). Primary control refers to behaviors directed at the external environment and involves attempts to change the world to fit the needs and desires of the individual. Secondary control is targeted at internal processes that may help the individual to cope with inevitable failure, to mitigate potential threats to the self, and to foster primary control by channeling motivational resources toward other selected goals throughout the life course (Rothbaum, Weisz, & Snyder, 1982).

One key assumption is that primary control striving has functional primacy over secondary control (Heckhausen, 1997). That is, individuals will strive to maintain and extend primary control as long as possible. Heckhausen, Wrosch, and Schulz (2010) reviewed evidence showing primary control to be crucial for different life domains, including work and private life. According to their results, indicators of primary control striving predict positive outcomes assessed both subjectively (e.g., well-being, subjective career success) and objectively (e.g., educational attainment, job attainment). The adaptive value of enacting selective primary control strategies in such domains as aging, health, and physical disability are particularly evident (Chipperfield & Perry, 2006). However, whether primary control has positive

or negative consequences for individual outcomes depends on the possibilities and restrictions in a given context. Secondary control is needed and especially valuable when individuals face insurmountable obstacles, setbacks, and losses (Heckhausen et al., 2010). Hence, at increasing age when individuals realize that they face a reduced potential for growth and control, secondary control strategies become more important as individuals disengage from goals that are no longer obtainable. For instance, age is related to an increased use “of more passive, intrapersonal emotion-focused forms of coping [. . . such as] distancing, acceptance of responsibility, and positive reappraisal” when dealing with hassles (Folkman, Lazarus, Pimley, & Novacek, 1987, p. 182). Both primary and secondary control strategies are especially important during life transitions (Hamm et al., 2013). For instance, challenging occupational and life-course transitions that are experienced as stressful and ambiguous pose serious challenges to individuals’ goal striving and attainment and might undermine the use of primary control strategies (e.g., investing effort, changing the environment). In these transitional situations, secondary control strategies are more adaptive (Hamm et al., 2013).

Baltes & Baltes (1990) developed the lifespan developmental concept of selective optimization with compensation (see Chapter 4 in this volume). One of their key assumptions is that successful and healthy aging is determined by the availability and use of self-regulatory resources to cope effectively with potential health deficiencies. The model states that the synchronized use of the three self-regulation strategies, namely selection, optimization, and compensation, maximizes gains and minimize losses in life, and, thus, contributes to healthy successful aging. Accordingly, older workers benefit from these cognitive-behavioral strategies to: (1) maintain important competencies, (2) adapt better to the loss of resources, (3) fit with their work environment, and (4) maintain their level of well-being (Freund & Baltes, 2002; Zacher et al., 2014). Specifically, selection refers to deciding about the goals one wants to pursue. Personal preferences or stressful experiences (e.g., time pressure or age-related changes) may determine selection. Optimization refers to the use and improvement of resources to achieve one’s selected goals (e.g., devoting attention to a task, practicing skills). Finally, compensation means that people apply strategies to make up for deficiencies and resource loss to maintain their performance level and be effective in the face of resource loss (e.g., asking others for help, delegating work tasks) (Freund & Baltes, 2002; Zacher & Frese, 2011).

The model of selective optimization with compensation may be applied to explain how people allocate resources to adapt to age-related changes. With increasing age, workers should have a stronger need to use selective optimization with compensation strategies to maintain effective functioning and well-being than younger workers (Abraham & Hansson, 1995; Freund & Baltes, 2002; Riediger, Li, & Lindenberger, 2006). Evidence suggests that selective optimization with compensation strategy use is positively related to

job involvement, affective commitment, and negatively related to fatigue, depressive symptoms, and work-life conflict (Moghimi, Zacher, Scheibe, & Van Yperen, 2016; Schmitt, Zacher, & Frese, 2012; Unger, Sonnentag, Niessen, & Kuonath, 2015; Wiese, Freund, & Baltes, 2002). While using selective optimization with compensation strategies is useful for all adults, older workers and those with lower personal resources may benefit more than younger workers and those with more personal resources (Moghimi, et al., 2016; Venz & Sonnentag, 2015; Young, Baltes, & Pratt, 2007; Zacher & Frese, 2011).

Role of Work Characteristics

Apart from personal factors, work characteristics may determine inter-individual differences in occupational health across the working lifespan (see Fig. 15.1). Work characteristics (e.g., level of autonomy, social support at work, interdependence) refer to the way work is designed. Work design is more generally described as “content and organization of one’s work tasks, activities, relationships, and responsibilities” (Parker, 2014, p. 662). Work design is, in turn, embedded in organizational design, organizational policies, structures, and procedures (Farr & Ringseis, 2002). Just as age develops over time and may affect how work characteristics are perceived and valued by the individual, work characteristics may also change across time (Zacher et al., 2014). A change in work characteristics can be implemented by the organization and by the worker himself/herself (e.g., through job crafting, Wrzesniewski & Dutton, 2001). Accordingly, a change in work characteristics may have differential effects on workers’ well-being for different age groups (Truxillo et al., 2015; Zacher, 2015). For instance, when work characteristics in terms of worker demands and requirements are changed by the organization, this might be more of a challenge for older than for younger workers (Kanfer & Ackerman, 2004; Scheibe, Stamov-Roßnagel, & Zacher, 2015). From the perspective of person-environment fit and following a lifespan developmental approach, it is especially important for maintaining occupational health that there is a fit between work characteristics and worker needs, goals, and abilities across all age groups. Organizations need to be able to generate job conditions that maintain or promote occupational health for younger as well as older workers (Truxillo et al., 2012; Zacher & Schmitt, 2016; see Chapter 8 in this volume).

Hackman and Oldham’s (1976) job characteristics model is one of the most prominent frameworks to classify work characteristics. The authors introduced five core characteristics that determine various motivational and health-related work outcomes, such as motivation, turnover, and job satisfaction. These are autonomy, feedback from the job, task identity, task significance, and skill variety. Morgeson and Humphrey (2006) added further aspects to this model. Their approach included a wider range of task

characteristics (e.g., different facets of job autonomy), knowledge (e.g., skill variety, job complexity), social (e.g., feedback from others), and contextual characteristics (e.g., physical demands) of a job that have been shown to be related to indicators of occupational health outcomes (Humphrey, Nahrgang, & Morgeson, 2007; Morgeson & Humphrey, 2006).

Adopting a lifespan perspectives on job design, Truxillo et al. (2012) suggested that younger and older workers have different preferences with regard to job characteristics. Some job features may be more attractive to younger than to older workers and vice versa. So far, however, only a small number of studies has examined age-differential associations between work characteristics and well-being outcomes (Zaniboni, Truxillo, Fraccaroli, McCune, & Bertolino, 2014; for an exception, see Hertel et al., 2013; Zacher & Frese, 2011). Hence, there is a general lack of knowledge on how to design jobs for workers at different stages in working life so that they can be successful in maintaining health and well-being (see Chapter 11 in this volume).

Also, existing studies on the interplay between age and work characteristics on occupational health reveal complex and mixed results (for a review see Kanfer & Ackerman, 2004; Zacher & Schmitt, 2016). The results are depending on the specific type of work characteristic as well as the specific operationalization of well-being (Ng & Feldman, 2015). Most research has focused on task characteristics. For instance, the negative relationship between autonomy and emotional exhaustion was found to be stronger for older workers. However, the relationships between job autonomy and job stress on one hand and mental health on the other hand were more negative among younger workers. Similarly, the positive effects of job autonomy on satisfaction, work engagement, and affective organizational commitment were stronger for younger workers (Ng & Feldman, 2015). Older workers' well-being seems to benefit more than the well-being of younger workers from time to complete tasks, job autonomy, and scheduling flexibility when there are deadlines at work or high problem-solving demands. These work characteristics buffer the stressor-strain relationships (Besen, Matz-Costa, James, & Pitt-Catsouphes, 2015). In another study, Zacher, Dirkers, Korek, and Hughes (2017) demonstrate that younger workers, as opposed to older workers, feel more attracted to jobs that are characterized by task characteristics such as feedback from the job, task variety, and task significance. Based on socioemotional selectivity theory (Carstensen, 1995) and evidence on motivational changes across age, younger workers benefit more from positive and negative feedback from the job and high task variety than older workers, specifically because they are eager to learn and gain experiences in working on different projects and tasks (Charles & Carstensen, 2010; Zaniboni et al., 2014). Of note, the finding for task significance was unexpected. According to lifespan theoretical approaches (e.g., Charles & Carstensen, 2010; Erikson, 1982; Truxillo, et al., 2012), older workers should especially strive for meaningful tasks as they have less time left over to

create meaning in life. The authors argue that their unexpected finding suggests that younger workers are more concerned than older workers with the consequences of their work for others.

There is little research on the role of social work characteristics and their influence on individual differences in occupational health across the working lifespan. Truxillo et al. (2012) argue that based on socioemotional selectivity theory (Carstensen, 1995), older workers may benefit more than younger ones from providing social support to others because this would fulfill their generative strivings (Kanfer & Ackerman, 2004). The positive relationship between receiving social support and occupation health should not differ among age groups. Furthermore, research has shown that younger workers' job satisfaction and work engagement benefit more than older workers' from jobs that require them to establish networks and interactions outside of the organization (Scroggins, 2008; Zacher, et al., 2017). As suggested by lifespan developmental theories, older workers seem more strongly to establish existing relationships within their organization.

For work context factors, physical job characteristics such as (temperature, noise, and safety risks), are related to occupational well-being outcomes across age groups. Some evidence suggests that as physical capabilities (e.g., muscular strength) that enable employees to manage physical demands decrease over time, older employees in professions with high physical job characteristics are more likely than their younger colleagues to suffer from an increased health-related risk. However, empirical evidence is ambiguous (Heiden, Weigl, Angerer, & Müller, 2013). Furthermore, research has investigated differences between blue- and white-collar workers. Blue-collar jobs typically cover higher physical demands whereas white-collar workers are non-manual professionals, whose work is knowledge-intensive. White-collar workers tend to report higher psychological job demands whereas blue-collar workers tend to report higher physical job demands (e.g., Wright, Bengtsson, & Frankenberg, 1994). As compared to older white-collar workers, older blue-collar workers were found to report a higher prevalence of emotional problems, musculoskeletal complaints, and hearing deficiencies (Arndt et al., 1996). Job type is also related to, and may be confounded with, individuals' socioeconomic status, which reveals significant effects on individuals' health (Aldwin et al., 2006; Crimmins et al., 2009).

LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

In this chapter, we have summarized theories and empirical research on occupational health from a lifespan perspective. We presented the concepts of successful aging at work and the person-environment fit approach as broad theoretical frameworks that integrate a lifespan developmental perspective with research on occupational health. Research on this topic has accumulated within the last decade. With the advent of advanced statistical

methods, it is now possible to investigate patterns of intraindividual change in occupational well-being over the working lifespan, as well as interindividual differences in intraindividual change. However, many open research questions remain (cf., Scheibe & Zacher, 2013; Schmitt & Bathen, 2015; Truxillo, et al., 2015; Zacher, 2015) and in the following we highlight some key implications for future research.

First, research on occupational health and well-being has primarily focused on older workers in the maintenance stage, whereas there is a lack of knowledge regarding younger workers that, according to Super (1980), are in the exploration or early establishment phase (see Fig. 15.1). Some evidence suggests that middle-aged workers face higher overall demands and may have, on average, lower well-being (Blanchflower & Oswald, 2008; Rauschenbach & Hertel, 2011); at the same time, this age group is less likely to take part in research due to their various work and nonwork requirements (Bohlmann et al., 2017). To make more overall statements on how occupational health develops across the full working lifespan, it is thus important to rely on samples that better represent the entire working population. From a statistical perspective, this means that curvilinear instead of linear relationships between chronological age and occupational health need to be tested (Bohlmann et al., 2017; Zacher & Schmitt, 2016).

Second, apart from chronological age, other conceptualizations of age have been developed. Researchers suggest that individuals with the same chronological age may differ, for instance, in terms of their subjective age, their functional health, or their organizational age (i.e., career stage, Bohlmann et al., 2017; Cleveland & Shore, 1992; Kooij et al., 2008; Schwall, 2012). However, there is a general lack of knowledge on how these different conceptualizations may specifically relate to occupational health indicators and whether and how the relationships are different from chronological age.

Third, in this article we focused on personal factors and work characteristics as contextual factors that have been shown to function as boundary conditions in the relationship between age across the working lifespan and health-related outcomes (see Fig. 15.1). Substantial future research is needed to identify further personal and contextual moderators apart from work characteristics and, thus, complement Fig. 15.1. For example, greater consideration of organizational variables such as organizational culture and climate on the relationship between age across the working lifespan and occupational health is needed (Harrison & Dawson, 2016; Lyons & Kuron, 2014; Zacher & Yang, 2016). Organizational climate is one broader aspect of the organizational environment that refers to people's shared perceptions of the norms, procedures, and practices in their work (Schneider, Ehrhart, & Macey, 2013). These shared perceptions impact employee behavior at work (Schneider et al., 2013; Sonnentag, Pundt, & Venz, 2017). Zacher and Yang (2016) introduced the concept of *organizational climate for successful aging* (i.e.,

employee shared perceptions of the extent to which their organization promotes successful aging). The authors showed that the negative relationship between age and focus on future occupational opportunities and goals was weaker for employees who perceive a strong organizational climate for successful aging. Future research is now needed on the joint effects of organizational climate and employee age on occupational health indicators over time.

Fourth, we emphasized that age-specific changes across the lifespan relate to both gains and losses (Fig. 15.1). However, many studies in the occupational domain fail to take into consideration various underlying processes of gains and losses across the lifespan. Therefore, we lack systematic knowledge on whether, for example, motivational, emotional, and cognitive changes lead to well-being outcomes across the working lifespan (Scheibe et al., 2015). More research is especially needed on how losses in one domain (e.g., cognitive domain regarding fluid intelligence) may interact with individual gains in other domains (e.g., emotional domain, such as emotion regulation skills) and how this interplay affects occupational health.

Fifth, we need to understand better the impact and interplay of both mechanisms and boundary conditions that affect the relationship between age and occupational health across the working lifespan. It would, thus, be fruitful for additional studies to examine the overall model as proposed in Fig. 15.1 and investigate the joint effects of age, contextual, and personality factors on various indicators of occupational health (Truxillo et al., 2012).

Finally, one key gap in the literature is the lack of knowledge on the development and implementation of effective intervention approaches and programs to maintain and increase occupational health for workers across all groups (Kooij, Jansen, Dikkers, & de Lange, 2014; Truxillo et al., 2015). Theory-grounded interventions are needed that are based on solid empirical evidence and that focus on how workers of different ages may benefit from organizational practices, policies, and interventions at work (e.g., mentoring programs), and adjustment in work design (Hertel et al., 2013; Kooij et al., 2014; Müller, Heiden, Herbig, Poppe, & Angerer, 2016; Truxillo et al., 2015).

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