

Running head: FOCUS ON OPPORTUNITIES

**Maintaining a Focus on Opportunities at Work: The Interplay between
Age, Job Complexity, and the Use of Selection, Optimization, and Compensation Strategies**

Hannes Zacher

Jacobs University Bremen

Michael Frese

National University of Singapore and Leuphana University Lüneburg

This manuscript is in press at *Journal of Organizational Behavior*. It is a post-review pre-publication version of the manuscript. Please refer to *Journal of Organizational Behavior* for the proof-read final version of the manuscript.

Link:

<http://www3.interscience.wiley.com/journal/4691/home>

Cite as:

Zacher, H. & Frese, M. (in press). Maintaining a focus on opportunities at work: The interplay between age, job complexity, and the use of selection, optimization, and compensation strategies. *Journal of Organizational Behavior*.

Authors' Notes

Hannes Zacher, Jacobs Center on Lifelong Learning and Institutional Development, Jacobs University, Bremen, Germany. Michael Frese has a joint appointment at National University of Singapore, Business School, and Leuphana University, Lüneburg, Germany. We thank RWE AG (Essen), The Advisory House (Zurich), and IG Metall Mittelhessen (Giessen) for supporting this research. Correspondence concerning this article should be addressed to Hannes Zacher, Jacobs Center on Lifelong Learning and Institutional Development (JCLL), Jacobs University Bremen, Campus Ring 1, 28759 Bremen, Germany, E-Mail: h.zacher@jacobs-university.de.

Maintaining a Focus on Opportunities at Work: The Interplay between Age, Job Complexity, and the Use of Selection, Optimization, and Compensation Strategies

Abstract

The concept of *focus on opportunities* describes how many new goals, options, and possibilities employees believe to have in their personal future at work. This study investigated the specific and shared effects of age, job complexity, and the use of successful aging strategies called selection, optimization, and compensation (SOC) in predicting focus on opportunities. Results of data collected from 133 employees of one company (mean age = 38 years, $SD = 13$, range 16-65 years) showed that age was negatively, and job complexity and use of SOC strategies were positively related to focus on opportunities. In addition, older employees in high-complexity jobs and older employees in low-complexity jobs with high use of SOC strategies were better able to maintain a focus on opportunities than older employees in low-complexity jobs with low use of SOC strategies.

Keywords: focus on opportunities; age; job complexity; selection, optimization, compensation

Short title: FOCUS ON OPPORTUNITIES

Maintaining a Focus on Opportunities at Work: The Interplay between Age, Job Complexity, and the Use of Selection, Optimization, and Compensation Strategies

“Persons of all ages are influenced by the manner in which they see the future”

– Kurt Lewin (1939, p. 878)

The aging of the workforces in most industrialized countries has led to increased research efforts to understand the role of age in the work context (Farr & Ringseis, 2002; Hedge, Borman, & Lammlein, 2006; Kanfer & Ackerman, 2004; Shultz & Adams, 2007; Warr, 2001). For a long time, aging at work had been primarily associated with functional deficits and losses in motivation and productivity (i.e., the "decremental theory of aging," cf. Giniger, Dispenzieri, & Eisenberg, 1983; Rhodes, 1983). Demographic changes, especially the aging of the baby boom generation, and the advancement of a more differentiated view on aging among developmental researchers (P. B. Baltes & Baltes, 1990; Birren & Schaie, 2006; Lachman, 2001; Levinson, 1986) have given rise to a research literature that also emphasizes the strengths, resources, contributions, and perspectives of older employees (Hobfoll & Wells, 1998; Kanfer & Ackerman, 2004; Moberg, 2001; S. J. Peterson & Spiker, 2005; Robson, Hansson, Abalos, & Booth, 2006). An important goal of this positive psychology perspective on aging at work is to identify factors that help older employees to maintain a positive outlook on their personal futures in the workplace (S. J. Peterson & Spiker, 2005).

Zacher and Frese (2009) recently extended this literature by adapting the concept of future time perspective (FTP) from adult development and life span psychology research to the work context. Generally, FTP describes individuals' perceptions, beliefs, and expectations concerning their personal future (Carstensen, 2006; Cate & John, 2007). Zacher and Frese (2009) suggested that *occupational FTP* can be conceived in terms of two distinct dimensions, (a)

perceptions of the length of one's personal *remaining time* at work and (b) beliefs about how many new goals, options, and possibilities one will have in the personal future at work (i.e., *focus on opportunities*). They showed that age was negatively related to both dimensions of occupational FTP. In addition, two important resources of the work context, job complexity (i.e., the extent to which the work is difficult, requires high-level skills, and is mentally demanding; Morgeson & Humphrey, 2006) and job control (i.e., the number of decision possibilities at work; Frese, 1987a), were positively related to focus on opportunities. Job complexity and job control also moderated the negative relationship between age and focus on opportunities, such that older employees in high-complexity and high-control jobs were better able to maintain a focus on opportunities than older employees in low-complexity and low-control jobs.

However, Zacher and Frese's (2009) study was limited because it examined only the moderating influences of situational or "external" resources of the work context. It did not provide an answer to the question whether older employees may use certain action regulation strategies to maintain a focus on opportunities. Action regulation strategies optimize the investment of personal or "internal" resources to achieve goals and help maintain and enhance functioning in the face of changes and challenges (Frese & Zapf, 1994; Freund & Baltes, 2000). Thus, they may be useful to counteract the detrimental effects of age-related influences on focus on opportunities. An important set of action regulation strategies in this regard are successful aging strategies. Successful aging strategies involve self-regulatory actions that help individuals to achieve a positive balance between age-related changes in capabilities, resources, and preferences and the possibilities and constraints provided by their (work) environment (Robson & Hansson, 2007). A well-known theory of successful aging is the selection, optimization, and compensation (SOC) model by P. B. Baltes and Baltes (1990, see also P. B. Baltes, 1997; Freund

& Baltes, 2000, 2002; Riediger, Li, & Lindenberger, 2006). The SOC model proposes that the synchronized use of SOC behaviors facilitates the optimal allocation of personal resources, maintenance and enhancement of functioning in the face of challenges, and adaptation to the loss of resources. A number of empirical studies have shown that the use of SOC strategies has beneficial effects when applied in the work context (Abele & Wiese, 2008; Abraham & Hansson, 1995; Bajor & Baltes, 2003; B. B. Baltes & Heydens-Gahir, 2003; Wiese, Freund, & Baltes, 2000, 2002). In addition, Young, Baltes, and Pratt (2007) recently suggested and found that the use of SOC strategies is particularly effective when external resources provided by the work environment (e.g., supervisor support, family-friendly policies) are low.

Based on this research, we suggest that Zacher and Frese's (2009) findings leave room for three alternative interpretations. First, it may be that the use of SOC strategies is impossible in jobs that provide few external resources, and thus does not have beneficial effects. Second, it may be that the use of SOC strategies is possible in these jobs, but does not help older employees to maintain a focus on opportunities. Finally, the use of SOC strategies may help older employees to compensate for low external resources, such that a focus on opportunities is maintained. Given these alternative possibilities, further research is needed. The goal of this study is to investigate the interplay between age, job complexity, and the use of SOC strategies in predicting focus on opportunities. We aim to advance research on the role of age in the work context by presenting the first study that simultaneously examines the buffering effects of resources provided by the work environment and employees' self-initiated action regulation strategies on the negative relationship between age and a criterion of successful aging at work.

Our model and hypotheses are shown in Figure 1. In short, we expect that age is negatively, and job complexity and the use of SOC strategies are positively related to focus on

opportunities (Hypotheses 1 to 3). Consistent with Zacher and Frese (2009), we propose that the negative relationship between age and focus on opportunities is weaker for employees in high-complexity jobs than for employees in low-complexity jobs (Hypothesis 4). Based on Young et al.'s research (2007), we propose that the positive relationship between the use of SOC strategies and focus on opportunities is stronger for employees in low-complexity jobs than for employees in high-complexity jobs (Hypothesis 5). Finally, we suggest that the negative relationship between age and focus on opportunities is stronger for employees in low-complexity jobs with low use of SOC strategies than for employees in low-complexity jobs with high use of SOC strategies and for employees in high-complexity jobs (Hypothesis 6). Before we outline the theoretical justifications for these hypotheses, we briefly describe the relevance of focus on opportunities as a criterion of successful aging at work and the SOC model.

Focus on Opportunities as a Criterion of Successful Aging at Work

Several years before successful aging first became a topic for work and organizational psychologists (Abraham & Hansson, 1995; Hansson, DeKoekkoek, Neece, & Patterson, 1997), gerontologists and developmental psychologists debated over the difficult questions of how to define successful aging and which criteria should be used to measure it (P. B. Baltes & Baltes, 1990; Rowe & Kahn, 1987; Ryff, 1989; Schulz & Heckhausen, 1996). Early theories suggested that successful aging involves that individuals disengage from an active lifestyle and prepare themselves for impending death (Cumming & Henry, 1961), or that individuals maintain similar levels of activity as in previous life stages (Havighurst, 1961). The most important criteria of successful aging proposed by these theories were inner feelings of happiness and satisfaction with one's present and past life (Havighurst, 1963).

Ryff (1989) was probably the first theorist to suggest that criteria of successful aging must go beyond age-neutral measures of successful living (e.g., satisfaction, happiness, or affect balance), and instead include more age-sensitive measures inquiring about perceived possibilities for continued personal growth, progress, and advancement. According to Ryff (1989), early theories of successful aging tended to “equate positive functioning with maintenance of previous attitudes and behaviors rather than successful negotiation of new challenges and developmental tasks ... there is a pervasive stability bias in the well-being literature, which excludes the individual’s potential for further development, self-realization, and growth” (Ryff, 1989, p. 38). Ryff (1989) recognized that the specific content of future goals, plans, and options of younger adults may be different from those of older adults due to changing capabilities, preferences, role constellations, and achievements across the life span. However, she pointed out that many older individuals would identify new opportunities for themselves that go beyond those in earlier life stages. Generally, having future goals, plans, and possibilities is an important component of individuals’ sense of purpose, directedness, and meaning at all points in the life span (Maier & Brunstein, 2001; McGregor & Little, 1998; Sheldon & Kasser, 2001). Yet, according to Ryff (1989), maintaining perceptions of future opportunities is a key challenge of successful development especially at higher ages, when individuals experience several age-related changes in capabilities, resources, social roles, and preferences, and face age-related restrictions and constraints (Neugarten, Moore, & Lowe, 1965).

In this study, we use focus on opportunities – that is, how many new goals, options, and possibilities employees believe to have in their personal future at work (Robson et al., 2006; Zacher & Frese, 2009) – as the dependent variable because we consider it an important domain-specific criterion of successful aging. We propose that focus on opportunities is a better criterion

of successful aging at work than traditional job attitudes such as job satisfaction and organizational commitment (Harrison, Newman, & Roth, 2006; Weiss, 2002) because it refers to employees' perceptions of continued possibilities for development, progress, growth, and advancement in their future at work. The difference between traditional job attitudes and focus on opportunities is captured by the distinction between hedonic and eudaimonic well-being (Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2001; Wrzesniewski, Dutton, & Debebe, 2003). Job satisfaction and organizational commitment fall in the category of hedonic well-being, as they describe individuals' balance of positive and negative thoughts and feelings at work (Grant, Christianson, & Price, 2007; Warr, 1990, 1992). In contrast, focus on opportunities is better captured by the eudaimonic approach to well-being, which addresses issues of growth and advancement, fulfillment, and the realization of potential.

Focus on opportunities can also be characterized as an age-related, contextualized form of optimism. In past research, optimism has most often been conceptualized as a stable, trait-like individual difference characteristic (Scheier & Carver, 1985; Seligman, 1998; Strutton & Lumpkin, 1992). For example, Scheier and Carver (1985) defined optimism as a general disposition to expect positive outcomes. However, more flexible forms of optimism also exist (C. Peterson, 2000; Youssef & Luthans, 2007). Focus on opportunities is certainly malleable to some extent as the correlations with age and work characteristics suggest (Cate & John, 2007; Zacher & Frese, 2009). Moreover, the theoretical and empirical literature is as of yet unclear how far optimism can be removed from reality and still have a positive function (Schneider, 2001; S. E. Taylor & Brown, 1988). With regard to focus on opportunities, Foo, Uy, and Baron (2009) showed that entrepreneurs' flexible focus on future opportunities positively predicted venture effort beyond what is immediately required. On the other hand, a recent study on unrealistic

optimism emphasized the negative function of it for entrepreneurs, as entrepreneurs' unrealistic trait optimism was negatively related to new venture performance (Hmieleski & Baron, 2009).

The Model of Selection, Optimization, and Compensation (SOC)

The SOC model proposes that the synchronized use of selection, optimization, and compensation behaviors leads to successful aging (P. B. Baltes, 1997; P. B. Baltes & Baltes, 1990; Freund & Baltes, 2000, 2002; Riediger et al., 2006). This proposition is based on the assumptions that individuals' internal and external resources are generally limited and that losses more and more outweigh gains with increasing age. The use of SOC strategies helps to minimize age-related losses and maximize age-related gains. The following definitions rely on Freund and Baltes (2002), who used an action-theoretical framework characterizing the three interrelated SOC components as goal-related actions. *Selection* involves setting goals and deciding on goal priorities. Goal selection may be guided by personal preferences (elective selection) or occur due to a loss of internal or external resources (loss-based selection). In the work context, employees may choose to focus more on those aspects of their work that they consider the most interesting and challenging or they might abandon goals that they cannot accomplish anymore. *Optimization* refers to the obtainment, improvement, and coordinated use of personal resources to achieve important goals. Specific optimization behaviors include practicing, modeling successful others, and investing more time and effort into goal pursuit. For example, employees might show increased effort and persistence on prescribed tasks even if they find them unchallenging or too difficult. Finally, *compensation* refers to the acquisition and use of alternative means to reach goals and to maintain functioning in the face of actual or anticipated resource losses. For example, older employees might compensate for decreases in physical strength by taking additional breaks or asking co-workers for help.

A central proposition of the SOC model is that the SOC behaviors are shown in a synchronized or coordinated way (P. B. Baltes & Baltes, 1990; Marsiske, Lang, Baltes, & Baltes, 1995). Thus, the use of any one strategy also requires the application of the other two strategies in order to promote successful aging (Marsiske et al., 1995). Moreover, little use of any one SOC strategy can be compensated by a higher use of the other SOC strategies; for example, a person who uses less selection of goals, may compensate this by using a higher amount of optimization of resources and better compensation of alternative strategies to reach the goals. The use of “selective optimization with compensation” was conceived as “one single ‘integrative’ process of adaptive mastery” (Baltes & Freund, 1998, p. 532), or as Young et al. (2007) argued “selection, optimization, and compensation behaviors ... should be considered as a functional set” (p. 514). As the three SOC components are also highly empirically related (Freund & Baltes, 2002), it is appropriate to investigate them by combining them into an overall SOC strategies score (e.g., B. B. Baltes & Heydens-Gahir, 2003; Jopp & Smith, 2006).

Empirical studies have supported the general assumption that the use of SOC strategies is associated with positive outcomes and developmental adaptation. The use of SOC strategies was positively related to subjective well-being both in- and outside work (Abele & Wiese, 2008; Freund & Baltes, 1998, 2002; Wiese et al., 2000, 2002). The use of SOC strategies was also positively related to the maintenance of important job competencies and goal attainment (Abraham & Hansson, 1995), and to supervisor-rated work performance (Bajor & Baltes, 2003). B. B. Baltes and Heydens-Gahir (2003) and Young et al. (2007) reported that the use of SOC strategies in both work and family domains resulted in fewer job and family stressors and subsequently lower amounts of work-to-family- and family-to-work-conflict.

Hypotheses Development

Age, Job Complexity, and Focus on Opportunities

Despite the suggestion of adult development researchers that many individuals will identify new goals, options, and possibilities for themselves as they grow older (Cate & John, 2007; Lang & Carstensen, 2002; Ryff, 1989), we expect that age is generally negatively related to focus on opportunities. One main reason for this assumption is that older employees face more age-related situational constraints at work than younger employees, which in turn may lead to a lower focus on opportunities. For example, older employees receive less supervisory and organizational support for learning and career development (Mirvis & Hall, 1996; Sterns & Subich, 2002), and many jobs are not well-designed to meet older employees' altered resources (e.g., declines in physical strength and increases in experiential knowledge) and preferences (e.g., increased preferences for tasks that involve collaboration and promote positive affect, Farr & Ringseis, 2002; Fried, Grant, Levi, Hadani, & Slowik, 2007; Griffiths, 1999; Kanfer & Ackerman, 2004). The second main reason for our assumption is that certain personal resources, which may be important for a focus on opportunities, are increasingly depleted with age. For example, older employees perceive less remaining time in their occupational future in which they can realize their goals and plans (Zacher & Frese, 2009). In addition, older employees are less change-oriented (Warr, Miles, & Platts, 2001) and less motivated to engage in learning activities (Colquitt, LePine, & Noe, 2000; Warr & Birdi, 1998). Evidence for our assumptions comes from a study by Maurer, Weiss, and Barbeite (2003) who found that employee age negatively affected both individual variables (e.g., learning preparedness) and situational variables (e.g., support for development) that predispose employees for development activities.

Hypothesis 1: Age is negatively related to focus on opportunities.

We expect that an important characteristic of the work context, job complexity, is positively related to focus on opportunities. *Job complexity* refers to “the extent to which the tasks on a job are complex and difficult to perform... work that involves complex tasks requires the use of numerous high-level skills and is more mentally demanding and challenging” (Morgeson & Humphrey, 2006, p. 1323). High-complexity jobs involve different elements that have to be considered (e.g., work goals, plans, and feedback signals) and provide employees with many decision necessities (Frese, 1987b). Highly complex jobs require the full use and development of knowledge, skills, and abilities (Kozlowski & Hults, 1986), and demand more collaboration and transfer of experience among co-workers (Man & Lam, 2003). Job complexity is generally thought to have positive effects on individual and work outcomes (Frese, 1982; Morgeson & Humphrey, 2006). For example, studies have shown that job complexity is positively related to an active life orientation (Kohn & Schooler, 1983a, 1983b), intellectual flexibility (Kohn & Schooler, 1978), mental health (Caplan, Cobb, French, Van Harrison, & Pinneau, 1975; Kornhauser, 1965), work motivation (Hackman & Oldham, 1976), personal initiative (Fay & Kamps, 2006; Frese, Garst, & Fay, 2007), as well as work satisfaction and performance (Fried & Ferris, 1987). Thus, high job complexity is an important situational resource for employees (Frese, 1989). In contrast, low job complexity is a central feature of a Tayloristic approach to work design (F. W. Taylor, 1911), which involves that tasks are divided into very simple and repetitive subtasks that are learned quickly. Tayloristic jobs are associated with negative employee outcomes such as lower personal initiative, readiness to change, and interest in work innovation (Fay & Kamps, 2006).

Individuals use their perception of the current situation to draw inferences about their perception of opportunities in the future (Markus & Nurius, 1986; Markus & Wurf, 1987). We

expect that job complexity is positively related to focus on opportunities because employees in high-complexity jobs infer from their current job conditions that they will also have many work-related opportunities in the future (e.g., the possibilities to use their abilities and to learn new things). In contrast, low-complexity jobs involve simple, narrowly prescribed tasks with a short-term perspective (Fay & Kamps, 2006), and should therefore not promote expectations of future work-related opportunities. In addition, the positive effects of job complexity on important employee resources such as an active life orientation, intellectual flexibility, mental health, and work motivation should contribute to more positive perceptions of future work-related opportunities. Individuals possess accurate self-knowledge of their abilities and resources (Ackerman, Beier, & Bowen, 2002; Hobfoll & Wells, 1998). Thus, employees who feel they possess many abilities and resources should consider themselves to be better prepared for their future at work, which in turn should lead to more positive evaluations of their future work opportunities.

Hypothesis 2: Job complexity is positively related to focus on opportunities.

The Use of SOC Strategies and Focus on Opportunities

We suggest that employees with high use of SOC strategies have a stronger focus on opportunities than employees with low use of SOC strategies. The use of SOC strategies may positively influence focus on opportunities in three possible ways. First, the use of SOC strategies enables individuals to adapt successfully to changes in personal resources (P. B. Baltes & Baltes, 1990; Freund & Baltes, 2002). Employees with high use of SOC strategies should be better able to adapt to a reduction of resources that affect their work (e.g., time constraints, health problems). When losses in personal resources occur, employees with high use of SOC strategies restructure their goal hierarchies, optimize goal pursuit, and compensate for losses such that they

maintain important job competencies (Abraham & Hansson, 1995). This should in turn have a positive impact on their focus on opportunities. In contrast, employees with low use of SOC strategies do not adapt well to a reduction of resources, which in turn should reduce their focus on opportunities.

Second, individuals with high use of SOC strategies also adapt better to environmental changes and demands (P. B. Baltes & Baltes, 1990; Freund & Baltes, 2002). Employees with high use of SOC strategies should deal more successfully with work demands and changes at work (e.g., introduction of a new production system) because they adapt their behaviors accordingly. Successful adaptation to work-related demands and changes should not only increase employees' work performance (Bajor & Baltes, 2001), but also their focus on opportunities.

Finally, high use of SOC strategies goes hand in hand with more autonomous goal setting (Bajor & Baltes, 2001), investment of energy into goal achievement (Freund & Baltes, 1998), and flexibility in adjusting goals to the environment and vice versa (Freund & Baltes, 2002). Employees who set many work-related goals by themselves, flexibly adjust them to their work demands and conditions, and invest energy to achieve their goals, should also perceive more work-related opportunities in the future because they are more active in terms of influencing their own development and creating future opportunities for themselves.

Hypothesis 3: The use of SOC strategies is positively related to focus on opportunities.

The Interplay between Age, Job Complexity, and the Use of SOC Strategies

We argue that job complexity is an especially important situational resource for older employees to maintain a focus on work-related opportunities. High-complexity jobs offer older employees many possibilities to capitalize on age-related gains, such as the possibility to use

their increased work-related knowledge and experience (Kanfer & Ackerman, 2004). Highly complex jobs also allow older employees to collaborate and to share and transfer their knowledge and experience with their co-workers (Man & Lam, 2003). In contrast, jobs low in complexity do not offer older employees many possibilities to use and transfer their experiential knowledge (Fay & Kamps, 2006). Thus, the attributes of high-complexity jobs should provide a better fit with older employees' changed capabilities and preferences than the attributes of low-complexity jobs. This enhanced fit should in turn help older employees to maintain a focus on work-related opportunities, because they can expect that their jobs will continue to provide them with work that fits their capabilities and preferences in the future.

Furthermore, older employees in high-complexity jobs are better able to maintain cognitive functioning (Avolio & Waldman, 1987, 1990) and intellectual flexibility (Schooler, Mulatu, & Oates, 1999). These cognitive resources should positively influence older employees' self-efficacy for learning and development (Colquitt et al., 2000), which in turn should increase their participation in development activities (Maurer et al., 2003). Employees in highly complex jobs are also able to perceive their abilities and knowledge accurately (Ackerman et al., 2002) and may infer from these perceptions how many work-related opportunities exist for them in the future. Thus, older employees in complex jobs should not only be better able to maintain cognitive resources, they should also perceive that they have these resources. This should in turn lead to enhanced expectations of future work-related opportunities (e.g., expectations related to participation in trainings or to changing jobs).

Hypothesis 4: Job complexity moderates the negative relationship between age and focus on opportunities, such that the relationship is weaker for employees in high-complexity jobs than for employees in low-complexity jobs.

SOC researchers have proposed that the effectiveness of the use of SOC strategies depends on the general availability of internal and external resources to individuals (B. B. Baltes & Dickson, 2001; Freund & Baltes, 2002; Jopp & Smith, 2006; Wiese et al., 2000, 2002). Specifically, the use of SOC strategies is thought to be most effective when individuals' resources are low, because in these situations the optimization of resource allocation and efforts to maintain and enhance functioning are relatively more important than in situations in which individuals have many resources available to support them (Jopp & Smith, 2006; Young et al., 2007). Young et al. (2007) recently showed that the use of SOC strategies was most effective in terms of reducing job and family stressors when external resources provided by the work environment (i.e., supervisor support and family-friendly policies) were low. In contrast, the use of SOC strategies did not predict job and family stressors among employees with many external resources provided by their environment.

Consistent with this research literature, we argue that the use of SOC strategies is more strongly positively related to focus on opportunities when job complexity is low than when job complexity is high. Actively adapting to personal and work-related changes and demands through the use of SOC strategies should increase employees' focus on opportunities in low-complexity jobs because these jobs do not provide employees with many possibilities to learn and develop in the first place (Kozlowski & Hults, 1986). Thus, it should have a positive effect on perceptions of future opportunities at work when employees actively adapt to changes and demands by themselves. For example, an assembly line worker might adapt to the introduction of a new production system by engaging in self-started learning activities about changes that affect his or her work behavior and by deliberately attempting to maintain his or her work performance despite the changes at work. In contrast, employees in low-complexity jobs who do not actively

adapt their behaviors to work-related changes and demands should be less prepared for their future at work, as their jobs do not provide them with many possibilities to learn and develop in the first place. For them, low use of SOC strategies should result in a lower focus on opportunities.

Employees with high use of SOC strategies should also set themselves more work-related goals, adapt these goals to their work environment and vice versa, and invest effort to pursue their goals (Freund & Baltes, 2002). Low-complexity jobs do not readily provide employees with many different work-related goals and possibilities to pursue their goals (Fay & Kamps, 2006), but the use of SOC strategies may help to focus on opportunities in spite of these constraints. For example, an assembly line worker who sets him- or herself the goal to learn about a new work process and who successfully pursues this goal despite the constraints of low-complexity jobs should perceive more work-related opportunities in the future. In contrast, employees in low-complexity jobs who do not set themselves goals should have a weaker focus on opportunities because their jobs do not provide them with many different goals, options, and possibilities.

Employees in high-complexity jobs do not need to use SOC strategies in order to perceive work-related opportunities because their jobs provide them with the prerequisites for a strong focus on opportunities in the first place. The use of SOC strategies should therefore be less effective with regard to focus on opportunities in high- versus low complexity jobs.

Hypothesis 5: Job complexity moderates the positive relationship between the use of SOC strategies and focus on opportunities, such that the relationship is stronger for employees in low-complexity jobs than for employees in high-complexity jobs.

Finally, we argue that the use of SOC strategies is more effective for older employees in low-complexity jobs in terms of maintaining a focus on opportunities than for older employees in

high-complexity jobs. We suggest that there are two possible reasons for this assumption. First, employees in low-complexity jobs with high use of SOC strategies should be better able to adapt to *age-related* changes which are not readily compensated for in these jobs. Actively adapting to age-related changes should positively affect older employees' functioning and help to maintain a focus on opportunities. In contrast, older employees in low-complexity jobs with low use of SOC strategies should not maintain a focus on opportunities because their jobs do not readily provide them with compensation and support possibilities for age-related changes. For example, an older assembly line worker who does not successfully adapt to decreases in physical strength by using SOC strategies (e.g., he or she might invest more effort) should perceive less opportunities in his or her work-related future than an older worker who does adapt.

Second, older employees in low-complexity jobs with high use of SOC strategies should also continue to set and pursue many work-related goals autonomously (Freund & Baltes, 2002). Employees in low-complexity jobs generally perceive fewer goals and opportunities for themselves, especially at higher ages (Zacher & Frese, 2009). We suggest that the use of SOC strategies buffers the negative effects of both low job complexity and higher age on focus on opportunities, because it facilitates continuous setting of work goals. In contrast to low-complexity jobs, high-complexity jobs provide older employees with many possibilities to capitalize on age-related gains in personal resources (e.g., to use their increased experiential knowledge). Thus, it should be less important for older employees in high-complexity jobs to make use of SOC strategies in order to maintain a focus on opportunities.

Hypothesis 6: There is a three way-interaction between age, job complexity, and the use of SOC strategies, such that the negative relationship between age and focus on opportunities is stronger for employees in low-complexity jobs with low use of SOC strategies than for

employees in low-complexity jobs with high use of SOC strategies and for employees in high-complexity jobs.

Method

Participants and Procedure

Data for this study came from 133 full-time employees employed by a manufacturing company in central Germany. 114 of the participants (85.7%) were male and 19 (14.3%) were female. Mean age was 38 years ($SD = 13.05$) and ranged from 16 to 65 years. More specifically, 41 employees (30.8%) were 30 years or younger, 48 employees (36.8%) were between 31 and 45 years, and 44 employees (33.1%) were 46 or older. The average participant held a German middle-school degree, which is usually attained around the age of 16. Across different age cohorts in the current German working population, about 20.5 percent hold this degree (Autorengruppe Bildungsberichterstattung, 2008). More specifically, 45 (33.8%) participants had a general education degree, 70 (52.6%) had a middle school degree, 9 (6.8%) had a degree that allows for admission into a technical college (typically two more years of school after the middle school degree), and nine (6.8%) had a high school degree. No participant had a university degree.

Participants worked in a number of different jobs throughout the company. The job descriptions provided by the participants included machine operators, secretaries, trainee instructors, locksmiths, electricians, cutters, materials requirements planners, fitters, maintenance and constructing engineers, industrial mechanics, industrial clerks, commercial clerks, accounting clerks, logisticians, metal employees, service technicians, janitors, shift foreman, welders, and toolmakers. On average, participants had been employed for 21.28 years in their lives ($SD = 13.39$, range 1-47 years), and were employed in their current job for 13.61 years (SD

= 9.80, range 1-42 years). We checked for outliers in age, work experience, and job tenure variables but did not find any. Age was highly correlated with work experience ($r = .96, p < .01$) and job tenure ($r = .75, p < .01$).

The company in which the study was conducted produces metal parts for the automotive industry and, in total, employs approximately 500 employees in three weekly rotating shifts (170 employees per shift). Union representatives of the company distributed survey announcements two weeks before the survey sessions in the company, kindly asking employees for voluntary participation. On each of two work days, which were separated by one week, five one-hour long survey sessions were conducted by the first author in a training room on the company site. Employees from two different morning shifts were generally able to participate on these two days. In groups of five to 15, volunteering employees from different units throughout the company were called in by union representatives to the training room to fill out the questionnaire. Besides the measures used for this study, the questionnaire contained a number of additional questions about employees' retirement plans and options. After completion of the questionnaires, participants deposited them individually and anonymously in a mailbox in the training room. After the survey sessions, only the authors had access to the completed questionnaires. Overall results were presented to company and union representatives two weeks later. In total, 143 employees participated in the survey sessions and returned questionnaires. Taking into consideration that only approximately 340 employees from the two different morning shifts had the chance to participate in the study, the response rate was 42 percent. Due to missing data in ten questionnaires, we were able to use the complete data provided by 133 employees.

Measures

Focus on opportunities was measured with four items from Carstensen and Lang's (1996; see also Lang & Carstensen, 2002) German FTP scale, which we adapted by adding the word "occupational" to each item (Zacher & Frese, 2009). The items are listed in the Appendix. Cate and John (2007) showed that the original four items loaded highly on a focus on opportunities factor, which was distinct from a focus on limitations factor. Zacher and Frese (2009) showed that focus on opportunities could be distinguished from perceptions of remaining time at work. Participants answered the items on a 5-point scale ranging from 1 (*does not apply at all*) to 5 (*applies completely*). Cronbach's alpha of the scale was .91.

Job complexity was measured with four items from a well-validated German scale (Semmer, 1982; Zapf, 1993), which is widely-used in German-speaking countries (Frese et al., 2007; Frese, Kring, Soose, & Zempel, 1996; Grebner, Semmer, & Elfering, 2005; Ohly, Sonnentag, & Pluntke, 2006). The items are listed in the Appendix. The content of these items corresponds to Morgeson and Humphrey's (2006) definition of job complexity as they assess the difficulty and complexity of tasks and decisions at work as well as the cognitive demands placed on the employees by their work (i.e., making full use of their knowledge and skills, learning new things at work). Participants answered the items on a 5-point scale ranging from 1 (*very little*) to 5 (*very much*). Cronbach's alpha of the job complexity scale was .76. Semmer (1982) showed that job complexity ratings of job incumbents and external observers were highly correlated ($r = .67$). Thus, there is evidence that job complexity is reported with little subjective bias. To provide further evidence that the self-ratings of job complexity correspond to actual job complexity in our sample, we compared the job descriptions of the employees scoring lowest and highest on our job complexity measure. The nine job descriptions (out of 13) provided by the employees scoring amongst the lowest 10% on our job complexity measure were machine

operator (4x), metal worker (2x), usher (2x), production helper, and clerical assistant. These job descriptions do not refer to jobs that involve many complex and challenging tasks or require the use of high-level knowledge and skills. The 10 job descriptions (out of 13) provided by the employees scoring amongst the highest 10% on our job complexity measure were industrial mechanic (2x), industrial electrician (2x), member of shop council (2x), project manager, mechanical engineer, shift supervisor, and human resource manager. These job descriptions refer to jobs that involve rather complex tasks and require the use high-level knowledge and skills.

Use of selection, optimization, and compensation (SOC) strategies was measured with an adapted version of the German 12-item scale developed by Baltes, Baltes, Freund, and Lang (1999; see also Freund & Baltes, 2002). We adapted the original scale in two ways in order to minimize survey time and to place less cognitive demands on our participants. First, instead of asking participants to think about their work when answering the general SOC items, we adapted the scale by adding the words “at work” to each item. Second, we used only the 12 response options reflecting typical SOC behaviors (targets) from the original scale and not the alternative response options reflecting non-SOC behaviors (distractors). The 12 items are listed in the Appendix. The adapted items were answered on a 5-point scale ranging from 1 (*does not apply at all*) to 5 (*applies completely*). Previous studies have adapted the short SOC scale in a similar manner and demonstrated its usefulness (Ziegelmann & Lippke, 2007a, 2007b). As we were interested in the use of SOC behaviors as a functional set, we computed an overall SOC score. This has also been done in many previous studies (e.g., B. B. Baltes & Heydens-Gahir, 2003; Jopp & Smith, 2006; Young et al., 2007). Cronbach’s alpha of the scale was .77. Averaging across items implies that two employees might get the same overall score on our SOC measure if, for example, one employee scores high on selection but low on optimization and

compensation, whereas the other employee scores moderately high on all three SOC components. As discussed in the introduction, SOC theory emphasizes the synchronization and coordination between the three SOC components (Marsiske et al., 1995); thus, it is very likely (and the good alpha reliability obtained in our sample seems to confirm this assumption) that employees tend to score either high, medium, or low on all of the three SOC components.

Control variables. *Physical health* was measured with six items from the German SF-12 health survey (Bullinger & Kirchberger, 1998; Ware, Kosinski, & Keller, 1996). The items cover different health domains such as bodily pain and physical functioning. As recommended by the scale authors, participants answered the items on non-uniform 2- to 6-point scales. The composite score for physical health is computed using a SPSS syntax provided by the scale authors (Bullinger & Kirchberger, 1998). The SF-12 has been shown to be a highly reliable, valid, and practical measure for physical health (Ware et al., 1996). Cronbach's alpha of the scale was .82. *Positive affect* was measured with five items from Mackinnon et al.'s (1999) short version of the positive and negative affect scales (PANAS). Participants rated on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*) how inspired, alert, excited, enthusiastic, and determined they generally are. Cronbach's alpha of the scale was .76.

Finally, participants indicated their chronological age, job and organizational tenure, job description, as well as their gender (0 = *male* and 1 = *female*), and their highest German educational degree attained (0 = *no degree*, 1 = *general education degree*, 2 = *middle school degree*, 3 = *advanced technical college entrance qualification*, 4 = *high school degree / A-level*, and 5 = *college / university degree*).

Analyses

We used a hierarchical moderated regression analysis to test our hypotheses. As recommended, all predictor variables were mean-centered prior to the analysis (Aiken & West, 1991; Cohen, Cohen, West, & Aiken, 2003). In the first step, we entered gender, education, positive affect, and physical health as control variables. In the second step, we entered age, job complexity, and the use of SOC strategies. In the third step, we entered the three two-way interaction terms, and in the fourth step, we entered the three-way interaction between age, job complexity, and the use of SOC strategies. To further probe the hypothesized interaction effects, we computed the simple slopes according to the methods outlined by Aiken and West (1991) for two-way interactions and by Preacher, Curran, and Bauer (2006) for three-way interactions. Specifically, we calculated the simple slopes of regressing focus on opportunities on age at one standard deviation above and below the mean values of job complexity and the use of SOC strategies. Finally, for the hypothesized three-way interaction, we tested whether there were significant differences between the four simple slopes using the procedures developed by Dawson and Richter (2006).

We controlled for gender, education, positive affect, and physical health in this study. Research showed that gender, education, and physical health are related to individuals' decisions to engage in work activities after retirement (Beehr, Glazer, Nielson, & Farmer, 2000; Griffin & Hesketh, 2008), and thus may also influence their focus on opportunities (Zacher & Frese, 2009). Education may also be a potential confound because it determines job level (Ganzeboom, De Graaf, Treiman, & De Leeuw, 1992), and at the same time it may have an effect on focus on opportunities that is theoretically independent of job complexity (e.g., when a person gets a high-level, highly complex job and has a high focus on opportunities because of high education – in this case there is no effect of job complexity but education is confounded with job complexity).

Finally, we controlled for positive affect in order to deal with the potential problem of common method bias when using self-report scales (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Results

Table 1 shows the descriptive statistics and intercorrelations of the study variables. Focus on opportunities was negatively correlated with age ($r = -.72, p < .01$) and positively correlated with physical health ($r = .23, p < .01$). Age was also significantly correlated with physical health ($r = -.34, p < .01$) and job complexity ($r = .28, p < .01$). Job complexity was also positively correlated with the use of SOC strategies ($r = .20, p < .05$). The use of SOC strategies was negatively related to education ($r = -.23, p < .01$), and positively related to positive affect ($r = .25, p < .01$).

Table 2 shows the results of the hierarchical moderated regression analysis. Of the control variables, only physical health had a positive and significant effect on focus on opportunities in the first step of the regression analysis ($\beta = .22, p < .05$). Together, the control variables explained eight percent of the variance in focus on opportunities.

In line with Hypothesis 1, Table 2 shows that age significantly and negatively predicted focus on opportunities ($\beta = -.77, p < .01$). Hypothesis 2 was also supported by a positive and marginally significant effect of job complexity on focus on opportunities ($\beta = .13, p < .10$). Hypothesis 3 was supported by a significantly positive effect of the use of SOC strategies on focus on opportunities ($\beta = .16, p < .05$).

According to Hypothesis 4, job complexity moderates the negative relationship between age and focus on opportunities, such that the relationship is weaker for employees in high-complexity jobs than for employees in low-complexity jobs. As shown in Table 2, the interaction effect of age and job complexity significantly predicted focus on opportunities when it was

entered into the third step of the regression analysis ($\beta = .15, p < .05$). Results of a simple slope analysis for two-way interactions (Aiken & West, 1991) indicated that the relationship between age and focus on opportunities was weaker among employees in high-complexity jobs ($B = -.04, SE = .01, \beta = -.60, t = -5.53, p < .01$) than among employees in low-complexity jobs ($B = -.07, SE = .01, \beta = -.94, t = -9.55, p < .01$). The significant interaction effect is displayed in Figure 2. Together, these results support Hypothesis 4.

Hypothesis 5 states that job complexity moderates the positive relationship between the use of SOC strategies and focus on opportunities, such that the relationship is stronger for employees in low-complexity jobs than for employees in high-complexity jobs. Table 2 shows that the interaction between the use of SOC strategies and job complexity had a significant effect on focus on opportunities ($\beta = -.20, p < .01$). Consistent with our expectations, a simple slope analysis indicated that the relationship between the use of SOC strategies and focus on opportunities was positive and significant for employees in low-complexity jobs ($B = .74, SE = .17, \beta = .37, t = 4.26, p < .01$). In contrast, there was no significant relationship between the use of SOC strategies and focus on opportunities for employees in high-complexity jobs ($B = -.08, SE = .17, \beta = -.04, t = -.48, p = .632$). This interaction effect is displayed in Figure 3. Together, these results support Hypothesis 5.

According to Hypothesis 6, there is a three-way interaction between age, job complexity, and the use of SOC strategies, such that the negative relationship between age and focus on opportunities is stronger for employees in low-complexity jobs with low use of SOC strategies than for employees in low-complexity jobs with high use of SOC strategies and for employees in high-complexity jobs. Table 2 shows that the three-way interaction effect of age, job complexity, and the use of SOC strategies was significant when entered into the fourth step of the regression

analysis ($\beta = -.18, p < .05$). Consistent with our expectations, a simple slope analysis for three-way interactions (Preacher et al., 2006) indicated that the relationship between age and focus on opportunities was more strongly negative for employees in low-complexity jobs with low use of SOC strategies ($B = -.08, SE = .01, \beta = -1.07, t = -9.19, p < .01$) than for employees in low-complexity jobs with high use of SOC strategies ($B = -.05, SE = .01, \beta = -.73, t = -4.56, p < .01$). A two-tailed significance test for three-way interaction slopes (Dawson & Richter, 2006) indicated that there was a marginally significant difference between these simple slopes ($t = 1.85, p = .067$).

Providing further support for our assumptions, the simple slope analysis also showed that the negative relationship between age and focus on opportunities was stronger for employees in low-complexity jobs with low use of SOC strategies than for employees in high-complexity jobs with high use of SOC strategies (simple slope: $B = -.05, SE = .01, \beta = -.71, t = -6.60, p < .01$). The two simple slopes of these two groups were significantly different ($t = 2.24, p < .05$). In addition, the negative relationship between age and focus on opportunities was stronger for employees in low-complexity jobs with low use of SOC strategies than for employees in high-complexity jobs with low use of SOC strategies (simple slope: $B = -.02, SE = .01, \beta = -.31, t = -1.84, p = .068$). The simple slopes of these two groups were also significantly different ($t = 3.37, p < .01$). The moderating influence of the use of SOC strategies on the negative relationship between age and focus on opportunities for employees in low-complexity jobs and for employees in high-complexity jobs, respectively, is shown in Figure 4. Together, these results support Hypothesis 6.

Even though not hypothesized, we note for the sake of completeness that the simple slope comparisons also indicated that the simple slopes for employees in high-complexity jobs with

high versus low use of SOC strategies differed significantly ($t = -2.10, p < .05$). The simple slopes for employees with high use of SOC strategies in high versus low complexity jobs did not differ ($t = .08, ns$). The simple slope for employees in low-complexity jobs with high use of SOC strategies differed marginally significantly from the simple slope for employees in high-complexity jobs with low use of SOC strategies ($t = 1.76, p = .082$).

Finally, we conducted a separate hierarchical moderated regression analysis in which we additionally controlled for the squared effects of age, job complexity, and the use of SOC strategies. This is important in order to test whether the interaction effects are due to the linear relationships among the three predictor variables (Cortina, 1993). The results showed that including the squared effects in the regression analysis did neither change the main effects, nor did it change the two-way and three-way interactive effects of age, job complexity, and the use of SOC strategies on focus on opportunities. In addition, two further separate regression analyses, one in which we did not control for physical health and positive affect, and one in which we did not control for any of the control variables, yielded the same patterns of results as the regression analysis reported in Table 2.

Discussion

The concept of focus on opportunities describes how many new goals, options, and possibilities employees perceive to have in their personal work-related future (Zacher & Frese, 2009). Considering that maintaining a focus on opportunities represents a key challenge at higher ages (Cate & John, 2007; Ryff, 1989), focus on opportunities can be conceived as an important criterion of successful aging at work. Zacher and Frese (2009) recently showed that age was negatively, and job complexity was positively related to focus on opportunities, and that high job complexity enabled older employees to maintain a focus on work-related opportunities.

However, their study did not answer the question whether older employees in low-complexity jobs might use certain action regulation strategies to maintain a focus on opportunities. Thus, the goal of this study was to examine the interplay between age, job complexity, and the successful aging strategies called SOC (P. B. Baltes & Baltes, 1990) in predicting focus on opportunities.

Our study was a constructive replication of Zacher and Frese's (2009) findings and extended their research in several important ways: First, our study showed that the use of SOC strategies was positively related to focus on opportunities. We suggest that high use of SOC strategies enhances employees' perceptions of future opportunities at work because employees who use SOC strategies adapt more successfully to various changes in personal resources and work-related demands, and engage more often in autonomous goal setting, goal adaptation to external circumstances, and goal pursuit (Freund & Baltes, 2002). The positive relationship between the use of SOC strategies and focus on opportunities provides first empirical support for our proposition that focus on opportunities is an important criterion of successful aging at work.

Second, we found that the use of SOC strategies was positively related to focus on opportunities in low-complexity jobs and unrelated to focus on opportunities in high-complexity jobs (see Figure 3). This finding is consistent with propositions of SOC researchers (Wiese et al., 2000, 2002; Young et al., 2007) who suggest that the use of SOC strategies is particularly effective when external resources provided by the work environment are low. We argue that the use of SOC strategies is positively related to focus on opportunities in low-complexity jobs because these jobs do not readily provide employees with many compensation and support possibilities for changes in personal resources and work-related demands as well as many possibilities related to goal setting, adaptation, and pursuit. Thus, the more employees in low-complexity jobs make active use of SOC strategies, the stronger is their focus on opportunities.

In contrast, the use of SOC strategies may be less effective in high-complexity jobs because these jobs provide employees with the prerequisites for a strong focus on opportunities in the first place (e.g., they readily provide employees with possibilities to learn new things and to share knowledge and skills).

Finally, we found that older employees in low-complexity jobs with low use of SOC strategies were less successful in terms of maintaining a focus on opportunities than older employees in low-complexity jobs with high use of SOC strategies, and than older employees in high-complexity jobs with either high or low use of SOC strategies. Figure 4 shows that the relationship between age and focus on opportunities was disproportionately negative when both external resources provided by the work environment (i.e., job complexity) and employees' use of SOC strategies (which is assumed to optimize the investment of personal resources) were low (Figure 4, left panel, solid line). In contrast, the negative relationship between age and focus on opportunities was weaker for employees in low-complexity jobs with high use of SOC strategies (Figure 4, left panel, dotted line), and for employees in high-complexity jobs with either high or low use of SOC strategies (Figure 4, right panel, solid and dotted lines).

We suggest that the use of SOC strategies is particularly effective among older employees in low-complexity jobs because the use of SOC strategies helps to counteract the detrimental effects of higher age as well as of low job complexity on focus on opportunities. Active use of SOC strategies leads to successful adaptation to age-related changes in personal resources and to work demands that become increasingly difficult at higher ages. Successful adaptation should be particularly important in low-complexity jobs, which provide fewer compensation and support possibilities for older employees than high-complexity jobs. In addition, the use of SOC strategies facilitates goal setting, adaptation, and pursuit among

employees. This effect of the use of SOC strategies should be especially important for older employees in low-complexity jobs who generally perceive the lowest amount of work-related future goals, options, and possibilities (Zacher & Frese, 2009). In contrast, the use of SOC strategies may be less effective in high-complexity jobs in terms of maintaining a focus on opportunities because these jobs readily provide older employees with many compensation and support possibilities as well as many work-related goals and options in the future (e.g., to transfer their experiential knowledge).

Limitations and Future Research

This study has a number of limitations that need to be discussed. First, cross-sectional designs do neither allow for definite conclusions about intraindividual change processes over time (i.e., aging) nor do they allow for conclusions about pure cohort/generation effects. Whereas part of the age-related differences found in our study may be due to the actual physical aging process of employees, another part of our results may be due to more social, generational differences between birth cohorts (Smola & Sutton, 2002). In addition, there may have been selection effects such that employees with poor health or a weak focus on opportunities retired early (i.e., the "healthy worker effect," Frese & Semmer, 1986). Our study design does not allow us to disentangle these underlying causes of the age differences found in our sample. Thus, future research needs to employ longitudinal and cohort-sequential designs to avoid problems associated with the interpretability of cross-sectional findings on age in the work context (P. B. Baltes & Nesselroade, 1979; Hofer & Sliwinski, 2006).

The cross-sectional design also does not allow causal interpretations of the mechanisms between job complexity and the use of SOC strategies on the one hand and focus on opportunities on the other hand. Even though we tested whether job complexity and the use of

SOC strategies would positively predict focus on opportunities, the effects might also be valid in the other direction. However, our findings are consistent with the theoretical perspective of occupational socialization (Frese, 1982), according to which work characteristics have important effects on employees' attitudes, beliefs, and personality. They are also consistent with the proposition of SOC theory that the use of SOC strategies positively influences employee outcomes (Abele & Wiese, 2008; Wiese et al., 2000, 2002; Young et al., 2007). With regard to our two- and three-way interaction effects, it is also very unlikely that focus on opportunities could predict the exact combinations of age, job complexity, and the use of SOC strategies that were found in this study.

A second limitation of this study is that our data came solely from self-report questionnaires. It might be argued that common method bias has led to inflated correlations among the study variables, leading to problems with the interpretability of our findings. However, the zero-order correlations between job complexity, the use of SOC strategies, and focus on opportunities were generally rather small. In addition, we controlled for positive affect as recommended by Podsakoff et al. (2003) as a potential remedy for the problem of common method bias. Common method bias also does not create artifactual interaction effects (Evans, 1985; Schriesheim & DeNisi, 1981). The objectivity of employees' ratings of their job complexity and their use of SOC strategies might nevertheless be questioned. Even though research has shown that there is a high agreement between the self-report measure of job complexity used in this study and ratings of external observers (Semmer, 1982), it is necessary to replicate the present findings using a combination of self-report and more objective measures (Semmer, Grebner, & Elfering, 2004). In addition, situational interviews or behavioral measures of SOC may be more valid than self-report measures (Li, Lindenberger, Freund, & Baltes, 2001).

Third, we conceptualized and measured job complexity consistent with Morgeson and Humphrey's (2006) broad definition in terms of the difficulty of the work tasks and the cognitive demands the work places on employees. Thus, it is very likely that our job complexity measure generalizes to other samples as well as other job complexity measures used in the literature. However, similar to other measures of job complexity, our measure of job complexity does not distinguish between jobs that place high demands on fluid intelligence (i.e., fast information processing demands which become more difficult for older employees) and jobs that place high demands on crystallized intelligence (i.e., accumulated knowledge and skills which are an advantage of older employees). In practice, highly complex jobs involve a combination of high demands on both fluid and crystallized intelligence (Kanfer & Ackerman, 2004). As fluid and crystallized intelligence are related to age, future research should distinguish between jobs' information processing demands and demands for accumulated knowledge and skills.

Fourth, the present study investigated *overall* use of SOC strategies and not the use of the specific SOC components (i.e., selection, optimization, and compensation). Our analytic approach is consistent with several other studies in work and organizational psychology (e.g., B. B. Baltes & Heydens-Gahir, 2003; Young et al., 2007) as well as the original conceptualization of SOC as a synchronized ensemble of strategies (P. B. Baltes & Baltes, 1990; Marsiske et al., 1995). However, SOC researchers have recently also suggested that the components may show differential relationships with outcomes depending on person- and context-related characteristics (Freund & Baltes, 2002; Jopp & Smith, 2006). Investigating the direct and moderating effects of each SOC component separately was not appropriate in this study as the short SOC scale measures each component only with three items, and previous studies have reported very low internal consistency estimates when using these measures (cf. Bajor & Baltes, 2003; Wiese et al.,

2002). In addition, our goal in this study was not to investigate differential relationships of each of the SOC components, but to examine the general effectiveness of the use of SOC strategies among older employees in low-complexity jobs. However, we acknowledge that using the overall measure may limit the practical implications of this study, as it would be interesting to know whether the relationships found are consistent for each SOC component. Thus, future research may want to use the 48-item SOC scale (Freund & Baltes, 2002) to investigate whether younger and older employees differ in their use of certain strategies, and whether some strategies are more effective for one of these age groups under different job conditions.

Fifth, the characteristics of our study's sample may render it difficult to generalize the present findings to the general working population. Our sample consisted of only 133 employees and all data came from only one company. In addition, most of the participants (86%) in the sample were male, none of the participants had a college or university degree, and only one third of the sample was older than 46 years. However, despite these potential limitations of the current sample, at least a partial set of the hypotheses have also been found to be valid in Zacher and Frese's (2009) study which was based on a diverse sample of working age adults from different organizations and occupations.

Finally, it might be questioned whether employees in low-complexity jobs have the possibility at all to make use of SOC strategies. As low-complexity jobs provide employees with only limited decision necessities, employees may not be able to develop and use SOC strategies. We believe that there are a number of reasons that render this objection unproblematic. Specifically, the zero-order correlation between job complexity and the use of SOC strategies was rather small ($r = .20$), indicating that employees in high-complexity jobs used SOC strategies only to some extent more often than employees in low-complexity jobs. Further, we

believe that all jobs in our sample – from operating a machine to clerical work – provided at least a small degree of complexity that allows employees to adapt their work behavior to changes in personal resources and work-related demands and to enhance their personal functioning. Similar to research suggesting that virtually every work situation provides some degree of freedom to improve it (cf. Frese, 1982), we suggest that even low-complexity jobs allow employees to adapt their work behavior. It is also important to note that we did not propose that employees in low-complexity jobs with high use of SOC strategies generally have a stronger focus on opportunities than employees in high-complexity jobs. Instead, we argued that the use of SOC strategies enables older employees in low-complexity jobs to maintain a *relatively* high focus on opportunities compared to older employees in low-complexity jobs with low use of SOC strategies. Finally, we did not argue that employees in low-complexity jobs are able to directly change their work tasks and conditions through the use of SOC strategies, but that they are better able to adapt their own work behaviors to changes in personal resources and work demands.

Implications for Theory and Practice

With this study, we aimed to advance research on the role of age in the work context by presenting the first study that simultaneously examines the buffering effects of resources provided by the work environment and employees' use of successful aging strategies on the negative effects of age on a criterion of successful aging at work. The results of this study may contribute to further theory development in at least two important ways. First, the concept of focus on opportunities should be included in future conceptualizations of criteria of successful aging at work (Hansson et al., 1997; Robson et al., 2006), because it is an age-sensitive (compared to an age-neutral) variable that is positively related to job complexity and the use of SOC strategies. Successful aging at work involves how well individuals achieve a positive

balance between their age-related resources and preferences and the possibilities and constraints provided by their work environment (Robson et al., 2006). We suggest that a strong focus on opportunities among older employees indicates that they have achieved such a positive balance as they still perceive opportunities for growth, progress, and advancement in their remaining time at work. In addition, based on Schneider's (2001) work on optimism and reality, we propose that focus on opportunities does not represent a stable optimistic bias (i.e., a form of self-deception that is deliberately disregarding reality) but a flexible form of realistic optimism, that is, a tendency to maintain a positive outlook within the constraints of perceived reality.

Schneider (2001) suggested that "... the hopes and aspirations associated with realistic optimism are coupled with *a focus on possible opportunities* to increase the likelihood of desirable and personally meaningful outcomes contingent on situational constraints" (Schneider, 2001, p. 253, italics added). Thus, in contrast to unrealistic optimism which likely leads to negative outcomes (Hmieleski & Baron, 2009), focus on opportunities can be assumed to be associated with positive outcomes (Foo et al., 2009). However, future research might challenge our proposition and examine potential pitfalls of an unrealistically high focus on opportunities among older employees, who realistically may not have many opportunities. For example, such studies could test whether a low focus on opportunities among older employees is actually more adaptive.

Second, this study contributes to the growing research literature on SOC (Riediger et al., 2006) by investigating the interplay between age, an external resource provided by the work context (i.e., job complexity), and the use of SOC strategies for the first time. Even though a number of studies have provided evidence for positive effects of using SOC strategies in the work context (Abraham & Hansson, 1995; Bajor & Baltes, 2003; B. B. Baltes & Heydens-Gahir, 2003; Wiese et al., 2000, 2002), they did not investigate how context characteristics interact with

age and the use of SOC strategies. Considering that SOC are successful *aging* strategies, it is important that future developments of SOC theory in the work context make more complex predictions about how the interplay of age, environmental resources, and the use of SOC strategies may influence work-related outcomes. For example, a recent study by Young et al. (2007) investigated interactions between the use of SOC strategies and age on work stressors, but not the three-way interaction between the use of SOC strategies, age, and work-related resources. In terms of environmental resources, Farr, Tesluk, and Klein (1998) suggested a useful taxonomy of context influences on older employees including cultural norms and practices (e.g., retirement regulations), organizational practices (e.g., training for older employees), as well as work characteristics (e.g., job complexity). Future theories of successful aging at work could predict how these environmental resources interact with age and the use of SOC strategies.

Our findings may have a number of practical implications for employees and organizations facing an increasingly aging workforce. First, the use of SOC strategies seems to be particularly effective for older employees in low-complexity jobs because it enables them to maintain a relatively strong focus on opportunities. Employees in low-complexity jobs should therefore become acquainted with the SOC model of successful aging and start practicing SOC strategies already at younger ages. The use of SOC strategies may not only help to maintain a focus on opportunities, but has also been shown to lead to several other important work outcomes such as work performance, reduction of job and family stressors, as well as work-family-conflict (Bajor & Baltes, 2003; B. B. Baltes & Heydens-Gahir, 2003).

Organizational practitioners who want to support older employees in terms of maintaining a focus on opportunities have two different options. First, they could redesign jobs in ways that increase job complexity, for instance, by providing employees with more substantial

and challenging decision necessities at their work, and enabling them to use, share, and develop their knowledge, skills, and abilities. These changes in work design should provide employees with important external resources that signal them that they can also expect to have work-related opportunities in the future. In addition, job complexity may increase and maintain focus on opportunities through its positive effects on employees' cognitive and emotional functioning (Frese, 1982).

Second, in the case of low-complexity jobs that cannot be changed easily, practitioners could set up trainings on “successful development” for employees of all ages. In these trainings, employees could learn about the theoretical background and practical use of SOC strategies. In the theoretical part, trainers could explain the content of SOC strategies and emphasize their importance in terms of successful development and work-related outcomes. Examples of how trainers might explain SOC strategies to employees can be found in the SOC literature (e.g., see the well-known example of the pianist Rubinstein in P. B. Baltes, 1997). The practical part of such training could emphasize how employees could select and prioritize work-related goals in their everyday work (e.g., by making lists), how they could optimize goal pursuit (e.g., by investing more effort into important goals), and how they could compensate for (age-related) losses in important resources (e.g., asking others for help). In addition, it is important that organizational practitioners cooperate with scientists to assess the effectiveness of such “successful development” trainings. For example, they could implement randomized control group designs in which a SOC strategies training group is compared to a control group which participates in a different training (e.g., a training on social competence). The effectiveness of “successful development” trainings could later be assessed using criteria such as work performance, job and career satisfaction, and focus on opportunities. So far, no empirical

evidence on the practicability and effectiveness of SOC trainings exists (Riediger et al., 2006). Nevertheless, the present study suggests that such trainings may be a useful way to enable older employees in low-complexity jobs to maintain a focus on opportunities at work.

References

- Abele, A. E., & Wiese, B. S. (2008). The nomological network of self-management strategies and career success. *Journal of Occupational and Organizational Psychology, 81*, 733-749.
- Abraham, J. D., & Hansson, R. O. (1995). Successful aging at work: An applied study of selection, optimization, and compensation through impression management. *Journal of Gerontology: Psychological Sciences, 50B*, P94-P103.
- Ackerman, P. L., Beier, M. E., & Bowen, K. R. (2002). What we really know about our abilities and our knowledge. *Personality and Individual Differences, 33*(4), 587-605.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Autorengruppe Bildungsberichterstattung. (2008). *Bildung in Deutschland 2008 [Education in Germany 2008]*. Bielefeld: Bertelsmann.
- Avolio, B. J., & Waldman, D. A. (1987). Personnel aptitude test scores as a function of age, education and job type. *Experimental Aging Research, 13*(2), 109-113.
- Avolio, B. J., & Waldman, D. A. (1990). An examination of age and cognitive test performance across job complexity and occupational types. *Journal of Applied Psychology, 75*(1), 43-50.
- Bajor, J. K., & Baltes, B. B. (2003). The relationship between selection optimization with compensation, conscientiousness, motivation, and performance. *Journal of Vocational Behavior, 63*, 347-367.
- Baltes, B. B., & Dickson, M. W. (2001). Using life-span models in industrial-organizational psychology: The theory of selective optimization with compensation. *Applied Developmental Science, 5*(1), 51-62.
- Baltes, B. B., & Heydens-Gahir, H. A. (2003). Reduction of work-family conflict through the use of selection, optimization, and compensation behaviors. *Journal of Applied Psychology, 88*(6), 1005-1018.
- Baltes, P. B. (1997). On the incomplete architecture of human ontogeny: Selection, optimization, and compensation as foundation of developmental theory. *American Psychologist, 52*(4), 366-380.
- Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes & M. M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences* (pp. 1-34). New York: Cambridge University Press.
- Baltes, P. B., Baltes, M. M., Freund, A. M., & Lang, F. R. (1999). *The measure of selection, optimization, and compensation (SOC) by self-report (Technical Report 1999)*. Berlin, Germany: Max Planck Institute for Human Development.
- Baltes, P. B., & Nesselroade, J. R. (1979). History and rationale of longitudinal research. In J. R. Nesselroade & P. B. Baltes (Eds.), *Longitudinal research in the study of behavior and development*. New York: Academic Press.
- Beehr, T. A., Glazer, S., Nielson, N. L., & Farmer, S. J. (2000). Work and nonwork predictors of employees' retirement ages. *Journal of Vocational Behavior, 57*, 206-225.
- Birren, J. E., & Schaie, K. W. (2006). *Handbook of the psychology of aging* (6th ed.). Burlington, MA: Elsevier.

- Bullinger, M., & Kirchberger, I. (1998). *SF-36 Fragebogen zum Gesundheitszustand [SF-36 Scale on health]*. Göttingen: Hogrefe.
- Caplan, R. D., Cobb, S., French, J. R. P., Van Harrison, R., & Pinneau, S. R. (1975). *Job demands and worker health*. Washington, DC: Department of Health, Education, and Welfare.
- Carstensen, L. L. (2006). The influence of a sense of time on human development. *Science*, *312*, 1913-1915.
- Carstensen, L. L., & Lang, F. R. (1996). *Future Time Perspective Scale*. Unpublished manuscript, Stanford University.
- Cate, R. A., & John, O. P. (2007). Testing models of the structure and development of future time perspective: Maintaining a focus on opportunities in middle age. *Psychology and Aging*, *22*(1), 186-201.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.
- Colquitt, J. A., LePine, J. A., & Noe, R. A. (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology*, *85*(5), 678-707.
- Cortina, J. M. (1993). Interaction, nonlinearity, and multicollinearity: Implications for multiple regression. *Journal of Management*, *19*(4), 915-922.
- Cumming, E., & Henry, W. E. (1961). *Growing old: The process of disengagement*. New York: Basic Books.
- Dawson, J. F., & Richter, A. W. (2006). Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test. *Journal of Applied Psychology*, *91*(4), 917-926.
- Evans, M. G. (1985). A monte carlo study of the effects of correlated method variance on moderated multiple regression analysis. *Organizational Behavior and Human Decision Processes*, *36*, 305-323.
- Farr, J. L., & Ringseis, E. L. (2002). The older worker in organizational context: Beyond the individual. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology*. Chichester, UK: Wiley.
- Farr, J. L., Tesluk, P. E., & Klein, S. R. (1998). Organizational structure of the workplace and the older worker. In K. W. Schaie & C. Schooler (Eds.), *Impact of work on older adults* (pp. 143-185). New York: Springer.
- Fay, D., & Kamps, A. (2006). Work characteristics and the emergence of a sustainable workforce: Do job design principles matter? *Gedrag & Organisatie*, *19*(2), 184-203.
- Foo, M. D., Uy, M. A., & Baron, R. A. (2009). How do feelings influence effort? An empirical study of entrepreneurs' affect and venture effort. *Journal of Applied Psychology*, *94*(4), 1086-1094.
- Frese, M. (1982). Occupational socialization and psychological development: An underemphasized research perspective in industrial psychology. *Journal of Occupational Psychology*, *55*, 209-224.
- Frese, M. (1987a). A concept of control: Implications for stress and performance in human computer interaction. In G. Salvendy, S. L. Sauter & J. J. Hurrell (Eds.), *Social, ergonomic and stress aspects of work with computers*. Amsterdam: Elsevier.
- Frese, M. (1987b). A theory of control and complexity: Implications for software design and integration of computer system into the work place. In M. Frese, E. Ulich & W. Dzida

- (Eds.), *Psychological issues of human-computer interaction at the work place* (pp. 313-337). Amsterdam: North-Holland.
- Frese, M. (1989). Theoretical models of control and health. In S. L. Sauter, J. J. Hurrell & C. L. Cooper (Eds.), *Job control and worker health* (pp. 107-128). Chichester: Wiley.
- Frese, M., Garst, H., & Fay, D. (2007). Making things happen: Reciprocal relationships between work characteristics and personal initiative in a four-wave longitudinal structural equation model. *Journal of Applied Psychology, 92*(4), 1084-1102.
- Frese, M., Kring, W., Soose, A., & Zempel, J. (1996). Personal Initiative at work: Differences between East and West Germany. *Academy of Management Journal, 39*(1), 37-63.
- Frese, M., & Semmer, N. K. (1986). Shiftwork, stress, and psychosomatic complaints: A comparison between workers in different shiftwork schedules, non-shiftworkers, and former shiftworkers. *Ergonomics, 29*, 99-114.
- Frese, M., & Zapf, D. (1994). Action as the core of work psychology: A German approach. In H. C. Triandis, M. D. Dunnette & L. Hough (Eds.), *Handbook of industrial and organizational psychology* (Vol. 4, pp. 271-340). Palo Alto, CA: Consulting Psychologists Press.
- Freund, A. M., & Baltes, P. B. (1998). Selection, optimization, and compensation as strategies of life management: Correlations with subjective indicators of successful aging. *Psychology and Aging, 13*, 531-543.
- Freund, A. M., & Baltes, P. B. (2000). The orchestration of selection, optimization, and compensation: An action-theoretical conceptualization of a theory of developmental regulation. In W. J. Perrig & A. Grob (Eds.), *Control of human behavior, mental processes, and consciousness*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Freund, A. M., & Baltes, P. B. (2002). Life-management strategies of selection, optimization, and compensation: Measurement by self-report and construct validity. *Journal of Personality and Social Psychology, 82*(4), 642-662.
- Fried, Y., & Ferris, G. R. (1987). The validity of the job characteristics model: A review and meta-analysis. *Personnel Psychology, 40*, 287-322.
- Fried, Y., Grant, A. M., Levi, A. S., Hadani, M., & Slowik, L. H. (2007). Job design in temporal context: A career dynamics perspective. *Journal of Organizational Behavior, 28*, 911-927.
- Ganzeboom, H., De Graaf, P., Treiman, D., & De Leeuw, J. (1992). A standard international socio-economic index of occupational status. *Social Science Research, 21*(1), 1-56.
- Giniger, S., Dispenzneri, A., & Eisenberg, S. (1983). Age, experience, and performance on speed and skill jobs in an applied setting. *Journal of Applied Psychology, 68*(3), 469-475.
- Grant, A. M., Christianson, M. K., & Price, R. H. (2007). Happiness, health, or relationships? Managerial practices and employee well-being tradeoffs. *Academy of Management Perspectives, 21*, 51-63.
- Grebner, S., Semmer, N. K., & Elfering, A. (2005). Working conditions and three types of well-being: A longitudinal study with self-report and rating data. *Journal of Occupational Health Psychology, 10*(1), 31-43.
- Griffin, B., & Hesketh, B. (2008). Post-retirement at work: The individual determinants of paid and volunteer work. *Journal of Occupational and Organizational Psychology, 81*(1), 101-121.
- Griffiths, A. (1999). Work design and management: The older worker. *Experimental Aging Research, 25*, 411-420.

- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, *16*, 250-279.
- Hansson, R. O., DeKoekkoek, P. D., Neece, W. M., & Patterson, D. W. (1997). Successful aging at work: Annual review, 1992-1996: The older workers and transitions to retirement. *Journal of Vocational Behavior*, *51*, 202-233.
- Harrison, D. A., Newman, D. A., & Roth, P. L. (2006). How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and time sequences. *Academy of Management Journal*, *49*(2), 305-325.
- Havighurst, R. J. (1961). Successful aging. *The Gerontologist*, *1*, 8-13.
- Havighurst, R. J. (1963). Successful aging. In R. H. Williams, C. Tibbitts & W. Donahue (Eds.), *Processes of aging* (pp. 299-320). New York: Atherton Press.
- Hedge, J. W., Borman, W. C., & Lammlein, S. E. (2006). *The aging workforce: Realities, myths, and implications for organizations*. Washington, DC: American Psychological Association.
- Hmieleski, K. M., & Baron, R. A. (2009). Entrepreneurs' optimism and new venture performance: A social cognitive perspective. *Academy of Management Journal*, *52*(3), 473-488.
- Hobfoll, S. E., & Wells, J. D. (1998). Conservation of resources, stress, and aging: Why do some slide and some spring? In J. Lomranz (Ed.), *Handbook of aging and mental health: An integrative approach*. New York: Plenum Press.
- Hofer, S. M., & Sliwinski, M. J. (2006). Design and analysis of longitudinal studies on aging. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (6th ed., pp. 15-37). Amsterdam: Elsevier.
- Jopp, D., & Smith, J. (2006). Resources and life-management strategies as determinants of successful aging: On the protective effect of selection, optimization, and compensation. *Psychology and Aging*, *21*(2), 253-265.
- Kanfer, R., & Ackerman, P. L. (2004). Aging, adult development, and work motivation. *Academy of Management Review*, *29*(3), 440-458.
- Keyes, C. L. M., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology*, *82*, 1007-1022.
- Kohn, M. L., & Schooler, C. (1978). The reciprocal effects of the substantive complexity of work and intellectual flexibility: A longitudinal assessment. *American Journal of Sociology*, *84*, 24-52.
- Kohn, M. L., & Schooler, C. (1983a). The reciprocal effects of substantive complexity of work and intellectual flexibility: A longitudinal assessment. In M. L. Kohn & C. Schooler (Eds.), *Work and personality: An inquiry into the impact of social stratification* (pp. 103-124). Norwood, NJ: Ablex.
- Kohn, M. L., & Schooler, C. (1983b). Stratification, occupation, and orientation. In M. L. Kohn & C. Schooler (Eds.), *Work and personality: An inquiry into the impact of social stratification* (pp. 5-33). Norwood, NJ: Ablex.
- Kornhauser, A. (1965). *Mental health of the industrial worker: A Detroit study*. New York: Wiley.
- Kozlowski, S. W. J., & Hults, B. M. (1986). Joint moderation of the relation between task complexity and job performance for engineers. *Journal of Applied Psychology*, *71*(2), 196-202.

- Lachman, M. E. (2001). *Handbook of midlife development*. New York: Wiley.
- Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17*(1), 125-139.
- Levinson, D. J. (1986). A conception of adult development. *American Psychologist, 41*, 3-13.
- Lewin, K. (1939). Field theory and experiment in social psychology: Concepts and methods. *American Journal of Sociology, 44*, 868-896.
- Li, K. Z. H., Lindenberger, U., Freund, A. M., & Baltes, P. B. (2001). Walking while memorizing: Age-related differences in compensatory behavior. *Psychological Science, 12*, 230-237.
- Mackinnon, A., Jorm, A. F., Christensen, H., Korten, A. E., Jacomb, P. A., & Rodgers, B. (1999). A short form of the Positive and Negative Affect Schedule: Evaluation of factorial validity and invariance across demographic variables in a community sample. *Personality and Individual Differences, 27*, 405-416.
- Maier, G. W., & Brunstein, J. C. (2001). The role of personal work goals in newcomers' job satisfaction and organizational commitment: A longitudinal analysis. *Journal of Applied Psychology, 86*(5), 1034-1042.
- Man, D. C., & Lam, S. S. K. (2003). The effects of job complexity and autonomy on cohesiveness in collectivistic and individualistic work groups: A cross-cultural analysis. *Journal of Organizational Behavior, 24*, 979-1001.
- Markus, H. R., & Nurius, P. (1986). Possible selves. *American Psychologist, 41*(9), 954-969.
- Markus, H. R., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. *Annual Review of Psychology, 38*, 299-337.
- Marsiske, M., Lang, F. L., Baltes, P. B., & Baltes, M. M. (1995). Selective optimization with compensation: Life span perspectives on successful human development. In R. A. Dixon & L. Bäckman (Eds.), *Compensation for psychological deficits and declines: Managing losses and promoting gains* (pp. 35-79). Hillsdale, NJ: Erlbaum.
- Maurer, T. J., Weiss, E. M., & Barbeite, F. G. (2003). A model of involvement in work-related learning and development activity: The effects of individual, situational, motivational, and age variables. *Journal of Applied Psychology, 88*(4), 707-724.
- McGregor, I., & Little, B. R. (1998). Personal projects, happiness, and meaning: On doing well and being yourself. *Journal of Personality and Social Psychology, 74*(2), 494-512.
- Mirvis, P. H., & Hall, D. T. (1996). Career development for the older worker. In D. T. Hall (Ed.), *The career is dead - Long live the career* (pp. 278-296). San Francisco: Jossey-Bass.
- Moberg, D. J. (2001). The aging workforce: Implications for ethical practice. *Business and Society Review, 106*(4), 315-329.
- Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology, 91*(6), 1321-1339.
- Neugarten, B. L., Moore, J. W., & Lowe, J. C. (1965). Age norms, age constraints, and adult socialization. *American Sociological Review, 70*, 710-717.
- Ohly, S., Sonnentag, S., & Pluntke, F. (2006). Routinization, work characteristics and their relationships with creative and proactive behaviors. *Journal of Organizational Behavior, 27*(3), 257-279.
- Peterson, C. (2000). The future of optimism. *American Psychologist, 55*(1), 44-55.
- Peterson, S. J., & Spiker, B. K. (2005). Establishing the positive contributory value of older workers: A positive psychology perspective. *Organizational Dynamics, 34*(2), 153-167.

- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903.
- Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics, 31*(3), 437-448.
- Rhodes, S. R. (1983). Age-related differences in work attitudes and behavior: A review and conceptual analysis. *Psychological Bulletin, 93*(2), 328-367.
- Riediger, M., Li, S.-C., & Lindenberger, U. (2006). Selection, optimization, and compensation as developmental mechanisms of adaptive resource allocation: Review and preview. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (6th ed., Vol. 2nd, pp. 289-313). Amsterdam: Elsevier.
- Robson, S. M., & Hansson, R. O. (2007). Strategic self development for successful aging at work. *International Journal of Aging and Human Development, 64*(4), 331-359.
- Robson, S. M., Hansson, R. O., Abalos, A., & Booth, M. (2006). Successful aging: Criteria for aging well in the workplace. *Journal of Career Development, 33*(2), 156-177.
- Rowe, J. W., & Kahn, R. L. (1987). Human aging: Usual and successful. *Science, 237*, 143-149.
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*(1), 141-166.
- Ryff, C. D. (1989). Beyond Ponce de Leon and life satisfaction: New directions in quest of successful ageing. *International Journal of Behavioral Development, 12*(1), 35-55.
- Scheier, M. F., & Carver, C. S. (1985). Dispositional optimism and physical well-being: The influence of generalized outcome expectancies on health. *Journal of Personality, 55*, 169-210.
- Schneider, S. (2001). In search of realistic optimism: Meaning, knowledge, and warm fuzziness. *American Psychologist, 56*(3), 250-263.
- Schooler, C., Mulatu, M. S., & Oates, G. (1999). The continuing effects of substantively complex work on the intellectual functioning of older workers. *Psychology and Aging, 14*(3), 483-506.
- Schriesheim, C. A., & DeNisi, A. S. (1981). Task dimensions as moderators of the effects of instrumental leadership: A two-sample replicated test of path-goal leadership theory. *Journal of Applied Psychology, 66*(5), 589-597.
- Schulz, R., & Heckhausen, J. (1996). A life span model of successful aging. *American Psychologist, 51*(7), 702-714.
- Seligman, M. E. (1998). *Learned optimism*. New York: Pocket.
- Semmer, N. K. (1982). Stress at work, stress in private life and psychological well-being. In W. Bachmann & I. Udrys (Eds.), *Mental load and stress in activity: European approaches* (pp. 42-55). Amsterdam: Elsevier.
- Semmer, N. K., Grebner, S., & Elfering, A. (2004). Beyond self-report: Using observational, physiological, and situation-based measures in research on occupational stress. In P. L. Perrewé & D. C. Ganster (Eds.), *Research in occupational stress and well-being: Emotional and physiological processes and positive intervention strategies* (Vol. 3, pp. 205-263). Amsterdam: Elsevier.
- Sheldon, K. M., & Kasser, T. (2001). Getting older, getting better? Personal strivings and psychological maturity across the life span. *Developmental Psychology, 37*(4), 491-501.

- Shultz, K. S., & Adams, G. A. (2007). *Aging and work in the 21st century*. Mahwah, NJ: Lawrence Erlbaum.
- Smola, K. W., & Sutton, C. D. (2002). Generational differences: Revisiting generational work values for the new millennium. *Journal of Organizational Behavior*, 23, 363-382.
- Sterns, H. L., & Subich, L. M. (2002). Career development in midcareer. In D. C. Feldman (Ed.), *Work careers: A developmental perspective* (pp. 186-213). San Francisco: Jossey-Bass.
- Strutton, D., & Lumpkin, J. (1992). Relationship between optimism and coping strategies in the work environment. *Psychological Reports*, 71(3), 1179-1186.
- Taylor, F. W. (1911). *The principles of scientific management*. New York: Harper.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103(2), 193-210.
- Ware, J. E., Kosinski, M., & Keller, S. D. (1996). A 12-item short-form health survey: Construction of scales and preliminary tests of reliability and validity. *Medical Care*, 34(3), 220-233.
- Warr, P. B. (1990). The measurement of well-being and other aspects of mental health. *Journal of Occupational Psychology*, 63, 193-210.
- Warr, P. B. (1992). Age and occupational well-being. *Psychology and Aging*, 7(1), 37-45.
- Warr, P. B. (2001). Age and work behaviour: Physical attributes, cognitive abilities, knowledge, personality traits and motives. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology*. Chichester, UK: Wiley.
- Warr, P. B., & Birdi, K. (1998). Employee age and voluntary development activity. *International Journal of Training and Development*, 2(3), 190-204.
- Warr, P. B., Miles, A., & Platts, C. (2001). Age and personality in the British population between 16 and 64 years. *Journal of Occupational and Organizational Psychology*, 74, 165-199.
- Weiss, H. M. (2002). Deconstructing job satisfaction: Separating evaluations, beliefs, and affective experience. *Human Resource Management Review*, 12, 173-194.
- Wiese, B. S., Freund, A. M., & Baltes, P. B. (2000). Selection, optimization, and compensation: An action-related approach to work and partnership. *Journal of Vocational Behavior*, 57, 273-300.
- Wiese, B. S., Freund, A. M., & Baltes, P. B. (2002). Subjective career success and emotional well-being: longitudinal predictive power of selection, optimization, and compensation. *Journal of Vocational Behavior*, 60, 321-335.
- Wrzesniewski, A., Dutton, J. E., & Debebe, G. (2003). Interpersonal sensemaking and the meaning of work. In S. B. & R. Kramer (Eds.), *Research in organizational behavior* (Vol. 25, pp. 93-135). New York.: Elsevier Science.
- Young, L. M., Baltes, B. B., & Pratt, A. K. (2007). Using selection, optimization, and compensation to reduce job/family stressors: Effective when it matters. *Journal of Business and Psychology*, 21, 511-539.
- Youssef, C. M., & Luthans, F. (2007). Positive organizational behavior in the workplace: The impact of hope, optimism, and resilience. *Journal of Management*, 33(5), 774-800.
- Zacher, H., & Frese, M. (2009). Remaining time and opportunities at work: Relationships between age, work characteristics, and occupational future time perspective. *Psychology and Aging*, 24(2), 487-493.
- Zapf, D. (1993). Stress-oriented job analysis of computerized office work. *The European Work and Organizational Psychologist*, 3, 85-100.

Ziegelmann, J. P., & Lippke, S. (2007a). Planning and strategy use in health behavior change: A life span view. *International Journal of Behavioral Medicine, 14*, 30-39.

Ziegelmann, J. P., & Lippke, S. (2007b). Use of selection, optimization, and compensation strategies in health self-regulation: Interplay with resources and successful development. *Journal of Aging and Health, 19*(3), 500-518.

Appendix

Focus on Opportunities Items (Adapted from Carstensen & Lang, 1996; Answer format: 5-point scale from 1 = *does not apply at all* to 5 = *applies completely*)

1. Many opportunities await me in my occupational future.
2. I expect that I will set many new goals in my occupational future.
3. My occupational future is filled with possibilities.
4. I could do anything I want in my occupational future.

Job Complexity Items (Adapted from Semmer, 1982; Answer format: 5-point scale from 1 = *very little* to 5 = *very much*)

1. Do you receive tasks that are extraordinary and particularly difficult?
2. Do you often have to make very complicated decisions in your work?
3. Can you use all your knowledge and skills in your work?
4. Can you learn new things in your work?

Use of SOC Strategies Items (Adapted from Baltes, Baltes, Freund, & Lang, 1999; Answer format: 5-point scale from 1 = *does not apply at all* to 5 = *applies completely*; ES = elective selection, LS = loss-based selection, O = optimization, C = compensation)

1. At work, I concentrate all my energy on few things. (ES)
2. At work, I always focus on the one most important goal at a given time. (ES)
3. At work, I commit myself to one or two important goals. (ES)

4. When things at work don't go as well as they have in the past, I choose one or two important goals. (LS)
5. When I can't do something important at work the way I did before, I look for a new goal. (LS)
6. When I can't do something at work as well as I used to, I think about my priorities and what exactly is important to me. (LS)
7. At work, I keep working on what I have planned until I succeed. (O)
8. At work, I make every effort to achieve a given goal. (O)
9. If something matters to me at work, I devote myself fully and completely to it. (O)
10. When things at work don't go as well as they used to, I keep trying other ways until I can achieve the same result I used to. (C)
11. When something at work isn't working as well as it used to, I ask others for advice or help. (C)
12. When it becomes harder for me to get the same results at work, I keep trying harder until I can do it as well as before. (C)

Table 1

Means (M), Standard Deviations (SD), and Intercorrelations of Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Focus on opportunities	2.84	.95	(.91)							
2. Age	37.99	13.05	-.72**	-						
3. Gender	.14	.35	-.11	.04	-					
4. Education	1.86	.81	.14	-.15	-.09	-				
5. Positive affect	3.65	.55	.03	.16	.02	-.09	(.76)			
6. Physical health	50.12	8.44	.23**	-.34**	.09	.21*	-.05	(.82)		
7. Job complexity	3.33	.78	-.03	.28**	-.35**	.01	.11	-.10	(.76)	
8. Use of SOC strategies	3.21	.48	.09	.14	.01	-.23**	.25**	-.11	.20*	(.77)

Note. Listwise $N = 133$. For gender, 0 = male and 1 = female. SOC = selection, optimization, and compensation. Reliability estimates (α) are shown in parentheses on the diagonal.

* $p < .05$. ** $p < .01$.

Table 2

Results of Hierarchical Moderated Regression Analysis Predicting Focus on Opportunities

Step / Predictor variable	Dependent Variable: Focus on Opportunities											
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Step 1: Control Variables												
Gender	-.33	.23	-.12	-.08	.18	-.03	-.17	.17	-.06	-.23	.17	-.09
Education	.11	.10	.09	.09	.07	.07	.13	.07	.11†	.16	.07	.13*
Positive affect	.09	.15	.05	.18	.11	.10†	.25	.10	.14*	.24	.10	.14*
Physical health	.03	.01	.22*	-.00	.01	-.01	-.00	.01	-.03	-.00	.01	-.02
Step 2: Main Effects												
Age				-.06	.01	-.77**	-.06	.01	-.77**	-.05	.01	-.70**
Job complexity				.16	.08	.13†	.12	.09	.10	.08	.09	.06
Use of SOC strategies				.32	.13	.16*	.34	.12	.17**	.49	.13	.25**
Step 3: Two-Way Interactions												
Age * Job complexity							.02	.01	.15*	.02	.01	.17*
Age * Use of SOC strategies							-.00	.01	-.01	-.00	.01	-.02
Job complexity * Use of SOC strategies							-.49	.16	-.20**	-.34	.16	-.14*
Step 4: Three-way Interaction												
Age * Job complexity * Use of SOC strategies										-.04	.01	-.18*
ΔR^2						.49**			.05**			.02*
R^2			.08*			.57**			.62**			.64**

Note. Listwise $N = 133$. For gender, 0 = male, 1 = female. SOC = selection, optimization, and compensation. All predictor variables were mean-centered.

† $p < .10$. * $p < .05$. ** $p < .01$.

Figure 1

The Proposed Model and Hypotheses

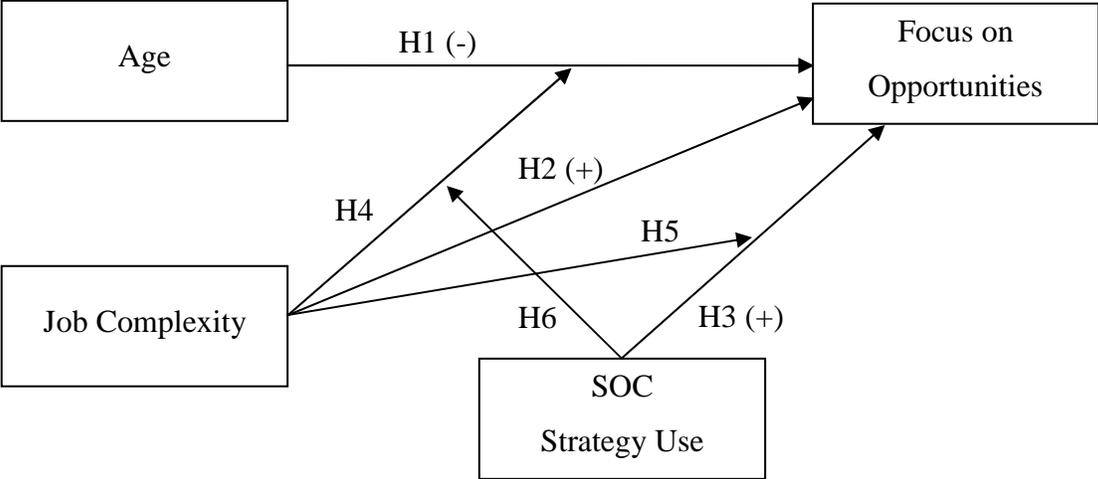


Figure 2

Moderation of the Relationship between Age and Focus on Opportunities by Job Complexity



Figure 3
Moderation of the Relationship between Use of SOC Strategies and Focus on Opportunities by Job Complexity

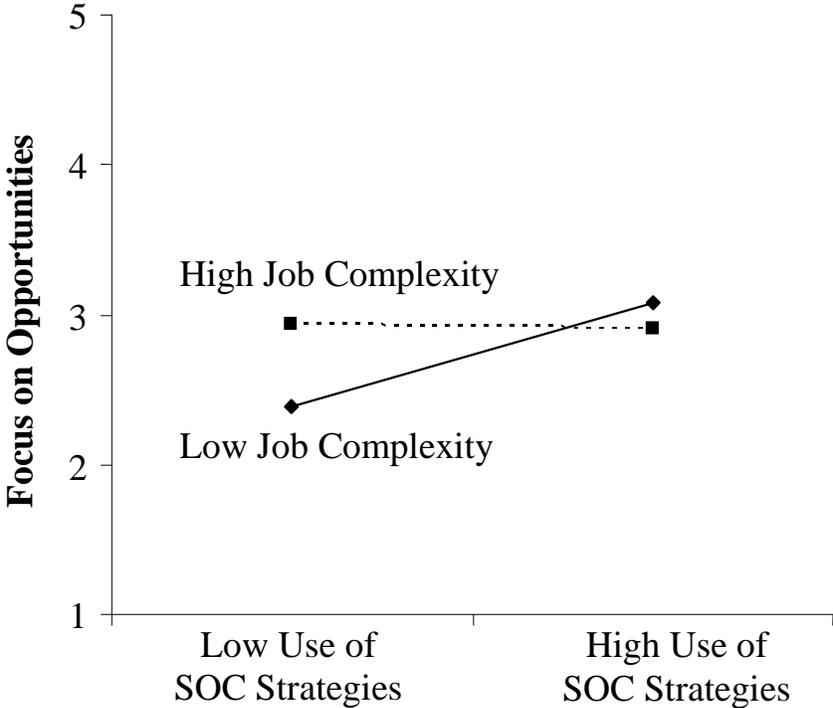


Figure 4

Moderation of the Relationship between Age and Focus on Opportunities by Use of SOC Strategies for Employees with Low Job Complexity (Panel A) and for Employees with High Job Complexity (Panel B)

