

Maintaining a Focus on Work-Related Opportunities at Higher Ages

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Hannes Zacher

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Dekan/in: Prof. Dr. Joachim Brunstein
1. Berichterstatter/in: Prof. Dr. Michael Frese
2. Berichterstatter/in: Prof. Dr. Gudrun Schwarzer

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Abstract

Individuals with a strong focus on opportunities believe that they will have many new goals, plans, options, and possibilities in their personal future. This dissertation consists of four empirical studies that investigated which person- and context-related factors help individuals to maintain a focus on *work-related* opportunities, especially at higher ages. In addition, relationships between focus on opportunities and important work outcomes were examined.

In Study 1, two dimensions of the concept of future time perspective were adapted to the occupational context: Perceptions of the length of personal remaining time at work and focus on opportunities at work. Relationships between these dimensions and age as well as two important work characteristics, job complexity and job control, were examined. Hierarchical moderated regression analyses and structural equation modeling of data collected from 176 employees of various occupations (mean age = 39 years, standard deviation = 13, range = 19 to 60 years) showed that age was negatively related to both remaining time and focus on opportunities. Job complexity and control were positively related to focus on opportunities and moderated the negative relationship between age and focus on opportunities, such that the relationship was weaker at high compared to low levels of job complexity and control.

Study 2 investigated the interplay between age, job complexity, and the use of a successful aging strategy entitled selection, optimization, and compensation (SOC) in predicting focus on opportunities at work. First, it was expected that employees in high-complexity jobs are better able to maintain a focus on opportunities at higher ages than employees in low-complexity jobs. Second, it was expected that SOC strategy use is more strongly positively related to focus on opportunities in low-complexity jobs than in high-complexity jobs. Third, it was expected that employees in low-complexity jobs with high levels of SOC strategy use are better able to maintain a focus on opportunities at higher ages than employees in low-complexity jobs with low levels of SOC strategy use. Data were collected from 133 employees of one company (mean age = 38 years, standard deviation = 13, range = 16 to 65 years). Results of a hierarchical moderated regression analysis supported the three main assumptions.

Study 3 investigated focus on opportunities as a mediator of the relationships between age and work performance and between job complexity and work performance. In addition, it was expected that job complexity buffers the negative relationship between age and focus on opportunities and moderates the negative and indirect effect of age on work performance (through focus on opportunities), such that the indirect effect is weaker for employees in high-complexity jobs than for employees in low-complexity jobs. Results of simple and moderated mediation analyses with data of 168 employees from 41 organizations (mean age = 40 years, standard deviation = 10, range = 19 to 64 years) and peer-ratings of work performance supported the assumptions for overall work performance as well as for more specific work performance dimensions (i.e., task, career, and citizenship performance).

In Study 4, focus on opportunities was investigated as a mediator of the relationships between business owners' age and venture growth and between mental health and venture growth. In addition, it was expected that mental health buffers the negative relationship between age and focus on opportunities and moderates the negative and indirect effect of age on venture growth (through focus on opportunities), such that the indirect effect is weaker for business owners high in mental health than for business owners low in mental health. Simple and moderated mediation analyses with data collected from 84 small business owners (mean age = 44 years, standard deviation = 10, range = 24 to 74 years) supported the assumptions.

In conclusion, focus on opportunities at work is an important concept to better understand the role of age in the work context. Future research should conceptualize focus on opportunities as an aspect of older adults' positive psychological capital and apply longitudinal designs.

Table of Contents

1 Introduction	7
2 Remaining Time and Opportunities at Work: Relationships between Age, Work Characteristics, and Occupational Future Time Perspective	11
2.1 The Concept of Occupational Future Time Perspective	11
2.2 Development of Hypotheses	14
2.2.1 <i>Age and Occupational Future Time Perspective</i>	14
2.2.2 <i>Job Complexity, Job Control, and Focus on Opportunities</i>	15
2.2.3 <i>Interactions between Age, Job Complexity, and Job Control</i>	16
2.3 Method	17
2.3.1 <i>Participants and Procedure</i>	17
2.3.2 <i>Measures</i>	18
2.3.3 <i>Analyses</i>	21
2.4 Results.....	23
2.4.1 <i>Intercorrelations of Study Variables</i>	23
2.4.2 <i>Test of Hypotheses</i>	23
2.5 Discussion	30
2.5.1 <i>Summary of Findings</i>	30
2.5.2 <i>Limitations</i>	32
2.5.3 <i>Implications for Future Research</i>	33
2.5.4 <i>Implications for Theory and Practice</i>	34
3 Maintaining a Focus on Opportunities at Work: The Interplay between Age, Job Complexity, and the Use of Selection, Optimization, and Compensation	36
3.1 Focus on Opportunities as a Criterion of Successful Aging at Work	39
3.2 The Model of Selection, Optimization, and Compensation.....	41
3.3 Development of Hypotheses	43
3.3.1 <i>Age, Job Complexity, and Focus on Opportunities</i>	43
3.3.2 <i>SOC Strategy Use and Focus on Opportunities</i>	45
3.3.3 <i>The Interplay between Age, Job Complexity, and SOC Strategy Use</i>	46
3.4 Method	50
3.4.1 <i>Participants and Procedure</i>	50
3.4.2 <i>Measures</i>	51
3.4.3 <i>Analyses</i>	53
3.5 Results.....	54
3.5.1 <i>Intercorrelations of Study Variables</i>	54
3.5.2 <i>Test of Hypotheses</i>	54
3.6 Discussion	61
3.6.1 <i>Summary of Findings</i>	61
3.6.2 <i>Limitations</i>	64
3.6.3 <i>Implications for Future Research</i>	66
3.6.4 <i>Implications for Theory and Practice</i>	68

4 Focus on Opportunities as a Mediator of the Relationships between Age, Job Complexity, and Work Performance	70
4.1 Conceptualization of Work Performance.....	72
4.2 Development of Hypotheses.....	75
4.2.1 <i>Age, Focus on Opportunities, and Work Performance</i>	75
4.2.2 <i>Job Complexity, Focus on Opportunities, and Work Performance</i>	78
4.2.3 <i>The Moderating Role of Job Complexity</i>	80
4.3 Method.....	82
4.3.1 <i>Participants and Procedure</i>	82
4.3.2 <i>Measures</i>	83
4.3.3 <i>Analyses</i>	85
4.4 Results.....	87
4.4.1 <i>Intercorrelations of Study Variables</i>	87
4.4.2 <i>Test of Hypotheses</i>	87
4.5 Discussion.....	99
4.5.1 <i>Summary of Findings</i>	99
4.5.2 <i>Limitations</i>	102
4.5.3 <i>Implications for Future Research</i>	104
4.5.4 <i>Implications for Theory and Practice</i>	106
5 Business Owners' Age, Focus on Opportunities, and Venture Growth: The Role of Mental Health.....	108
5.1 Development of Hypotheses.....	112
5.1.1 <i>Business Owners' Age, Focus on Opportunities, and Venture Growth</i>	112
5.1.2 <i>The Role of Mental Health</i>	115
5.2 Method.....	118
5.2.1 <i>Participants and Procedure</i>	118
5.2.2 <i>Measures</i>	119
5.2.3 <i>Analyses</i>	120
5.3 Results.....	122
5.3.1 <i>Intercorrelations of Study Variables</i>	122
5.3.2 <i>Test of Hypotheses</i>	122
5.4 Discussion.....	130
5.4.1 <i>Summary of Findings</i>	130
5.4.2 <i>Limitations</i>	133
5.4.3 <i>Implications for Future Research</i>	135
5.4.4 <i>Implications for Theory and Practice</i>	136
6 Conclusion	138
References.....	153

Appendix A: Scales Used in the Studies

Appendix B: Questionnaires

Appendix C: German Summary

1 Introduction

The populations in most developed countries and some developing countries (e.g., China) are projected to age dramatically over the upcoming decades (J. E. Cohen, 2003; Shrestha, 2000). In the European Union, the age group of 15- to 54-year-olds is expected to decrease by approximately 25 percent between the years 2005 and 2050. In the same time period, there will be population increases of nine and 44 percent for the age groups of 55- to 64-year-olds and 65- to 79-year-olds, respectively. The median age of individuals living in the European Union is expected to increase from about 39 years in 2005 to 48 years in 2050 (European Commission, 2005). This demographic change is the result of three basic trends: Continuing increases in life-expectancy due to improvements in health care and life quality, the aging of the “baby boom generation” (i.e., individuals born between the years 1946 and 1964), and continuously low birth rates (Vaupel & Loichinger, 2006). These developments entail that future labor markets will depend more strongly on older adults. The aging of the workforce is further aggravated by cutbacks in retirement security and increased attention to legal issues surrounding age discrimination in organizations (Farr & Ringseis, 2002).

The aging of the workforce has renewed the interest in the role of age in the work context among work and organizational psychologists, as indicated by several recent review articles and books (e.g., Farr & Ringseis, 2002; Hedge, Borman, & Lammlein, 2006; Kanfer & Ackerman, 2004; Shultz & Adams, 2007; Warr, 2001). Whereas early research on aging at work took a rather negative perspective (cf. Rhodes, 1983), contemporary research examines not only age-related losses, but also the growth, maintenance, and reorganization trajectories of psychological factors such as cognitive abilities, personality, affect, interests, values, and the self-concept (Kanfer & Ackerman, 2004; Warr, 2001). In addition, researchers have proposed a positive psychology perspective on aging at work. This literature highlights the particular strengths and advantages of older employees, such as increased knowledge and maturity (Moberg, 2001; S. J. Peterson & Spiker, 2005), and investigates factors that contribute to successful aging at work, such as self-management strategies (Abraham & Hansson, 1995; Hansson, DeKoekkoek, Neece, & Patterson, 1997; Robson & Hansson, 2007). An important goal of this literature is to identify factors that help older individuals to “remain confident in their abilities to learn, grow, and contribute” and to be “hopeful and optimistic about their futures in the workplace” (S. J. Peterson & Spiker, 2005, p. 158).

This dissertation adopts a positive psychology perspective on aging in the work context by investigating which person- and context-related factors help individuals to maintain a *focus on work-related opportunities* at higher ages, and whether such a focus on opportunities is positively related to important work outcomes. The concept of focus on opportunities originates from the research literature on the broader construct of future time perspective (FTP). Interest in FTP among psychologists dates back to the 1930's, when Kurt Lewin wrote that "persons at all ages are influenced by the manner in which they see the future" (Lewin, 1939, p. 878). However, research on FTP had been sparse and scattered throughout the second half of the 20th century and mostly in the fields of social psychology (e.g., Nuttin, 1985), educational psychology (e.g., de Volder & Lens, 1982; Trommsdorff, 1983), and clinical psychology (e.g., Henik & Domino, 1975; Smart, 1968; Wallace, 1956).

The FTP concept received increasing attention in the early 1990's when researchers from the fields of adult development and life span psychology included it in their theories (Carstensen, 1992; Carstensen, Isaacowitz, & Charles, 1999; Fingerma n & Perlmutter, 1995). For example, Carstensen (1992) suggested in her socioemotional selectivity theory that FTP has important implications for individuals' social goal priorities and emotion regulation. Recently, Cate and John (2007) provided a broad definition of FTP as individuals' perceptions, beliefs, and expectations regarding their personal future. In contrast to previous conceptualizations of FTP as primarily reflecting beliefs about the length of remaining time in life (Carstensen et al., 1999), Cate and John (2007) conceived FTP as consisting of two separate dimensions, focus on opportunities and focus on limitations. Individuals with a strong focus on opportunities believe that they will have many new goals, plans, options, and possibilities in their personal future. In contrast, individuals with a strong focus on limitations perceive their future more negatively and concentrate on losses, boundaries, and restrictions. Importantly, both Carstensen (2006) and Cate and John (2007) conceptualized FTP as an age-related, flexible, and cognitive-motivational construct that has to be distinguished from rather stable, trait-like concepts such as time orientation (de Volder, 1979; Shmotkin, 1991), future orientation (Gjesme, 1983; Koenig, Frese, Steinmetz, Rauch, & Wang, 2007; Zimbardo & Boyd, 1999), temporal depth (Bluedorn, 2002; Bluedorn & Martin, 2008; Bluedorn & Standifer, 2006), and an optimistic attributional style (Seligman, 1998).

Cate and John (2007) suggested that future research should not only investigate differences in focus on opportunities across different age groups, but also relationships between focus on opportunities and relevant person- and context-related characteristics as

well as important outcome variables. In addition, Cate and John (2007) called for increased research on the moderators of the relationship between age and focus on opportunities: “What can be done to prolong the feeling that there are many opportunities ahead?” (p. 200). This dissertation addresses Cate and John’s (2007) suggestions by investigating focus on opportunities in one of the most important domains of life: The work context. Specifically, the first overarching goal of this dissertation is to examine how focus on work-related opportunities – that is, how many new goals, plans, options, and possibilities individuals believe to have in their personal future at work – is related to age and other person-related characteristics as well as characteristics of the work context. The second overarching goal of this dissertation is to investigate which factors help individuals to maintain a focus on opportunities at higher ages. Finally, the third overarching goal of this dissertation is to investigate relationships between focus on opportunities and important work outcomes.

Overview of the Following Chapters

This dissertation consists of four empirical studies with individuals’ age and focus on opportunities as focal constructs. These studies are reported in the following four chapters (Chapters 2 to 5). They can be read independently from each other because the chapters contain separate theoretical introductions and discussion sections.

Study 1 (Chapter 2) adapts two dimensions of the general FTP construct as described by Carstensen (2006) and Cate and John (2007) to the occupational context: Individuals’ perceptions of the length of their remaining time at work and their focus on work-related opportunities. The relationships between age and these two dimensions of occupational FTP are examined. In addition, the study investigates how two important characteristics of the work context – job complexity and job control – are related to focus on opportunities and how they influence the strength of the relationship between age and focus on opportunities.

Study 2 (Chapter 3) replicates and extends the findings of Study 1 by investigating the specific and shared effects of age, job complexity, and the use of a successful aging strategy entitled “selection, optimization, and compensation” (SOC; Freund & Baltes, 2002) in predicting focus on opportunities at work. Based on SOC theory, it is expected that SOC strategy use is more strongly positively related to focus on opportunities in low-complexity jobs than in high-complexity jobs. In addition, it is expected that SOC strategy use is more

effective in terms of maintaining a focus on opportunities at higher ages in low-complexity jobs than in high-complexity jobs.

Study 3 (Chapter 4) investigates focus on opportunities as a mediator of the relationships between age and overall work performance as well as between age and specific work performance dimensions (i.e., task, career, innovative, team member performance, and organizational citizenship behavior). It is expected that age is negatively related to focus on opportunities, and that focus on opportunities in turn is positively related to work performance. The study further extends the findings of Studies 1 and 2 by examining whether the relationship between job complexity and work performance is mediated by focus on opportunities. In addition, the study examines whether job complexity buffers the negative relationship between age and focus on opportunities and moderates the negative and indirect effect of age on work performance (through focus on opportunities), such that the indirect effect is weaker for employees in high-complexity jobs than for employees in low-complexity jobs.

Study 4 (Chapter 5) extends previous research on focus on opportunities by investigating the concept in a different employment-status group than salaried employees: Self-employed small business owners. Specifically, the study examines whether focus on opportunities mediates the relationships between small business owners' age and venture growth and between small business owners' mental health and venture growth. The study also investigates whether mental health buffers the negative relationship between age and focus on opportunities and moderates the negative and indirect effect of age on venture growth (through focus on opportunities), such that the indirect effect is weaker for business owners high in mental health than for business owners low in mental health.

In Chapter 6, the main results and implications of the four empirical studies are summarized, integrated, and discussed in terms of the three overarching goals of this dissertation. Furthermore, it is suggested that focus on opportunities fulfills the inclusion criteria of the "positive organizational behavior" approach (Luthans, 2002a) and should therefore be considered in future studies as an additional aspect of "positive psychological capital" (Luthans, Avolio, Avey, & Norman, 2007) – particularly of older individuals. Finally, limitations of a cross-sectional approach to the study of aging at work are outlined.

2 Remaining Time and Opportunities at Work: Relationships between Age, Work Characteristics, and Occupational Future Time Perspective¹

Demographic changes and the outlook of a rapidly aging workforce in the 21st century have led to an increased interest among researchers and practitioners in issues surrounding older employees and adult development over the working life span (Farr & Ringseis, 2002; Kanfer & Ackerman, 2004; Warr, 2001). In this context, employment trends such as the anticipation of longer working lives (Ilmarinen, 2005) and the introduction of flexible retirement options such as bridge employment (Hedge et al., 2006) render individuals' perceptions, beliefs, and expectations regarding their remaining time and remaining opportunities on the job important research topics. Several studies from the fields of adult development and gerontology have examined age-related changes in general *future time perspective* (FTP; e.g., Carstensen, 2006). However, no research so far has examined FTP in relation to individuals' employment and careers. The goals of this article were, therefore, to adapt the FTP concept to the work context and to investigate its relationships with age and two important work characteristics, job complexity and job control.

2.1 The Concept of Occupational Future Time Perspective

The FTP concept describes how much time individuals believe they have left in their personal future and how they perceive that time to be like (Cate & John, 2007). FTP has to be distinguished from trait-like concepts, for example, Zimbardo's "future orientation" (Zimbardo & Boyd, 1999) and Bluedorn's concept of "temporal depth" (Bluedorn, 2002), which refer to rather stable modes of thought and behavior. In contrast, FTP as conceptualized by Carstensen (2006) and Cate and John (2007) is a flexible, cognitive-motivational, and age-related construct that changes over time. Carstensen (2006) conceived FTP as a one-dimensional temporal construct, ranging from expansive to limited time left.

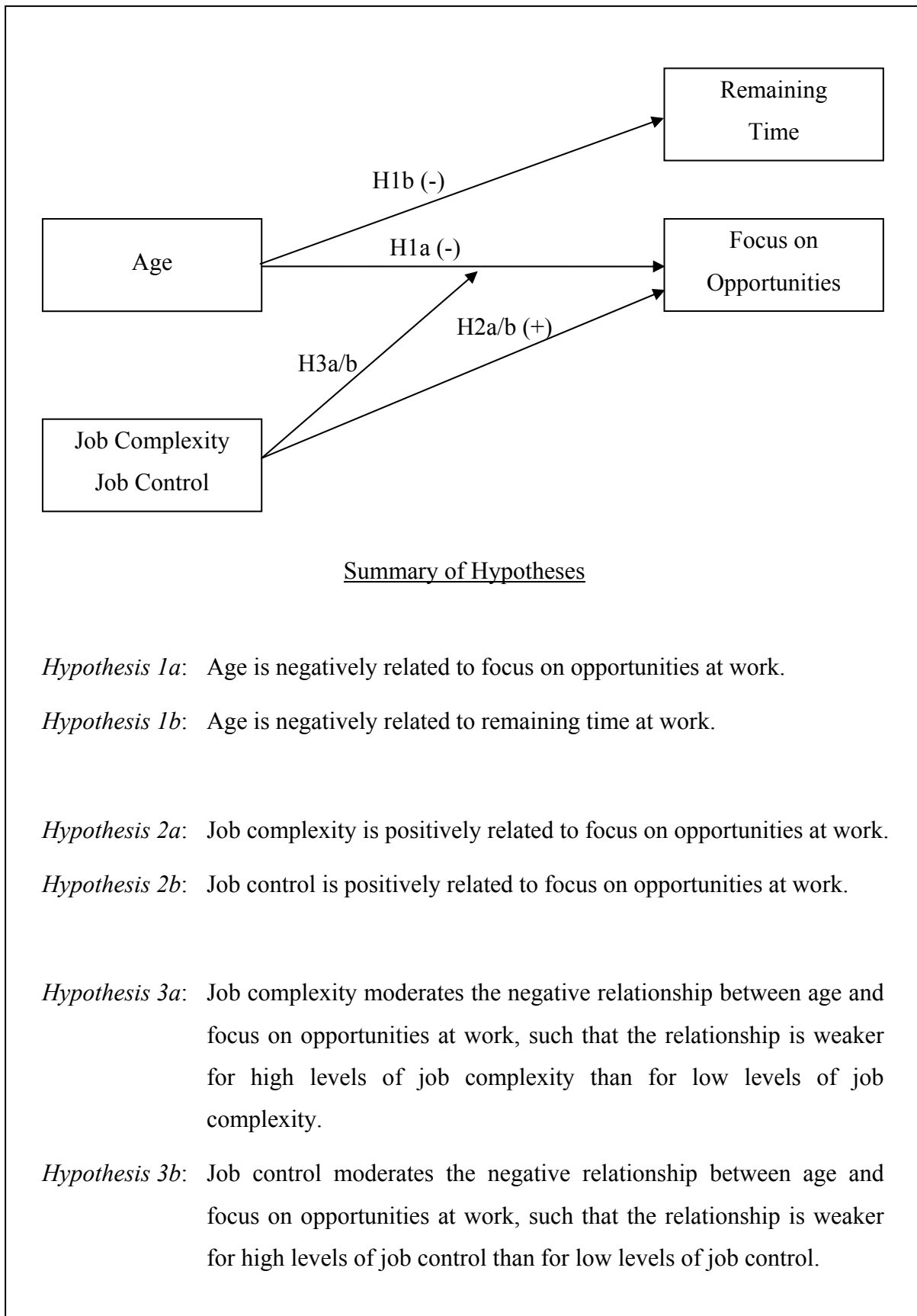
¹ An abbreviated version of this chapter will be published as: Zacher, H., & Frese, M. (in press). Remaining time and opportunities at work: Relationships between age, work characteristics, and occupational future time perspective. *Psychology and Aging*.

Recently, Cate and John (2007) showed that FTP can also be conceived in terms of two distinct qualitative dimensions: Focus on opportunities and focus on limitations. Individuals with a strong focus on opportunities perceive their futures in positive ways. They believe that they will have many new goals, plans, options, and possibilities in their remaining life time. In contrast, individuals with a strong focus on limitations perceive many restrictions and boundaries that lie in the time ahead, and concentrate on losses and limitations.

Despite its growing importance for aging research, FTP has received little attention in work and organizational psychology (for an exception, see Seijts, 1998). The end of an individual's career, which includes the exit from the workforce and from professional and other social networks that have been established over years, is certainly an important endpoint in life (Hedge et al., 2006). For the purposes of this study, we adapted two presumably related but distinct dimensions of *occupational FTP*. The first dimension is *focus on opportunities at work*, which we derived from Cate and John's (2007) focus on opportunities dimension. Individuals with a strong focus on opportunities at work believe that they will have many new goals, plans, options, and possibilities in their work-related future. For example, these individuals might expect that they will start, pursue, and finish new projects at work; change teams, jobs, or organizations; get promoted to a supervisory position; engage in new work roles such as training or mentoring younger co-workers; or learn about new technologies and work methods. In contrast, individuals with a weak focus on opportunities at work believe that they will not have many new goals, plans, options, and possibilities in their work-related future. They do not necessarily perceive their occupational future in a negative light, but they believe that the number of future opportunities for them is restricted. Second, we adapted the dimension *remaining time at work* from Carstensen's (2006) notion of FTP as a temporal construct. Individuals who perceive their remaining time at work to be short are expecting to end their active work career in the near future, whereas those who perceive their remaining time at work to be long expect that they will engage in some type of employment or work for an extended period of time.

The theoretical model and a summary of the hypotheses we propose in this study are displayed in Figure 1. Briefly, age is hypothesized to be negatively related to focus on opportunities and remaining time (Hypotheses 1a/b). Job complexity and control are expected to be positively related to focus on opportunities (Hypotheses 2a/b), and to moderate the assumed negative relationship between age and focus on opportunities (Hypotheses 3a/b). In the following section, we provide further theoretical justifications for these assumptions.

Figure 1

The Proposed Model and Summary of Hypotheses

2.2 Development of Hypotheses

2.2.1 Age and Occupational Future Time Perspective

We assume that age is negatively related to both focus on opportunities and remaining time. The first main reason why older employees should expect to have fewer opportunities in their personal future at work than younger employees is that there are certain age-related norms and constraints (Neugarten, Moore, & Lowe, 1965) in the work context that restrict the number of available future goals, plans, options, and possibilities as employees grow older. Even though many companies have begun to invest more in their older employees in terms of training and career development over the past years, older employees generally have fewer opportunities to participate in learning activities or to get promoted than younger employees who are just starting their careers (Mirvis & Hall, 1996; Sterns & Subich, 2002). In addition, many jobs are not well-designed to meet older employees changed resources and preferences (Fried, Grant, Levi, Hadani, & Slowik, 2007; Griffiths, 1999; Kanfer & Ackerman, 2004). For example, Kanfer and Ackerman (2004) suggested that older employees prefer work that allows for collaboration and the use and transfer of their increased work-related knowledge and experience. The reduced availability of career development possibilities and changed work-related resources and preferences at higher ages are likely to lead to lower perceptions of work-related future opportunities among older employees.

The second main explanation for a lower focus on opportunities among older employees compared to younger employees is that certain personal resources such as occupational mobility and training motivation decline with age. Research has shown that older employees voluntarily quit and change their jobs less often (Healy, Lehman, & McDaniel, 1995), and are generally less motivated to participate in learning and development activities than younger employees (Colquitt, LePine, & Noe, 2000; Warr & Birdi, 1998). It is likely that decreases in these resources lead to a lower focus on work-related opportunities at higher ages.

Remaining time should also be negatively related to age because most employees exit the workforce within a narrowly defined retirement age range, usually sometime between 55 and 70 years (Hedge et al., 2006). It is therefore likely that perceptions of the length of remaining time at work mirror the length of time employees have already lived (i.e., age).

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

Hypothesis 1b: Age is negatively related to remaining time at work.

2.2.2 Job Complexity, Job Control, and Focus on Opportunities

We expect that certain characteristics of the work situation are positively related to focus on opportunities at work. Job complexity and job control are considered to be two important work characteristics (Frese, 1987b; Frese, Garst, & Fay, 2007; Hackman & Oldham, 1976; Karasek & Theorell, 1990) and probably the most widely studied (Morgeson & Humphrey, 2006). *Job complexity* has been defined as “the level of stimulating and challenging demands associated with a particular job” (Fried, Melamed, & Bend-David, 2002, p. 133). Low-complexity jobs involve that employees have to consider only a small number of elements at their work (e.g., goals, strategies, feedback signals), provide few decision necessities, and are monotonous and repetitive in nature (Frese, 1987b). In addition, low-complexity jobs do not offer employees many possibilities to use, transfer, and develop their knowledge, skills, and abilities (Fay & Kamps, 2006). In contrast, high-complexity jobs necessitate many decisions, and demand the full use and development of qualification and the transfer of knowledge, skills, and experience among co-workers (Kozlowski & Hults, 1986; Man & Lam, 2003). Job complexity is an important work-related resource that has been shown to enhance individuals’ overall functioning at work. For example, job complexity is positively related to intellectual flexibility (Kohn & Schooler, 1978) as well as job satisfaction and work performance (Fried & Ferris, 1987).

Job control refers to the possibility to choose one’s actions at work from multiple options and to have an influence on various dimensions of work, such as the sequence and pace, content of goals, quantity and quality of production, techniques and strategies, working conditions, and feedback (Frese, 1989; Ganster & Fusilier, 1989). Low-control jobs do not allow employees to make many substantial work-related decisions on their own (Fay & Kamps, 2006). In contrast, jobs high in control are characterized by “substantial freedom, independence, and discretion of the individual in scheduling the work and in determining the procedures to be used in carrying it out” (Hackman & Oldham, 1976, p. 258). Job control is related to important affective and behavioral work outcomes, such as job satisfaction, psychological strain, performance, turnover, and absenteeism (Ganster & Fusilier, 1989). Previous research has often combined job complexity and job control into one work characteristics factor (e.g., Frese, Garst et al., 2007; Frese, Teng, & Wijnen, 1999; Karasek & Theorell, 1990) because both conceptually refer to work-related decisions and are empirically highly correlated (Semmer, 1982).

Based on the proposition that job complexity and job control are important situational resources for employees (Frese, 1982, 1989; Fried & Ferris, 1987), we expect them to be positively related to focus on opportunities at work. Employees in high-complexity jobs have to make many complicated decisions and have more possibilities to use their knowledge, skills, and abilities, and to learn new things at their work. Thus, they should be more likely than employees in low-complexity jobs to believe that they will have many work-related opportunities in their personal future (e.g., the possibility to utilize their knowledge). Employees in high-control jobs have many possibilities for decision-making and influencing how they carry out their work. We also expect employees in high-control jobs to perceive more work-related opportunities in their personal future than employees in low-control jobs because their work can be expected to continue to provide them with many and varied possibilities (e.g., the possibility for deciding how to carry out their tasks). We do not propose positive or negative relationships between job complexity and job control on the one hand and the occupational FTP dimension of remaining time on the other hand, because we expect that other factors besides work characteristics, such as age or physical health, have a stronger influence on individuals' perceptions of their remaining time on the job.

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

Hypothesis 2b: Job control is positively related to focus on opportunities at work.

2.2.3 Interactions between Age, Job Complexity, and Job Control

We further argue that job complexity and job control are especially important and useful situational resources as employees grow older. High-complexity jobs allow older employees to make full use of their increased work-related knowledge, skills, and experience because many difficult and challenging decisions have to be made in these jobs. Complex jobs also require employees to share and transfer their knowledge and experience with co-workers (Man & Lam, 2003). These attributes of complex jobs provide a good fit with the strengths and needs of older employees that have been identified in the literature on aging at work (Kanfer & Ackerman, 2004) and should therefore help to maintain a focus on work-related opportunities at higher ages. In contrast, jobs low in complexity often require more aging-sensitive resources that follow a loss trajectory, such as physical strength (P. B. Baltes, 1997; Hedge et al., 2006; Morgeson & Humphrey, 2006). Low-complexity jobs also do not offer older employees many possibilities to apply and transfer their increased work-related

knowledge and experience because they involve tasks that are simple and learned quickly (Fay & Kamps, 2006). Low job complexity should therefore strengthen the assumed negative relationship between age and focus on opportunities at work.

High-control jobs provide older employees with many possibilities to compensate for certain age-related losses such as slower information processing (Kanfer & Ackerman, 2004). For example, older employees in high-control jobs have the possibility to adjust their work goals and tasks according to their capabilities, and to decide how much time and energy to spend on a given task. In addition, high job control allows older employees to adjust their tasks to their age-related needs and preferred ways of working. For example, older employees in high-control jobs might decide to solve a work-related problem in cooperation with others or to offer others their help and assistance. These ways of working have been identified in the literature on aging at work as particularly important to older employees (Kanfer & Ackerman, 2004). Because the attributes of high-control jobs allow employees to compensate for age-related losses and to arrange their tasks according to age-related preferences, they should help to maintain a focus on opportunities at work at higher ages. In contrast, low-control jobs do not allow older employees to modify their work goals, tasks, and ways of working because they follow detailed prescriptions (Fay & Kamps, 2006). Low job control should therefore strengthen the assumed negative relationship between age and focus on opportunities at work.

Hypothesis 3a: Job complexity moderates the negative relationship between age and focus on opportunities at work, such that the relationship is weaker for high levels of job complexity than for low levels of job complexity.

Hypothesis 3b: Job control moderates the negative relationship between age and focus on opportunities at work, such that the relationship is weaker for high levels of job control than for low levels of jobs control.

2.3 Method

2.3.1 Participants and Procedure

The data used in this study came from 176 individuals in Germany. The sample was a convenience sample acquired by giving psychology students questionnaires to be distributed to their acquaintances and relatives working in full-time jobs. Participants were asked to answer a number of questions about themselves and their work, and to return the completed

questionnaire in an enclosed envelope through the student contact to the psychology department. In total, 182 questionnaires were handed out to volunteering students. All 182 questionnaires were returned, and students received class credit for their help. Six participants were excluded due to missing data.

Ninety-nine of the participants (56.3%) were female and 77 (43.7%) were male. The mean age was 38.66 years ($SD = 13.32$) and ranged from 19 to 60 years. The average participant held a German high school degree (A-level). Across different age cohorts in the current German working population, about 30 percent hold this degree (Autorengruppe Bildungsberichterstattung, 2008). Four and a half percent had a general education degree, 25 percent had a middle school degree, 33 percent had a high school degree, and 37.5 percent had graduated from college or university. Participants had a broad range of occupations (e.g., civil engineer, IT manager, pastor, physiotherapist, secretary, teacher, and mechanic) and came from various industries (e.g., finances, health care, manufacturing, public service, and sales). On average, participants had been employed for 16.46 years ($SD = 13.52$), and were employed in their current job for 9.90 years ($SD = 10.09$).

2.3.2 Measures

Unless indicated otherwise, all items used in the present study were assessed on 7-point Likert-type scales ranging from 1 (*does not apply at all*) to 7 (*applies completely*).

Occupational FTP. Before the present study was conducted, we asked a different convenience sample of $N = 137$ employees (also relatives and acquaintances of psychology students) to answer all of the ten FTP items from Carstensen and Lang's (1996) German FTP scale, which we adapted to the work context by adding the words "occupational" and "at work" to the items (5-point scales from 1 [*does not apply at all*] to 5 [*applies completely*]). An exploratory factor analysis with Varimax rotation of the item ratings showed that the items loaded on two distinct factors (Table 1). Specifically, items 1, 2, 3, 6, 7, and 9 loaded highest on a focus on opportunities factor (explained variance = 39.96%), whereas items 4, 5, 8, and 10 loaded highest on a remaining time factor (explained variance = 22.23%).

Focus on opportunities at work was measured in the present study with the first three items from Carstensen and Lang's (1996) German FTP scale (see also Lang & Carstensen, 2002), which we adapted by adding the word "occupational" to each item. The items are "Many opportunities await me in my occupational future," "I expect that I will set many new

goals in my occupational future,” and “My occupational future is filled with possibilities.” Cronbach’s alpha of the scale was .94.

Table 1

Occupational FTP Items Adapted from Carstensen and Lang (1996) and Results of an Exploratory Factor Analysis (Rotation: Varimax)

Item	Factor	
	1	2
1. Many opportunities await me in my <i>occupational</i> future.	.838	.375
2. I expect that I will set many new goals in my <i>occupational</i> future.	.794	.364
3. My <i>occupational</i> future is filled with possibilities.	.876	.309
4. Most of my <i>occupational</i> life lies ahead of me.	.293	.821
5. My <i>occupational</i> future seems infinite to me.	.193	.503
6. I could do anything I want in my <i>occupational</i> future.	.788	.311
7. There is plenty of time left in my <i>occupational</i> life to make new plans.	.698	.437
8. I have the sense that my time <i>at work</i> is running out.	-.339	-.518
9. There are only limited possibilities in my <i>occupational</i> future	-.699	-.315
10. As I get older, I begin to experience time in my <i>occupational</i> future as limited.	-.245	-.523
% of variance explained (Total: 62.19)	39.96	22.23

Note. $N = 137$. Italicized words were added to the original items to adapt them to the work context. The highest factor loading is printed in bold.

Remaining time was also assessed with three items adapted from Carstensen and Lang’s (1996) scale. The items are “Most of my occupational life lies ahead of me,” “My occupational future seems infinite to me,” and “As I get older, I begin to experience time in my occupational future as limited” (reverse coded). Cronbach’s alpha was .81.

To test whether focus on opportunities and remaining time represent two distinct dimensions of occupational FTP, we compared the results of two confirmatory factor analyses. In the first model, the two sets of items were specified to load on two separate factors, which were allowed to covary. In the second model, all items were specified to load on one factor. The first model had a good fit ($\chi^2[8, N = 176] = 7.70, p = .46$; root mean square

error of approximation [RMSEA] = .00; confirmatory fit index [CFI] = 1.00). The items had loadings of .88, .89, and .95 for focus on opportunities, and .93, .75, and .63 for remaining time. The correlation between the two factors was .69. The one-dimensional model did not fit the data well ($\chi^2[9, N = 176] = 100.00, p < .01$; RMSEA = .24; CFI = .87). A comparison of the models showed that the first model fit the data significantly better ($\Delta\chi^2[1, N = 176] = 92.6, p < .01$). Thus, remaining time and focus on opportunities should be distinguished.

Work characteristics: Job complexity and job control were measured with four items each from two well-validated German scales (Semmer, 1982; Zapf, 1993, also reported in Frese, Kring, Soose, & Zempel, 1996). A sample item for job complexity is “I receive tasks that are extraordinary and particularly difficult,” and a sample item for job control is “I can determine how I do my work.” Survey measures are appropriate to assess these work characteristics because strong relationships exist between employees’ self-reports, other people’s judgments, and archival data (Morgeson & Humphrey, 2006; Semmer, 1984; Spector, 1992). Cronbach’s alphas were .74 for job complexity and .80 for job control.

Control variables. Past research suggests that individual characteristics besides age might be related to occupational FTP. Cate and John (2007) analyzed relationships between FTP and the Big Five personality traits (cf. Barrick & Mount, 1991) and found, for example, that conscientiousness was positively related to focus on opportunities in a sample of undergraduate students. Conscientious and open employees probably perceive more future opportunities at work because they tend to plan their future in greater detail and are more alert to new possibilities. In addition, extraverted, agreeable, and emotionally stable (i.e., low neurotic) employees may perceive more future opportunities at work because they generally perceive themselves and the future more positively (Rammstedt, 2007). For these reasons, we included the Big Five personality traits as control variables in our study. We also controlled for gender and education because recent research has shown that these demographic variables are related to individuals’ intentions to engage in work activities after retirement (B. Griffin & Hesketh, 2008). We controlled for physical and mental health because employees in poor health retire earlier (Beehr, Glazer, Nielson, & Farmer, 2000). Finally, Cate and John (2007) found that young adults differ from adults in early middle-age in focus on opportunities, but that the latter group does not differ from adults in late middle-age. To avoid a comparison of artificially created age groups (MacCallum, Zhang, Preacher, & Rucker, 2002), we controlled for the orthogonalized quadratic age effect (Little, Bovaird, & Widaman, 2006) to examine whether there were curvilinear relationships between age and the two criterion variables.

Personality traits (extraversion, agreeableness, conscientiousness, neuroticism, openness to experience) were assessed with the German version of the Big Five Inventory (BFI, John & Srivastava, 1999; Lang, Lüdtke, & Asendorpf, 2001). In a study with young, middle-aged, and older adults, Lang et al. (2001) reported evidence of good reliability, external validity, and psychometric equivalence of the German BFI scales. In the present study, Cronbach's alphas were .90 for extraversion, .73 for agreeableness, .82 for conscientiousness, .86 for neuroticism, and .84 for openness to experience.

Physical and mental health were measured with six items each from the German SF-12 health survey (Bullinger & Kirchberger, 1998; Ware, Kosinski, & Keller, 1996). The items cover different health domains such as bodily pain, vitality, and physical and social functioning. Responses on the items of the SF-12 were given on non-uniform 2- to 6-point scales. The composite scores for physical and mental health are 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 and mental health (Ware et al., 1996). Cronbach's alphas were .83 for physical health and .82 for mental health.

Finally, participants indicated their chronological age, job and organizational tenure, job title, and type of industry, 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 = *high school degree / A-level*, and 4 = *college / university degree*).

2.3.3 Analyses

We tested our hypotheses using hierarchical moderated regression analyses. As recommended, all variables were mean-centered before entering them into the models and before computing the interaction terms (Aiken & West, 1991; J. Cohen, Cohen, West, & Aiken, 2003). We ran separate analyses for job complexity and job control to avoid problems with multicollinearity, as both work characteristics were highly correlated ($r = .59, p < .01$). In the first step, we entered the control variables into the empty model. The main effects (age and either job complexity or job control) were entered in the second step. The interaction between age and job complexity, or between age and job control, respectively, was entered in the third step.

In addition to the hierarchical moderated regression analyses, we applied structural equation modeling (AMOS 7, Arbuckle, 2006) in order to correct for measurement error in the observed variables and to examine the effects of the predictor and interaction variables on each criterion variable independent of the respective other criterion variable. The factor loadings of age, gender, education, and the interaction construct were fixed to one and their errors to zero. As outlined in the introduction, job complexity and job control are conceptually similar as both refer to decisions at work (Frese, Garst et al., 2007). In addition, the variables were highly correlated in the present study ($r = .59, p < .01$). We therefore used the aggregate measures of job complexity and job control as two indicators with equal loadings of a latent work characteristics construct.² We constructed the indicator of the latent interaction variable by multiplying age and the latent work characteristics variable (Schumacker, 2002), and by orthogonalizing this product term from its first-order constructs (Little et al., 2006; see also Marsh et al., 2007). Specifically, orthogonalization involves regressing the product term on its first-order effects and using the saved residuals of this regression analysis as the interaction effect. The advantage of this procedure is that the interaction term becomes uncorrelated with (i.e., orthogonal to) its first-order effect terms (Little et al., 2006). We did not specify more than one product indicator for the latent interaction because all indicators would have included age, thus leading to problems with under-identification (Little, Lindenberger, & Nesselroade, 1999).

To keep the number of estimated parameters low (Jackson, 2007), the measurement models of personality and health variables were fixed using aggregate measures and their reliabilities (Hofmann & Morgeson, 1999; Unger, Keith, Hilling, Gielnik, & Frese, 2009). Specifically, we used the square root of the reliabilities of the observed variables as the factor loadings and $(1 - \text{reliability})$ multiplied by the variance of the observed measure as the measurement error in the indicators. All latent predictors were allowed to correlate, except for the orthogonalized variables. The residuals of the two latent criterion variables were not allowed to correlate. The fit of our model was evaluated by chi-square statistic, root mean square error of approximation (RMSEA) below .06, and comparative fit index (CFI) above .95 (Hu & Bentler, 1999).

² We also computed separate models for job complexity and job control and their respective interaction with age. The pattern of results of these models was the same as in the model reported.

2.4 Results

2.4.1 Intercorrelations of Study Variables

Table 2 shows the descriptive statistics and intercorrelations of the study variables. Remaining time and focus on opportunities were highly correlated with each other ($r = .60$, $p < .01$) and with age ($r = -.82$ and $r = -.60$, respectively, $ps < .01$). Remaining time was also related to extraversion ($r = .15$, $p < .05$), conscientiousness ($r = -.22$, $p < .01$), physical health ($r = .34$, $p < .01$), and mental health ($r = -.20$, $p < .01$). Focus on opportunities was also related to education ($r = .19$, $p < .05$), extraversion ($r = .24$, $p < .01$), conscientiousness ($r = -.28$, $p < .01$), physical health ($r = .37$, $p < .01$), and job complexity ($r = .17$, $p < .05$).

2.4.2 Test of Hypotheses

The results of the hierarchical moderated regression analyses with job complexity and job control as moderator variables are shown in Tables 3 and 4, respectively. As can be seen in both tables, the control variables explained together 32 percent of the variance in focus on opportunities. Extraversion ($\beta = .33$), conscientiousness ($\beta = -.34$), and physical health ($\beta = .25$) significantly predicted focus on opportunities at work ($ps < .01$).

According to Hypothesis 1a, age is negatively related to focus on opportunities. As shown in Tables 3 and 4, age negatively and significantly predicted focus on opportunities after the control variables and either job complexity or job control were taken into account (both β s = $-.59$, $ps < .01$). Thus, Hypothesis 1a was supported. According to Hypothesis 1b, age is negatively related to remaining time. Separate regression analyses showed that age negatively and significantly predicted remaining time after controlling for the control variables and job complexity ($\beta = -.85$, $p < .01$) as well as after controlling for the control variables and job control ($\beta = -.86$, $p < .01$). Hypothesis 1b was therefore also supported.

According to Hypothesis 2a, job complexity is positively related to focus on opportunities. As shown in Table 3, job complexity positively and significantly predicted focus on opportunities after the control variables and age were taken into account ($\beta = .26$, $p < .01$). Hypothesis 2a was therefore supported. According to Hypothesis 2b, there is a positive relationship between job control and focus on opportunities. As shown in Table 4, job control positively and significantly predicted focus on opportunities after controlling for the control variables and age ($\beta = .18$, $p < .01$). Thus, Hypothesis 2a was supported.

Table 2

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

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Focus on opportunities	4.36	1.68	(.94)													
2. Remaining time	3.88	1.77	.60**	(.81)												
3. Age	38.66	13.32	-.60**	-.82**	-											
4. Gender	.56	.50	-.01	.18*	-.16*	-										
5. Education	3.03	.90	.19*	.10	-.04	.03	-									
6. Extraversion	5.05	1.08	.24**	.15*	-.05	.22**	.08	(.90)								
7. Agreeableness	4.97	.80	-.09	-.11	.21**	-.01	.01	.16*	(.73)							
8. Conscientiousness	5.43	.82	-.28**	-.22**	.30**	.10	-.07	.33**	.33**	(.82)						
9. Neuroticism	3.60	1.11	-.06	.07	-.14	.25**	.02	-.29**	-.33**	-.32**	(.86)					
10. Openness to experience	5.03	.91	.04	-.12	.20**	.13	.09	.31**	.26**	.23**	-.07	(.84)				
11. Physical health	52.38	7.65	.37**	.34**	-.33**	.06	.15*	.05	-.07	-.15*	.06	-.03	(.83)			
12. Mental health	49.15	9.92	-.14	-.20**	.39**	-.24**	.04	.26**	.31**	.29**	-.59**	.01	-.39*	(.82)		
13. Job complexity	4.80	1.22	.17*	-.10	.21**	-.22**	.01	.20**	.08	.17*	-.05	.20**	-.02	.14	(.74)	
14. Job control	4.99	1.25	.10	-.08	.27**	-.09	-.02	.24**	.23**	.18*	-.20**	.32**	.06	.24**	.59**	(.80)

Note. Listwise $N = 176$. For gender, 0 = male, 1 = female. Reliability estimates (α) are shown in parentheses on the diagonal.

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

Table 3

Results of Hierarchical Moderated Regression Analysis Predicting Focus on Opportunities at Work (Moderator: Job Complexity)

Step / Predictor Variable	Dependent Variable: Focus on Opportunities at Work								
	<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	-.22	.24	-.07	-.13	.20	-.04	-.10	.20	-.03
Education	.20	.12	.11	.19	.10	.10	.22	.10	.12*
Extraversion	.51	.12	.33**	.22	.10	.14*	.22	.10	.14*
Agreeableness	-.05	.15	-.03	-.01	.12	-.00	-.01	.12	-.01
Conscientiousness	-.70	.15	-.34**	-.49	.13	-.24*	-.48	.12	-.24**
Neuroticism	-.23	.13	-.15	-.17	.11	-.12	-.13	.11	-.09
Openness to experience	.03	.13	.02	.20	.11	.11	.20	.11	.11
Physical health	.05	.02	.25**	.04	.01	.16*	.04	.01	.16**
Mental health	-.02	.02	-.13	.01	.01	.07	.01	.01	.08
Age squared	.00	.00	.05	.00	.00	.03	.00	.00	.03
Step 2: Main Effects									
Age				-.08	.01	-.59**	-.07	.01	-.58**
Job complexity				.35	.08	.26**	.34	.08	.25**
Step 3: Two-Way Interaction									
Age * Job complexity							.01	.01	.12*
ΔR^2						.27**			.01*
R^2			.32**			.58**			.60**

Note. Listwise $N = 176$. For gender, 0 = male and 1 = female. The predictor variables were mean-centered.

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

Table 4

Results of Hierarchical Moderated Regression Analysis Predicting Focus on Opportunities at Work (Moderator: Job Control)

Step / Predictor Variable	Dependent Variable: Focus on Opportunities at Work								
	<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	-.22	.24	-.07	-.35	.20	-.10	-.32	.20	-.10
Education	.20	.12	.11	.21	.10	.11*	.22	.10	.12*
Extraversion	.51	.12	.33**	.28	.10	.18**	.25	.10	.16*
Agreeableness	-.05	.15	-.03	-.04	.13	-.02	-.05	.12	-.02
Conscientiousness	-.70	.15	-.34**	-.42	.13	-.21**	-.44	.13	-.21**
Neuroticism	-.23	.13	-.15	-.11	.11	-.07	-.06	.11	-.04
Openness to experience	.03	.13	.02	.18	.11	.10	.18	.11	.10
Physical health	.05	.02	.25**	.03	.01	.14*	.03	.01	.13*
Mental health	-.02	.02	-.13	.01	.01	.05	.01	.01	.06
Age squared	.00	.00	.05	.00	.00	.03	.00	.00	.04
Step 2: Main Effects									
Age				-.08	.01	-.59**	-.07	.01	-.58**
Job control				.24	.08	.18**	.23	.08	.17**
Step 3: Two-Way Interaction									
Age * Job control							.02	.01	.14**
ΔR^2									.02**
R^2									.57**

Note. Listwise $N = 176$. For gender, 0 = male and 1 = female. The predictor variables were mean-centered.

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

Separate regression analyses showed that job complexity did not significantly predict remaining time ($\beta = .06, ns$). However, there was a small positive and significant effect of job control on remaining time ($\beta = .10, p < .05$).

According to Hypotheses 3a and 3b, job complexity and job control moderate the negative relationship between age and focus on opportunities, such that the relationship is weaker for high levels of job complexity and job control than for low levels of job complexity and job control, respectively. As shown in Table 3, the interaction term of age and job complexity significantly predicted focus on opportunities ($\beta = .12$) and explained incremental variance ($\Delta R^2 = .01, p < .05$). As shown in Table 4, the interaction term of age and job control also significantly predicted focus on opportunities ($\beta = .14$) and explained incremental variance ($\Delta R^2 = .02, p < .01$).

To determine the form of these interaction effects, we followed the recommendations by Aiken and West (1991) and computed the simple slopes of regressing focus on opportunities on age at high (i.e., one standard deviation above the mean) and low (i.e., one standard deviation below the mean) values of job complexity and job control. The simple slopes showed that the relationship between age and focus on opportunities was weaker for high levels of job complexity ($B = -.06, SE = .01, \beta = -.46, t = -5.54; p < .01$) than for low levels of job complexity ($B = -.09, SE = .01, \beta = -.70, t = -8.99; p < .01$). The relationship between age and focus on opportunities was also weaker for high levels of job control ($B = -.05, SE = .01, \beta = -.43, t = -4.95; p < .01$) than for low levels of job control ($B = -.09, SE = .01, \beta = -.73, t = -8.92, p < .01$). The significant interaction effects are graphically displayed in Figure 2. Together, these findings support Hypotheses 3a and 3b. Separate regression analyses showed that the interaction terms of age and job complexity and of age and job control did not significantly predict remaining time (both β s = $-.01, ns$).

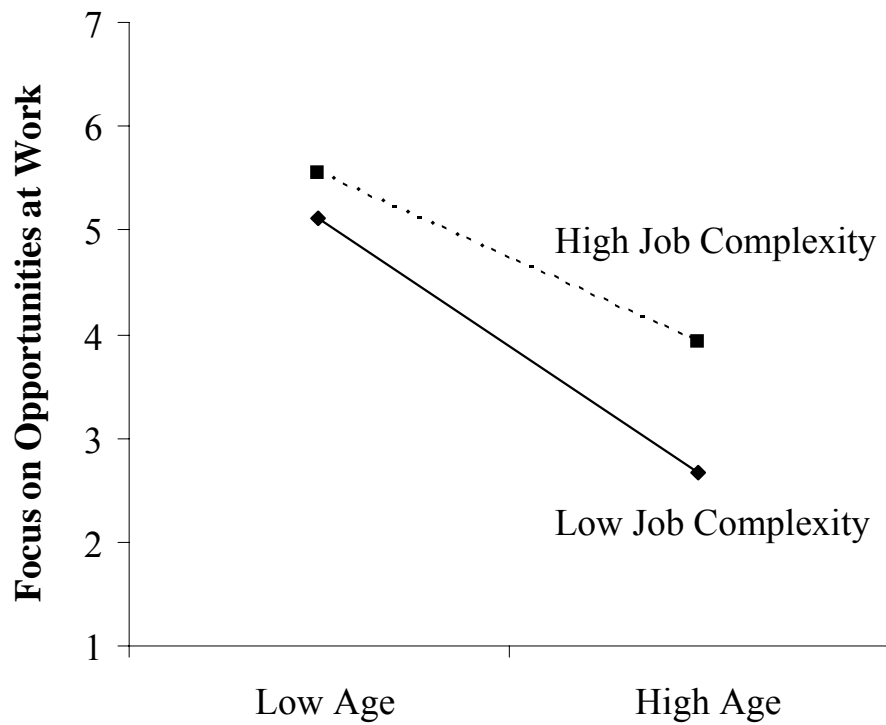
The results of the structural equation model are shown in Figure 3. The model had a good fit ($\chi^2[82, N = 176] = 130.76, p < .01; RMSEA = .058; CFI = .968$).³ The predictors explained 70 percent of the variance in focus on opportunities and 88 percent of the variance in remaining time. Of the control variables, education positively and significantly predicted focus on opportunities ($.12, p < .05$) and remaining time ($.09, p < .05$), and conscientiousness negatively and significantly predicted focus on opportunities ($-.30, p < .01$).

³ We also computed models without the control variables, and the same pattern of results emerged.

Figure 2

Job Complexity (Panel A) and Job Control (Panel B) as Moderators of the Relationship between Age and Focus on Opportunities at Work

A

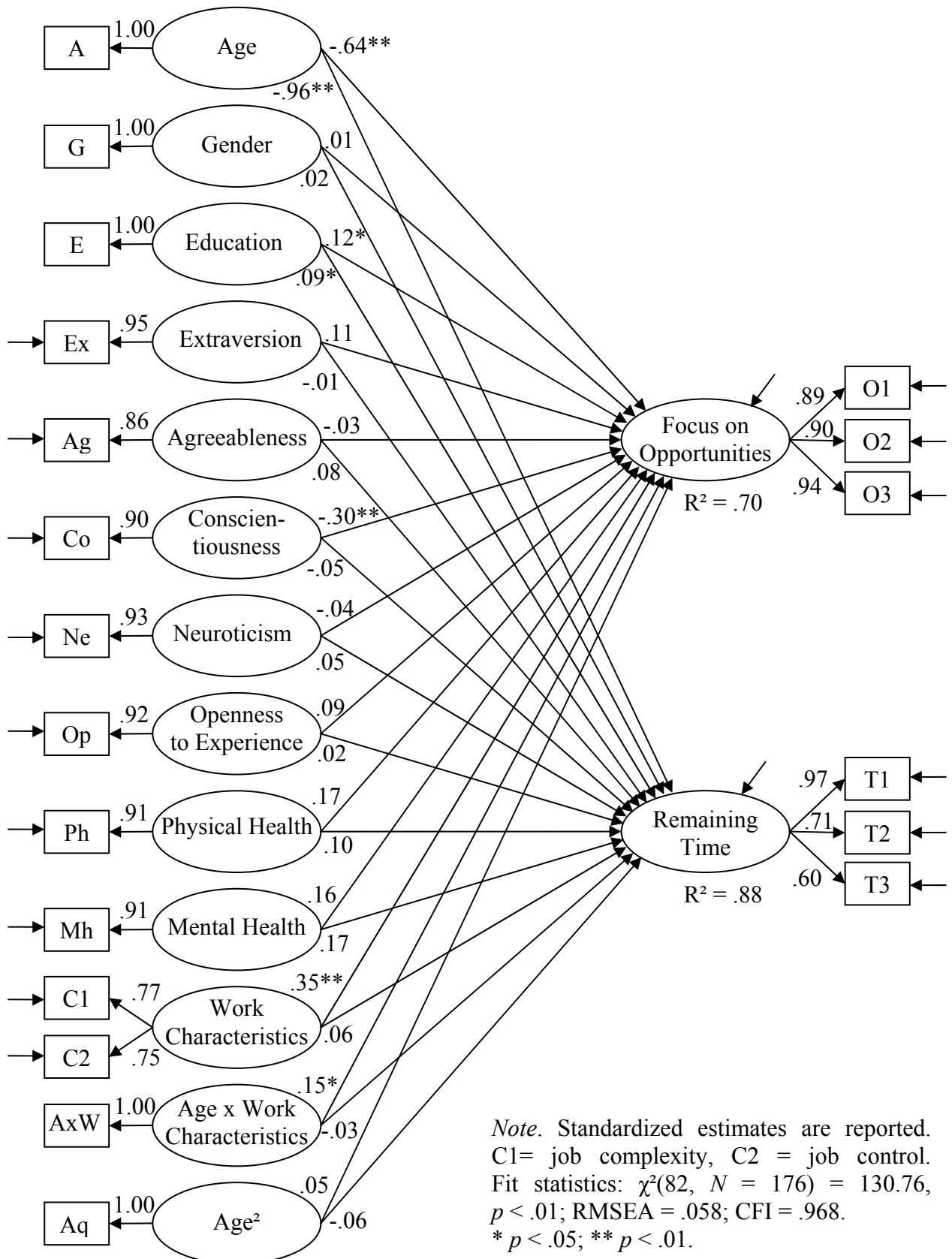


B



Figure 3

Structural Equation Model of Demographic, Personality, Health, and Work Characteristic Variables Predicting Occupational FTP Dimensions



Regarding our hypotheses, the pattern of results obtained from the structural equation model was similar to the one of the hierarchical moderated regression analyses. Age negatively and significantly predicted both dimensions of occupational FTP, with path coefficients of $-.64$ for focus on opportunities and of $-.96$ for remaining time ($ps < .01$). Quadratic age neither predicted focus on opportunities ($.05$, *ns*) nor remaining time ($-.06$, *ns*). The latent work characteristics factor (job complexity and control) positively and significantly predicted focus on opportunities ($.35$, $p < .01$), but not remaining time ($.06$, *ns*). The path from the interaction of age and work characteristics to focus on opportunities was significant ($.15$, $p < .05$), whereas the path to remaining time was not significant ($-.03$, *ns*). It is important to note that even though some of the standardized coefficient estimates in the structural equation model were larger than others in absolute terms, they were not statistically significant. This is due to the fact that the significance is based on the unstandardized coefficients and their standard errors, while the standardized coefficients are additionally influenced by the variance of the variables.

2.5 Discussion

2.5.1 Summary of Findings

The goals of this study were to adapt the FTP concept to the work context and to investigate its relationships with age and two important work characteristics, job complexity and job control. We found that two distinct dimensions of occupational FTP, focus on opportunities and remaining time, are negatively related to age. Similar to findings on general FTP (Carstensen, 2006; Cate & John, 2007), we showed that older employees perceive less remaining time and have a lower focus on opportunities at work than younger employees. The strong negative relationship between age and remaining time can be explained by the fact that most people retire within a narrowly defined age range: Time at work is simply “running out” with increasing age (Hedge et al., 2006). Age was also negatively, but less strongly associated with focus on opportunities, which suggests that this dimension of occupational FTP is also influenced by factors other than age, such as personal and work context characteristics. Possible reasons why older compared to younger employees perceive fewer opportunities in their personal future at work may be that organizations provide older employees with less career development possibilities and with work tasks that are not well-designed to meet their altered resources and work-related preferences (Kanfer & Ackerman,

2004; Sterns & Subich, 2002). Furthermore, lower motivation for training and development on part of the older employees may explain our results (Colquitt et al., 2000).

Job complexity and control were positively related to focus on opportunities when demographic, personality, and health variables were taken into account. This finding is consistent with research conceptualizing these work characteristics as important situational resources of employees that positively influence individual and work-related outcomes (Frese, 1982; Frese, Garst et al., 2007; Fried & Ferris, 1987). The more their jobs require employees to make challenging decisions and provides possibilities to use, transfer, and develop their knowledge, skills, and abilities, the more opportunities employees believe to have in their personal future at work. In addition, the more decision possibilities employees have on the job, the more positively they perceive their future possibilities at work.

Finally, job complexity and job control moderated the negative relationship between age and focus on opportunities, such that employees in high-complexity and high-control jobs were better able to maintain a focus on opportunities at higher ages than their counterparts working in low-complexity and low-control jobs. We suggest that high job complexity and control have these buffering effects because they involve work attributes that fit well with older employees altered resources and work-related preferences. Jobs high in complexity allow older employees to use and transfer their increased work-related knowledge and experience, to learn new things, and they depend less on physical capabilities (Kozlowski & Hults, 1986; Man & Lam, 2003; Morgeson & Humphrey, 2006). Jobs high in control provide older employees with more possibilities to make decisions that help to compensate for age-related losses and satisfy their increased motives for collaboration. For example, older employees in high-control jobs may decide to take more time to finish their tasks or to ask their co-workers for assistance in order to compensate for decreases in fast information processing abilities (Kanfer & Ackerman, 2004). This should in turn positively influence their perceptions of their personal work-related opportunities in the future.

In addition to these main results, a number of noteworthy relationships emerged between occupational FTP and the control variables. Education was positively related to both remaining time and focus on opportunities at work. This is consistent with recent research by Griffin and Hesketh (2008) who found that more highly educated employees are more likely to have the intention to work after retirement. Conscientiousness was negatively related to focus on opportunities. This is in contrast to previous findings in age-homogeneous samples (Cate & John, 2007) and needs to be further investigated. At this point, we can only speculate

that conscientious employees focus more strongly on their present goals, tasks, and duties instead of thinking about broader work-related goals and opportunities in the future.

2.5.2 Limitations

This study has a number of limitations. Most important, the cross-sectional design does not allow drawing definite conclusions about intraindividual changes in occupational FTP over time. It is possible that part of the age-related differences in occupational FTP is due to differences between birth cohorts or selection effects which can only be detected with longitudinal studies and cohort-sequential designs (P. B. Baltes & Nesselroade, 1979; Hofer & Sliwinski, 2006). However, researchers have suggested that cross-sectional studies are nevertheless important because they allow for conclusions about age-related differences in the current working population (Ng & Feldman, 2008; Warr, Miles, & Platts, 2001).

Second, our data came from a convenience sample collected from working relatives and acquaintances of university students. The employees who participated in our study were more highly educated and may be working under more favorable job conditions than the general working population in Germany. Thus, future studies need to replicate our findings in other populations and more representative samples.

Third, since all data in this study were obtained from the same individuals, it could be argued that the results are influenced by common method bias. However, as recommended by P. M. Podsakoff, MacKenzie, Lee, and Podsakoff (2003), we controlled for individuals' affectivity by including personality traits such as extraversion and neuroticism. In addition, significant interaction effects are less likely to be influenced by common method bias (Evans, 1985; Schriesheim & DeNisi, 1981).

Finally, the rather strong relationship between the two criterion variables of focus on opportunities and remaining time renders it difficult to investigate the predictors' effects on each criterion independently. It could be argued that the interaction effects of age and job complexity and age and job control on focus on opportunities only exist when there is a strong association with remaining time. However, using structural equation modeling enabled us to simultaneously investigate the predictors' effects and the interaction effect on each criterion variable independent of the respective other criterion variable. Importantly, the pattern of results of the structural equation model was similar to the one obtained from two separate moderated regression analyses.

2.5.3 Implications for Future Research

There are at least four possible avenues for future research on occupational FTP. First, Cate and John (2007) suggested that focus on opportunities may be related to motivational and behavioral outcomes. Research is needed that examines whether focus on opportunities at work is related to important work outcomes. For example, it could be investigated whether a strong focus on opportunities at work is associated with a longer and maybe more engaged participation in the workforce. Future studies could also examine whether focus on opportunities is associated with work performance. A positive relationship between focus on opportunities and work performance may be expected, as research showed that positive thinking about the future leads to higher motivation and performance (Aspinwall, 2005).

Second, this study examined job complexity and job control, two situational or “external” resources of the work context, as moderators of the relationship between age and focus on opportunities. However, it may also be possible that certain action regulation strategies, which optimize the investment of personal resources, are important to maintain a focus on opportunities at work at higher ages. For example, Young, Baltes, and Pratt (2007) recently suggested that the use of a successful aging strategy called selection, optimization, and compensation (SOC; P. B. Baltes & Baltes, 1990) is particularly effective in terms of important work outcomes when external resources provided by the work context (e.g., supervisor support) are low. SOC strategy use facilitates the optimal investment of personal resources, helps to maintain and enhance personal functioning in the face of difficulties and challenges, and compensates for resource losses (Freund & Baltes, 2002; Riediger, Li, & Lindenberger, 2006). Maybe SOC strategy use could help employees to adapt better to age-related challenges at work and to maintain a focus on work-related opportunities at higher ages, particularly when job complexity and job control are low.

Third, future research may investigate additional moderating influences on the relationship between age and focus on opportunities at work. For example, Hobfoll and Wells (1998) suggested that personal resources such as mental health become particularly important at higher ages because they help to protect, retain, and replenish other resources. Future research might also investigate the moderating influences of additional important work characteristics such as specialization, problem solving, and skill variety (Morgeson & Humphrey, 2006) or social support (Frese, 1999).

Finally, future research could adapt FTP dimensions to the work context that were not included in this study. For example, Seijts (1998) suggested that there are at least three other dimensions of general FTP besides remaining time (labeled “extension” by Seijts, 1998, p. 157) and focus on opportunities (“density”) which may deserve consideration in the work context: “Coherence, the degree of organization of the events in the future time span” (p. 157), “directionality, the extent to which one perceives oneself as moving forward from the present moment to the future” (p. 158), and “affectivity, the extent to which a person is gratified or pleased by anticipated events” (p. 158).

2.5.4 Implications for Theory and Practice

This study extends previous theoretical accounts of general FTP (e.g., Carstensen, 2006; Cate & John, 2007) by showing that the concept can be meaningfully applied in one of the most important domains of life: The work context. Future models of FTP might include additional important life domains such as education or subdomains of the work context such as FTP with regard to teams or organizations. As time in general is an important topic in organizational research (Ancona, Goodman, Lawrence, & Tushman, 2001; Bluedorn, 2002; Hofmann, Jacobs, & Gerras, 1992; Katz, 1980), future conceptualizations of FTP might also include perceptions of past and present opportunities at work besides future-related perceptions, and describe how these perceptions may be linked to important work outcomes.

Adult development research has so far neglected influences of context characteristics on individuals’ FTP. Our research suggests that job complexity and job control are not only positively related to focus on opportunities at work, but that these work characteristics also buffer the negative relationship between age and focus on opportunities. Future theoretical accounts of FTP should therefore not only include person-related influences, but also important characteristics of the relevant context. In the field of work and organizational psychology, Farr, Tesluk, and Klein (1998) suggested that research on older employees and aging at work should take a systems perspective, such that older employees are viewed as the center of multiple layers of systems that have direct or indirect influences on them. These systems include cultural practices and norms at the outmost layer (e.g., retirement expectations and regulations), followed by the organizational structure (e.g., human resource policies and practices), and the immediate work environment (e.g., work design). In this study, we investigated two characteristics of the innermost layer of Farr et al.’s (1998) model.

Future conceptualizations of employees' occupational FTP should also take the more distant system layers into account.

Finally, future research on aging at work might conceptualize focus on opportunities as a criterion of successful aging at work (Hansson et al., 1997). Generally, criteria of successful aging at work describe how well aging employees maintain a positive balance between their resources and preferences and the constraints and opportunities provided by the work context (Robson, Hansson, Abalos, & Booth, 2006). Focus on opportunities may be a better criterion of successful aging at work than rather passive attitude measures such as job satisfaction and organizational commitment (Harrison, Newman, & Roth, 2006; Ledford, 1999), because the concept describes individuals' perceptions concerning their potential for continuous work-related growth, advancement, and development.

Our findings have practical implications in terms of designing jobs for an aging workforce (Farr & Ringseis, 2002; Farr et al., 1998; Griffiths, 1999). Assuming that focus on opportunities is a criterion of successful aging at work and relates to important work outcomes, human resource practitioners should increase jobs' complexity and control. Job complexity could be increased by providing employees with more possibilities to make difficult and challenging decisions at work and to use, develop, and transfer their knowledge, skills, and experience. Job control could be increased by allowing employees to make more substantial decisions concerning their work on their own, for instance, which work goals to set and pursue and how to schedule and approach their tasks. Such changes in work design seem to be not only important for employees at all ages (Fay & Kamps, 2006), but particularly important for older employees in terms of maintaining a focus on work-related opportunities.

In conclusion, we believe that this study provides a good basis for further investigations of a new and promising approach to FTP. It contributes to aging and work research by adapting FTP to the work context and investigating the influence of two work characteristics on the relationship between age and occupational FTP.

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

Over the past two decades, 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 et al., 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, Dispenzner, & 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; J. E. 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 et al., 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).

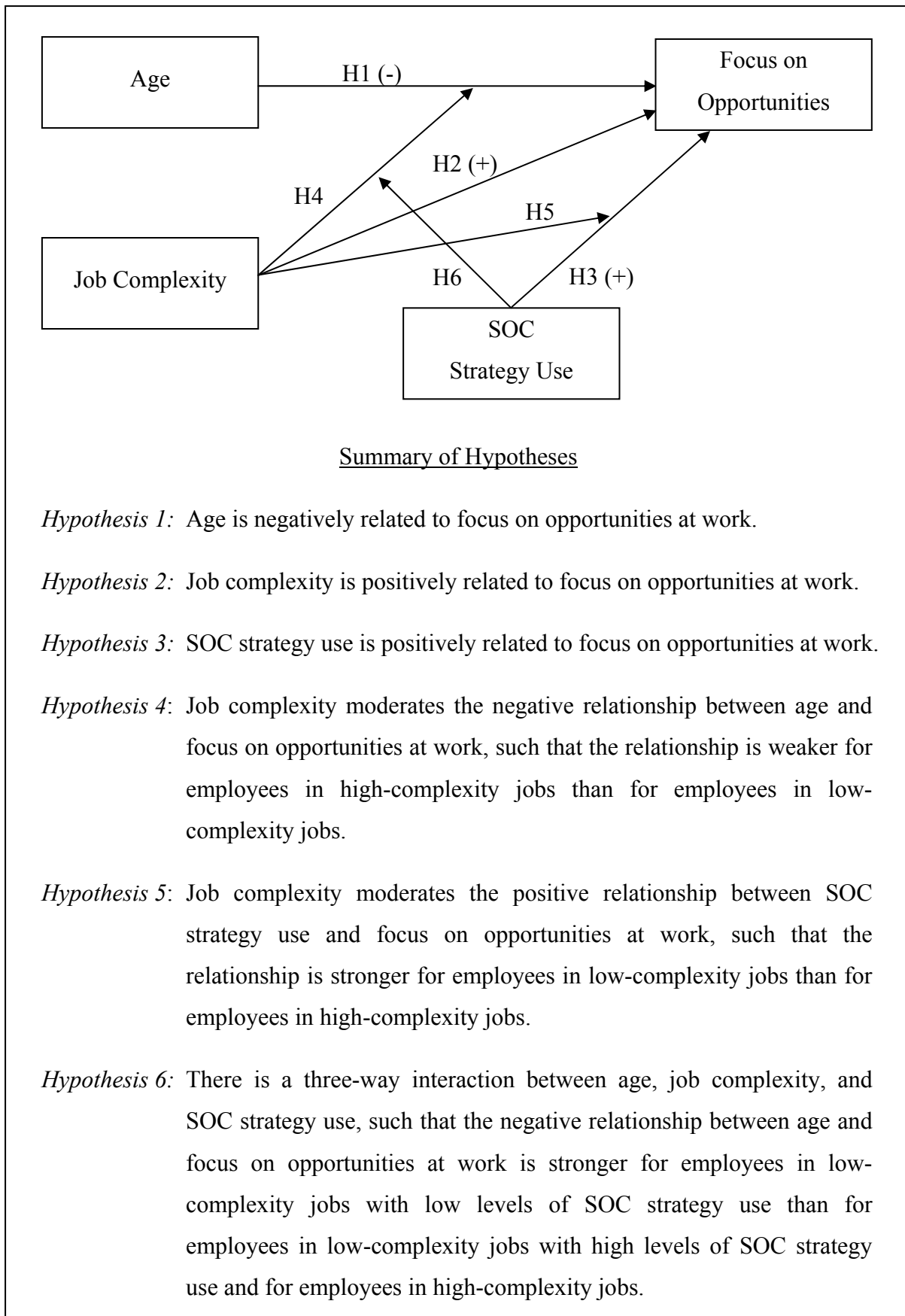
Zacher and Frese (in press) recently extended this literature by adapting the concept of future time perspective (FTP) from adult development and life span psychology research to the work context. Generally, FTP describes individuals' perceptions, beliefs, and expectations concerning their personal future (Carstensen, 2006; Cate & John, 2007). Zacher and Frese (in press) 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, plans, 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 stimulating and challenging; Fried et al., 2002) and job control (i.e., the number of decision possibilities at work; Frese, 1987a), were positively related to focus on opportunities at work. Job complexity and job control also moderated the negative relationship between age and focus on opportunities, such that

employees in high-complexity and high-control jobs were better able to maintain a focus on opportunities at higher ages than employees in low-complexity and low-control jobs.

However, Zacher and Frese's (in press) 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 et al., 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 SOC strategy use 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 SOC strategy use 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 (in press) findings leave room for three alternative interpretations. First, it may be that SOC strategy use is impossible in jobs that provide few external resources, and thus does not have beneficial effects. Second, it may be that SOC strategy use is possible in these jobs, but does not help older employees to maintain a focus on opportunities. Finally, SOC strategy use 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 SOC strategy use in predicting focus on opportunities at work. Our model and hypotheses are shown in Figure 1.

Figure 1

The Proposed Model and Summary of Hypotheses

In short, we expect that age is negatively, and job complexity and SOC strategy use are positively related to focus on opportunities (Hypotheses 1 to 3). Consistent with Zacher and Frese (in press), 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 SOC strategy use 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 levels of SOC strategy use than for employees in low-complexity jobs with high levels of SOC strategy use 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 (3.1) and the SOC model (3.2).

3.1 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 et al., 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; Marsiske, Lang, Baltes, & Baltes, 1995; Rowe & Kahn, 1987; Ryff, 1989). 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). More recently, theorists have criticized that these early approaches did not conceive successful aging as an ongoing developmental process and used criteria that were too fixed (P. B. Baltes & Baltes, 1990; Schulz & Heckhausen, 1996). They defined successful aging as achieving a positive balance between gains and losses over the aging process. Individuals who age successfully do not just cope with decline but also strive to continuously develop themselves, grow, and advance.

Ryff (1989) was probably the first theorist who suggested that successful aging is a developmental process in which personal growth is still possible. She argued 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 aging-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 (Brunstein, 1999; 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 more age-related restrictions and constraints (Neugarten et al., 1965).

In this study, we use focus on opportunities at work – that is, how many new goals, plans, options, and possibilities employees believe to have in their personal future at work (Zacher & Frese, in press) – as the dependent variable because we consider it an important domain-specific criterion of successful aging. In a similar vein, Robson et al. (2006) recently suggested that a “continued focus [on] and achievement of personal goals and occupational growth” (p. 168) are important criteria of successful aging at work. 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 et al., 2006; Locke, 1976; Weiss, 2002) because it refers to employees’ perceptions of continued possibilities for development, progress, growth, and advancement in their future at work. In contrast, job satisfaction has been described as a rather passive state of dull contentment (Koprowski, 1981; Ledford, 1999). The difference between traditional job attitudes and focus on opportunities at work is also 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 at work has to be distinguished from the concept of optimism, which refers to a rather stable individual difference characteristic (C. Peterson, 2000; Scheier, Weintraub, & Carver, 1986; Strutton & Lumpkin, 1992). In his widely accepted definition of optimism, Seligman (1998) described the construct as an attributional style that explains positive events in terms of internal, stable, and global causes and negative events in terms of external, temporary, and specific causes. A pessimistic attributional style explains events in the reverse way. Seligman's (1998) definition of optimism has also been adopted by organizational researchers (Youssef & Luthans, 2007). In contrast to optimism, focus on opportunities at work is a rather flexible, cognitive-motivational construct that changes over the life span and is influenced by work characteristics (Zacher & Frese, in press).

3.2 The Model of Selection, Optimization, and Compensation

The SOC model proposes that the synchronized use of selection, optimization, and compensation behaviors represents a self-management strategy that 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. SOC strategy use helps to minimize age-related losses and maximize age-related gains. The following definitions rely on Freund and Baltes (2002), who described the three interrelated SOC components in an action-theoretical framework. This approach characterizes SOC behaviors 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 have to be applied in a synchronized way in order to promote successful aging (P. B. Baltes & Baltes, 1990). The use of “selective optimization with compensation” was originally conceived as “one single ‘integrative’ process of adaptive mastery” (Baltes & Freund, 1998, p. 532). Recently, Young et al. (2007) argued similarly that “selection, optimization, and compensation behaviors are viewed as working together in a coordinated fashion, and thus, they should be considered as a functional set” (p. 514). As the three SOC components are also empirically related (Freund & Baltes, 2002), it is appropriate to investigate them as a single and unified self-management strategy (e.g., B. B. Baltes & Heydens-Gahir, 2003; Young et al., 2007).

Empirical studies have supported the assumption that SOC strategy use is associated with positive outcomes and developmental adaptation. Freund and Baltes (1998, 2002) showed that SOC strategy use was positively related to subjective well-being. In the work context, Abraham and Hansson (1995) found that SOC strategy use positively predicted self-reported maintenance of important job competencies and goal attainment. Wiese et al. (2000, 2002) showed that SOC strategy use was positively related to job satisfaction and subjective career success among young professionals. Bajor and Baltes (2003) reported that SOC strategy use was positively related to autonomous setting of work goals and employees’ subjective recollection of supervisor-rated work performance. B. B. Baltes and Heydens-Gahir (2003) reported that SOC strategy use 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. Young et al. (2007) extended these findings by showing that SOC strategy use was most effective in terms of reducing job and family stressors among employees who have few external resources (i.e., family support, family-friendly services provided by the organization, and supervisor support) compared to employees with many external resources. Finally, Abele and Wiese (2008) recently reported that the SOC strategy components of selection and optimization were positively related to self-reported career planning and subjective career success as well as (for optimization) objective career success.

3.3 Development of Hypotheses

3.3.1 Age, Job Complexity, and Focus on Opportunities

Despite the suggestion of adult development researchers that many individuals will identify new goals, plans, 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 at work (Zacher & Frese, in press). 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 et al., 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 at work, 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, in press). In addition, older employees are less change-oriented (Warr et al., 2001) and less motivated to engage in learning and development activities (Colquitt et al., 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 at work.

We expect that an important characteristic of the work context, job complexity, is positively related to focus on opportunities at work (Zacher & Frese, in press). *Job complexity* refers to the extent to which a job provides employees with stimulating and challenging demands (Fried et al., 2002). High-complexity jobs involve many different elements that have to be considered (e.g., work goals, plans, and feedback signals) and provide employees with many decision necessities (Frese, 1987b). High-complexity jobs require the full use and development of knowledge, skills, and abilities (Kozlowski & Hulst,

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 et al., 2007), and 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 (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 knowledge about their current situation to make inferences about their possibilities in the future (Markus & Nurius, 1986; Markus & Wurf, 1987). We expect that job complexity is positively related to focus on opportunities at work because employees in high-complexity jobs should be more likely to 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 futures at work, which in turn should lead to more positive evaluations of their future work opportunities. Employees with many abilities and resources due to high job complexity should also engage more often in activities related to opportunity identification and exploitation. For example, active, healthy, and motivated employees should be more likely to search for and use work-related learning possibilities, which in turn should increase their expectations of future opportunities at work.

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

3.3.2 SOC Strategy Use and Focus on Opportunities

We suggest that employees with high levels of SOC strategy use have a stronger focus on opportunities at work than employees with low levels of SOC strategy use. SOC strategy use may positively influence focus on opportunities in three possible ways. First, SOC strategy use enables individuals to adapt successfully to changes in personal resources (P. B. Baltes & Baltes, 1990; Freund & Baltes, 2002). Employees with high levels of SOC strategy use should be better able to adapt to changes in personal resources that may affect their work (e.g., time constraints, health problems). When losses in personal resources occur, employees with high levels of SOC strategy use 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 levels of SOC strategy use do not adapt well to changes in personal resources, which in turn should reduce their focus on opportunities at work.

Second, individuals with high levels of SOC strategy use also adapt more successfully to environmental changes and demands (P. B. Baltes & Baltes, 1990; Freund & Baltes, 2002). For example, B. B. Baltes and Heydens-Gahir (2003) showed that SOC strategy use reduced job stressors and subsequent work-to-family conflict. Employees with high levels of SOC strategy use 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 at work. In contrast, employees with low levels of SOC strategy use are less successful in adapting to work demands and changes, show lower work performance (Bajor & Baltes, 2001), and this should in turn result in a lower focus on opportunities at work.

Finally, high SOC strategy use 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: SOC strategy use is positively related to focus on opportunities at work.

3.3.3 The Interplay between Age, Job Complexity, and SOC Strategy Use

We argue that job complexity is an important situational resource for employees that helps them to maintain a focus on work-related opportunities at higher ages (Zacher & Frese, in press). 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). In addition, high-complexity jobs allow employees to collaborate and to share and transfer their knowledge and experience with their co-workers (Man & Lam, 2003). Thus, high-complexity jobs better fulfill older employees' increased needs for collaboration and transfer of knowledge and experience (Calo, 2005). In contrast, jobs low in complexity often require more aging-sensitive resources that follow a loss-trajectory, such as physical strength (P. B. Baltes, 1997; Morgeson & Humphrey, 2006), and do not offer older employees many possibilities to use and transfer their increased 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, employees in high-complexity jobs are better able to maintain cognitive functioning (Avolio & Waldman, 1987, 1990) and intellectual flexibility (Schooler, Mulatu, & Oates, 1999) with increasing age. 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). Because participation in such activities should create more options for older employees, we expect that high job complexity helps to maintain a focus on opportunities at work at higher ages. Employees 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, employees in complex jobs should not only be better able to maintain cognitive resources at higher ages, 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 at work, 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 SOC strategy use 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, SOC strategy use is thought to be most effective when individuals' resources are low (Jopp & Smith, 2006; Young et al., 2007). When only few resources are available, the optimization of resource allocation and efforts to maintain and enhance individual functioning through SOC strategy use are relatively more important than in those situations in which individuals have many internal and external resources readily available to support them. Young et al. (2007) recently showed that SOC strategy use was most effective in terms of reducing job and family stressors when external resources provided by the work environment (i.e., family support, family-friendly services provided by the organization, and supervisor support) were low. In contrast, SOC strategy use 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 SOC strategy use is more strongly positively related to focus on opportunities at work when job complexity is low than when job complexity is high. There are three reasons why we expect SOC strategy use to be positively related to focus on opportunities in low-complexity jobs. First, actively adapting to changes in personal resources through SOC strategy use should enhance employees' focus on opportunities in low-complexity jobs because these jobs involve narrowly prescribed tasks that provide few compensation possibilities by themselves and that cannot be easily adapted to employees' resources (Fay & Kamps, 2006). Thus, it should be beneficial for employees to adapt to changes in personal resources when their work cannot be adapted to them. For example, an assembly line worker with back pain might adapt by using different movements to fulfill his or her work tasks. Employees in low-complexity jobs who do not adapt their work-related behaviors to changes in personal resources should experience more difficulties at work and this should in turn reduce their focus on opportunities.

Second, actively adapting to work-related changes and demands through SOC strategy use should increase employees' focus on opportunities in low-complexity jobs because these jobs do not provide employees with many possibilities to learn and develop (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 at work 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 SOC strategy use should result in a lower focus on opportunities.

Third, employees with high levels of SOC strategy use should set themselves more goals autonomously, adapt these goals to their work environment and vice versa, and invest effort to pursue their goals (Freund & Baltes, 2002). This should lead to a higher focus on opportunities in low-complexity jobs because these jobs do not readily provide employees with many different work-related goals and possibilities to pursue these goals (Fay & Kamps, 2006). For example, an assembly line worker who sets him- or herself the goal to advance to a supervisory position 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 autonomously should have a weaker focus on opportunities at work because their jobs do not provide them with many different goals, options, and possibilities in the first place.

In contrast to low-complexity jobs, in high-complexity jobs focus on opportunities at work should be less dependent on employees' level of SOC strategy use. High-complexity jobs offer employees many work-related possibilities, which in turn should result in a higher a-priori focus on opportunities (Zacher & Frese, in press). High-complexity jobs also readily provide employees with many compensation and support possibilities for changes in personal resources (e.g., the tasks are less strictly prescribed, such that employees can decide when and where to work on them) and to master work-related changes and demands successfully (e.g., high-complexity jobs readily provide more possibilities for learning and development). It is already an inherent part of these jobs that they provide employees with many different goals and that employees set themselves work-related goals autonomously. Thus, employees in high-complexity jobs do not need to use the SOC strategy in order to perceive many work-related opportunities because their jobs provide them with the prerequisites for a strong focus on opportunities in the first place. SOC strategy use 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 SOC strategy use and focus on opportunities at work, such that the relationship is stronger for employees in low-complexity jobs than for employees in high-complexity jobs.

Finally, we argue that SOC strategy use is more effective for employees in low-complexity jobs in terms of maintaining a focus on opportunities at higher ages than for employees in high-complexity jobs. We suggest that there are two possible reasons for this assumption. First, employees in low-complexity jobs with high levels of SOC strategy use should be better able to adapt to *age-related* changes in personal resources 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, employees in low-complexity jobs with low levels of SOC strategy use should not maintain a focus on opportunities at higher ages because their jobs do not readily provide them with compensation and support possibilities for age-related changes. For example, an assembly line worker who does not successfully adapt to decreases in physical strength at higher ages by using the SOC strategy (e.g., he or she might invest more effort) should perceive less opportunities in his or her work-related future than a worker who does adapt.

Second, employees in low-complexity jobs with high levels of SOC strategy use should also continue to set and pursue many work-related goals autonomously at higher ages (Freund & Baltes, 2002). Employees in low-complexity jobs generally perceive fewer goals and opportunities for themselves, especially at higher ages (Zacher & Frese, in press). We suggest that SOC strategy use 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, in high-complexity jobs SOC strategy use should be relatively less effective for employees in terms of maintaining a focus on opportunities at higher ages. 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) and involve fewer work demands that pose a challenge to them (e.g., less physically demanding tasks; Morgeson & Humphrey, 2006). In addition, high-complexity jobs continue to provide older employees with many new and challenging work goals. Thus, it should be less important for employees in high-complexity jobs to make use of the SOC strategy in order to maintain a focus on opportunities at work at higher ages.

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

3.4 Method

3.4.1 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, 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 no degree or 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). It is important to note that there were no outliers in the age, work experience, and job tenure variables. Age was highly correlated with work experience ($r = .96$, $p < .01$) and job tenure ($r = .75$, $p < .01$). The rather small difference of approximately 17 years between the average age (38 years) and the average work experience (21.28 years) can be explained by the fact that most individuals in Germany with general education or middle school degrees start working around the ages of 16 or 17 years.

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 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 author 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 approximately 340 employees from two different morning shifts generally had the possibility to participate in the study, the response rate was 42 percent. Due to missing data in ten questionnaires, we were able to use complete data provided by 133 employees.

3.4.2 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, in press). The items are "Many opportunities await me in my occupational future," "I expect that I will set many new goals in my occupational future," "My occupational future is filled with possibilities," and "I can do anything I want in my occupational future." Cate and John (2007) showed that the original four items loaded highly on a focus on opportunities factor. 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, also reported in Frese et al., 1996). A sample item is "Do you receive tasks that are extraordinary and particularly difficult?" 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 (1984, cf. Frese et al., 1996) showed that job complexity ratings of job incumbents and external observers were highly correlated ($r = .67$). There is also evidence that job complexity is reported with little subjective bias (Zapf, 1989).

Selection, optimization, and compensation (SOC) strategy use 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 adapted items were answered on a 5-point Likert 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). The Cronbach’s alpha of the scale was .77.

The items of the adapted SOC scale were “*At work, I concentrate all my energy on few things,*” “*At work, I always focus on the one most important goal at a given time,*” and “*At work, I commit myself to one or two important goals*” (elective selection); “*When things at work don’t go as well as they have in the past, I choose one or two important goals,*” “*When I can’t do something important at work the way I did before, I look for a new goal,*” and “*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*” (loss-based selection); “*At work, I keep working on what I have planned until I succeed,*” “*I make every effort at work to achieve a given goal,*” and “*If something matters to me at work, I devote myself fully and completely to it*” (optimization); “*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,*” “*When something at work isn’t working as well as it used to, I ask others for advice or help,*” and “*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*” (compensation).

Control variables. Physical health was measured with six items from the German SF-12 health survey (Bullinger & Kirchberger, 1998; Ware et al., 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 Likert 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*).

3.4.3 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; J. Cohen et al., 2003). In the first step, we entered gender, education, positive affect, and physical health as control variables into the empty model. In the second step, we entered age, job complexity, and SOC strategy use. 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 SOC strategy use. 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 at work on age at one standard deviation above and below the mean values of job complexity and SOC strategy use. 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 has shown that gender, education, and physical health are related to individuals' decisions to engage in work activities after retirement (Beehr et al., 2000; B. Griffin & Hesketh, 2008), and thus may also influence their focus on opportunities (Zacher & Frese, in press). Finally, we controlled for positive affect in order to deal with the potential problem of common method bias when using self-report scales (P. M. Podsakoff et al., 2003).

3.5 Results

3.5.1 Intercorrelations of Study Variables

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 SOC strategy use ($r = .20, p < .05$). SOC strategy use was negatively related to education ($r = -.23, p < .01$), and positively related to positive affect ($r = .25, p < .01$).

3.5.2 Test of Hypotheses

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 at work 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 at work ($\beta = -.77, p < .01$). 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 SOC strategy use on focus on opportunities ($\beta = .16, p < .05$).

According to Hypothesis 4, job complexity moderates the negative relationship between age and focus on opportunities at work, 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 at work 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.

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. SOC strategy use	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 at Work

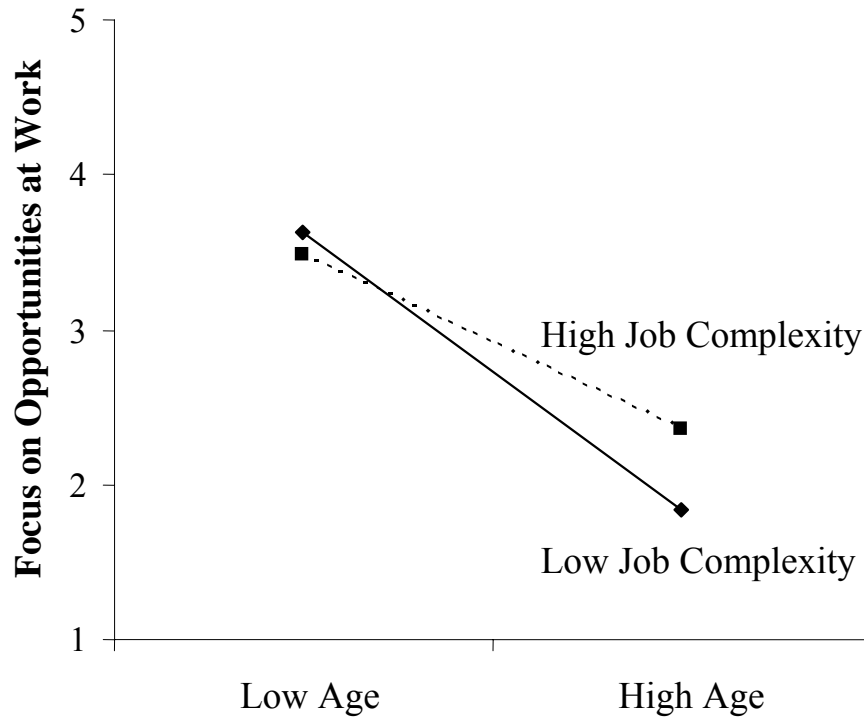
Step / Predictor variable	Dependent Variable: Focus on Opportunities at Work											
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Step 1: Control Variables												
Gender	-.33	.23	-.12	-.08	.18	-.03	-.17	.17	-.06	-.23	.17	-.09
Education	.11	.10	.09	.09	.07	.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
SOC strategy use				.32	.13	.16*	.34	.12	.17**	.49	.13	.25**
Step 3: Two-Way Interactions												
Age * Job complexity							.02	.01	.15*	.02	.01	.17*
Age * SOC strategy use							-.00	.01	-.01	-.00	.01	-.02
Job complexity * SOC strategy use							-.49	.16	-.20**	-.34	.16	-.14*
Step 4: Three-way Interaction												
Age * Job complexity * SOC strategy use										-.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.

† < .10. * $p < .05$. ** $p < .01$.

Figure 2

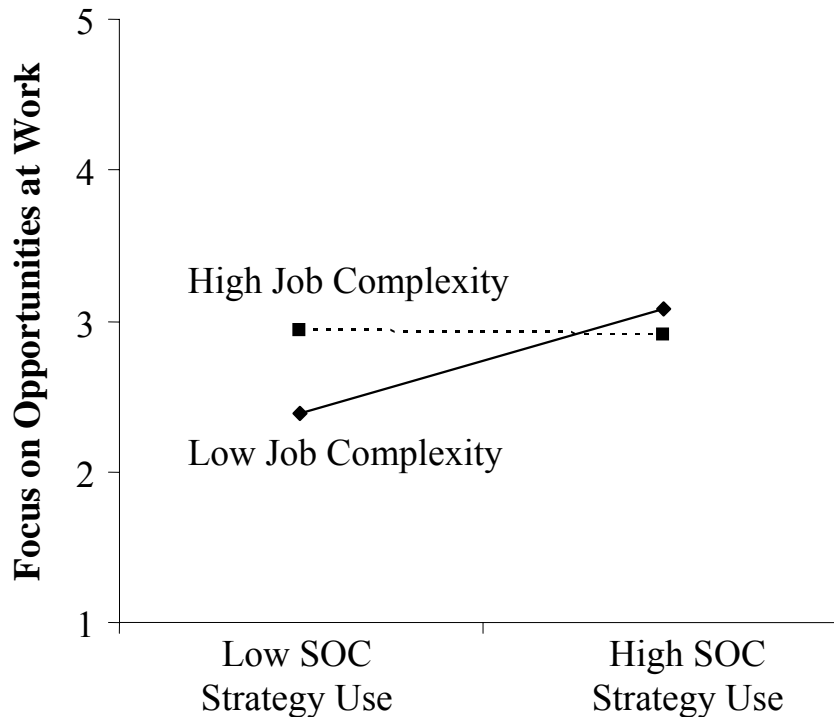
Moderation of the Relationship between Age and Focus on Opportunities at Work by Job Complexity



Hypothesis 5 states that job complexity moderates the positive relationship between SOC strategy use and focus on opportunities at work, 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 SOC strategy use and job complexity had a significant effect on focus on opportunities at work ($\beta = -.20, p < .01$). Consistent with our expectations, a simple slope analysis indicated that the relationship between SOC strategy use 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 SOC strategy use 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.

Figure 3

Moderation of the Relationship between SOC Strategy Use and Focus on Opportunities at Work by Job Complexity



According to Hypothesis 6, there is a three-way interaction between age, job complexity, and SOC strategy use, such that the negative relationship between age and focus on opportunities at work is stronger for employees in low-complexity jobs with low levels of SOC strategy use than for employees in low-complexity jobs with high levels of SOC strategy use and for employees in high-complexity jobs. Table 2 shows that the three-way interaction effect of age, job complexity, and SOC strategy use 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 levels of SOC strategy use ($B = -.08, SE = .01, \beta = -1.07, t = -9.19, p < .01$) than for employees in low-complexity jobs with high-levels of SOC strategy use ($B = -.05, SE = .01, \beta = -.73, t = -4.56, p < .01$). 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 ($t = 1.85, p = .067$).

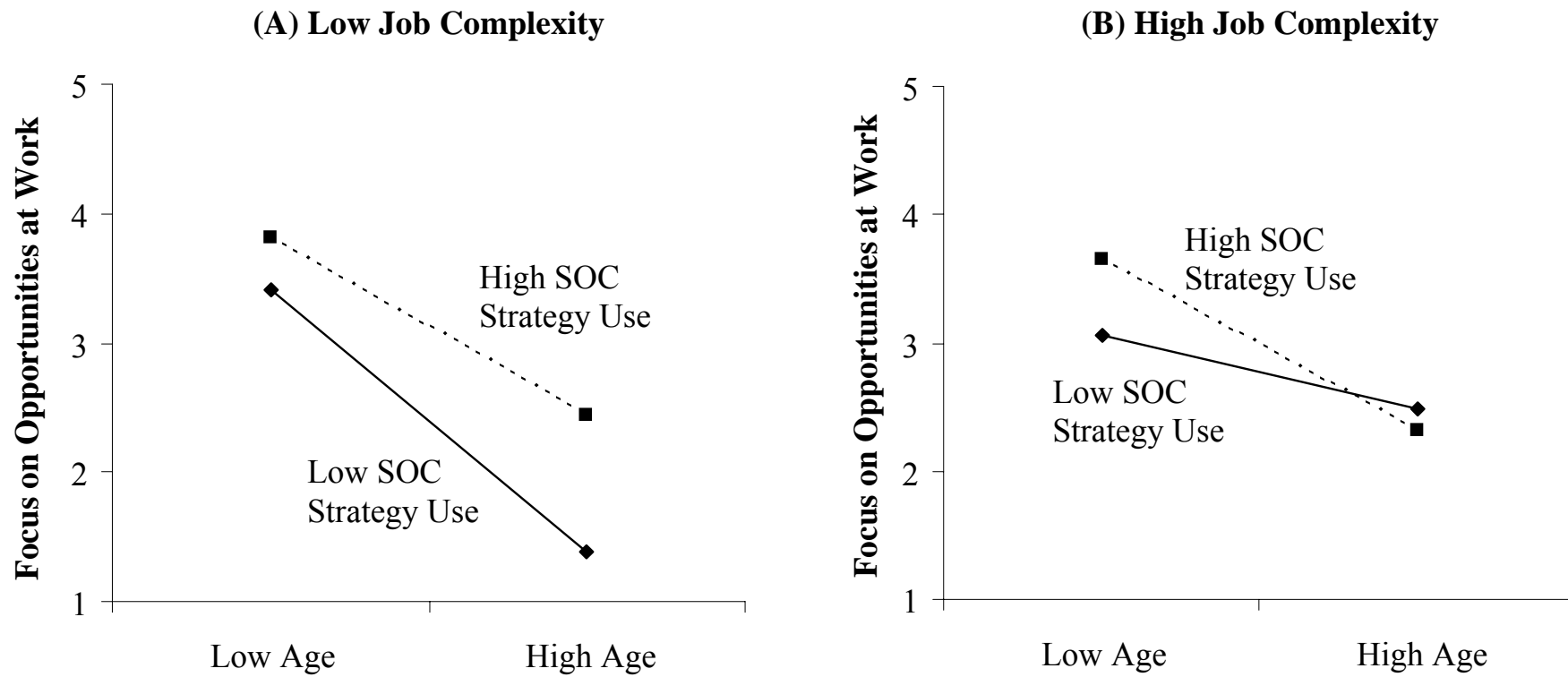
Providing further support for our assumptions, the simple slope analysis also showed that the negative relationship between age and focus on opportunities at work was stronger for employees in low-complexity jobs with low levels of SOC strategy use than for employees in high-complexity jobs with high levels of SOC strategy use (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 at work was stronger for employees in low-complexity jobs with low levels of SOC strategy use than for employees in high-complexity jobs with low levels of SOC strategy use (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 SOC strategy use on the negative relationship between age and focus on opportunities at work 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 levels of SOC strategy use differed significantly ($t = -2.10$, $p < .05$). The simple slopes for employees with high levels of SOC strategy use in high versus low complexity jobs did not differ ($t = .08$, *ns*). The simple slope for employees in low-complexity jobs with high levels of SOC strategy use differed marginally significantly from the simple slope for employees in high-complexity jobs with low levels of SOC strategy use ($t = 1.76$, $p = .082$).

Finally, we conducted a separate hierarchical moderated regression analysis in which we additionally controlled for the squared effects of age, job complexity, and SOC strategy use. 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 SOC strategy use on focus on opportunities at work. 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.

Figure 4

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



3.6 Discussion

3.6.1 Summary of Findings

The concept of focus on opportunities at work describes how many new goals, plans, options, and possibilities employees perceive to have in their personal work-related future (Zacher & Frese, in press). 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 (in press) recently showed that job complexity was positively related to focus on opportunities at work, and that high levels of job complexity enabled employees to maintain a focus on work-related opportunities at higher ages. However, their study did not provide an answer to the question whether employees in low-complexity jobs who use successful aging strategies are better able to maintain a focus on opportunities at higher ages than employees in low-complexity jobs who do not use successful aging strategies. Such a finding would be important to design workplace interventions (e.g., trainings) that may enable older employees in low-complexity jobs to maintain a focus on opportunities. Thus, the goal of this study was to examine the interplay between age, job complexity, and the use of a well-known successful aging strategy entitled SOC (P. B. Baltes & Baltes, 1990) in predicting focus on opportunities at work. Extending previous research by Zacher and Frese (in press) and based on propositions by SOC researchers (P. B. Baltes & Baltes, 1990; Freund & Baltes, 2000, 2002; Young et al., 2007), our main assumptions in this study were that SOC strategy use is more strongly positively related to focus on opportunities in low-complexity jobs than in high-complexity jobs, and that SOC strategy use is more effective in low-complexity jobs compared to high-complexity jobs in terms of maintaining a focus on opportunities at higher ages.

Our study replicated Zacher and Frese's (in press) findings, and extended their research in several important ways. First, consistent with Zacher and Frese (in press), we showed that age was negatively, and job complexity was positively related to focus on opportunities at work. In addition, job complexity moderated the negative relationship between age and focus on opportunities at work, such that employees in high-complexity jobs were better able to maintain a focus on opportunities at higher ages than employees in low-complexity jobs (see Figure 2). Potential explanations for these findings are that older employees in general have fewer personal (e.g., training motivation) and situational resources (e.g., support for development) than younger employees that may be important for focus on opportunities at work. Employees in high-complexity jobs have more possibilities (e.g., to

learn new things) than employees in low-complexity jobs, which in turn may influence how many possibilities they expect in their occupational future. In addition, the possibilities and positive effects of high-complexity jobs seem to be particularly important for maintaining a focus on opportunities at higher ages. For example, older employees in high-complexity jobs are better able to use and transfer their experiential knowledge, and high job complexity helps them to maintain high levels of cognitive and emotional functioning (Frese, 1982).

Second, our study contributes to the literature on successful aging at work by showing that SOC strategy use was generally positively related to focus on opportunities. We suggest that high levels of SOC strategy use enhance employees' perceptions of future opportunities at work because employees who use the SOC strategy 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 SOC strategy use and focus on opportunities provides first empirical support for our proposition advanced in the introduction that focus on opportunities is an important criterion of successful aging at work.

Third, we found that SOC strategy use 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) which suggest that SOC strategy use is particularly effective when external resources provided by the work environment are low. We argue that SOC strategy use 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 autonomous goal setting, adaptation, and pursuit. Thus, the more employees in low-complexity jobs make active use of the SOC strategy, the stronger is their focus on opportunities. In contrast, SOC strategy use 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 many different possibilities, such as possibilities to learn new things and to share knowledge and skills).

Finally, we found support for our assumption that employees in low-complexity jobs with low SOC strategy use are less successful in terms of maintaining a focus on opportunities at higher ages than employees in low-complexity jobs with high SOC strategy use. Employees in low-complexity jobs with low SOC strategy use are also less successful in

terms of maintaining a focus on opportunities at higher ages than employees in high-complexity jobs with either high or low SOC strategy use (see Figure 4). Specifically, Figure 4 shows that the major effect of the three-way interaction between age, job complexity, and SOC strategy use found in this study was due to low SOC strategy use under high versus low job complexity (Figure 4, solid lines). The relationship between age and focus on opportunities was disproportionately negative when SOC strategy use and job complexity were low (Figure 4, left panel, solid line). In this case, both external resources provided by the work environment (i.e., job complexity) and employees' SOC strategy use (which is assumed to facilitate adaptation and optimization of the investment of personal resources) were low. In contrast, the negative relationship between age and focus on opportunities was weaker for employees in low-complexity jobs with high SOC strategy use (Figure 4, left panel, dotted line), and for employees in high-complexity jobs with either high or low SOC strategy use (Figure 4, right panel, dotted and solid lines).

We suggest that SOC strategy use is particularly effective among older employees in low-complexity jobs because SOC strategy use helps to counteract the detrimental effects of higher age as well as of low job complexity on focus on opportunities at work. Active SOC strategy use 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, SOC strategy use facilitates autonomous goal setting, adaptation, and pursuit among employees. This effect of SOC strategy use should be especially important for older employees in low-complexity jobs who generally perceive the lowest amount of work-related future goals, plans, and options (Zacher & Frese, in press). In contrast, SOC strategy use may be less effective in high-complexity jobs in terms of maintaining a focus on opportunities at higher ages 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). The tasks in high-complexity jobs are less narrowly prescribed and therefore more easily adaptable to age-related changes in personal resources and preferences than tasks in low-complexity jobs. In addition, high-complexity jobs involve less physically demanding tasks (Morgeson & Humphrey, 2006) that become more difficult at higher ages, and therefore older employees in these jobs should be better able to maintain a relatively strong focus on opportunities in the first place.

3.6.2 Limitations

This study has a number of limitations that need to be discussed. First, cross-sectional designs do not allow for definite conclusions about intraindividual change processes over time (i.e., aging). Part of the age-related differences found in focus on opportunities at work may be due to differences between age 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). Longitudinal and cohort-sequential designs are necessary to disentangle these effects (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 SOC strategy use on the one hand and focus on opportunities on the other hand. Even though we tested whether job complexity and SOC strategy use would positively predict focus on opportunities at work, 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 SOC strategy use 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 at work could predict the exact combinations of age, job complexity, and SOC strategy use that were found in this study.

A second limitation of this study is that our data came solely from self-report questionnaires. Specifically, it might be argued that common method bias has led to inflated correlations among the study variables. However, the zero-order correlations between job complexity, SOC strategy use, 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 cannot create artifactual interaction effects (Evans, 1985; Schriesheim & DeNisi, 1981). The objectivity of employees' ratings of their job complexity and SOC strategy use might nevertheless be questioned. However, research has shown that there is a high agreement between the self-report measure of job complexity used in this study and ratings of observers (Frese et al., 1996; Semmer, 1984). Furthermore, researchers have suggested that self-reports of SOC strategy use might simply reflect a personal preference for SOC instead of actual SOC strategy use (Jopp & Smith, 2006). Situational interviews or behavioral measures of

SOC may be more valid (Li, Lindenberger, Freund, & Baltes, 2001). Future research needs to replicate our findings using a combination of self-report and more objective measures.

Third, the present study investigated *overall* SOC strategy use 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 synchronized SOC strategy use 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 needs 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. Future studies should use the 48-item SOC scale (Freund & Baltes, 2002) in order to investigate the direct and moderating influences of each SOC component separately.

Fourth, 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, we were able to replicate the findings of Zacher and Frese's (in press) study in which these authors investigated a much more diverse sample of working age adults from different organizations and occupations. Nevertheless, future research should replicate the findings of our study in larger and more representative samples.

Finally, it might be questioned whether employees in low-complexity jobs have the possibility at all to make use of the SOC strategy. As low-complexity jobs provide employees with only limited decision necessities and narrowly prescribed tasks, employees may not be able to develop and use SOC strategy behaviors. We believe that there are a number of reasons that render this objection unproblematic. Specifically, the zero-order correlation between job complexity and SOC strategy use was rather small ($r = .20$), indicating that employees in high-complexity jobs used the SOC strategy 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 levels of SOC strategy use generally have a stronger focus on opportunities than employees in high-complexity jobs. Instead, we argued that SOC strategy use 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 levels of SOC strategy use. Finally, we did not argue that employees in low-complexity jobs are able to directly change their work tasks and conditions through SOC strategy use, but that they are better able to adapt their own work behaviors to changes in personal resources and work demands, and to set and pursue work-related goals more autonomously.

3.6.3 Implications for Future Research

We conceptualized focus on opportunities in this study as a criterion of successful aging at work. Future research might investigate whether the positive direct and moderating effects of job complexity and SOC strategy use also generalize to other, recently proposed criteria of successful aging at work, such as adaptability and health, positive relationships, and personal security (Robson et al., 2006). In addition, future studies might investigate the direct and buffering effects of additional work characteristics, such as skill variety, specialization, and social support (Morgeson & Humphrey, 2006) on criteria of successful aging at work. It may be that these work characteristics also act as external resources for employees and help them to maintain a focus on opportunities at higher ages.

Future research also needs to investigate further work characteristics besides “job simplicity” that may have negative effects on older employees’ focus on opportunities. For example, Kanfer and Ackerman (2004) suggested that jobs involving tasks that place high demands on employees’ fluid intelligence (e.g., air traffic controllers, mathematicians) become more difficult at higher ages. These job demands may lead to an overload in fast information processing capacity and in turn result in a lower focus on opportunities and even increased turnover among older employees. The job complexity measure used in this study only partially captured such fast information processing demands. Specifically, it assesses whether the job allows employees to make complex and challenging decisions, use their knowledge and skills, and to learn new things. We suggest that these job attributes also place high demands on employees’ crystallized cognitive abilities (i.e., prior knowledge and experience), and that these demands should be beneficial in terms of maintaining a focus on work-related opportunities among older employees. Other work characteristics scales than the one used in this study (e.g., Morgeson & Humphrey, 2006) also draw a clear distinction between job complexity and jobs’ fast information processing demands.

Researchers have also suggested a number of additional successful aging strategies particularly for employees (Robson & Hansson, 2007), which might have positive effects on focus on opportunities and other criteria of successful aging at work. For example, Robson and Hansson (2007) identified strategies such as “relationship development,” “continuous learning,” and “stress relief.” Even though these strategies might overlap somewhat with the more established successful aging strategy of SOC investigated in this study, future research could investigate whether these strategies also have positive effects on successful aging outcomes at different ages and for different levels of job complexity.

Future research also needs to investigate relationships between focus on opportunities and important work outcomes. For example, focus on opportunities might be positively related to work performance. Researchers have suggested that individuals’ self-knowledge of their future possibilities is positively related to efforts to attain these possibilities and leads to higher evaluative standards for regulating behavior (Cross & Markus, 1991; Markus & Nurius, 1986). Cate and John (2007) have suggested that focus on opportunities at work may fulfill similar functions as possible selves. Finding a positive relationship between focus on opportunities and work performance would further strengthen our proposition that focus on opportunities is an important construct in the field of work and organizational psychology.

Finally, this study did not answer the question why some older employees in low-complexity jobs used the SOC strategy whereas other employees did not. Maybe motivational factors such as conscientiousness (Bajor & Baltes, 2003) or control orientation (i.e., a compound of control aspiration, opportunity for control, and self-efficacy, see Frese, Garst et al., 2007) influence the degree to which employees believe that SOC strategy use is effective and make use of it. Future research that investigates these possibilities may have important implications for hiring older employees (McNaught & Barth, 1992).

3.6.4 Implications for Theory and Practice

The results of this study contribute to theory development in at least two important ways. First, the concept of focus on opportunities at work should be included in future conceptualizations of criteria of successful aging at work (Hansson et al., 1997), because it is an age-sensitive (compared to an age-neutral) variable that is positively related to job complexity and SOC strategy use. 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 work-related 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.

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 SOC strategy use for the first time. Even though a number of studies have provided evidence for positive effects of SOC strategy use 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 SOC strategy use. A recent study by Young et al. (2007) investigated interactions between external work resources and SOC strategy use, but it did not include age. Considering that SOC is a successful *aging* strategy, it is important that future developments of SOC theory in the work context make more complex predictions about how the interplay of individual characteristics such as age, environmental resources, and SOC strategy use may influence work-related outcomes. 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 make predictions about how these different environmental resources interact with age and SOC strategy use.

Taking the limitations of this study into account, our findings have a number of practical implications for employees and organizations facing an increasingly aging workforce. First, SOC strategy use seems to be particularly effective for older employees in low-complexity jobs because it enables them to maintain a relatively strong focus on opportunities at work. Assuming that focus on opportunities is a criterion of successful aging that also relates to important outcomes such as work motivation and performance (Seijts, 1998), employees in low-complexity jobs should become acquainted with the SOC model of successful adaptation and start practicing SOC behaviors already at younger ages. SOC strategy use may not only help to maintain a focus on opportunities at higher ages, 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 & Dickson, 2001; B. B. Baltes & Heydens-Gahir, 2003).

Organizational practitioners who want to support older employees in terms of maintaining a focus on opportunities at work 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 might offer trainings that teach employees the theoretical background and practical use of SOC. Such trainings could give specific examples of SOC strategy use. They could also explain why these strategies are particularly important for successful adaptation as employees grow older (i.e., as changes in personal resources occur and certain work demands become more difficult). So far, no empirical evidence on the practicability and effectiveness of SOC strategy 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.

4 Focus on Opportunities as a Mediator of the Relationships between Age, Job Complexity, and Work Performance

Over the past 25 years, the aging of the workforces in most industrialized countries has led to an increased interest among researchers and practitioners in the relationship between age and work performance (McEvoy & Cascio, 1989; Ng & Feldman, 2008; Rhodes, 1983; Sturman, 2003; Waldman & Avolio, 1986; Warr, 1993, 2001). This is not surprising, given that work performance – an individual’s behavior that contributes to the goals and effective functioning of an organization (Campbell, McCloy, Oppler, & Sager, 1993) – is a central construct in work and organizational psychology and has important implications for both employees and organizations (Austin & Villanova, 1992; Sonnentag & Frese, 2002). While early reviews reported mixed findings (Rhodes, 1983) or zero relationships between age and task performance (McEvoy & Cascio, 1989; Schmidt & Hunter, 1998), Ng and Feldman (2008) recently published a meta-analysis in which they took the multidimensional nature of work performance into account. They found that although age was largely unrelated to task, innovative, and training performance, older employees seem to contribute more than younger employees to the noncore dimensions of work performance, such as organizational citizenship behavior (e.g., helping others and the organization). Thus, on a bivariate level, there is now solid evidence on how age is related to work performance.

However, the mediating mechanisms of the relationship between age and work performance are so far not well understood (Ng & Feldman, 2008; Warr, 2001). Research from the fields of adult development and life span psychology has shown that the aging process is accompanied by a number of physical (Hedge et al., 2006), cognitive (P. B. Baltes, Staudinger, & Lindenberger, 1999; Kanfer & Ackerman, 2004), personality (Roberts, Walton, & Viechtbauer, 2006; Warr et al., 2001), emotional as well as motivational changes (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Lang & Carstensen, 2002) that may be important for work performance (Kanfer & Ackerman, 2004). Yet, we are not aware of any empirical study that explicitly examined age-related factors as mediators of the relationship between age and work performance. This would be important however, as “conceptualizing and measuring mediating processes may be one of the most effective ways to help researchers

explain *why* age matters to job performance, not only *that* age matters to job performance” (Ng & Feldman, 2008, p. 406). In addition, the identification of mediators of the age-performance relationship might help organizational practitioners to maintain or improve older employees’ levels of work performance by changing these mediators through interventions.

To address this gap in the literature, the first goal of this study is to investigate employees’ personal *focus on opportunities* as a mediator of the relationship between age and work performance. Focus on opportunities is an age-related, cognitive-motivational concept that describes how many new goals, plans, options, and possibilities employees generally believe to have in their personal future at work (Zacher & Frese, in press). Employees with a strong focus on opportunities believe that their personal future at work will be full of new goals, plans, options, and possibilities. In contrast, employees with a weak focus on opportunities expect that the number of opportunities in their personal future at work will be limited. Zacher and Frese (in press) adapted the concept from research on the broader notion of future time perspective in the fields of adult development and life span psychology (e.g., Carstensen, 2006; Cate & John, 2007) to the occupational context and showed that it is negatively related to age. Even though several researchers have speculated that individuals’ focus on opportunities should lead to positive motivational and behavioral outcomes (Cate & John, 2007; Seijts, 1998), no empirical research has yet investigated this issue. In this study, we draw on Markus’ theory on possible selves (Cross & Markus, 1991; Markus & Nurius, 1986) to suggest that focus on opportunities is positively related to work performance.

The second goal of this study is to examine focus on opportunities as a mediator of the relationship between job complexity and work performance. Numerous studies have shown that job complexity (i.e., the level of stimulating and challenging demands at work; Fried, Melamed, & Ben-Davis, 2002) is positively related to work performance (Fried & Ferris, 1987). However, it remains an important task of work design research to identify alternative mediators of this relationship (Parker, Wall, & Cordery, 2001). Zacher and Frese (in press) suggested and found that job complexity is positively related to focus on opportunities. In this study, we extend this research by examining focus on opportunities as a mediator of the relationship between job complexity and work performance.

Finally, the third goal of this study is to investigate whether high levels of job complexity weaken the assumed negative and indirect effect of age on work performance through focus on opportunities. Such a finding would be important because organizational practitioners then could design jobs in a way that allows employees to maintain a focus on

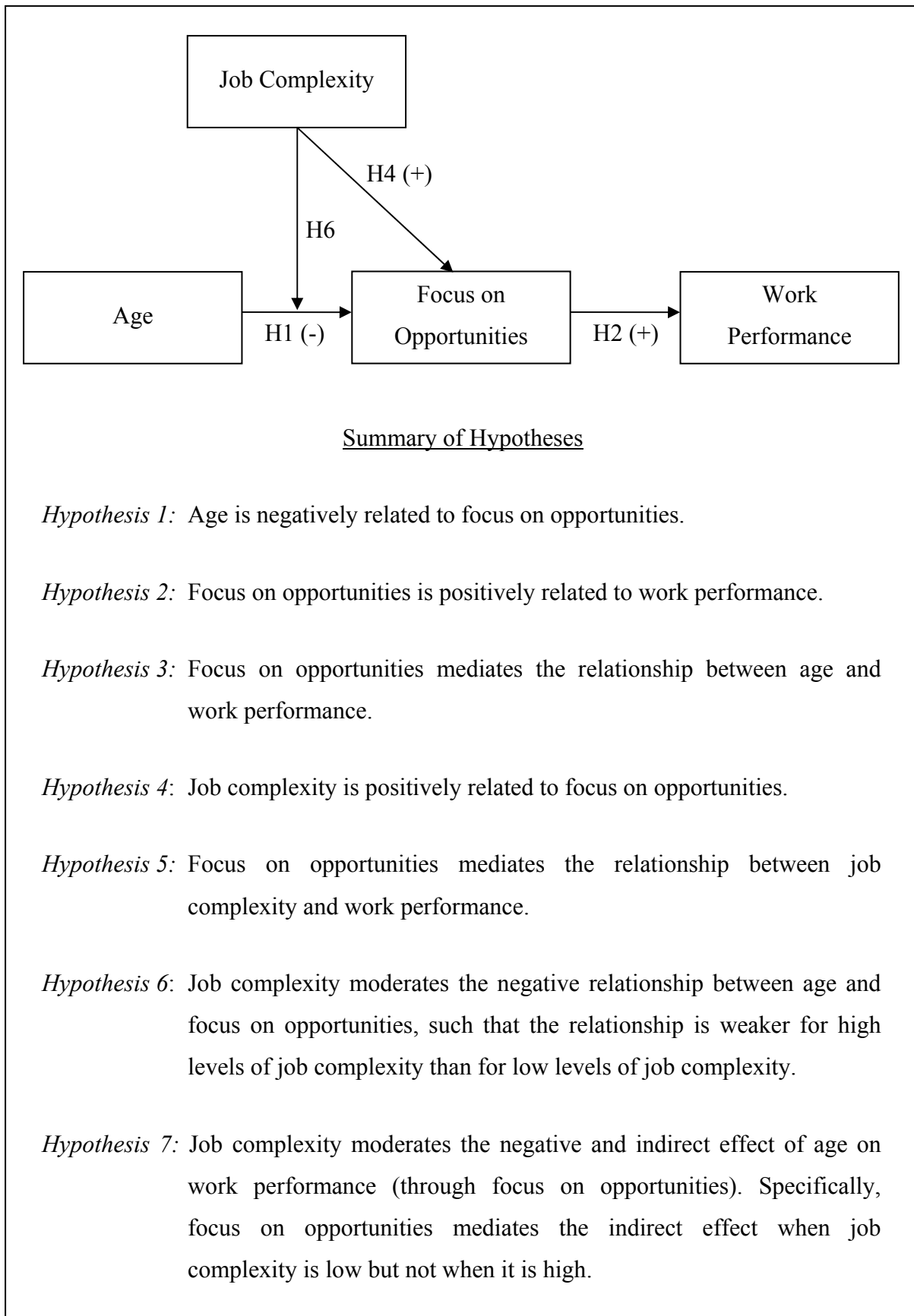
opportunities at higher ages, which in turn may be linked to better work performance. Zacher and Frese (in press) showed that job complexity buffered the negative relationship between age and focus on opportunities. However, the question whether job complexity also contributes to work performance by reducing the negative effect of increasing age on focus on opportunities at work still needs to be investigated.

The theoretical model and a summary of our hypotheses are displayed in Figure 1. In the model, age is negatively related to focus on opportunities (Hypothesis 1), and focus on opportunities in turn is positively related to work performance (Hypothesis 2). Thus, focus on opportunities mediates the relationship between age and work performance (negative indirect effect; Hypothesis 3). In addition, job complexity is positively related to focus on opportunities (Hypothesis 4), and focus on opportunities mediates the relationship between job complexity and work performance (positive indirect effect; Hypothesis 5). Job complexity is assumed to moderate 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 (Hypothesis 6). Finally, we propose that job complexity moderates the negative and indirect effect of age on work performance (through focus on opportunities), such that the indirect effect is weaker for employees in high-complexity jobs than for employees in low-complexity jobs (conditional indirect effect; Hypothesis 7). Before we provide further theoretical justifications for our hypotheses, we briefly outline our conceptualization and measurement of work performance in this study.

4.1 Conceptualization of Work Performance

Work performance can be investigated both as a multidimensional construct as well as a single higher-order or “p-factor” (Harrison et al., 2006; Viswesvaran & Ones, 2000). Research since the early 1990’s has provided evidence that work performance involves not only fulfilling the core tasks of one’s job but also, for example, cooperating with others and helping the organization (Campbell, McHenry, & Wise, 1990; Motowidlo & Van Scotter, 1994). In this study, we used the theory-based and multidimensional conceptualization of work performance by Welbourne, Johnson, and Erez (1998). Specifically, Welbourne et al. (1998) drew on role theory and identity theory to suggest that five dimensions of work performance are particularly important to employees and organizations: *Task performance* describes how well an employee fulfills the core demands of his or her job (e.g., operating a

Figure 1

The Proposed Model and Summary of Hypotheses

machine, selling a product; Borman & Motowidlo, 1993). *Career performance* refers to how well an employee progresses in his or her career and learns new knowledge and skills necessary for future performance. Career performance is important for both employees and organizations due to increasing flexibility in employment contracts and quickly changing work demands (Feldman, 2002). *Innovative performance* describes how well an employee develops new ideas and implements them to improve work processes. In times of increasing global competition, innovative employees are an important resource for organizations (Bledow, Frese, Anderson, Erez, & Farr, 2009; West & Farr, 1990). *Team member performance* describes how well an employee cooperates with his or her co-workers and makes sure that the team succeeds. Team member performance is important because many organizations have introduced team-based work structures over the past decades (Kozlowski & Ilgen, 2006). Finally, *organizational citizenship behavior* (OCB) describes how well an employee contributes to the well-being of the organization, for example by helping others and promoting the organization to outsiders (Bateman & Organ, 1983). OCB has several positive consequences for individuals as well as organizations (N. P. Podsakoff, Whiting, Podsakoff, & Blume, 2009).

In addition to a multidimensional conceptualization of work performance, researchers have suggested that a broader, more integrative perspective on work performance may be beneficial in certain situations (Harrison et al., 2006; Hulin, 1982; Viswesvaran & Ones, 2000). Specifically, predictor variables and outcomes such as work performance can be expected to be more strongly related if they are conceptualized and measured at the same level of generality. This issue has been termed the compatibility principle in attitude theory (Ajzen, 1988; Ajzen & Fishbein, 1977) and has been discussed as the bandwidth-fidelity dilemma in personality research (Ones & Viswesvaran, 1996). In work and organizational psychology research, Judge, Thoresen, Bono, and Patton (2001) showed that *general* job satisfaction was more strongly related to work performance than previously believed. Harrison et al. (2006) extended Judge et al.'s (2001) work by showing that an even broader job attitude construct (composed of general job satisfaction and organizational commitment) provided an even better prediction of a higher-order work performance factor than did each of the two job attitudes separately.

The concept of focus on opportunities at work refers to employees' general beliefs concerning the availability of new goals, plans, options, and possibilities in their personal future at work, and not necessarily to future opportunities in specific work roles such as

jobholder, team member, or organizational citizen (Zacher & Frese, in press). We expect that focus on opportunities at work is more strongly related to a broader work performance factor than to specific work performance dimensions, because focus on opportunities at work and overall work performance are conceptualized at similar levels of generality. Thus, in addition to the specific work performance dimensions described above, we also investigated a higher-order, overall work performance factor in this study based on the shared variance of the specific work performance dimensions. According to Viswesvaran and Ones (2000), meta-analytic results have shown that the empirical overlap between different work performance dimensions can be described as a substantively meaningful higher-order performance factor or “p-factor,” that is not simply due to rater halo bias (see also Hulin, 1982).

4.2 Development of Hypotheses

4.2.1 Age, Focus on Opportunities, and Work Performance

We argue that there are two main reasons why age should be negatively related to focus on opportunities at work (Zacher & Frese, in press). First, certain age-related norms and constraints (Neugarten et al., 1965) in the work context may lead to lower perceptions of future opportunities among older employees compared to younger employees. For example, an age-graded norm in the work context is that older employees are expected to plan for retirement instead of making new and future work-related plans (Hershey, Jacobs-Lawson, & Neukam, 2002). In addition, older employees receive less organizational and interpersonal support for career development activities than younger employees (Maurer et al., 2003; Mirvis & Hall, 1996), and many workplaces are not well-designed to meet the altered capabilities and preferences of older employees, such as decreased physical strength and increased motives for collaboration, transfer of knowledge and experience, and positive affect (Farr & Ringseis, 2002; Griffiths, 1999; Hedge et al., 2006; Kanfer & Ackerman, 2004).

Second, certain personal resources that may contribute to perceptions of future work-related opportunities are becoming more and more depleted with age; for example, the length of time employees expect to remain on the job is decreasing with age (Zacher & Frese, in press). A certain amount of time however is necessary to identify and exploit work-related opportunities such as getting promoted, learning about new technologies, and mentoring younger colleagues. Another personal resource that decreases with age is motivation to learn and to participate in career development (Colquitt et al., 2000; Maurer et al., 2003); these

activities may influence perceptions of future work-related opportunities. Finally, physical health and fast information processing abilities decrease with age (Baltes, 1997). Older employees perceive these decreases and compare themselves with younger colleagues (Ackerman et al., 2002), and may infer that they have fewer future opportunities at work.

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

Seventy years ago, Kurt Lewin (1939) wrote that “Persons of all ages are influenced by the manner in which they see the future” (p. 878). Contemporary research shows that particularly positive beliefs about the future lead to higher motivation and successful performance, because they promote individual well-being, successful problem-solving, the setting of high standards, and persistence in goal pursuit (Aspinwall, 2005; Bandura, 1997; de Volder & Lens, 1982; Nuttin, 1985; Oettingen & Mayer, 2002; C. Peterson, 2000). Researchers from the field of adult development have suggested that the concept of focus on opportunities represents a form of positive thinking about the future that is potentially important for motivation and successful performance (Cate & John, 2007; Seijts, 1998). Drawing on these suggestions, we argue that focus on opportunities at work is positively related to work performance. Evidence for this assumption comes from the literature on possible selves, or the cognitive representations individuals have of themselves and their personal possibilities in the future (Cross & Markus, 1991, 1994; Markus & Nurius, 1986). The concept of possible selves is particularly important for adult development research, because possible selves are thought of as guides for individual development (Cross & Markus, 1991; Ryff, 1991). Recently, Cate and John (2007) have speculated that focus on opportunities may fulfill similar functions as possible selves in guiding individual behavior.

Possible selves serve two important functions in motivating individuals and in directing and regulating their behavior. First, possible selves function as incentives or motivators for behavior. According to Cross and Markus (1991), possible selves provide the essential link between individuals’ cognitions and motivation, because they represent self-relevant possibilities to achieve or to avoid: “As individuals choose among tasks or actions, and as they persist or withdraw from these tasks or actions, they are often guided by a sense, an image, or a conception of what is possible for them” (p. 232). Focus on opportunities at work may fulfill a similar function in directing and regulating positive employee behavior (i.e., work performance) as possible selves. Employees who believe to have many new goals,

options, and possibilities in their personal future at work probably tend to simulate relevant actions and situations more often, choose better and more specific plans and strategies to attain their potential opportunities, and persist until as many of the potential opportunities as possible are attained. These factors should in turn lead to better work performance.

Second, Markus and Nurius (1986) suggested that possible selves function as standards for evaluating individuals' current selves: "The meaning given to a particular self-relevant event depends on the context of possibility that surrounds it" (p. 962). In other words, individuals judge their current actions and situations according to their perceived future possibilities. These evaluations in turn lead to more or less positive or negative emotions, and individual actions aimed at reducing the discrepancy between their current selves and their possible future selves. Focus on opportunities at work might fulfill a similar function among employees. Employees who believe that they have many future opportunities should be more motivated to reduce the discrepancy between their current status and their expected future possibilities, for example by investing more time and effort into work-related activities (e.g., participating in trainings, providing better customer service). This in turn should lead to better work performance. In contrast, employees with a weak focus on opportunities in their work-related future should be less motivated to invest more time and effort into work-related activities because their standards for judging their actions and current situation are lower.

Empirical research has shown that possible selves play an important role for successful performance (Cross & Markus, 1994). Yet, no research so far exists that has examined whether a strong focus on opportunities at work leads to better work performance. Based on the arguments presented above we propose:

Hypothesis 2: Focus on opportunities is positively related to work performance.

Based on our previous assumptions that age is negatively related to focus on opportunities (Hypothesis 1), and that focus on opportunities is positively related to work performance (Hypothesis 2), we expect that focus on opportunities mediates the relationship between age and work performance. Even though the relationships between age and work performance and between age and work performance dimensions are typically rather small or even zero (Ng & Feldman, 2008), it is still possible that these relationships are mediated by focus on opportunities. That is, the small or zero bivariate relationships between age and

work performance may be the result of several competing mediating processes. In such cases, it is quite possible to find an indirect effect in the absence of a total or bivariate effect between a predictor and a criterion variable (MacKinnon, Krull, & Lockwood, 2000; Shrout & Bolger, 2002). Age may be negatively related to focus on opportunities, which in turn may be positively related to work performance. Yet, there are probably several other mediating processes in the theoretically distal and complex relationship between age and work performance that balance out the negative and indirect effect of age on work performance through focus on opportunities, leading to a small overall relationship. For example, age may be positively associated with conscientiousness and work-related knowledge, which in turn may be positively related to work performance (Kanfer & Ackerman, 2004). The goal of this study was not to provide a comprehensive account of all possible mediating processes of the relationship between age and work performance, but to investigate a model of the specific role of focus on opportunities at work in this relationship. The investigation of unique mediators of the age-performance relationship is important to gain a better understanding of the underlying processes (Ng & Feldman, 2008) and how they might be modified (e.g., through work design interventions).

Hypothesis 3: Focus on opportunities mediates the relationship between age and work performance.

4.2.2 Job Complexity, Focus on Opportunities, and Work Performance

Job complexity refers to the level of stimulating and challenging demands at work (Fried et al., 2002). Employees in high-complexity jobs have to consider many different elements (e.g., work goals, strategies, and feedback signals) and make difficult decisions (Frese, 1987b). High-complexity jobs demand that employees make full use of their knowledge, skills, and abilities, continuously learn about new technologies and procedures (Kozlowski & Hults, 1986), and collaboratively share their knowledge and skills with their co-workers (Man & Lam, 2003). In contrast, low-complexity jobs involve repetitive and monotonous tasks that do not involve many difficult decisions and planning activities, and are learned rather quickly (Fay & Kamps, 2006).

Researchers have suggested that job complexity is an important situational resource for employees: “Because work that involves complex tasks requires the use of numerous high-level skills and is more mentally demanding and challenging, it is likely to have positive

motivational outcomes” (Morgeson & Humphrey, 2006, p. 1323). Frese (1982) argued that the demands and possibilities of complex jobs go hand in hand with the more frequent use of employees’ abilities, which in turn has positive effects on their cognitive and emotional functioning. Research has generally confirmed these assumptions. For example, Kohn and Schooler (1978) showed longitudinally that job complexity has a small but consistent influence on intellectual flexibility. In addition, studies showed that job complexity is positively associated with employees’ mental health (Caplan et al., 1975; Kornhauser, 1965).

We argue that job complexity is positively related to focus on opportunities at work (Zacher & Frese, in press). Individuals base their beliefs and expectations concerning their future possibilities on their current experiences (Markus & Nurius, 1986; Markus & Wurf, 1987). Thus, employees in challenging jobs that provide them with many possibilities (e.g., to make difficult decisions, to apply their knowledge and skills, and to learn new things) should be more likely than employees in low-complexity jobs to expect that their work will continue to provide them with many work-related possibilities in the future (Zacher & Frese, in press). In addition, the positive effects of job complexity on employees’ intellectual flexibility and mental health may lead to a stronger focus on opportunities. Individuals hold accurate and differentiated views of their abilities (Ackerman et al., 2002), and may judge their future opportunities at work according to their perceived abilities. Mentally healthy individuals are more alert to opportunities and continuously identify new goals for themselves (Warr, 1990); thus, they should also have a stronger focus on opportunities at work.

Hypothesis 4: Job complexity is positively related to focus on opportunities.

Researchers have suggested and many studies have shown that job complexity is positively related to work performance (Frese, 1987b; Fried & Ferris, 1987; Hackman & Oldham, 1976; Kozlowski & Hults, 1986; Oldham & Cummings, 1996). However, the mediators of this relationship are not yet fully understood (Parker et al., 2001). Based on our assumptions that job complexity is positively related to focus on opportunities (Hypothesis 4), and that focus on opportunities is positively related to work performance (Hypothesis 2), we suggest that focus on opportunities acts as a mediator of the relationship between job complexity and work performance. As outlined above, high-complexity jobs should go hand in hand with more positive expectations of future possibilities at work and better cognitive and emotional functioning (Frese, 1982; Zacher & Frese, in press). Since employees hold

accurate views of their personal abilities (Ackerman et al., 2002) and base expectations concerning their future possibilities on their current experiences (Markus & Nurius, 1986; Markus & Wurf, 1987), employees in high-complexity jobs should have a stronger focus on opportunities than employees in low-complexity jobs. Focus on opportunities in turn should be positively related to work performance, because employees with a strong focus on opportunities are likely to show more effort, persistence, and use more effective work strategies to achieve what they perceive to be possible for them than employees with a weak focus on opportunities (Cross & Markus, 1994; Markus & Nurius, 1986).

Hypothesis 5: Focus on opportunities mediates the relationship between job complexity and work performance.

4.2.3 *The Moderating Role of Job Complexity*

Frese and Stewart (1984) emphasized “the importance of looking at the task structure of the environment when investigating development over the life span” (p. 145). We argue that job complexity is an especially important situational resource for maintaining a focus on opportunities at work at higher ages (Zacher & Frese, in press). Jobs high in complexity offer older employees more possibilities to capitalize on age-related gains, such as increased work-related knowledge and experience, and better fulfill older employees’ preferences for collaboration and knowledge sharing (Kanfer & Ackerman, 2004). In contrast, low-complexity jobs often require more aging-sensitive resources that follow a loss-trajectory, such as physical strength (P. B. Baltes, 1997; Morgeson & Humphrey, 2006), and do not offer older employees many possibilities to use and transfer their increased experiential knowledge (Fay & Kamps, 2006). Thus, the attributes of high-complexity jobs should provide a better fit with older employees’ changed capabilities and preferences and therefore help to maintain a focus on opportunities at work. In addition, we argue that the positive effects of job complexity on cognitive and emotional functioning (Frese, 1982) help employees to maintain a focus on opportunities at higher ages. Intellectual capacities (and self-perceptions of these capacities) may facilitate older employees’ participation in learning and development activities, which in turn should increase their focus on future opportunities at work. A few empirical studies have provided support for the beneficial effects of high job complexity on cognitive functioning at higher ages. For example, Avolio and Waldman (1987; 1990) demonstrated in a series of studies that job complexity and occupational type

moderated the relationship between age and cognitive ability, such that employees in high-complexity jobs showed a less negative relationship between age and cognitive ability than employees in low-complexity jobs. Schooler, Mulatu, and Oates (1999) showed in a longitudinal study that job complexity helped to maintain intellectual flexibility with increasing age. In terms of emotional functioning, research has shown that mental health is a particularly important resource at higher ages because it helps to protect, retain, and replenish other important resources such as physical health, an active approach to life's demands, and learning motivation (Hobfoll & Wells, 1998; Keyes, 2007; Knight, Kaskie, Shurgot, & Dave, 2006; Warr, 1990). The cognitive, motivational, and emotional resources associated with high job complexity should in turn help employees to maintain a focus on work-related opportunities at higher ages.

Hypothesis 6: Job complexity moderates the negative relationship between age and focus on opportunities, such that the relationship is weaker for high levels of job complexity than for low levels of job complexity.

Farr and Ringseis (2002) speculated that “employees in jobs that offer intellectual stimulation are more likely to perform effectively as they age than are employees engaging in more mundane tasks who may become unmotivated and bored over time” (p. 48). We extend Farr and Ringseis’ (2002) reasoning by suggesting that employees in high-complexity jobs are better able to maintain a cognitive-motivational focus on opportunities at higher ages, which in turn is positively associated with work performance. So far, we have proposed that job complexity moderates the negative relationship between age and focus on opportunities (Hypothesis 6), and that focus on opportunities is positively related to work performance (Hypothesis 2). It is therefore likely that job complexity also moderates the strength of the negative and indirect effect of age on work performance (see Figure 1). As we predict a weaker relationship between age and focus on opportunities at work among employees in high-complexity jobs than among employees in low-complexity jobs, the negative and indirect effect of age on work performance via focus on opportunities should be weaker among employees in high-complexity jobs than among employees in low-complexity jobs.

Hypothesis 7: Job complexity moderates the negative and indirect effect of age on work performance (through focus on opportunities). Specifically, focus on opportunities mediates the indirect effect only when job complexity is low but not when it is high.

4.3 Method

4.3.1 Participants and Procedure

The data used in this study came from 168 employees working for 41 different organizations in Germany and Switzerland. Of these participants, 88 (52.4%) were male and 80 (47.6%) were female. Mean age was 40.22 years ($SD = 10.43$) and ranged from 19 to 64 years. More specifically, 61 participants (36.3%) were 35 years or younger, 53 (31.5%) were between 36 and 45 years, and 54 (32.1%) were 46 years or older. The average participant held a high school degree (A-level). Across different age cohorts in the current German working population, about 30 percent hold this degree (Autorengruppe Bildungsberichterstattung, 2008). Specifically, nine participants (5.4%) had a general education degree, 42 (25.0%) had a middle school degree, 37 (22.0%) had a high school degree, and 71 (42.3%) had a college or university degree (nine participants [5.4%] did not indicate their education). Participants worked in a broad array of different jobs. For example, the job descriptions provided by the participants included office clerk, management assistant, banker, customer service advisor, IT specialist, controller, sales engineer, nurse, teacher, secretary, software developer, tax accountant, and personnel trainer. On average, participants had been employed for 18.74 years in their lives ($SD = 11.04$, range 1-50 years) and had been working for their current employer for 10.84 years ($SD = 8.94$, range 1-43 years).

At the onset of data collection for this study, we contacted 98 representatives of different organizations in German and Switzerland by phone or mail, and asked whether they would be willing to participate in a questionnaire study on “intergenerational learning.” The organizations contacted were either chosen from the yellow pages of a medium-sized city in central Germany, or based on personal contacts with representatives of the organizations. Forty-five organizations (46%) out of those contacted agreed to participate in the study with at least two employees. Twenty-eight (62%) of the participating organizations were from the private sector, and 17 (38%) were from the public sector. In total, we provided the 45 organizations which agreed to participate with 360 questionnaire packages (on average, eight questionnaires per organization). These packages included a self-report questionnaire, a peer questionnaire, return envelopes, and two letters with detailed instructions on how to fill out the questionnaires. All participants were assured that their answers were completely confidential. Participating employees were asked to fill out the self-report questionnaire themselves and to give the peer questionnaire to another person at their work who had the chance to regularly observe their work behavior (e.g., a co-worker). On the peer

questionnaire, participants' peers were asked to independently and confidentially evaluate the work performance of the participants. We obtained data on the roles of these peer raters. Most of them were co-workers (124; 73.8%), followed by smaller numbers of subordinates (23; 13.7%) and supervisors (21; 12.5%). A non-parametric Kruskal-Wallis-test indicated that there were no significant differences in work performance ratings provided by these groups ($\chi^2[2, N = 168] = 3.42, ns$). The peer raters were on average 38.66 years old ($SD = 10.58$, range 19-65), and had worked together with the participant for 4.46 years ($SD = 4.61$, range 1-25 years). Eighty-four (50%) of the peer raters were male, and 84 (50%) were female. Participant age and peer age were weakly and significantly correlated ($r = .16, p < .05$). In addition, men were rated more often by men, and women were rated more often by women (62 of the male participants were rated by other men, and 26 of the male participants were rated by women; 58 of the female participants were rated by other women, and 22 of the female participants were rated by men; $\chi^2[1, N = 168] = 30.93, p < .01$).

In addition to the scales used in this study, all participants completed a number of other scales on intergenerational learning (e.g., transfer of knowledge). Both self-report and peer questionnaires were returned directly and independently back to the investigators, in their respective sealed envelope to ensure confidentiality. The questionnaires were later reallocated using six letters or numbers which the participating employee wrote on both questionnaires before handing the second questionnaire to a chosen peer. In total, 176 sets of questionnaires (i.e., 176 self-report and 176 peer questionnaires) were returned (49%). Out of the questionnaire sets returned, 168 employees and 168 peers from 41 organizations provided complete data, which we used for this study.

4.3.2 Measures

Focus on opportunities was assessed with three self-report items from Carstensen and Lang's (1996; see also Lang & Carstensen, 2002; Zacher & Frese, in press) German future time perspective scale, which we adapted by adding the word "occupational" to each item. The items are "My occupational future is filled with possibilities," "I expect that I will set many new goals in my occupational future," and "There are only limited possibilities in my occupational future" (reverse coded). Participants gave their answers on a 5-point scale ranging from 1 (*does not apply at all*) to 5 (*applies completely*). Cronbach's alpha of the scale was .88.

Job complexity was measured with four self-report items from a well-established and validated German scale (Semmer, 1982; Zapf, 1993, also reported in Frese et al., 1996). A sample item is “Do you receive tasks that are extraordinary and particularly difficult?” Participants gave their answers on a scale ranging from 1 (*very little*) to 5 (*very much*). Cronbach’s alpha of the scale was .72. Semmer (1984, cf. Frese et al., 1996) showed that job complexity ratings of job incumbents and external observers were highly correlated ($r = .67$). There is also evidence that job complexity is reported with little subjective bias (Zapf, 1989).

Work performance was measured by asking participants’ peers to rate participants’ performance on all of the 20 items from Welbourne et al.’s (1998) Role-based Performance Scale.⁴ Each of the five work performance dimensions included in this scale is measured with four short items such as “Quality of work output” (task performance), “Developing skills needed for his/her future career” (career performance), “Working to implement new ideas” (innovative performance), “Seeking information from others in his/her work group” (team member performance), and “Working for the overall good of the company” (organizational citizenship behavior). Welbourne et al. (1998) explicitly recommended the use of their scale to researchers who want to apply a generalizable measure of work performance. Important advantages of this scale are that it is based on theory, it has been shown to be a reliable and valid measure in several occupations and organizational contexts, and is useful for researchers as well as practitioners due to its shortness and face validity. The items were translated and re-translated by a German native speaker fluent in English and an English-language native speaker fluent in German. As suggested by Welbourne et al. (1998), the peer raters provided their answers on a 5-point scale ranging from 1 (*needs much improvement*) to 5 (*excellent*). Cronbach’s alphas of the specific work performance scales in this study were .85 or greater. We averaged the four items of each work performance dimension to create five work performance dimension scores. In addition, we computed an overall work performance score for each participant using his or her values on the first unrotated factor derived by a factor analysis. The factor analysis showed that all work performance items had their highest loading on this first unrotated factor (ranging from .59 to .78) and that this factor explained 49.13% of the variance in the ratings (note that Viswesvaran and Ones [2000] cite an unpublished meta-analysis that found a quite similar value of “over 50% of the variance” [p. 223] that is shared by different work performance dimensions).

⁴ The items from the Role-Based Performance Scale were used with permission of Theresa Welbourne, Stephen M. Ross School of Business, University of Michigan, 701 Tappan Street, Ann Arbor, MI 48109-1234, USA.

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 educational degree attained (0 = *no degree*, 1 = *general education degree*, 2 = *middle school degree*, 3 = *high school degree / A-level*, and 4 = *college / university degree*).

Control variable. We controlled for age squared (age^2) in all analyses to take into account the possibility suggested by some authors that the relationship between age and work performance is non-linear (Avolio, Waldman, & McDaniel, 1990; Sturman, 2003). As recommended by Little, Bovaird, and Widaman (2006), we orthogonalized the age squared term from age by regressing age squared on age and saving the residuals of this regression as a new variable. This new age squared variable is uncorrelated with age, and its use helps to avoid problems with multicollinearity and enhances the interpretability of results.

4.3.3 Analyses

Hypotheses 1 to 3 as well as Hypotheses 4 and 5 represent together two simple mediation models, one in which the effect of age on work performance is conveyed by focus on opportunities (H1-3; negative indirect effect), and one in which the effect of job complexity on work performance is conveyed by focus on opportunities (H4 and 5; positive indirect effect; see Figure 1).⁵ Tests of such simple mediation models often follow the multistep approach recommended by R. M. Baron and Kenny (1986). According to these authors, mediation exists if (1) an initial variable X has a “total effect” on the outcome variable Y (c path; i.e., overall relationship), (2) X has an effect on the mediator variable M (a path), (3) M has an effect on Y when controlling for X (b path), and (4) the effect of X on Y becomes significantly smaller or non-significant when controlling for M (c' path, or “direct effect”). Complete mediation exists if X no longer affects Y when M is controlled; partial mediation exists when the effect of X on Y is reduced in absolute size but is still different from zero when M is controlled (Kenny, Kashy, & Bolger, 1998). Thus, Step 4 has to be met only for complete mediation to exist. In addition, methodologists have argued that R. M. Baron and Kenny’s (1986) approach is limited because of the Step 1 requirement that the total effect from of the initial variable X on the outcome variable Y (c path) must be significant (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). According to these

⁵ We use the term “indirect effect” instead of “mediated effect” because it does not require that a total effect of the predictor on the outcome variable exists (Preacher & Hayes, 2004).

critics, if the mediating process is rather distal or complex (as in the age-performance relationship), the size of the relationship between X and Y becomes smaller due to additional or competing factors in the mediating process (MacKinnon et al., 2000; MacKinnon et al., 2002; Shrout & Bolger, 2002). Thus, it is recommended to drop the Step 1 requirement from tests of mediation (MacKinnon et al., 2000; Shrout & Bolger, 2002). Instead, tests of mediation should be based on significance tests of the indirect effect ab , that is, the product of the a and b paths (Preacher & Hayes, 2004). The essential steps in establishing mediation are therefore R. M. Baron and Kenny's (1986) Steps 2 and 3 (Kenny et al., 1998).

One possibility to test the indirect effect ab for significance is the Sobel test (Sobel, 1982), which is based on the assumption that the indirect effect is normally distributed. As this assumption cannot be fulfilled (Edwards & Lambert, 2007), methodologists recommend the bootstrapping method to test indirect effects, which generates bootstrapped confidence intervals that help to avoid power problems due to non-normal sampling distributions of the indirect effect (Boos, 2003; Erceg-Hurn & Mirosevich, 2008; MacKinnon, Lockwood, & Williams, 2004; Shrout & Bolger, 2002). To test our mediation models, we used a SPSS macro for simple mediation analysis developed by Preacher and Hayes (2004). This macro includes the four steps recommended by Baron and Kenny (1986) as well as parametric (i.e., Sobel test) and non-parametric (i.e., bootstrapping) tests of the estimated indirect effect ab .

Hypothesis 6 is a moderation hypothesis and Hypothesis 7 is a moderated mediation hypothesis. *Moderated mediation* means that the mediating process between an initial variable and an outcome variable depends on the value of a moderator variable (Muller, Judd, & Yzerbyt, 2005; Preacher, Rucker, & Hayes, 2007). For example, if the moderator is job complexity, the indirect effect between the initial variable and the outcome variable is different for different levels of job complexity. Importantly, this definition implies mediation for at least some values of the moderator, but it does not imply an overall moderation of the total effect of the initial variable on the outcome variable that is mediated (this would be a case of *mediated moderation*; Muller et al., 2005). We used another SPSS macro provided by Preacher and colleagues for moderated mediation analysis (Preacher, 2006; Preacher et al., 2007) that integrates procedures to test our Hypotheses 6 and 7 simultaneously. The macro also uses the recommended bootstrapping method to test the *conditional indirect effect* for significance at different values of the moderator variable. Our presentation of the mediation and moderated mediation results follows a standard recently set by Cole, Walter, and Bruch (2008). As recommended by Aiken and West (1991), all variables were mean-centered.

4.4 Results

4.4.1 Intercorrelations of Study Variables

Table 1 shows the descriptive statistics and intercorrelations of the study variables. Age was negatively related to focus on opportunities ($r = -.50, p < .01$). The correlations between age and work performance dimensions were generally low and non-significant, ranging from $r = -.04$ for team member performance to $r = .13$ for organizational citizenship behavior. Job complexity was positively related to focus on opportunities ($r = .20, p < .01$), as well as to overall work performance ($r = .18, p < .05$), task performance ($r = .24, p < .01$), career performance ($r = .19, p < .05$), and innovative performance ($r = .17, p < .05$). As expected, focus on opportunities had the strongest positive relationship with overall work performance ($r = .19, p < .05$), followed by smaller positive relationships with task performance ($r = .15, p < .05$), career performance ($r = .16, p < .05$), and OCB ($r = .16, p < .05$). All work performance dimensions correlated .76 or higher with overall work performance, and the correlations between the five work performance dimensions ranged from .41 to .69 ($ps < .01$).

4.4.2 Test of Hypotheses

Table 2 shows the results of the simple mediation analysis to test Hypotheses 1 to 3. According to Hypothesis 1, age is negatively related to focus on opportunities at work. As can be seen in Table 2, age had a significantly negative effect on focus on opportunities (a path: $B = -.05, SE = .01, \beta = -.54, t = -8.34, p < .01$). This finding supports Hypothesis 1.

According to Hypothesis 2, focus on opportunities at work is positively related to work performance. Table 2 shows that focus on opportunities had a significantly positive effect on overall work performance when controlling for age, age squared, and job complexity (b path: $B = .25, SE = .09, \beta = .26, t = 2.85, p < .01$). Thus, Hypothesis 2 received support. Separate analyses showed that focus on opportunities also had significantly positive effects on task performance ($B = .10, SE = .05, \beta = .19, t = 2.06, p < .05$), career performance ($B = .15, SE = .07, \beta = .20, t = 2.19, p < .05$), and OCB ($B = .21, SE = .06, \beta = .30, t = 3.28, p < .01$). Marginally significant effects of focus on opportunities were found for innovative performance ($B = .12, SE = .07, \beta = .17, t = 1.77, p = .079$) and team member performance ($B = .11, SE = .06, \beta = .18, t = 1.94, p = .054$).

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	9
1. Age	40.22	10.43	-								
2. Job complexity	3.55	.73	.14	(.72)							
3. Focus on opportunities	3.21	1.04	-.50**	.20**	(.88)						
4. Overall work performance ^a	.00	.98	.07	.18*	.19*	(.94)					
5. Task performance ^b	4.27	.56	.07	.24**	.15*	.80**	(.85)				
6. Career performance ^b	3.69	.75	.05	.19*	.16*	.76**	.53**	(.91)			
7. Innovative performance ^b	3.88	.76	.06	.17*	.13	.84**	.62**	.65**	(.91)		
8. Team member performance ^b	4.13	.61	-.04	.02	.15	.79**	.61**	.41**	.54**	(.87)	
9. Organizational citizenship behavior ^b	4.03	.72	.13	.10	.16*	.83**	.58**	.47**	.56**	.69**	(.91)

Note. Listwise $N = 168$. ^a This variable is derived from the first unrotated factor of a factor analysis of all 20 work performance items. ^b Rating provided by peer raters. Reliability estimates (α) are shown in parentheses on the diagonal.

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

Table 2

Results of Simple Mediation Analysis (Hypotheses 1 to 3)

Baron and Kenny (1986) Steps	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>		
Direct and total effects							
Step 1: Overall work performance regressed on age (<i>c</i> path)	.00	.01	.05	.60	.547		
Step 2: Focus on opportunities regressed on age (<i>a</i> path)	-.05	.01	-.54	-8.34	.000		
Step 3: Overall work performance regressed on focus on opportunities, controlling for age (<i>b</i> path)	.25	.09	.26	2.85	.005		
Step 4: Overall work performance regressed on age, controlling for focus on opportunities (<i>c'</i> path)	.02	.01	.19	2.07	.040		
Partial effects of control variables on overall work performance							
Job complexity	.14	.11	.10	1.30	.197		
Age squared	.02	.08	.02	.27	.791		
	Unstandardized value	<i>SE</i>	LL 95% CI	UL 95% CI	Standardized value	<i>z</i>	<i>p</i>
Indirect effect and significance using normal distribution							
Sobel	-.013	.005	-.023	-.004	-.14	-2.70	.007
Bootstrap results for indirect effect							
Effect	-.013	.005	-.025	-.004	-.14		

Note. Listwise $N = 168$. LL = lower limit; CI = confidence interval; UL = upper limit. Bootstrap sample size = 5,000. All predictor variables were mean-centered.

According to Hypothesis 3, focus on opportunities at work mediates the relationship between age and work performance. The lower part of Table 2 shows that age had a negative and indirect effect on overall work performance (unstandardized value = $-.013$, standardized value = $-.14$). The results of the Sobel test indicated that this indirect effect was significant (Sobel $z = -2.70$, $p < .01$). Bootstrap results confirmed the Sobel test (see Table 2), with a bootstrapped 95% confidence interval around the unstandardized indirect effect not containing zero ($-.025$, $-.004$). Hypothesis 3 was therefore also supported.

Table 2 also shows that R. M. Baron and Kenny's (1986) Step 2 and 3 requirements were fulfilled (i.e., significant a and b paths), but not the Step 1 and 4 requirements (i.e., the c path was not significant, but the c' path was significant). In fact, the results indicate that the total effect of age on overall work performance (c path: $B = .00$, $SE = .01$, $\beta = .05$, $t = .60$, $p = .547$) was closer to zero than the effect of age on overall work performance controlling for focus on opportunities (c' path: $B = .02$, $SE = .01$, $\beta = .19$, $t = 2.07$, $p < .05$). In addition, the indirect effect (standardized value = $-.14$) and the effect of age on work performance controlling for focus on opportunities ($\beta = .19$) were of opposite sign. This pattern of coefficient estimates indicates the presence of mediational suppression (MacKinnon et al., 2000; Shrout & Bolger, 2002) or what MacKinnon, Fairchild, and Fritz (2007) called "inconsistent mediation" (p. 602). Mathematically speaking, the positive relationship between age and work performance (controlling for focus on opportunities) is capturing the part of age that is uncorrelated with focus on opportunities.

The upper part of Table 3 shows the bootstrap results for the indirect effects of age on the five work performance dimensions (through focus on opportunities). The standardized values of the indirect effect ranged from $-.09$ for innovative performance to $-.16$ for OCB. For all dimensions except innovative performance, the bootstrapped confidence intervals around the unstandardized indirect effects did not include zero, suggesting that focus on opportunities also mediated the relationships between age and task, career, team member performance, and OCB. Similar to the indirect effect of age on overall work performance, all significant indirect effects of age on the specific work performance dimensions were inconsistent.

Table 4 shows the results of the simple mediation analysis to test Hypotheses 4 and 5. According to Hypothesis 4, job complexity is positively related to focus on opportunities at work. As shown in Table 4, job complexity had a significantly positive effect on focus on opportunities (a path: $B = .38$, $SE = .09$, $\beta = .27$, $t = 4.12$, $p < .01$). This supports Hypothesis 4.

Table 3

Bootstrap Results for Indirect Effects of Age and Job Complexity on Work Performance Dimensions (Through Focus on Opportunities)

Dependent variable	Unstandardized value	SE	LL 95% CI	UL 95% CI	Standardized value
Bootstrap results for indirect effects of age on work performance dimensions ^a					
Task performance	-.005	.003	-.012	-.001	-.10
Career performance	-.008	.002	-.016	-.000	-.11
Innovative performance	-.006	.005	-.016	.002	-.09
Team member performance	-.006	.003	-.014	-.000	-.10
OCB	-.011	.004	-.020	-.004	-.16
Bootstrap results for indirect effects of job complexity on work performance dimensions ^b					
Task performance	.039	.023	.003	.098	.05
Career performance	.055	.031	.003	.126	.05
Innovative performance	.046	.036	-.011	.130	.04
Team member performance	.041	.024	.004	.102	.05
OCB	.079	.032	.028	.159	.08

Note. Listwise $N = 168$. LL = lower limit; CI = confidence interval; UL = upper limit. OCB = organizational citizenship behavior. ^aControlling for job complexity and age squared. ^bControlling for age and age squared. Bootstrap sample size = 5,000. All predictor variables were mean-centered.

According to Hypothesis 5, focus on opportunities at work mediates the relationship between job complexity and work performance. The results in the lower part of Table 4 show that job complexity had a positive and indirect effect on overall work performance (unstandardized value = .094, standardized value = .07). The Sobel test indicated that this indirect effect was significant (Sobel $z = 2.34$, $p < .05$). Bootstrap results confirmed the Sobel test (see Table 4), with a bootstrapped 95% confidence interval around the unstandardized indirect effect not containing zero (.026, .208). Thus, Hypotheses 5 also received support.

Table 4

Results of Simple Mediation Analysis (Hypotheses 4 and 5)

Baron and Kenny (1986) Steps	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>		
Direct and total effects							
Step 1: Overall work performance regressed on job complexity (<i>c</i> path)	.23	.11	.17	2.23	.027		
Step 2: Focus on opportunities regressed on job complexity (<i>a</i> path)	.38	.09	.27	4.12	.000		
Step 3: Overall work performance regressed on focus on opportunities, controlling for job complexity (<i>b</i> path)	.25	.09	.26	2.85	.005		
Step 4: Overall work performance regressed on job complexity, controlling for focus on opportunities (<i>c'</i> path)	.14	.11	.10	1.30	.197		
Partial effects of control variables on overall work performance							
Age	.02	.01	.19	2.07	.040		
Age squared	.02	.08	.02	.27	.791		
Unstandardized value	<i>SE</i>	LL 95% CI	UL 95% CI	Standardized value	<i>z</i>	<i>p</i>	
Indirect effect and significance using normal distribution							
Sobel	.094	.040	.016	.172	.07	2.34	.019
Bootstrap results for indirect effect							
Effect	.094	.044	.026	.208	.07		

Note. Listwise $N = 168$. LL = lower limit; CI = confidence interval; UL = upper limit. Bootstrap sample size = 5,000. All variables were mean-centered.

Table 4 also shows that all of R. M. Baron and Kenny's (1986) requirements for complete mediation were fulfilled. Specifically, the total effect of job complexity on work performance was significant (c path: $B = .23$, $SE = .11$, $\beta = .17$, $t = 2.23$, $p < .05$), fulfilling the Step 1 requirement. Job complexity was significantly related to focus on opportunities (a path), and focus on opportunities was significantly related to work performance (b path: $B = .25$, $SE = .09$, $\beta = .26$, $t = 2.85$, $p < .01$), fulfilling the Step 2 and 3 requirements. Finally, the relationship between job complexity and work performance became smaller and non-significant when focus on opportunities was controlled (c' path: $B = .14$, $SE = .11$, $\beta = .10$, $t = 1.30$, $p = .197$), fulfilling the Step 4 requirement. Thus, according to R. M. Baron and Kenny's (1986) approach, we found that focus on opportunities completely mediated the relationship between job complexity and overall work performance.

The lower part of Table 3 shows the bootstrap results for the indirect effects of job complexity on the five work performance dimensions. The standardized values of the indirect effect ranged from .04 for innovative performance to .08 for organizational citizenship behavior. For all work performance dimensions except innovative performance, the bootstrapped confidence intervals around the unstandardized indirect effects did not include zero, suggesting that focus on opportunities also mediated the relationships between job complexity and task, career, team member performance, and OCB.

The analyses further showed that focus on opportunities partially mediated the relationship between job complexity and task performance, as the total effect of job complexity on task performance (c path: $B = .18$, $SE = .06$, $\beta = .24$, $t = 3.12$, $p < .01$) decreased in absolute size but remained significant when focus on opportunities was controlled (c' path: $B = .14$, $SE = .06$, $\beta = .19$, $t = 2.37$, $p < .05$). Focus on opportunities completely mediated the relationship between job complexity and career performance, as the total effect (c path: $B = .19$, $SE = .08$, $\beta = .19$, $t = 2.40$, $p < .05$) became smaller and non-significant when focus on opportunities was controlled (c' path: $B = .14$, $SE = .08$, $\beta = .13$, $t = 1.64$, $p = .102$). The effect of job complexity on team member performance when controlling for focus on opportunities (c' path: $B = -.02$, $SE = .07$, $\beta = -.02$, $t = -.28$, $p = .78$) was of the opposite sign as the indirect effect, suggesting inconsistent mediation. Finally, the total effect of job complexity on OCB was small and non-significant (c path: $B = .09$, $SE = .08$, $\beta = .09$, $t = 1.11$, $p = .267$) and became even smaller when controlling for focus on opportunities (c' path: $B = .01$, $SE = .08$, $\beta = .01$, $t = .09$, $p = .931$). This pattern of results can neither be described as inconsistent mediation nor using the complete and partial mediation

terminology of R. M. Baron and Kenny (1986; Andrew F. Hayes, personal communication, March 2009). Nevertheless, the results indicated that an indirect effect of job complexity on OCB through focus on opportunities exists.

Table 5 presents the results of the moderation and moderated mediation analyses to test Hypotheses 6 and 7. According to Hypothesis 6, the negative relationship between age and focus on opportunities at work is weaker for employees in high-complexity jobs than for employees in low-complexity jobs. The upper part of Table 5 shows that the interaction between age and focus on opportunities significantly predicted focus on opportunities ($B = .02$, $SE = .01$, $\beta = .14$, $t = 2.17$, $p < .05$). To fully support Hypothesis 6, the form of this interaction effect should also show the hypothesized pattern. Therefore, we followed the procedures recommended by Aiken and West (1991) and computed the simple slopes of regressing focus on opportunities at work on age at high (i.e., one standard deviation above the mean) and low (i.e., one standard deviation below the mean) values of job complexity. Consistent with our expectation, the simple slope for employees in high-complexity jobs ($B = -.04$, $SE = .01$, $\beta = -.39$, $t = -4.05$, $p < .01$) was weaker than the simple slope for employees in low-complexity jobs ($B = -.07$, $SE = .01$, $\beta = -.66$, $t = -7.78$, $p < .01$). The significant interaction effect is graphically displayed in Figure 2. Together, these findings support Hypothesis 6.

According to Hypothesis 7, job complexity moderates the negative and indirect effect of age on work performance (through focus on opportunities), such that focus on opportunities mediates the indirect effect only when job complexity is low but not when it is high. Although the results so far showed that age interacted with job complexity in predicting focus on opportunities, and that focus on opportunities mediated the relationship between age and overall work performance, they do not directly assess the conditional indirect effect model suggested in Figure 1 and proposed in Hypothesis 7. Therefore, we examined the conditional indirect effect of age on work performance (through focus on opportunities) at three values of job complexity (i.e., at the mean and at one standard deviation below and above the mean). The results, shown in the middle part of Table 5, indicated that the conditional indirect effect was weaker at high levels of job complexity than at low levels of job complexity. Specifically, the standardized conditional indirect effect was $-.19$ at one standard deviation below the mean of job complexity ($p < .01$), $-.15$ at the mean of job complexity ($p < .01$), and $-.11$ at one standard deviation above the mean of job complexity ($p < .05$).

Table 5

Results of Moderation and Moderated Mediation Analyses (Hypotheses 6 and 7)

Predictor variable	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
DV: Focus on opportunities (Mediator variable model)					
Constant	-.02	.07		-.30	.762
Age squared	-.10	.07	-.09	-1.42	.156
Age	-.05	.01	-.52	-8.13	.000
Job Complexity	.36	.09	.25	3.93	.000
Age * Job complexity	.02	.01	.14	2.17	.031
DV: Overall work performance (Dependent variable model)					
Constant	.02	.07		.28	.783
Age squared	.04	.08	.04	.48	.633
Age	.02	.01	.18	2.08	.039
Job complexity	.15	.11	.11	1.39	.165
Age * Job complexity	-.02	.01	-.15	-1.94	.054
Focus on opportunities	.28	.09	.29	3.16	.002
Job Complexity	Unstandardized boot indirect effect	Boot <i>SE</i>	Standardized boot indirect effect	Boot <i>z</i>	Boot <i>p</i>
Conditional indirect effect at job complexity = $M \pm 1 SD$					
- 1 <i>SD</i> (-.73)	-.018	.007	-.19	-2.68	.007
<i>M</i> (.00)	-.014	.005	-.15	-2.65	.008
+ 1 <i>SD</i> (.73)	-.011	.005	-.11	-2.23	.026
Job Complexity ^a	Unstandardized boot indirect effect	Boot <i>SE</i>	Standardized boot indirect effect	Boot <i>z</i>	Boot <i>p</i>
Conditional indirect effect at range of values of job complexity (standardized scale)					
-1.84	-.022	.008	-.22	-2.60	.009
-1.36	-.020	.007	-.20	-2.65	.008
-.88	-.018	.007	-.18	-2.69	.007
-.41	-.016	.006	-.17	-2.69	.007
.07	-.014	.005	-.15	-2.64	.008
.55	-.012	.005	-.13	-2.49	.013
1.02	-.010	.005	-.11	-2.21	.027
1.50	-.009	.005	-.09	-1.81	.071
1.98	-.007	.005	-.07	-1.34	.180

Note. Listwise $N = 168$. DV = dependent variable. ^a Range of values represent an abbreviated version of the output provided by the macro. Bootstrap sample size = 5,000. All variables were mean-centered.

Figure 2

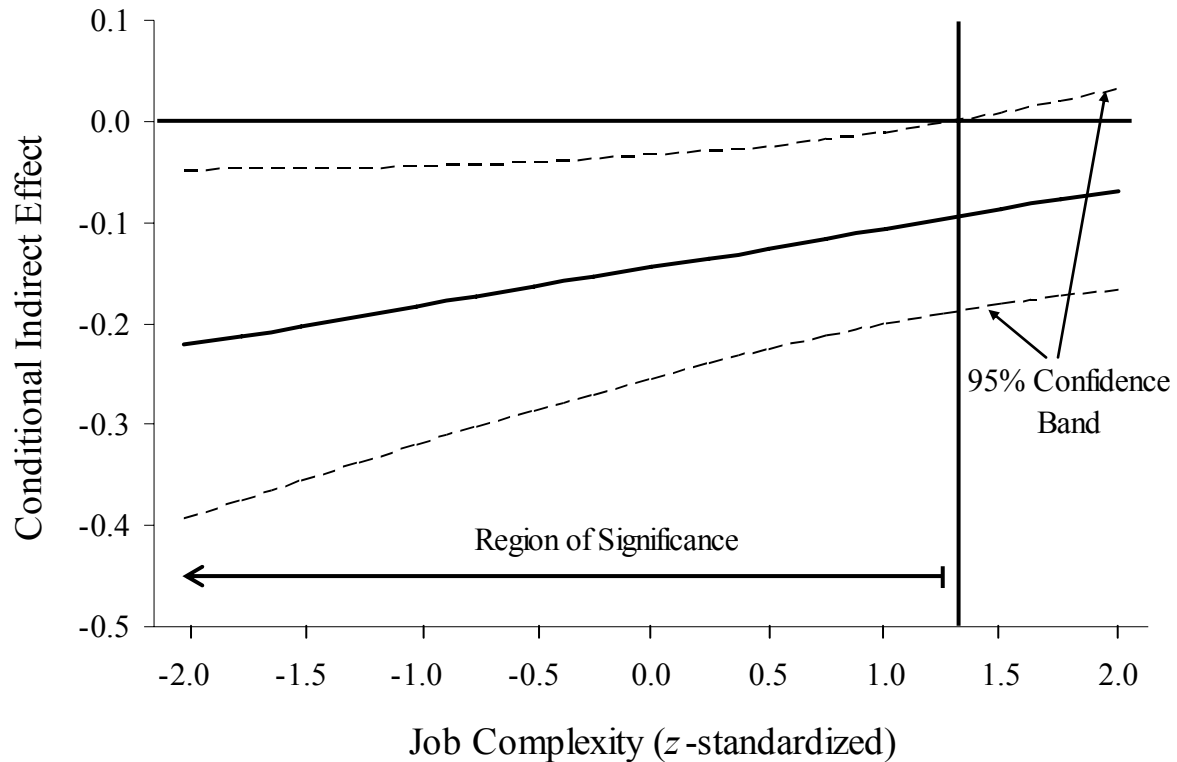
Focus on Opportunities at Work Predicted by Age Moderated by Job Complexity



In addition, Preacher et al.'s (2007) moderated mediation SPSS macro computes conditional indirect effects at various values of the moderator variable that fall within the range of the data. This output, shown in the lower part of Table 5, allows the identification of job complexity values for which the conditional indirect effect becomes statistically significant (i.e., the regions of significance; Preacher et al., 2007). The results showed that the conditional indirect effect of age on work performance (through focus on opportunities) was significant at the .05 alpha level for any value lower than about 1.30 on a z -standardized measure of job complexity (i.e., $M = 0$, $SD = 1$). The standardized conditional indirect effect, together with a 95%-confidence band and the region of significance, is shown in Figure 3 (see Preacher et al., 2007, for instructions on how to create such plots). The horizontal line in Figure 3 represents an indirect effect of zero, and the vertical line represents the boundary of the region of significance. For example, the results in the middle part of Table 5 and Figure 3 both indicate that the standardized indirect effect of age on work performance (through focus on opportunities) at the mean of job complexity is $-.15$ and significant (i.e., the 95%-confidence band does not include zero). Together, these results support Hypothesis 7.

Figure 3

Standardized Conditional Indirect Effect of Age on Work Performance (Through Focus on Opportunities) for Different Values of Job Complexity with a 95%-Confidence Band



Finally, Table 6 shows the results of the separate moderated mediation analyses for the five work performance dimensions. As can be seen in the lower part of Table 6, the conditional indirect effects of age on all five work performance dimensions became weaker with increasing levels of jobs complexity. At almost two standard deviations above the mean of job complexity (+1.98 *SD*, as provided by the SPSS macro), none of the conditional indirect effects of age on work performance dimensions were significant (standardized values between -.05 and -.08). At almost two standard deviation below the mean of job complexity (-1.84 *SD*, as provided by the SPSS macro), the conditional indirect effects of age on task and career performance (both -.17, $p < .05$) as well as OCB (-.26, $p < .01$) were significant, whereas the conditional indirect effects of age on innovative performance (-.16) and team member performance (-.15) were not significant.

Table 6

Results of Moderated Mediation Analyses for Work Performance Dimensions

Predictor variable	Task performance			Career performance			Innovative performance			Team member performance			Organizational citizenship behavior		
	<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	<i>B</i>	<i>SE</i>	β
Constant	.01	.04		.01	.06		.02	.06		.01	.05		.02	.05	
Age squared	.04	.04	.07	.02	.06	.03	-.02	.06	-.03	.03	.05	.05	.03	.05	.04
Age	.01	.01	.13	.01	.01	.13	.01	.01	.12	.00	.01	.06	.02	.01	.27**
Job complexity	.15	.06	.20*	.14	.08	.14	.13	.08	.12	-.02	.07	-.02	.01	.08	.01
Age * Job complexity	-.01	.01	-.14	-.01	.01	-.08	-.02	.01	-.17*	-.00	.01	-.06	-.01	.01	-.15
Focus on opportunities	.12	.05	.22*	.16	.07	.22*	.14	.07	.20*	.11	.06	.20*	.23	.06	.33**
Job Complexity	Ustd boot	Boot <i>SE</i>	Std boot	Ustd boot	Boot <i>SE</i>	Std boot	Ustd boot	Boot <i>SE</i>	Std boot	Ustd boot	Boot <i>SE</i>	Std boot	Ustd boot	Boot <i>SE</i>	Std boot
Conditional indirect effect at job complexity = $M \pm 1 SD$															
- 1.84 <i>SD</i> (-1.35)	-.009	.004	-.17*	-.013	.006	-.17*	-.011	.007	-.16	-.009	.005	-.15	-.018	.006	-.26**
- 1 <i>SD</i> (-.73)	-.008	.004	-.15*	-.010	.005	-.15*	-.009	.006	-.13	-.008	.004	-.13	-.015	.005	-.22**
<i>M</i> (.00)	-.006	.003	-.11*	-.008	.004	-.11*	-.007	.005	-.11	-.006	.003	-.10	-.012	.004	-.17**
+ 1 <i>SD</i> (.73)	-.004	.002	-.08	-.006	.003	-.08	-.005	.004	-.08	-.004	.003	-.07	-.009	.004	-.13*
+ 1.98 <i>SD</i> (1.45)	-.003	.002	-.05	-.004	.003	-.05	-.004	.003	-.05	-.003	.002	-.05	-.006	.004	-.08

Note. Listwise $N = 168$. Ustd boot = unstandardized conditional boot indirect effect. Boot *SE* = standard error of unstandardized conditional indirect effect. Std boot = standardized conditional boot indirect effect. Bootstrap sample size = 5,000. All predictor variables were mean-centered. * $p < .05$. ** $p < .01$.

4.5 Discussion

4.5.1 Summary of Findings

An increasingly aging workforce requires that researchers and practitioners arrive at a better understanding of the role of age in the work context, particularly with regard to important outcomes such as work performance (Kanfer & Ackerman, 2004; Warr, 2001). On a bivariate level, meta-analyses showed that age is largely unrelated to task, training, and innovative performance, but positively related to noncore work performance dimensions such as OCB (Ng & Feldman, 2008). However, the mediators of the age-performance relationship have so far not received much research attention. In this study, we tested a moderated mediation model of the relationships between age, job complexity, and work performance. Specifically, we investigated the central variable of focus on opportunities at work (Zacher & Frese, in press) as a mediator of the relationships between age and work performance and between job complexity and work performance. In addition, we examined whether high levels of job complexity buffer the negative effect of age on focus on opportunities and weaken the negative and indirect effect of age on work performance through focus on opportunities. The three main results can be summarized and interpreted as follows.

First, our results showed that focus on opportunities acted as a mediator of the relationship between age and overall work performance. Previous research indicated that focus on opportunities declines with age (Zacher & Frese, in press), but empirical evidence that focus on opportunities is also associated with work performance was still missing (Seijts, 1998). Based on the literature on possible selves (Markus & Nurius, 1986), we suggest that a strong focus on opportunities at work fulfills two important functions. First, employees who believe that they have many future possibilities should also be more motivated to invest effort, be persistent, and apply effective work strategies in order to attain these possibilities (Cross & Markus, 1994). This should in turn result in better work performance. Second, perceived future possibilities serve as a standard against which employees can evaluate their current situation and performance (Cross & Markus, 1994). A strong focus on future opportunities is more likely to be associated with a high perceived discrepancy between present and future states; employees are probably motivated to reduce this discrepancy through additional effort, persistence, and application of relevant work strategies. Again, this should increase their work performance. Our finding is consistent with previous research from social psychology showing that positive thinking about the future has generally positive effects on motivation and performance (Aspinwall, 2005; Oettingen & Mayer, 2002).

It is important to note that the negative and indirect effect of age on overall work performance through focus on opportunities was significant even though the total, bivariate relationship between age and work performance was close to zero and non-significant. This indicates that additional, competing age-related mediators also influence work performance, leading to a small overall association between age and work performance (Shrout & Bolger, 2002). Our findings nevertheless indicate that focus on opportunities by itself is an important negative age-related factor associated with work performance. Specifically, when focus on opportunities was held constant in the regression analysis, the relationship between age and overall work performance became positive and significant. This suppression effect suggests that, given a younger and an older employee with the same level of focus on opportunities, the older employee shows better work performance than the younger employee. One possible explanation may be that perceptions of work-related opportunities are more motivating for older employees because they are not taken for granted. Another possible explanation may be that older employees additionally possess more work-related knowledge and experience (Kanfer & Ackerman, 2004) and are more conscientious than younger employees (Roberts et al., 2006), which also enhance work performance. It may be tempting to infer from these results that employees who maintain high levels of focus on opportunities with increasing age also show improvements in their work performance with age; however, longitudinal research is needed to definitely resolve this issue.

Our study further showed that focus on opportunities at work also mediated the relationships between age and four out of five more specific work performance dimensions (i.e., task, career, team member performance, and OCB). Consistent with the compatibility principle from attitude theory (Ajzen & Fishbein, 1977) and research on the bandwidth-fidelity dilemma (Ones & Viswesvaran, 1996), we proposed that focus on opportunities at work as a rather general belief should be more strongly related to an overall work performance factor than to any of the more specific work performance dimensions. This assumption was supported by the bivariate relationships between the variables. However, when controlling for age, age squared, and job complexity in the regression analyses, focus on opportunities displayed only a stronger relationship with overall work performance than with task, career, innovative, and team member performance. In contrast, the relationship between focus on opportunities and OCB was stronger than the relationship between focus on opportunities and overall work performance. This finding may possibly be explained by the discretionary nature of behaviors subsumed under the OCB concept (Bateman & Organ,

1983). Employees might perceive more future opportunities for themselves in terms of less strictly prescribed work behaviors such as helping others or the organization compared to more narrowly defined roles such as task and career performance. The finding that focus on opportunities did not significantly mediate the relationship between age and innovative performance can probably be explained with low statistical power to detect this mediation effect, since the regression analyses indicated that focus on opportunities was also positively related to innovative performance when controlling for age, age squared, and job complexity. In addition, the absolute size of the indirect effect of age on innovative performance through focus on opportunities was not much smaller than the other indirect effects.

Second, we found that focus on opportunities also mediated the relationships between job complexity and overall work performance as well as between job complexity and task, career, team member performance, and OCB. These findings suggest that employees in more complex jobs not only have more possibilities at their work (e.g., to make difficult decisions, to use their knowledge and skills, to learn new things), but they also believe to have more work-related possibilities in their personal future. This finding may be explained by research showing that employees use perceptions of their present possibilities to infer their personal possibilities in the future (Markus & Nurius, 1986; Markus & Wurf, 1987). In addition, high job complexity is associated with enhanced cognitive and emotional functioning (Frese, 1982). As employees are aware of their own abilities (Ackerman et al., 2002), they may infer their work-related opportunities from these perceptions. In turn, focus on opportunities is positively associated with work performance. These findings add to the growing research literature on alternative mediators of the relationships between work characteristics such as job complexity and work performance (Parker et al., 2001).

Finally, we showed that high levels of job complexity weakened the negative and indirect effect of age on overall work performance (through focus on opportunities). In other words, employees in high complexity jobs were better able to maintain a focus on opportunities at higher ages, which in turn was positively associated with work performance. Again, similar results were found for the more specific work performance dimensions of task and career performance as well as OCB, but not for innovative and team member performance. These findings extend previous research by Zacher and Frese (in press), who showed that job complexity buffered the negative relationship between age and focus on opportunities. It seems that job complexity also contributes to work performance by buffering the negative and indirect effect of age on work performance through focus on opportunities.

4.5.2 Limitations

This study has a number of limitations. First, cross-sectional designs do not allow investigating intraindividual changes over time (i.e., aging). It is therefore possible that the indirect effects of age on work performance dimensions are due to differences between birth cohorts or selection effects (P. B. Baltes & Nesselroade, 1979). Specifically, the younger employees in our sample might have had a higher focus on work-related opportunities than their older counterparts because they started their jobs in a more globalized economy that expects employees to continuously identify new opportunities (e.g., career opportunities) for themselves (Frese, 2000; Smola & Sutton, 2002). In addition, it is possible that the older employees in our sample represent a selected group as those employees with lower health or work motivation may have left their organizations before reaching their 50's or 60's (i.e., the "healthy worker effect," Frese & Semmer, 1986). However, there is probably no other area of organizational research in which it is more complicated to conduct longitudinal studies than in the area of aging (Ng & Feldman, 2008). For example, in their recent meta-analysis on the relationships between age and different work performance dimensions, Ng and Feldman (2008) reported that only 12% of the studies included were longitudinal in nature; the time periods investigated in these studies had a range from two months to five years, with an average time period of only 11 months. Warr, Miles, and Platts (2001) suggested that the study of cross-sectional differences between age groups present in the current workforce may nevertheless be important. For example, cross-sectional studies such as the current one show that older employees in general do not perform worse than younger employees on several different work performance dimensions. This knowledge can help to defy negative age stereotypes still present in many organizations (Hassell & Perrewe, 1995) and society in general (Kite, Stockdale, Whitley, & Johnson, 2005).

It should also be noted that the true nature of relationships between job complexity, focus on opportunities, and work performance is probably more complex than can be captured by our relatively simple input-process-output model (Figure 1). Researchers have suggested that individual and context characteristics interact over time in influencing work performance, and that work performance at one point in time influences work performance at a later point in time (Hofmann et al., 1992; Sonnentag & Frese, in preparation; Zickar & Slaughter, 1999). Thus, the sequence of events in our model may be better represented by a cyclic model. Specifically, age and job complexity might interact in influencing subsequent work performance through focus on opportunities, and work performance in turn might again

influence employees' focus on opportunities and work performance at a later point in time. Unfortunately, our cross-sectional data does not permit us to test such a cyclic input-mediator-output-input model (Ilgen, Hollenbeck, Johnson, & Jundt, 2005).

Second, another potential limitation of this study is that we did not propose and assess additional mediators of the relationship between age and work performance. Our results showed that when focus on opportunities at work was held constant, the relationship between age and work performance became positive, suggesting the presence of additional, positive age-related mediators. For example, two factors that are positively related to both age and work performance are experiential knowledge and conscientiousness (Kanfer & Ackerman, 2004; Roberts et al., 2006). However, the number of further potential mediators of the complex relationship between age and work performance is probably quite large (Warr, 2000, 2001); also, several moderating influences (e.g., work and rater characteristics) need to be taken into account (Ferris, Judge, Chachere, & Liden, 1991; Warr, 1993). Based on previous research, the goal of this study was to test a specific moderated mediation model including the central variable of focus on opportunities at work (Zacher & Frese, in press). Given recent computational advances that allow the test of multiple mediator models (Preacher & Hayes, 2008), future research needs to investigate several competing mediators of the age-performance relationship, including focus on opportunities.

Third, the subjective nature of the job complexity and work performance measures employed in this study could be criticized. However, previous research has shown that there is generally good agreement between self-report ratings of job complexity and observer ratings as well as archival data (Morgeson & Humphrey, 2006; Spector, 1992). For the job complexity measure used in this study, research showed high agreement between job incumbents' ratings and ratings of external observers (Frese et al., 1996; Semmer, 1984). In addition, researchers have argued that peer ratings of work performance have several advantages. They are reliable and valid indicators of work performance (Harris & Schaubroeck, 1988), have a high degree of acceptance among employees (McEvoy & Buller, 1987), and minimize the chance of common method bias (P. M. Podsakoff et al., 2003). In fact, Wexley and Klimoski (1984) suggested that peer ratings are "potentially the most accurate judgments of employee behavior" (p. 60). Nevertheless, future research should also investigate the relationships proposed in this study with more objective indicators.

4.5.3 Implications for Future Research

Based on this study's results, we suggest that there are several possible avenues for future research. First, in spite of the overall small or zero relationships between age and work performance dimensions, future research should continue to identify mediators of these relationships and investigate them simultaneously in more comprehensive, multiple mediation models (Preacher & Hayes, 2008). For example, such models might include age-related cognitive abilities such as fluid and crystallized intelligence (P. B. Baltes, Staudinger et al., 1999; Kanfer & Ackerman, 2004), personality traits such as conscientiousness and emotional stability (Roberts et al., 2006; Warr et al., 2001), as well as motivational variables such as motivation to learn (Colquitt et al., 2000) and focus on opportunities at work (Zacher & Frese, in press).

Second, it is important to identify the mediators of the relationship between age and focus on opportunities. In this study, we suggested that both age-related norms and constraints (e.g., retirement expectations, support for career development) as well as decreases in personal resources (e.g., occupational mobility, learning motivation) may contribute to a lower focus on opportunities at higher ages. Future research could take a qualitative approach and ask both younger and older employees about their specific work-related future opportunities. In addition, this research should ask which factors employees consider responsible for possible changes in their focus on opportunities over time.

Third, it would be interesting to examine the mediating mechanisms of the positive relationship between focus on opportunities and work performance. Based on possible selves theory (Markus & Nurius, 1986), we suggested that a strong focus on opportunities serves both a motivating as well as an evaluative function. Research needs to investigate the links between individuals' beliefs that they have many opportunities, their motivation to attain these opportunities, and subsequent work performance. In addition, research needs to investigate whether individuals with a strong focus on opportunities perceive a higher discrepancy between their current status and their possible status, and whether this discrepancy is linked to certain emotions and efforts in order to reduce the discrepancy.

Fourth, future research needs to investigate whether focus on opportunities is a unique predictor of work performance that explains variance beyond important and more established predictor variables such as general mental ability and conscientiousness (Viswesvaran & Ones, 2000). For example, Judge, Jackson, Shaw, Scott, and Rich (2007) recently showed

that self-efficacy (i.e., individuals' beliefs in their capabilities to attain certain outcomes; Bandura, 2000) explained relatively little variance in work performance beyond general mental ability, work experience, and personality traits. These studies need to take age as an important predictor of focus on opportunities into account. It may also be possible that focus on opportunities functions as a cognitive-motivational mediator variable between individuals' abilities, personality traits, and work performance.

Fifth, future research might investigate relationships between focus on opportunities and other conceptualization of work performance than the one by Welbourne et al. (1998) used in this study. For example, it would seem plausible that individuals with a strong focus on future work-related opportunities tend to show less counterproductive performance, that is, work behaviors that harm the organization (e.g., Rotundo & Sackett, 2002). In addition, Griffin, Neil, and Parker (2007) recently suggested a taxonomy with adaptive performance and proactive behavior as major work performance components besides proficiency of work behaviors. It may be that individuals who believe to have many work-related options adapt better to changing circumstances and also show more proactive behavior at work.

A final issue that may be worthy of further investigation concerns potential negative effects of high job complexity. Whereas most of the work design literature views job complexity as a highly desirable work characteristic leading to positive motivational outcomes (Morgeson & Humphrey, 2006), some authors have suggested that there can be too much job complexity. For example, Frese (1987b) argued that jobs that require too many decisions might lead to lower performance due to an overload of processing capacity. Evidence for this proposition comes primarily from studies of occupational groups with heavy demands on fluid intelligence, such as air traffic controllers or mathematicians (Kanfer & Ackerman, 2004; Wood, 1986). Researchers have suggested that job complexity includes both the motivational implications of work characteristics, such as knowledge use, development, and transfer, as well as the cognitive demands of fast information processing (Farr & Ringseis, 2002). However, these demands on fluid intelligence may not be extreme in most jobs, because work is rarely conducted at the limits of information processing capacity (Kanfer & Ackerman, 2004). Focusing on occupational well-being, Grant, Christianson, and Price (2007) recently argued that there may also be well-being trade-offs of well-intentioned work design practices. For example, although increasing jobs' complexity often leads to higher job satisfaction, the challenges of more complex work may also lead to increases in physical strain, fatigue, and health complaints (Campion & McClelland, 1991, 1993).

4.5.4 Implications for Theory and Practice

The findings of the present study contribute to theory development in several ways. First, they suggest that focus on opportunities at work should be included as an important age-related, cognitive-motivational mediator in theoretical models of age and work performance. More comprehensive models should include both positive and negative age-related mediators, and conceptualize work performance both as a higher-order as well a multidimensional construct with several specific dimensions. In addition, these models should encompass potential boundary conditions of these mediation effects, such as characteristics of the work context (e.g., job complexity).

Second, this study contributes to the literature on work design by identifying focus on opportunities at work as an additional, age-related mediator of the relationship between job complexity and work performance. Recently, researchers have called for theoretical extensions of work design models (Parker et al., 2001) and for the incorporation of a temporal dimension into these models (Fried et al., 2007). An important difference between focus on opportunities at work and other mediators of the job complexity-work performance relationship identified so far (e.g., self-efficacy, Speier & Frese, 1997) is that focus on opportunities is negatively related to age (Zacher & Frese, in press). Thus, future models of work design and work performance should not only take focus on opportunities, but also employee age and other time-related variables such as work experience and organizational tenure (Sturman, 2003) into account.

The results of this study also have a number of practical implications for organizational practitioners and policy makers facing increasingly aging workforces. First, practitioners should more strongly take the roles of age and age-related resources and preferences into account when designing jobs (Farr & Ringseis, 2002; Griffiths, 1999). Increasing the degree of complexity at work seems to be important for employees at all ages (Fay & Kamps, 2006), but it may be particularly important as employees grow older, because high job complexity helps to maintain a focus on work-related opportunities. A strong focus on opportunities in turn is associated with better work performance. High work performance is not only a desirable outcome for organizations, but also for employees as it increases work-related well-being and leads to financial rewards (Sonnentag & Frese, 2002). Thus, organizations could provide their older employees with more possibilities to make full use of their experiential knowledge, make challenging decisions, and to learn about new technologies and procedures. Since future labor markets will depend more strongly on older

employees (Hedge et al., 2006), and more and more older individuals consider working after retirement a viable option for themselves (Shultz, 2003; Wang, Zhan, Liu, & Shultz, 2008), work design interventions that increase job complexity should be particularly important.

Second, practitioners need to find ways to increase and maintain employees' focus on opportunities at work even when it is not possible to increase jobs' complexity. One possible way to do so could be to provide not only younger, but also middle-aged and older employees with adequate training and development opportunities as well as vertical and horizontal career options (Hall & Mirvis, 1995; Mirvis & Hall, 1996; Sterns & Subich, 2002). In addition, organizations could create work possibilities for employees after their official retirement age, such as bridge employment (Dendinger, Adams, & Jacobson, 2005; B. Griffin & Hesketh, 2008) or organizational mentor and ambassador roles (Calo, 2005). In addition, organizations might consider frequently monitoring their employees' focus on opportunities in organization-wide surveys. In contrast to more established, rather passive indicators of work-related well-being such as job satisfaction and organizational commitment (Harrison et al., 2006; Ledford, 1999), focus on opportunities at work may be a better criterion of successful aging in the workplace because it involves employees' perceptions of continued growth, development, and advancement (Hansson et al., 1997; Robson et al., 2006; Ryff, 1989).

Finally, we suggest that older employees' focus on opportunities at work might be enhanced if policy makers took actions to provide older individuals with more discretion and flexible options regarding their personal work-related future. This includes that mandatory retirement ages, which – in contrast to the United States – are still prevailing in most European countries, are abolished in favor of more flexible and individualized retirement regulations (Curl & Hokenstad, 2006; Dychtwald, Erickson, & Morison, 2004). Research indicates that many older individuals, particularly employees in high-complexity jobs, want to keep working and to stay involved with their organizations at higher ages (Calo, 2005; B. Griffin & Hesketh, 2008; Noonan, 2005; S. J. Peterson & Spiker, 2005). More flexible retirement options may help these individuals to maintain a focus on work-related opportunities at higher ages and also contribute indirectly to their work performance.

5 Business Owners' Age, Focus on Opportunities, and Venture Growth: The Role of Mental Health⁶

Business owners' age is a neglected variable in entrepreneurship research. This is surprising, given that an early literature review emphasized the potential importance of age for understanding entrepreneurial motivation and behavior (Hisrich, 1990). In addition, population aging in most Western developed countries (J. E. Cohen, 2003) and some developing countries (e.g., China, Shrestha, 2000) is assumed to have significant effects on entrepreneurial activities over the next decades (Bönte, Falck, & Heblich, 2007; Shane, 1996). Longer and healthier lives, shrinking retirement security, and continued personal ambitions also make later-life entrepreneurship an increasingly attractive option for many older individuals (de Bruin & Firkin, 2003; Miner, 1999; Rogoff, 2007). Yet most studies in the field have so far treated age, if at all, as a control variable. One notable exception is a recent theoretical article by Lévesque and Minniti (2006), who suggested that age is generally negatively related to entrepreneurial attitudes and activity. However, empirical research on the role of age in entrepreneurship, especially on the processes linking age to important business outcomes, is still sparse. Our goal in this study, therefore, is to empirically investigate a model which proposes that two psychological factors – focus on opportunities and mental health – can add to a better understanding of the relationship between business owners' age and venture growth. We concentrate on the entrepreneurial outcome of venture growth because it is considered an important indicator of venture success and the ultimate goal of entrepreneurial efforts (Covin & Slevin, 1997; Stevenson & Jarillo, 1990).

To ensure permanent venture growth, business owners continuously have to identify new business opportunities. Identifying and exploiting business opportunities offers the chance to introduce innovative products, services, or processes to the market in order to make entrepreneurial profit and grow the business (Eckhardt & Shane, 2003; Gaglio, 2004; Shane, 2003). In recent years, the entrepreneurship literature identified several factors that are related to opportunity identification, such as human capital (Davidsson & Honig, 2003; Shane, 2000), social capital (Davidsson & Honig, 2003; Ozgen & Baron, 2007), and active search (Fiet, 2002; Ucbasaran, Westhead, & Wright, 2008). In addition to these factors, researchers

⁶ I thank Michael Gielnik for his ideas and helpful comments that contributed to this chapter.

have suggested that placing a stronger emphasis on entrepreneurs' cognitions is a promising approach to understand why some individuals but not others recognize business opportunities and why some entrepreneurs are more successful than others (R. A. Baron, 2004; Shane & Venkataraman, 2000). Entrepreneurial cognitions are defined as "knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth" (Mitchell, Busenitz et al., 2002, p. 97). According to Mitchell and his colleagues (Mitchell, Busenitz et al., 2002; Mitchell et al., 2004; Mitchell et al., 2007), the core of the cognitive approach to entrepreneurship can be summarized in one central question: "How do entrepreneurs think?" (Mitchell et al., 2007, p. 2).

With this study, we seek to contribute to the entrepreneurship literature by addressing the most basic question that follows from the central question of entrepreneurial cognition research: How do entrepreneurs think *about opportunities* and how does this affect venture growth? How an individual thinks about opportunities, particularly future opportunities, is captured by the concept of focus on opportunities (Cate & John, 2007; Zacher & Frese, in press). Individuals with a strong focus on opportunities believe that the future holds many opportunities that they can still pursue, whereas individuals with a weak focus on opportunities lack a belief in future opportunities. Individuals with a weak focus on opportunities do not deny the general existence of opportunities, but they do not perceive opportunities for *themselves* (Cate & John, 2007). In addition, it is important to note that focus on opportunities does not imply an active or passive approach towards opportunities. Believing that the future holds many opportunities does not mean the individual thinks that opportunities will arise like a sudden insight without any own efforts. Individuals with a strong focus on opportunities simply acknowledge the potential existence of future opportunities. In contrast, people with a weak focus on opportunities believe that their future does not hold any opportunities.

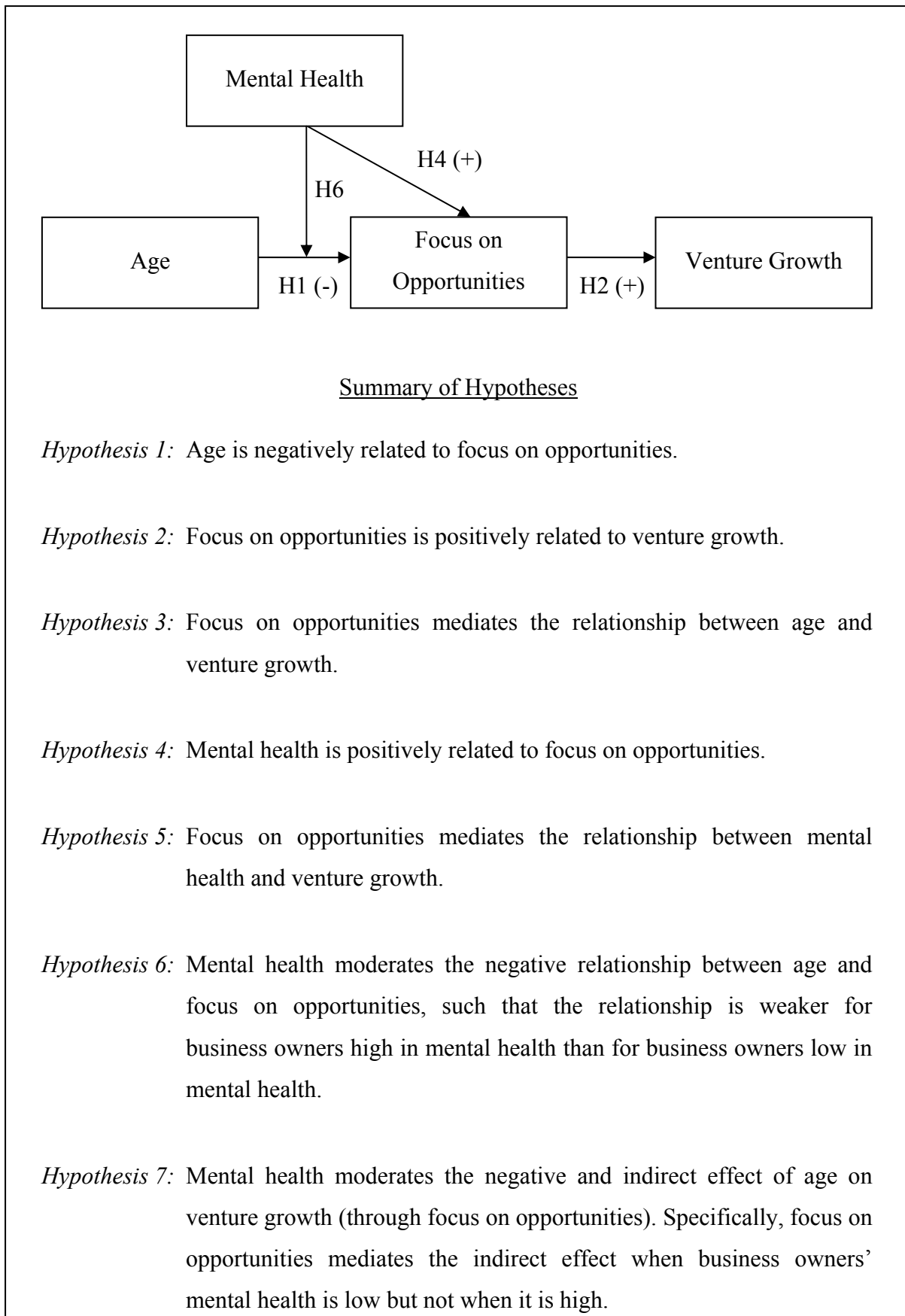
Focus on opportunities changes over time (Cate & John, 2007; Zacher & Frese, in press). Using both cross-sectional and longitudinal data, Cate and John (2007) found that young adults had a stronger focus on opportunities than older adults. Zacher and Frese (in press) investigated focus on opportunities in the occupational context and also found that it decreased linearly with age. We further seek to contribute to the entrepreneurship literature with this study by investigating the relationship between business owners' age and focus on opportunities. Particularly in small businesses, where the business founder is also the manager of the company and, in most cases, remains in this function until retirement, age and

change over time due to aging are important issues. In these cases, business owners influence their companies over several decades. Since business managers are central to the companies' strategic orientation and performance (Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984; MacKey, 2008), any changes in their individual characteristics, for example due to their aging, should influence performance and growth of their businesses (Frese, 2007; Michel & Hambrick, 1992; Rauch & Frese, 2007).

In contrast to Lévesque and Minniti (2006), who proposed that opportunity identification and exploitation generally decline with increasing age, we suggest that a decrease in business owners' focus on opportunities with increasing age is not inevitable. Specifically, we argue that mental health is a particularly important personal resource at higher ages that helps older business owners to maintain a focus on opportunities. While many different definitions of mental health exist, a widely accepted one describes it as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (World Health Organization, 2004, p. 12). By investigating the interplay between business owners' mental health, age, and focus on opportunities in predicting venture growth, we follow recent calls in the literature to study the potentially important role of mental health in entrepreneurship (Hisrich, Langan-Fox, & Grant, 2007).

Our theoretical model and a summary of our hypotheses are depicted in Figure 1. Briefly, we propose that age is negatively related to focus on opportunities (Hypothesis 1), and that focus on opportunities in turn is positively related to venture growth (Hypothesis 2). Thus, focus on opportunities mediates the relationship between age and venture growth (Hypothesis 3; negative indirect effect). Mental health is positively related to focus on opportunities (Hypothesis 4), and focus on opportunities mediates the relationship between mental health and venture growth (Hypothesis 5; positive indirect effect). In addition, we propose that mental health moderates the negative relationship between age and focus on opportunities, such that the relationship is weaker for business owners high in mental health than for business owners low in mental health (Hypothesis 6). Finally, we suggest that mental health moderates the strength of the negative and indirect effect of age on venture growth (through focus on opportunities), such that the indirect effect is weaker for business owners high in mental health than for business owners low in mental health (Hypothesis 7; conditional indirect effect). In the following section, we provide further theoretical justifications for our hypotheses.

Figure 1

The Proposed Model and Summary of Hypotheses

5.1 Development of Hypotheses

5.1.1 Business Owners' Age, Focus on Opportunities, and Venture Growth

We propose that business owners' age is negatively related to focus on opportunities. Similar to findings in other contexts (Cate & John, 2007; Zacher & Frese, in press), older business owners' focus on opportunities should be generally lower than younger business owners' focus on opportunities. We suggest that there are four major reasons for this assumption. First, a number of important personal resources such as time left in the future, change orientation, and the willingness to take risks become increasingly limited with age (Lévesque & Minniti, 2006; Schwer & Yucelt, 1984; Warr et al., 2001). However, these resources may be important for focus on opportunities because they equip business owners with the means to take on new, uncertain, and future-oriented endeavors. Based on findings that these personal resources are becoming more and more depleted with increasing age, researchers have suggested that older individuals discount future-oriented activities and outcomes and instead focus more on maximizing their present outcomes, such as immediate financial returns (Lévesque & Minniti, 2006) or personal satisfaction (Lang & Carstensen, 2002). Specifically, Lévesque and Minniti (2006) suggested that decreases in future time and willingness to take risks lead to a lowered "entrepreneurial attitude" (p. 178) at higher ages.

Second, research suggests that the perceived utility of investing high levels of effort into resource-intensive activities is generally lower for older individuals due to increased motives to enhance positive affect and personal satisfaction (Kanfer & Ackerman, 2004; Lang & Carstensen, 2002). Investing effort into activities such as learning about new technologies and other developments in the field may be useful to maintain a focus on opportunities, but can also be a frustrating experience, especially at higher ages when information processing abilities become more and more limited (Baltes, 1997). Older business owners are therefore more likely to strive for personal satisfaction by maintaining the status quo and well-established routines. In contrast, younger business owners are more willing to test their abilities and persist in the face of challenges (Kangasharju, 2000).

Third, older business owners are more likely than younger business owners to have already achieved their most important personal and business goals as well as a level of income from their businesses that they consider satisfactory (Smallbone & Wyer, 2006). Thus, they may not feel a strong need to focus on new business opportunities in the future and are instead more inclined to maintain the status quo and "reap what they have sown."

Finally, age-related norms and constraints in the environment (Neugarten et al., 1965), such as conventional retirement ages and institutional age discrimination, may reduce the number of future opportunities perceived by older business owners. For example, in most Western societies, older individuals are generally expected to plan for their life after retirement instead of seeking new opportunities (Hershey et al., 2002; Usui, 1998). Older business owners may also experience more difficulties in finding support for their future-related endeavors. For example, an older business owner's beliefs concerning future opportunities probably decline when a bank denies him or her loans due to advanced age. According to a social cognitive approach (Fiske & Taylor, 1984), these external (social) cues should influence the business owner's cognitions (e.g., about his or her future opportunities). Based on the arguments presented above, we propose the following:

Hypothesis 1: Business owners' age is negatively related to focus on opportunities.

We argue that business owners with a strong focus on opportunities are more successful in terms of venture growth than business owners with a weak focus on opportunities. There are three possible reasons why focus on opportunities should be positively related to venture growth. First, a strong focus on opportunities should go hand in hand with setting and pursuing specific and challenging growth goals for the venture, which in turn should lead to venture growth (Baum & Locke, 2004; Baum, Locke, & Smith, 2001). Markus and colleagues have suggested that individuals who perceive more opportunities in the future also set themselves more challenging goals and have higher standards for evaluating their success with regard to these goals (Cross & Markus, 1994; Markus & Nurius, 1986). Business owners with a strong focus on opportunities should be more likely to set specific and challenging goals for their ventures because they are more confident that the future provides many opportunities to achieve these goals. Additionally, given the importance of CEOs and the top management for an organization (Hambrick & Mason, 1984), businesses led by owners with a strong focus on opportunities may reflect the characteristics of their owners in their structures and processes, which may further contribute to venture growth.

Second, focus on opportunities should influence venture growth through information search and information processing relevant to business opportunities. Focus on opportunities is conceptualized as a cognitive schema (Cate & John, 2007; Zacher & Frese, in press) and as such influences the selection and interpretation process of incoming information (Rumelhart,

1980). Business owners are confronted with a continuous stream of information and they must make judgments of whether or not the stimuli are relevant in terms of business opportunities. Business owners with a strong focus on opportunities should pay more attention to opportunity-relevant information than business owners with a weak focus on opportunities. Specifically, they should have a heightened attention for events and changes in the environment entailing the potentiality for business opportunities, such as new technologies, political and regulatory changes, changes in trends, and social or demographic changes (R. A. Baron, 2006; Schumpeter, 1934; Shane, 2003). This attention bias should promote opportunity identification and thus venture growth. Business owners with a strong focus on opportunities should also interpret the received information more in terms of potential business opportunities than business owners with a weak focus on opportunities. This should also facilitate opportunity identification and thus venture growth. Shane and Venkataraman (2000) noted that opportunity identification requires the combination of information to create new means-ends-frameworks that imply the potential for a new product, service, or process. Individual characteristics such as cognitive or creative ability should influence the quality of the combination process (Shane, 2003). However, the combination process that transforms received information into business opportunities must also be guided by individuals' cognitive schemata. Researchers showed that an individual's schema is an important factor in the process that transforms received information into business opportunities (Ozgen & Baron, 2007). We suggest that focus on opportunities is such a cognitive schema and thus contributes to venture growth.

Finally, focus on opportunities should also influence business owners' engagement in opportunity exploitation activities. After identification of a business opportunity, business owners have to decide whether or not they want to pursue the identified opportunity. Business owners with a strong focus on opportunities should be more confident that opportunity exploitation also leads to desired business outcomes because they perceive that the future holds many possibilities for them. They should have more positive expectations concerning the feasibility and value of the exploitation process, which McMullen and Shepherd (2006) proposed to be important factors for engaging in exploitation activities. In contrast, business owners with a weak focus on opportunities should be less confident that opportunity exploitation leads to desired business outcomes, and therefore be less motivated to engage in exploitation activities. This should lead to lower levels of venture growth.

Hypothesis 2: Focus on opportunities is positively related to venture growth.

So far, we have argued that age is negatively related to focus on opportunities (Hypothesis 1), and that focus on opportunities is positively related to venture growth (Hypothesis 2). These two hypotheses combined suggest that focus on opportunities mediates the overall relationship between age and venture growth. In other words, as business owners grow older, they generally believe to have fewer opportunities in the future, which in turn is associated with lower venture growth. There is some indirect empirical evidence in support of an overall negative relationship between business owners' age and venture growth. In a survey of over 18,000 small businesses in the United Kingdom, Carter, Mason, and Tagg (2004) found a negative association between the age group of business owners and the proportion of corresponding businesses reporting growth in sales, profitability, and employees. For example, the proportion of businesses reporting a growth in sales was 65% among business owners between 22 and 34 years, but only 53% for business owners between 55 and 64 years. We suggest that the overall negative relationship between business owners' age and venture growth is mediated by business owners' focus on opportunities.

Hypothesis 3: Focus on opportunities mediates the relationship between age and venture growth.

5.1.2 *The Role of Mental Health*

With the exception of two studies that compared business owners with non-owners (Prottas & Thompson, 2006; Tetrick, Slack, Da Silva, & Sinclair, 2000), not much research on the mental health of business owners exists. According to Hisrich et al. (2007) this may be due to the fact that "entrepreneurship has been synonymous with economic well-being, far removed from psychological well-being" (p. 582). We argue that mental health is an important personal resource that is positively related to business owners' focus on opportunities. In general, individuals with high levels of mental health function markedly better than those with low levels of mental health in dealing actively with various demands and difficulties of life (Jahoda, 1958; Keyes, 2007). According to Warr (1990), "a mentally healthy person is often viewed as having an interest in, and engaging with, the environment. He or she establishes goals and makes active efforts to attain them, through motivated behavior, alertness to new opportunities, and efforts to meet challenges that are personally significant" (p. 197). In contrast, individuals low in mental health are rather apathetic, show a reduced involvement in life's demands, and

tend to accept present conditions more easily, even when they are unsatisfactory (Warr, 1994). Business owners with high levels of mental health should have a stronger focus on opportunities because they tend to think more positively about the future and their potential opportunities in the future (J. Birren, Sloane, & Cohen, 1992; Jahoda, 1958; Keyes, 2007; Warr, 1990). Their stronger interest in the environment and their tendencies to set new goals and seek new challenges for themselves should also lead to a stronger focus on opportunities. In contrast, business owners with low levels of mental health should have a weak focus on opportunities because they generally perceive the future, and their future opportunities, in a more negative way. Their low interest in the environment, their rather passive and reactive tendencies, and their unconditional acceptance of the status quo should result in a weak focus on opportunities.

Hypothesis 4: Mental health is positively related to focus on opportunities.

We have argued that mental health is positively related to focus on opportunities (Hypothesis 4), and that focus on opportunities is positively related to venture growth (Hypothesis 2). These two hypotheses combined suggest that focus on opportunities mediates the relationship between mental health and venture growth. In other words, mental health is positively related to focus on opportunities, which in turn is positively related to venture growth. So far, no empirical research on the relationship between business owners' mental health and venture growth exists (Hisrich et al., 2007). We suggest that mental health exerts an indirect influence on venture growth by positively influencing focus on opportunities.

Hypothesis 5: Focus on opportunities mediates the relationship between mental health and venture growth.

We further argue that high levels of mental health are particularly important for business owners in terms of maintaining a focus on opportunities at higher ages. Lévesque and Minniti (2006) recently suggested that age is generally negatively related to entrepreneurial attitudes and activities. In contrast to this universal proposition, we believe that a decline in focus on opportunities over time is not inevitable because high levels of mental health may help business owners to keep up a focus on opportunities despite the negative effects of age-related influences. Researchers from various disciplines have suggested that mental health is a particularly important resource for successful aging (Hobfoll

& Wells, 1998; Keyes, 2007; Knight et al., 2006; Lazarus & DeLongis, 1983; Staudinger & Kunzmann, 2005; Warr, 1997). For example, Lazarus and DeLongis (1983) proposed that mentally healthy individuals are better able to deal with age-related stressors and changing circumstances as they grow older. A reason for this may be that individuals high in mental health appraise age-related demands, constraints, and changes more positively (Lazarus & DeLongis, 1983). Hobfoll and Wells (1998) similarly suggested that personal resources such as mental health can help older individuals to frame their experiences in a more positive way. In addition, the aging literature suggests that older individuals generally have fewer personal resources, and also have more problems than younger individuals to replenish personal resources (P. B. Baltes, 1987, 1997). Mental health helps older individuals to obtain, protect, and replenish other important personal resources such as physical health, social networks, and motivation to learn (Hobfoll & Wells, 1998; Keyes, 2007).

We argue that mental health positively influences the processes responsible for the hypothesized negative effect of age on focus on opportunities. First, business owners high in mental health should be better able to maintain a focus on opportunities at higher ages because they are better in obtaining, protecting, and replenishing their personal resources than business owners low in mental health. Second, high mental health should help business owners to maintain a focus on opportunities at higher ages because utility perceptions for engaging in activities relevant to future opportunities (e.g., learning about new technologies) should be higher among mentally healthy business owners. Engaging in such activities may be accompanied by stressful and unpleasant situations. Mentally healthy business owners should frame those experiences in a more positive light. They should also be better in meeting challenges that come along with engaging in business opportunities. Third, mentally healthy business owners should be less prone to settle for the status quo and instead continuously set and pursue new goals. This should also help to maintain a strong focus on opportunities. Finally, business owners high in mental health should be better in dealing actively with various age-related demands, constraints, and changing circumstances that may be hindrances for focus on opportunities. They should also comply less with age-related norms and expectations of a lower focus on opportunities at higher ages because of their stronger tendencies to be active, engage with the environment, and to seek new opportunities.

Hypothesis 6: Mental health moderates the negative relationship between age and focus on opportunities, such that the relationship is weaker for business owners high in mental health than for business owners low in mental health.

The assumptions outlined so far suggest that mental health also moderates the strength of the negative and indirect effect of age on venture growth through focus on opportunities. Specifically, we suggested that mental health buffers the negative relationship between age and focus on opportunities (Hypothesis 6) and that focus on opportunities mediates the negative effect of age on venture growth (Hypothesis 3). Therefore, we predict that the negative and indirect effect of age on venture growth (through focus on opportunities) is weaker for business owners high in mental health than for business owners low in mental health.

Hypothesis 7: Mental health moderates the negative and indirect effect of age on venture growth (through focus on opportunities). Specifically, focus on opportunities mediates the indirect effect when business owners' mental health is low but not when it is high.

5.2 Method

5.2.1 Participants and Procedure

Data for this study came from 84 small business owners in Germany. Of the participants, 71 (84.5%) were male and 13 (15.5%) were female. Mean age was 44.02 years ($SD = 10.12$) and ranged from 24 to 74 years. Specifically, 34 business owners were 40 years or younger, 27 were between 41 and 50 years, and 23 were 51 years or older. On average, participants currently employed 3.55 employees ($SD = 8.58$). Twenty participants (23.8%) owned businesses in the manufacturing industry sector (e.g., construction, food production, crafts), and 64 (76.2%) owned businesses in the service industry sector (e.g., catering, retail, consulting).

We selected 200 small businesses from the yellow pages of a medium-sized city in central Germany. Out of these 200 businesses, we were able to contact 170 owners personally or by phone, and 99 business owners agreed to participate in our study (58% response rate). We conducted personal interviews with these 99 business owners at their company site which lasted about one hour each and included a standardized questionnaire with the scales used for this study. We had to exclude 14 business owners from the final sample because they did not answer the venture growth items. In addition, we excluded one participant because his overall value of venture growth (580%) departed more than three standard deviations from the sample mean (i.e., 121.22%). Thus, we were able to use complete data provided by 84 business owners. Results of non-parametric Mann-Whitney-U-tests indicated that there were

no significant differences in terms of age, physical and mental health, focus on opportunities, firm size, and industry sector between the 84 participants included and the 15 participants not included in the study. However, the number of female participants excluded (8 out of 21) was disproportionately greater than the number of male participants excluded (7 out of 78; $\chi^2[1, N = 99] = 10.91, p < .01$).

5.2.2 Measures

Focus on opportunities was measured with three items adapted from Carstensen and Lang's (1996) German future time perspective scale (see also Cate & John, 2007; Lang & Carstensen, 2002; Zacher & Frese, in press). The items are "Many opportunities await me in my occupational future," "My occupational future is filled with possibilities," and "There are only limited possibilities in my occupational future" (reverse coded). Participants gave their answers on 5-point scales ranging from 1 (*does not apply at all*) to 5 (*applies completely*). Cronbach's alpha of the scale was .84.

Venture growth was measured with five items adapted from Kraus, Frese, Friedrich, and Unger (2005, see also Frese, Krauss et al., 2007). The items asked business owners to indicate percent changes in sales, profit, transaction volume, income, and number of employees in the year 2007 compared to the previous year. No change in these factors was coded as 100%. A sample item is: "Compared to 2006, have your sales increased or decreased or did they stay the same in 2007? By what percentage have they in/decreased?" Cronbach's alpha of the scale was .79.

Mental and physical health were measured with six items each from the German SF-12 health survey (Bullinger & Kirchberger, 1998; Ware et al., 1996). The items cover different health domains such as bodily pain, vitality, and physical and social functioning. As suggested by the scale authors, participants answered the items of the SF-12 on non-uniform 2- to 6-point scales. The two composite scores for physical and mental health are computed using a SPSS syntax provided by the scale authors (Bullinger & Kirchberger, 1998). The SF-12 is widely used in research and practice and has been shown to be a highly reliable, valid, and practical measure for physical and mental health (Ware et al., 1996). Cronbach's alphas were .76 for physical health and .77 for mental health.

Finally, participants indicated their chronological age, gender (0 = *female* and 1 = *male*), number of employees, and a description of their industry. Firm size was indicated

by the number of employees (Baum, Locke, & Kirkpatrick, 1998), and for industry sector we created a dummy-coded variable (0 = *manufacturing*, 1 = *service*).

5.2.3 Analyses

Hypotheses 1 to 3 and Hypotheses 4 and 5 represent together two mediation models, one in which the relationship between age and venture growth is mediated by focus on opportunities (H1-3; negative indirect effect) and one in which the relationship between mental health and venture growth is mediated by focus on opportunities (H4 and 5; positive indirect effect).⁷ Tests of such mediation models often follow the classic four-step approach proposed by R. M. Baron and Kenny (1986). According to these authors, mediation exists if (1) an initial variable X has a “total effect” on the outcome variable Y (c path; i.e., overall relationship), (2) X has an effect on the mediator variable M (a path), (3) M has an effect on Y when controlling for X (b path), and (4) the effect of X on Y becomes significantly smaller or non-significant when controlling for M (c' path, or “direct effect”). Complete mediation exists if X no longer affects Y when M is controlled; partial mediation exists when the effect of X on Y is reduced in absolute size but is still different from zero when M is controlled (Kenny et al., 1998). Thus, Step 4 has to be met only for complete mediation to exist. Recently, methodologists have argued that R. M. Baron and Kenny’s (1986) approach is limited because of the Step 1 requirement that the total effect from of the initial variable X on the outcome variable Y (c path) must be significant (MacKinnon et al., 2002). According to these critics, if the mediating process is rather distal or complex, the size of the relationship between X and Y becomes smaller due to additional or competing factors in the mediating process (MacKinnon et al., 2000; MacKinnon et al., 2002; Shrout & Bolger, 2002). Thus, it is recommended to drop the Step 1 requirement from tests of mediation (MacKinnon et al., 2000; Shrout & Bolger, 2002). Instead, tests of mediation should be based on significance tests of the indirect effect ab , that is, the product of the a and b paths (Preacher & Hayes, 2004). The essential steps in establishing mediation are therefore R. M. Baron and Kenny’s (1986) Steps 2 and 3 (Kenny et al., 1998).

⁷ We use the term “indirect effect” instead of “mediated effect” in this study because some authors consider it necessary that a total effect of the initial variable on the outcome variable exists to call an effect “mediated” (Kenny et al., 1998). However, there is no such assumption for indirect effects (Preacher & Hayes, 2004).

One possibility to test the indirect effect ab for significance is the Sobel test (Sobel, 1982). However, this test is based on the unrealistic assumption that the indirect effect is normally distributed (Edwards & Lambert, 2007). Methodologists therefore recommend the non-parametric bootstrapping approach to test the indirect effect, which generates bootstrapped confidence intervals that help to avoid power problems introduced by non-normal sampling distributions of the indirect effect (Boos, 2003; Erceg-Hurn & Mirosevic, 2008; MacKinnon et al., 2004; Shrout & Bolger, 2002). The bootstrapping approach is also particularly useful in small samples. To test our mediation models, we used a SPSS macro for simple mediation analysis developed by Preacher and Hayes (2004). This macro performs the steps recommended by R. M. Baron and Kenny (1986) and provides parametric (i.e., Sobel test) as well as non-parametric (i.e., bootstrapping) tests of the estimated indirect effect ab .

Hypothesis 6 is a moderation hypothesis and Hypothesis 7 is a moderated mediation hypothesis (see Figure 1). *Moderated mediation* means that the mediating process between an initial variable and an outcome variable depends on the value of a moderator variable (Muller et al., 2005; Preacher et al., 2007). For example, if the moderator is mental health, the mediating process between the initial variable and the outcome variable is different for different levels of mental health. Importantly, this definition implies mediation for at least some values of the moderator, but it does not imply an overall moderation of the total effect of the initial variable on the outcome variable that is mediated (this would be a case of *mediated moderation*; Muller et al., 2005). We used a second SPSS macro provided by Preacher and his colleagues (Preacher, 2006; Preacher et al., 2007) that integrates procedures to test our Hypotheses 6 and 7 simultaneously. This macro also uses the recommended bootstrapping method to test whether the conditional indirect effect is significant at different values of the moderator variable. Our presentation of the simple mediation and moderated mediation results follows a standard recently set by Cole, Walter, and Bruch (2008).

As recommended by Aiken and West (1991; J. Cohen et al., 2003), we mean-centered all variables prior to the analyses. We controlled for gender, physical health, firm size, and industry sector in our analyses. Older individuals generally report more physical health problems than younger individuals (Aldwin, Spiro, & Park, 2006), and this may influence their focus on opportunities (Zacher & Frese, in press). We controlled for gender, firm size, and industry sector because these variables have been shown to be related to venture growth (Brush, 1992; Carroll & Hannan, 2000; Davis & Henreksson, 1999).

5.3 Results

5.3.1 Intercorrelations of Study Variables

Table 1 shows the descriptive statistics and intercorrelations of the study variables. Age was negatively related to physical health ($r = -.23, p < .05$), focus on opportunities ($r = -.40, p < .01$), and venture growth ($r = -.28, p < .01$). Focus on opportunities was positively related to venture growth ($r = .32, p < .01$). The 13 female business owners reported significantly lower mental health ($M = 40.25, SD = 12.69$) than the 71 male business owners ($M = 50.46, SD = 8.04; t[82] = -3.81, p < .01$). All of the 13 female business owners, and 51 out of the 71 male business owners had their businesses in the service sector.

5.3.2 Test of Hypotheses

Table 2 shows the results of the simple mediation analysis to test Hypotheses 1 to 3. According to Hypothesis 1, business owners' age is negatively related to focus on opportunities. As shown in the upper part of Table 2, age had a significantly negative effect on focus on opportunities (a path: $B = -.04, SE = .01, \beta = -.43, t = -3.96, p < .01$). This finding supports Hypothesis 1.

According to Hypothesis 2, focus on opportunities is positively related to venture growth. Table 2 shows that focus on opportunities had a significantly positive effect on venture growth (b path: $B = 9.48, SE = 3.80, \beta = .28, t = 2.49, p < .05$), supporting Hypothesis 2.

According to Hypothesis 3, focus on opportunities mediates the relationship between age and venture growth. Table 2 shows that all of R. M. Baron and Kenny's (1986) requirements for establishing complete mediation were fulfilled. First, the total effect of age on venture growth was negative and significant (c path: $B = -.97, SE = .37, \beta = -.29, t = -2.59, p < .05$), fulfilling the Step 1 requirement. Second, as reported above, age had a significantly negative effect on focus on opportunities (a path), and focus on opportunities had a significantly positive effect on venture growth (b path), fulfilling the Step 2 and 3 requirements. Finally, the relationship between age and venture growth decreased and became non-significant when focus on opportunities was controlled (c' path: $B = -.56, SE = .40, \beta = -.17, t = -1.41, p = .163$), fulfilling the Step 4 requirement. Thus, focus on opportunities completely mediated the relationship between age and venture growth.

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. Age	44.02	10.12	-							
2. Gender	.85	.36	.21	-						
3. Physical health	53.03	6.00	-.23*	.18	(.76)					
4. Mental health	48.88	9.57	.20	.39**	-.14	(.77)				
5. Focus on opportunities	3.58	1.01	-.40**	-.01	.15	.15	(.84)			
6. Venture growth	115.75	33.83	-.28**	-.01	.18	-.16	.32**	(.79)		
7. Firm size	3.55	8.58	.18	.00	-.08	.00	-.05	.18	-	
8. Industry sector	.76	.43	-.13	-.24*	-.02	-.18	-.04	.13	-.15	-

Note. Listwise $N = 84$. For gender, 0 = female, 1 = male. For industry sector, 0 = manufacturing, 1 = service.

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

Table 2

Results of Simple Mediation Analysis (Hypotheses 1 to 3)

Baron and Kenny (1986) Steps	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>		
Direct and total effects							
Step 1: Venture growth regressed on age (<i>c</i> path)	-.97	.37	-.29	-2.59	.012		
Step 2: Focus on opportunities regressed on age (<i>a</i> path)	-.04	.01	-.43	-3.96	.000		
Step 3: Venture growth regressed on focus on opportunities, controlling for age (<i>b</i> path)	9.48	3.80	.28	2.49	.015		
Step 4: Venture growth regressed on age, controlling for focus on opportunities (<i>c'</i> path)	-.56	.40	-.17	-1.41	.163		
Partial effects of control variables on venture growth							
Gender	11.21	10.83	.12	1.04	.304		
Physical health	.43	.61	.08	.70	.488		
Mental health	-.61	.41	-.17	-1.48	.142		
Firm size	1.00	.41	.25	2.47	.016		
Industry sector	11.97	8.29	.15	1.45	.153		
Unstandardized value	<i>SE</i>	LL 95% CI	UL 95% CI	Standardized value	<i>z</i>	<i>p</i>	
Indirect effect and significance using normal distribution							
Sobel	-.41	.18	-.76	-.06	-.12	-2.12	.034
Bootstrap results for indirect effect							
Effect	-.41	.17	-.81	-.14	-.12		

Note. Listwise $N = 84$. LL = lower limit; CI = confidence interval; UL = upper limit. Bootstrap sample size = 5,000. All predictor variables were mean-centered.

The results were further corroborated by the parametric and non-parametric tests of the indirect effect (unstandardized value = $-.41$, standardized value = $-.12$), which are shown in the lower part of Table 2. The Sobel-test was significant (Sobel's $z = -2.12$, $p < .05$). In addition, the bootstrapped 95% confidence interval did not include zero, indicating that the indirect effect was significant. Together, these results support Hypothesis 3.

Table 3 shows the results of the simple mediation analysis to test Hypotheses 4 and 5. According to Hypothesis 4, mental health is positively related to focus on opportunities. As shown in the upper part of Table 3, mental health had a significantly positive effect on focus on opportunities (a path: $B = .03$, $SE = .01$, $\beta = .26$, $t = 2.26$, $p < .05$). This finding supports Hypothesis 4.

According to Hypothesis 5, focus on opportunities mediates the relationship between mental health and venture growth. Table 3 shows that mental health had a positive and indirect effect on venture growth through focus on opportunities (unstandardized value = $.26$, standardized value = $.07$). The Sobel test results indicated that this indirect effect was only marginally significant (Sobel $z = 1.68$, $p = .093$). However, the bootstrap results indicated that a bootstrapped 95% confidence interval around the indirect effect did not contain zero ($.04$, $.70$). Hypothesis 5 was therefore supported.

Table 3 also shows that R. M. Baron and Kenny's (1986) essential Step 2 and 3 requirements were fulfilled (i.e., significant a and b paths), but not the Step 1 and 4 requirements. In fact, the results indicated that the total effect of mental health on venture growth (c path: $B = -.35$, $SE = .41$, $\beta = -.10$, $t = -.86$, $p = .393$) was smaller than the estimate controlling for focus on opportunities (c' path: $B = -.61$, $SE = .41$, $\beta = -.17$, $t = -1.48$, $p = .142$). In addition, the indirect effect (standardized value = $.07$) and the direct effect of mental health on venture growth controlling for focus on opportunities ($\beta = -.17$) were of the opposite sign. This pattern of coefficient estimates indicates the presence of mediational suppression (MacKinnon et al., 2000; Shrout & Bolger, 2002) or what MacKinnon, Fairchild, and Fritz (2007) called "inconsistent mediation" (p. 602). Mathematically speaking, the negative relationship between mental health and venture growth (controlling for focus on opportunities) is capturing the part of mental health that is uncorrelated with focus on opportunities (note, however, that this negative relationship is not statistically significant).

Table 3

Results of Simple Mediation Analysis (Hypotheses 4 to 5)

Baron and Kenny (1986) Steps	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>		
Direct and total effects							
Step 1: Venture growth regressed on mental health (<i>c</i> path)	-.35	.41	-.10	-.86	.393		
Step 2: Focus on opportunities regressed on mental health (<i>a</i> path)	.03	.01	.26	2.26	.026		
Step 3: Venture growth regressed on focus on opportunities, controlling for mental health (<i>b</i> path)	9.48	3.80	.28	2.49	.015		
Step 4: Venture growth regressed on mental health, controlling for focus on opportunities (<i>c'</i> path)	-.61	.41	-.17	-1.48	.142		
Partial effects of control variables on venture growth							
Age	-.56	.40	-.17	-1.41	.163		
Gender	11.21	10.83	-.12	1.04	.304		
Physical health	.43	.61	.08	.70	.488		
Firm size	1.00	.41	.25	2.47	.016		
Industry sector	11.97	8.29	.15	1.45	.153		
Unstandardized value	<i>SE</i>	LL 95% CI	UL 95% CI	Standardized value	<i>z</i>	<i>p</i>	
Indirect effect and significance using normal distribution							
Sobel	.26	.15	-.04	.56	.07	1.68	.093
Bootstrap results for indirect effect							
Effect	.26	.17	.04	.70	.07		

Note. Listwise $N = 84$. LL = lower limit; CI = confidence interval; UL = upper limit. Bootstrap sample size = 5,000. All predictor variables were mean-centered.

Table 4 presents the results of the moderation and moderated mediation analyses to test Hypotheses 6 and 7. According to Hypothesis 6, mental health moderates the negative relationship between age and focus on opportunities, such that the relationship is weaker for business owners high in mental health than for business owners low in mental health. As shown in the upper part of Table 4 (the “mediator variable model”), the interaction between age and mental health significantly predicted focus on opportunities ($B = .00$, $SE = .00$, $\beta = .25$, $t = 2.05$, $p < .05$). In order to test whether the form of this interaction effect also had the hypothesized pattern, we followed the recommendations by Aiken and West (1991) and computed the simple slopes of regressing focus on opportunities on age at high (i.e., one standard deviation above the mean) and low (i.e., one standard deviation below the mean) values of mental health.

As hypothesized, the relationship between age and focus on opportunities was weak and non-significant for business owners high in mental health ($B = -.02$, $SE = .02$, $\beta = -.18$, $t = -1.07$, $p = .29$), whereas the relationship was negative and significant for business owners low in mental health ($B = -.07$, $SE = .02$, $\beta = -.68$, $t = -4.20$, $p < .01$). The significant interaction effect is shown in Figure 2. These results combined support Hypothesis 6.

According to Hypothesis 7, mental health moderates the negative and indirect effect of business owners’ age on venture growth (through focus on opportunities), such that focus on opportunities mediates the indirect effect when business owners’ mental health is low but not when it is high. Although the results so far showed that mental health buffered the negative effect of age on focus on opportunities, and that focus on opportunities mediated the relationship between age and venture growth, they do not directly assess the conditional indirect effect model suggested in Figure 1 and proposed in Hypothesis 7. Therefore, we examined the conditional indirect effect of age on venture growth (through focus on opportunities) at three values of mental health (i.e., at the mean and at one standard deviation below and above the mean). The results, shown in the middle part of Table 4, indicated that the conditional indirect effect was weaker at high compared to low levels of mental health. Specifically, the standardized conditional indirect effect was $-.19$ at one standard deviation below the mean of mental health ($p < .05$), $-.12$ at the mean of mental health ($p < .05$), and $-.05$ at one standard deviation above the mean of mental health ($p = .309$).

Table 4

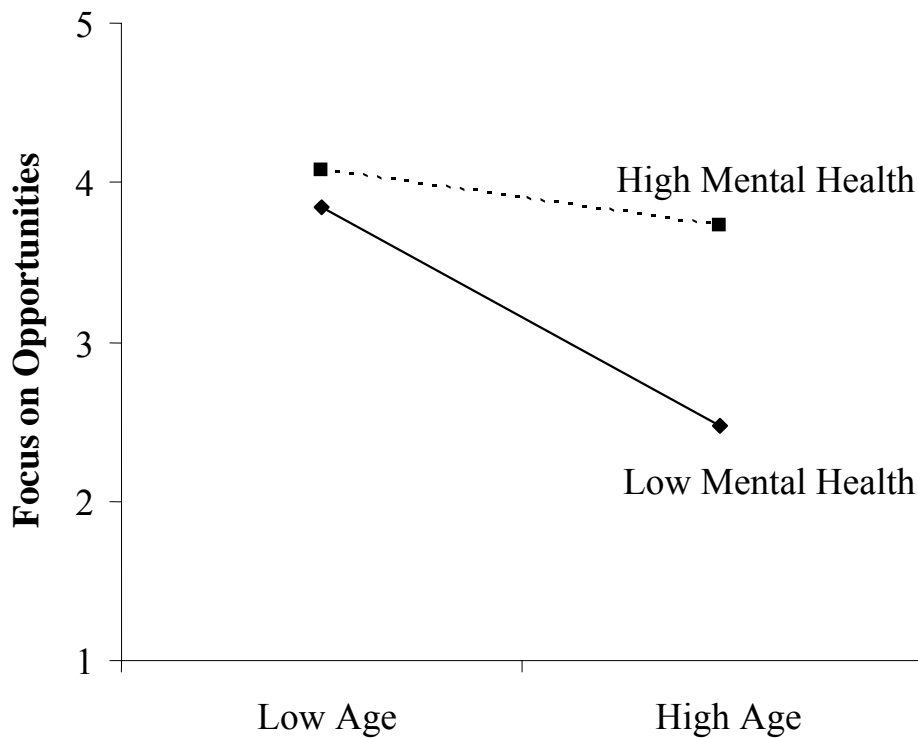
Results of Moderation and Moderated Mediation Analyses (Hypotheses 6 and 7)

Predictor variable	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
DV: Focus on opportunities (Mediator variable model)					
Constant	-.05	.10		-.50	.621
Gender	-.28	.32	-.10	-.85	.400
Physical health	.01	.02	.07	.64	.527
Firm size	-.01	.01	-.06	-.57	.574
Industry sector	-.12	.24	-.05	-.51	.611
Age	-.04	.01	-.43	-4.03	.000
Mental health	.04	.01	.37	3.00	.004
Age * Mental health	.00	.00	.25	2.05	.043
DV: Venture growth (Dependent variable model)					
Constant	-.57	3.48		-.16	.871
Gender	9.55	11.13	.10	.86	.393
Physical health	.38	.62	.07	.62	.539
Firm size	.89	.44	.23	2.02	.047
Industry sector	11.87	8.32	.15	1.43	.158
Age	-.59	.40	-.18	-1.46	.148
Mental health	-.44	.48	-.13	-.93	.354
Age * Mental health	.03	.05	.09	.70	.487
Focus on opportunities	8.85	3.92	.27	2.26	.027
Mental health	Unstandardized boot indirect effect	Boot <i>SE</i>	Standardized boot indirect effect	Boot <i>z</i>	Boot <i>p</i>
Conditional indirect effect at mental health = $M \pm 1 SD$					
- 1 <i>SD</i> (-9.57)	-.63	.30	-.19	-2.15	.032
<i>M</i> (.00)	-.40	.18	-.12	-2.28	.023
+ 1 <i>SD</i> (9.57)	-.16	.16	-.05	-1.02	.309
Mental health ^a	Unstandardized boot indirect effect	Boot <i>SE</i>	Standardized boot indirect effect	Boot <i>z</i>	Boot <i>p</i>
Conditional indirect effect at range of values of mental health (standardized scale)					
-1.16	-.67	.32	-.20	-2.12	.034
-.90	-.61	.28	-.18	-2.17	.030
-.64	-.55	.25	-.16	-2.23	.026
-.38	-.49	.22	-.15	-2.28	.023
-.12	-.42	.19	-.13	-2.30	.022
.14	-.36	.16	-.11	-2.24	.025
.40	-.30	.15	-.09	-2.04	.041
.67	-.24	.15	-.07	-1.66	.097
.93	-.18	.15	-.05	-1.16	.246
1.19	-.11	.17	-.03	-.67	.502

Note. Listwise $N = 84$. DV = dependent variable. ^aRange of values represent an abbreviated version of the output provided by the macro. Bootstrap sample size = 5,000. All predictor variables were mean-centered.

Figure 2

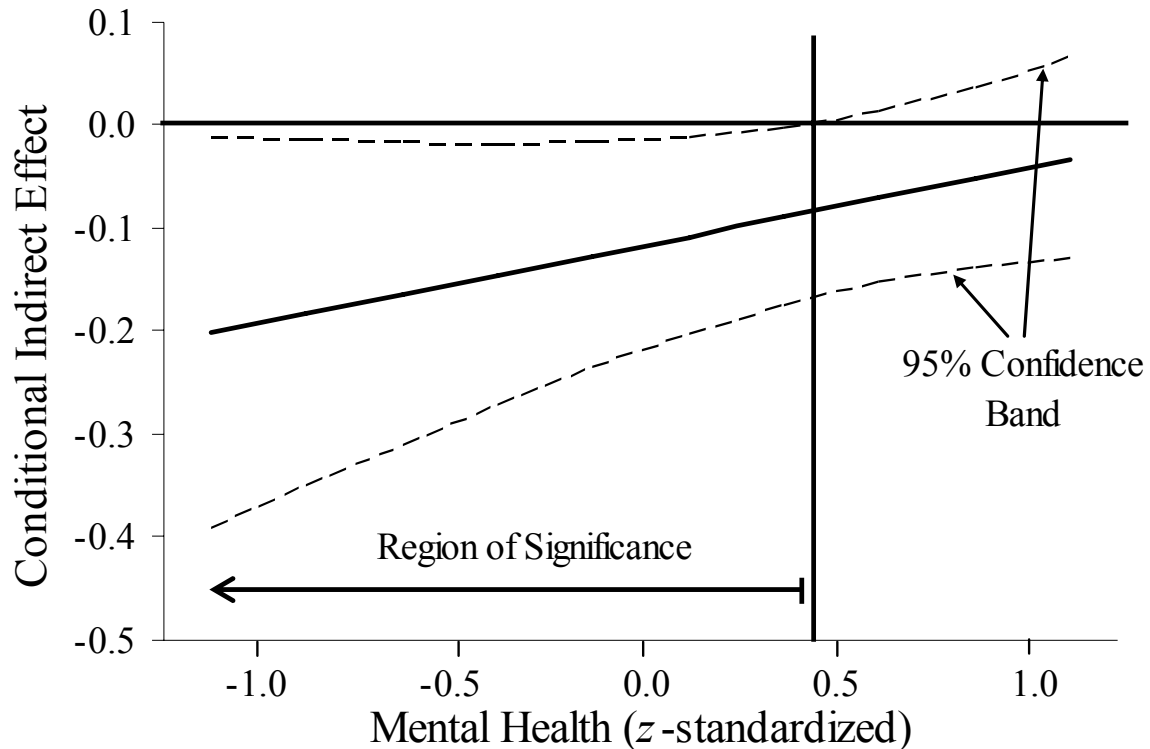
Focus on Opportunities Predicted by Age Moderated by Mental Health



In addition, Preacher et al.'s (2007) moderated mediation SPSS macro computes conditional indirect effects and their significance at various values of the moderator variable that fall within the range of the data. This output, shown in the lower part of Table 4, allows for the identification of mental health values for which the conditional indirect effect becomes statistically significant (i.e., the regions of significance; Preacher et al., 2007). The results showed that the conditional indirect effect of age on venture growth (through focus on opportunities) was significant at the .05 alpha level for any value lower than about .45 on a *z*-standardized measure of mental health (i.e., $M = 0$, $SD = 1$). For business owners with mental health values above .45 on this standardized measure, the indirect effect of age on venture growth (through focus on opportunities) was not significant. The standardized conditional indirect effect for different values of mental health, together with a 95%-confidence band, is shown in Figure 3. The horizontal line in Figure 3 represents an indirect effect of zero, and the vertical line represents the boundary of the region of significance. For example, it can be taken from both Table 4 and Figure 3 that the standardized indirect effect of age on venture growth (through focus on opportunities) at the mean of mental health is -.12 and significant (i.e., the 95%-confidence band does not include zero). These results support Hypothesis 7.

Figure 3

Standardized Conditional Indirect Effect of Age on Venture Growth (Through Focus on Opportunities) for Different Values of Mental Health with a 95%-Confidence Band



5.4 Discussion

5.4.1 Summary of Findings

Research on business owners' age, cognitions, and mental health is important, yet so far only very few empirical studies have investigated these issues (Hisrich et al., 2007; Lévesque & Minniti, 2006; Mitchell et al., 2007). We would like to add to the entrepreneurship literature an empirical study on the central variable of focus on opportunities (Cate & John, 2007; Zacher & Frese, in press). Our goal in this study was to investigate a moderated mediation model in which focus on opportunities mediates the relationships between age and venture growth and between mental health and venture growth. In addition, we proposed that mental health is a particularly important personal resource for business owners at higher ages. Specifically, we assumed that high levels of mental health buffer the negative relationship between age and focus on opportunities and weaken the negative and indirect effect of age on venture growth (through focus on opportunities).

Proposing and testing the mediating processes and boundary conditions of relationships between predictor and criterion variables are important steps to advance research in a scientific field. With this study, we extend previous research on the role of age in entrepreneurship (Lévesque & Minniti, 2006) by providing first empirical evidence showing that business owners' mental health acts as a boundary condition to the generally negative direct and indirect effects of increasing age on focus on opportunities and venture growth.

Specifically, we found that age was negatively related to focus on opportunities among small business owners. An explanation for a weaker focus on opportunities among older business owners may be that important personal resources such as time left in life, change orientation, and willingness to take risks decrease over time (Lévesque & Minniti, 2006; Schwer & Yucelt, 1984; Warr et al., 2001). In addition, older business owners are more likely to have already achieved their most important business goals (Smallbone & Wyer, 2006) and tend to discount effortful and future-oriented activities, such as new skill learning (Kanfer & Ackerman, 2004). Finally, certain age norms (e.g., retirement expectations and regulations) and age-related constraints (e.g., discrimination) may lead to a lower focus on future opportunities among older business owners compared to younger business owners.

The positive relationship found between focus on opportunities and venture growth is consistent with entrepreneurial cognition theory (R. A. Baron, 2004; Mitchell et al., 2007), which argues that business owners' cognitions influence important entrepreneurial outcomes. We suggest that there are three possible avenues leading from focus on opportunities to venture growth. First, business owners with a strong focus on opportunities should set and pursue more specific and challenging growth goals, which in turn enhance venture growth (Baum & Locke, 2004; Baum et al., 2001). Second, a strong focus on opportunities should act as a cognitive schema that directs business owners' attention to opportunity-relevant information and facilitates interpretation of received information in terms of potential business opportunities. Finally, a strong focus on opportunities should also serve a motivational function by increasing business owners' confidence that exploitation activities lead to desired business outcomes. Our findings provide first empirical evidence that business owners who regard their future as opportunity-rich are indeed more successful in terms of venture growth.

Our findings further showed that a generally weaker focus on opportunities among older business owners is responsible for lower levels of venture growth in this age group. So far, studies have only suggested an overall negative relationship between business owners'

age and venture growth (Carter et al., 2004) or theoretically proposed negative relationships between age and entrepreneurial outcomes (Lévesque & Minniti, 2006). Generally, the identification of mediators of relationships between age and business outcomes such as venture growth is important as demographic changes will probably lead to higher numbers of older business owners over the next decades (Rogoff, 2007). A better understanding of the mediating mechanisms may help practitioners and policy makers to design interventions with the goal of influencing these mechanisms such that older individuals' venture growth is maintained or enhanced.

We further found that mental health was positively related to focus on opportunities, and that focus on opportunities mediated the relationship between mental health and venture growth. These findings are consistent with the literature on mental health (e.g., Keyes, 2007; Warr, 1990), which suggests that mentally healthy individuals not only function generally better in life, but also perceive their future and future opportunities more positively than individuals with low levels of mental health. We also suggested and found that mental health had a positive and indirect effect on venture growth through focus on opportunities. It is important to note that this indirect effect was significant even though the overall bivariate relationship was not. Finding a significant indirect effect in the absence of a significant total effect is quite possible (Preacher & Hayes, 2004). We suggest that focus on opportunities is only one mediator among others underlying the complex relationship between business owners' mental health and venture growth, and that other, competing mediating processes may act to diminish the overall relationship. In fact, the small negative (yet non-significant) relationship between mental health and venture growth when controlling for focus on opportunities may suggest that business owners with high levels of mental health – besides perceiving more opportunities for themselves – also engage more often in activities that may be detrimental to high venture growth (e.g., leisure). Future research is needed to identify alternative mediating mechanisms of the relationship between mental health and venture growth in addition to focus on opportunities.

We also found that high levels of mental health buffered the negative relationship between age and focus on opportunities and weakened the negative and indirect effect of age on venture growth through focus on opportunities. Researchers have suggested that mental health is a particularly important personal resource at higher ages, because it helps to protect, retain, and replenish personal resources, to frame negative experiences positively, and to deal successfully with age-related demands, difficulties, and constraints (Hobfoll & Wells, 1998;

Keyes, 2007; Knight et al., 2006; Lazarus & DeLongis, 1983). Our findings in this study challenge Lévesque and Minniti's (2006) assumption that the relationship between age and entrepreneurial motivation is generally negative. Specifically, we provided first empirical evidence that mental health is an important boundary condition that needs to be considered in future studies that investigate the impact of age on important business outcomes such as venture growth.

In addition to our main findings, a number of noteworthy relationships between business owners' age, mental health, and the control variables emerged in our study. First, business owners' age was negatively related to physical health. This finding is consistent with previous research showing that older adults report more physical health problems than younger adults (Aldwin et al., 2006; P. B. Baltes, 1997; Keyes, 2005). Second, the female business owners in our sample reported worse mental health than the male business owners. This finding is consistent with the literature on gender differences in mental health, which shows that women tend to have higher rates of depression and anxiety (Rosenfield, 1999). Rosenfield (1999) suggested that the reasons this gender difference may be that women earn relatively less than men, tend to have less power and autonomy at work, and are more receptive to problems of individuals in their social networks. Finally, the female business owners in our sample worked only in the service sector and not in the manufacturing sector. This finding is in agreement with research showing that the service sector represents an attractive area for female entrepreneurs (Brush, 1992; Coughlin & Thomas, 2002).

5.4.2 Limitations

This study has a number of limitations. First, cross-sectional designs do not allow definite conclusions about causal processes and intraindividual changes over time (i.e., aging). It may also be that business owners' age negatively affects venture growth, which in turn may lead to a lower focus on opportunities among older business owners. In addition, low levels of venture growth may adversely affect both mental health and focus on opportunities and not vice versa. However, the fact that the interaction between mental health and age predicted focus on opportunities but not venture growth provides some preliminary evidence for the proposed sequence of events in our moderated mediation model. It is also likely that the true nature of relationships is more complex than can be represented by our relatively simple input-process-output model. The relationships between mental health, focus

on opportunities, and venture growth unfold over time as business owners interact with the environment (Bird & West, 1997). Thus, it may be that the sequence of events is better captured by a cyclic model in which outputs also serve as future inputs. Age and mental health may interact in influencing subsequent venture growth through focus on opportunities, and venture growth in turn might again influence mental health and focus on opportunities.

Furthermore, it is possible that our findings are influenced by differences between birth cohorts or selection effects (P. B. Baltes & Nesselroade, 1979; Hofer & Sliwinski, 2006). For example, it may be that the older business owners in our sample are a selected group of individuals because those business owners low in mental health have retired early or stopped working as business owners. Critics might also argue that the negative relationship between age and venture growth in this study is due to the fact that younger cohorts of business owners are more often working in high-growth industries than older cohorts. However, all of the small business owners in our sample were working in rather traditional manufacturing or service businesses (e.g., car repair shop, travel agency), and not in high-growth industries such as software development.

Second, the validity of our venture growth measure might be questioned. Instead of hard data on profit or sales we measured venture growth using business owners' own evaluations. In small business settings it is often difficult to acquire exact performance data (Daniels, 1999; Sapienza, Smith, & Gannon, 1988). Our approach of measuring venture growth is in line with other studies conducted in small business settings (Frese, Krauss et al., 2007; Krauss et al., 2005; Unger, Keith et al., 2009). In addition, Frese and colleagues (Frese, Krauss et al., 2007) provided support for the validity of this approach by showing a positive relationship between business owners' performance statements and independent expert ratings of businesses' performance. Finally, the problem of common method bias was minimized in our study by including an objective independent variable in our model (i.e., age), and by using different scale anchors and answer formats for focus on opportunities, mental health, and venture growth (P. M. Podsakoff et al., 2003). It is also important to note that moderation and moderated mediation effects are not influenced by common method bias (Evans, 1985; Schriesheim & DeNisi, 1981).

A final limitation of our study may be that we investigated the relationship between business owners' focus on opportunities and venture growth in the past year, thereby predicting an outcome variable measured in the past with a future-oriented predictor variable. Future research should first measure business owners' focus on opportunities, and return at a

later point in time to measure venture growth, ideally after several months or years. However, we believe that our findings are valid, as previous research showed that focus on opportunities does not decline substantially within a short period of time such as several months or one year, but rather over longer periods of time such as ten years (Cate & John, 2007; Zacher & Frese, in press).

5.4.3 Implications for Future Research

Based on the results of our study, there are at least four possible avenues for future research. First, we proposed that focus on opportunities is positively related to venture growth through three different mechanisms (i.e., growth goals, information search and processing, and motivational function). Future studies now need to examine whether the positive relationship between focus on opportunities and venture growth is indeed mediated by these mechanisms.

A second important task for future research is to examine how focus on opportunities relates to other concepts discussed by entrepreneurial cognition researchers (R. A. Baron, 2004; R. A. Baron & Ward, 2004; Shane, Locke, & Collins, 2003). For example, R. A. Baron (2004) suggested that business owners with a strong promotion focus (Higgins, 1998) are more likely to search for opportunities and to generate hypotheses concerning opportunities. Even though a certain degree of overlap between focus on opportunities and promotion focus may be expected, we believe that focus on opportunities is a unique cognitive construct due to its relationship with age. In contrast, cognitive constructs such as promotion focus or counterfactual thinking (R. A. Baron, 2004) may be more stable over time.

Third, future research should investigate how exactly mental health enhances focus on opportunities and through which processes mental health helps to maintain a focus on opportunities at higher ages. We suggested that high levels of mental health enable business owners to perceive their future opportunities more positively, to take an active approach to various demands and difficulties, and to set themselves new and challenging goals. In addition, we suggested that mental health is an especially important resource at higher ages, because it helps to frame negative age-related experiences positively, to protect, retain, and replenish resources, and to better cope with age-related challenges and constraints. Future research should examine these functions of mental health in further detail, for example, by conducting experience sampling or behavior observation studies.

Finally, future research should identify additional factors that contribute to high levels of focus on opportunities. Our study suggests that age and mental health influence focus on opportunities. In addition, an individual's focus on opportunities may change due to personal experiences, learning, and external persuasion processes that alter the individual's confidence in the existence of future opportunities.

5.4.4 Implications for Theory and Practice

The findings of this study contribute to theory development in several ways. First, we introduced focus on opportunities as a new and promising concept to the growing literature on entrepreneurial cognition (R. A. Baron, 1998, 2004; Mitchell et al., 2007). Focus on opportunities captures business owners' answers to one of the most basic questions of entrepreneurial cognition theory: How do entrepreneurs think about opportunities? So far, entrepreneurial cognition research mainly focused on biases and heuristics in entrepreneurial decision making processes (e.g., R. A. Baron, 1998, 2004; Busenitz & Barney, 1997) or entrepreneurial expertise, for example in terms of venture scripts (e.g., Mitchell, Smith, Seawright, & Morse, 2000; Mitchell, Smith et al., 2002). Our findings indicate that the general belief about the existence of future opportunities is also relevant in the entrepreneurial process. Being confident about the existence of future opportunities might be a general factor in entrepreneurship, facilitating various processes that are important for entrepreneurial success, such as goal setting, opportunity identification, and opportunity exploitation.

In addition, this study contributes to the literature on the roles of time (Bird & West, 1997), time perspective (Bluedorn, 2002; Bluedorn & Martin, 2008), and aging (Lévesque & Minniti, 2006) in entrepreneurship. Entrepreneurship per se is considered to be a dynamic process because of the ever changing tasks and demands associated with it (Shane et al., 2003). Our study provides empirical support for another dimension of dynamism that entrepreneurship researchers need to take into account. So far, theoretical models of venture growth have been rather static. What is now needed are more comprehensive models of change in venture growth over time that take business owners' age and focus on opportunities, as well as moderating factors such as mental health, into account.

Finally, this study contributes to the literature on mental health and psychological well-being of entrepreneurs (Hisrich et al., 2007). Mental health has long been considered an

important aspect of human capital (Becker, 1975). Yet so far, research on the relationship between human capital and entrepreneurial success has mostly focused on business owners' knowledge, experience, and cognitive abilities (Unger, Rauch, Frese, & Rosenbusch, 2009). We suggest that future theories of the role of human capital in entrepreneurship include mental health as an additional important aspect.

The findings of our study also have practical implications for business owners and policy makers. First, the findings on the important role of mental health suggest that business owners should find ways to maintain or improve their mental health. Policy makers could provide business owners with information and support in this endeavor. A large number of factors influence mental health (Keyes, 2007; Warr, 1994). For example, Warr (1987) outlined nine features of the environment which may positively influence mental health: Opportunity for control, opportunity for skill use, externally generated goals, variety, environmental clarity, availability of money, physical security, opportunity for interpersonal contact, and a valued social position. Business owners and policy makers should ensure that these conditions are met. In addition, business owners with particularly low levels of mental health should be encouraged to seek professional help.

Second, considering that venture growth is probably the most important indicator of entrepreneurial success (Davidsson, Delmar, & Wiklund, 2007), and that focus on opportunities is positively associated with this indicator, it is important to find additional ways to increase business owners' focus on opportunities and to maintain it at higher ages. Besides increasing mental health, a promising approach may be that entrepreneurship associations provide older business owners with more learning and development possibilities. In addition, reducing age-related constraints and discrimination in institutions and society, encouraging and supporting flexibility at higher ages, and recognizing that many individuals want to keep working and pursuing business opportunities at higher ages may be essential ways to assist older business owners in maintaining a focus on opportunities.

6 Conclusion

The concept of focus on opportunities at work describes how many new goals, plans, options, and possibilities individuals believe to have in their personal work-related future (Zacher & Frese, in press). Based on suggestions by researchers, who theoretically and empirically explored the overarching construct of future time perspective in work psychology (Seijts, 1998) and life span psychology (Cate & John, 2007), the three main goals of this dissertation were (1) to investigate relationships between focus on opportunities at work and person- and context-related characteristics, (2) to identify moderators of the negative relationship between age and focus on opportunities at work, and (3) to examine relationships between focus on opportunities at work and important work outcomes. The purpose of this chapter is to summarize, integrate, and discuss the results and implications of the four empirical studies compiled in this dissertation with regard to these three goals. First, I review the relationships found between person- and context-related characteristics and focus on opportunities (6.1). Second, I consider the person- and context-related moderators of the relationship between age and focus on opportunities (6.2). Third, I describe the relationships found between focus on opportunities and work outcomes (6.3). In addition to these topics, I address two broader implications for future research on focus on opportunities. Specifically, I suggest that focus on opportunities should be conceptualized as an additional aspect of older individuals' "positive psychological capital" (6.4), and I outline possibilities to improve future cross-sectional studies on age and focus on opportunities (6.5). Finally, I give a brief summary of this dissertation's contributions (6.6).

6.1 Relationships between Person- and Context-Related Characteristics and Focus on Opportunities at Work

Based on Cate and John's (2007) recent research suggestions, the first main goal of this dissertation was to examine relationships between focus on opportunities at work and person- as well as context-related characteristics. Specifically, I investigated relationships between focus on opportunities and age, gender, education, personality, physical and mental health, SOC strategy use, and job control and complexity.

Age. In all four studies included in this dissertation, older individuals had a weaker focus on opportunities than younger individuals. A mega-analysis (Sternberg, Baradaran,

Abbott, Lamb, & Guterman, 2006) of the combined samples from the four studies ($N = 561$) yielded a negative correlation of $r = -.57$ ($p < .01$) between age and focus on opportunities. As suggested in each of the four studies, the reasons for this negative relationship may range from age-related decreases in personal resources that are relevant for focus on opportunities (e.g., perceived time left at work, motivation to learn) to the existence of age-related norms and constraints in the work, organizational, and societal environment that may have a detrimental effect on focus on opportunities at higher ages (e.g., mandatory retirement age).

It is important to note, however, that the negative correlations between age and focus on opportunities found in the different samples varied in size, ranging from moderate in the sample of small business owners ($r = -.40$; Study 4) to large in the sample of employees from a manufacturing company ($r = -.72$; Study 2). The correlations in the convenience sample of employees from different occupations (Study 1) and in the sample of employees from 41 different organizations (Study 3) were within this range ($r_s = -.60$ and $-.50$, respectively). Tests of the difference between correlation coefficients from independent samples (Preacher, 2002) revealed that the correlation found in Study 2 ($r = -.72$) was significantly different from the correlations found in Studies 3 and 4 ($r_s = -.50$ and $-.40$, respectively; $p_s < .01$), and that the correlation found in Study 1 ($r = -.60$) was significantly different from the correlation found in Study 4 ($r = -.40$; $p < .05$). It may be that the variation in the size of these correlations is due to different age distributions as well as different levels of job complexity in the samples. The small business owners (Study 4) had a significantly higher average age ($M = 44.02$ years, $SD = 10.12$) than the employees in Study 1 ($M = 38.66$, $SD = 13.32$), Study 2 ($M = 37.99$ years, $SD = 13.05$), and Study 3 ($M = 40.22$ years, $SD = 10.43$; $F[3, 557] = 5.07$, $p < .01$). The standard deviation of age was also lower in Study 4 compared to the other studies. The different age distribution in the sample of small business owners may have led to a lower correlation between age and focus on opportunities because fewer younger individuals, who have the strongest focus on opportunities, were included. Second, it is likely that the self-employed small business owners in Study 4 had generally higher levels of job complexity than the three other samples. Business owners probably have to make more difficult and challenging decisions at work and have more possibilities to use, develop, and transfer their work-related knowledge and skills than salaried employees. Thus, the comparison of the correlations between age and focus on opportunities from the four different studies may provide further support for one of main propositions of Studies 1, 2, and 3; that is, high levels of job complexity weaken the negative relationship between age and focus on

opportunities (Zacher & Frese, in press). In other words, individuals working in high-complexity jobs are better able to maintain a focus on opportunities at higher ages (see also section 6.2). Future research should investigate the theoretically proposed mediators of the negative relationship between age and focus on opportunities (i.e., age-related changes in personal resources and environmental constraints). The identification of these mediating mechanisms is important because it enables organizational practitioners and policy makers to design interventions that may help individuals to maintain a focus on opportunities at higher ages, which in turn may have positive effects on important work outcomes (see section 6.3).

Gender and education. Two additional demographic characteristics investigated in this dissertation were gender and education. There were virtually no gender differences in focus on opportunities at work (Studies 1, 2, and 4). The fact that men and women perceived comparable amounts of work-related opportunities may be interpreted as an encouraging result from a gender mainstreaming and equal opportunities perspective on employment (Rubery, 2002). However, it could be that men and women differ in the more specific contents of their perceived future opportunities. For example, men may think more often of career-related opportunities, whereas women may more often consider opportunities related to reconciling work and family demands. A recent qualitative study found that there were no gender differences in the content and characteristics of employees' occupational goals (Zacher, Degner, Seevaldt, Frese, & Lüdde, in press). Nevertheless, further research on gender differences in the content of perceived future opportunities at work is important, as future labor markets will increasingly depend on women (Rubery, 2002).

Education was positively related to focus on opportunities at work (Studies 1 and 2) when other person and work characteristics were controlled. This finding is consistent with research showing that more highly educated individuals more often intend to work beyond their official retirement age (B. Griffin & Hesketh, 2008). Reasons for this finding may be that well-educated individuals want to continue to apply their knowledge, skills, and abilities and also receive more job offers at higher ages due to their higher qualification. Future research might investigate focus on opportunities as a mediator of the relationship between education and retirement age. Policy makers need to implement practices that enable highly educated individuals to remain active in the workforce at higher ages. One possibility to do so may be to abolish inflexible and mandatory retirement regulations, which are still prevailing in many European countries such as Germany (Dychtwald et al., 2004).

Personality. Cate and John (2007) suggested that the personality characteristics included in the Five Factor Model of personality (e.g., Barrick & Mount, 1991) may be related to individuals' perceptions of the future. Studies 1 and 2 showed that extraversion and the related characteristic of positive affect were positively, and conscientiousness was negatively related to focus on opportunities at work when other person and work characteristics were controlled. Extraverted individuals and those with high levels of positive affect tend to perceive themselves and their futures more positively (Rammstedt, 2007). However, the negative relationship between conscientiousness and focus on opportunities stands in contrast to previous findings in age homogeneous samples (Cate & John, 2007). As suggested in Study 1, it may be that highly conscientious individuals focus more on their current and rather specific work goals instead of broad future options. Conscientiousness increases with age (Roberts et al., 2006); however, Study 1 showed that there was also a negative relationship between conscientiousness and focus on opportunities when controlling for age. The investigation of relationships between personality traits and the more flexible, age-related concept of focus on opportunities remains an important issue for future research. For example, future studies could investigate how other, rather stable characteristics such as regulatory focus (Higgins, 1997, 1998) and an optimistic attributional style (Seligman, 1998) interact with age in predicting focus on opportunities at work. This research may have implications for personnel selection decisions in organizations regarding older job applicants.

Physical and mental health. Physical and mental health are important variables in aging research (Aldwin et al., 2006; Knight et al., 2006) as well as in work and organizational psychology research (Grant et al., 2007). In this dissertation, participants' physical health was positively related to focus on opportunities in Studies 1 and 2, but not in Study 4. A possible explanation for a positive relationship is that employees with good physical health perceive that they have the resources to deal with new opportunities in the work-related future; for example, they may feel capable of changing jobs even at higher ages. This is in accordance with research showing that physical health is positively related to retirement age (Beehr et al., 2000). A possible explanation for the rather small and non-significant positive correlation in Study 4 may be that physical health is a less important prerequisite for focus on opportunities among business owners compared to employees. Business owners continuously have to identify new opportunities to grow their businesses (Eckhardt & Shane, 2003). Thus, focus on opportunities may be less dependent on physical health in this occupational group, because even business owners with low physical health continuously have to focus on opportunities.

In terms of mental health, Study 1 did not find a positive relationship between employees' mental health and focus on opportunities. However, mental health was positively related to focus on opportunities among small business owners and had a positive and indirect effect on venture growth through focus on opportunities (Study 4). Entrepreneurship researchers have suggested that mental health is an important resource for self-employed individuals because their work involves higher demands and more stressors; they also face more economic and social risks than salaried employees (Hisrich et al., 2007; Prottas & Thompson, 2006; Tetrick et al., 2000). Future research should investigate the specific mechanisms through which physical and mental health might influence focus on opportunities. Research on older individuals' physical and mental health has important implications for designing work-related interventions as well as programs and campaigns to improve health on a national level (Hedge et al., 2006; Keyes, 2007).

SOC strategy use. Study 2 investigated the relationship between focus on opportunities and the use of a self-management strategy called selection, optimization, and compensation (SOC, P. B. Baltes & Baltes, 1990; Freund & Baltes, 2002). SOC strategy use was positively related to focus on opportunities. Possible explanations for this finding are that SOC strategy use enhances employees' successful adaptation to changes in personal resources and work-related demands and facilitates autonomous goal setting, adaptation, and pursuit. These factors may in turn increase employees' focus on opportunities. Future research could investigate whether self-management strategies such as SOC can be trained, such that focus on opportunities is enhanced and in turn influences important work outcomes.

Much more research on how the concept of focus on opportunities is related to individual characteristics is needed. For example, Krueger and Dickson (1993; 1994) suggested that self-efficacy beliefs (Bandura, 2000) may influence how many opportunities individuals perceive for themselves. Research might also investigate how employees' cognitive abilities (i.e., fluid and crystallized intelligence), and changes in these abilities over the life span (P. B. Baltes, Staudinger et al., 1999), influence focus on opportunities at work.

Work characteristics. In terms of context-related characteristics, Studies 1, 2, and 3 showed that job complexity (i.e., the extent to which the work provides employees with stimulating and challenging demands; Fried et al., 2002) was positively related to focus on opportunities when other variables – especially age – were taken into account. Study 3 found that focus on opportunities completely mediated the positive relationship between job complexity and work performance. Study 1 also provided evidence that job control (i.e., the

extent to which the work provides employees with decision possibilities; Frese, 1987a) was positively related to focus on opportunities. These findings are consistent with the perspective of occupational socialization (Frese, 1982; Kohn & Schooler, 1978; Schooler, 1987), which argues that work characteristics, such as job control and complexity, have positive effects on employees' motivation as well as cognitive and emotional functioning. These positive effects, together with individuals' inferences from their current to future work-related possibilities (Markus & Nurius, 1986), should in turn positively affect focus on opportunities at work.

Future research needs to investigate the mediating processes through which work characteristics may positively influence focus on opportunities. For example, Schooler et al. (1999) suggested that complex work environments reward employees' cognitive efforts more strongly, and therefore employees in high-complexity jobs are more motivated to develop their intellectual abilities and to generalize the resulting cognitive processes to other situations. In addition, future research might also investigate whether there is a "dark side" to the positive effects of high job complexity on focus on opportunities (and, indirectly, on outcomes such as work performance). Grant et al. (2007) recently suggested that increasing jobs' complexity may result in well-being trade-offs, such as reduced physical health. Research on these trade-offs between focus on opportunities and physical health appears to be particularly important in terms of designing jobs for an aging workforce (Griffiths, 1999), because both focus on opportunities and physical health decline with age.

6.2 Moderators of the Relationship between Age and Focus on Opportunities at Work

In their recent pioneer study on focus on opportunities, Cate and John (2007) asked "What can be done to prolong the feeling that there are many opportunities ahead?" (p. 200). I investigated this question in four empirical studies with focus on opportunities at work as the dependent variable. Specifically, two different kinds of resources were assumed to buffer the generally negative relationship between age and focus on opportunities at work: Work characteristics (job control and complexity) and mental health.

Work characteristics. Frese and Stewart (1984) argued that studies on aging and development at work have to take the characteristics of jobs into account. However, so far only very few empirical studies on the effects of work characteristics at different ages have been conducted (Farr & Ringseis, 2002; Griffiths, 1999). In this dissertation, I suggested that

two important work characteristics – job control and complexity – would interact with employee age in predicting focus on opportunities at work. Studies 1, 2, and 3 congruently found that high job complexity buffered the negative relationship between age and focus on opportunities at work. In addition, Study 3 showed that high job complexity weakened the negative and indirect effect of age on work performance (through focus on opportunities). As suggested in these studies, a possible explanation why high-complexity jobs enable employees to maintain a focus on opportunities at higher ages may be that the demands and possibilities of high-complexity jobs provide a better fit to older employees' altered resources (e.g., increased experiential knowledge, decreased physical strength) and preferences (e.g., higher needs to collaborate and share knowledge; Kanfer & Ackerman, 2004). In addition, high job complexity helps to maintain intellectual flexibility at higher ages (Schooler et al., 1999), which in turn may facilitate activities that contribute to focus on opportunities (e.g., work-related learning). Study 1 also found that job control buffered the negative relationship between age and focus on opportunities at work. Even though job control and complexity are highly related (Semmer, 1982), the explanation for the buffering effect of job control may be different. Specifically, I argued that high job control enables older employees to adapt their work tasks to their altered resources and provides them with more decision possibilities to carry out their work according to their changed preferences. These possibilities associated with high job control should in turn enhance focus on opportunities at higher ages.

Critics might argue that the demands of high-complexity jobs (e.g., making challenging decisions) become more difficult at higher ages due to age-related cognitive impairments. Meta-analytic studies have shown that individuals' information processing speed declines linearly after the age of 20 and declines even more rapidly after the age of 50 (Verhaeghen & Salthouse, 1997). These findings may lead to the assumption that older employees should have more problems in complex jobs than younger employees and that high job complexity should actually strengthen the negative relationship between age and focus on opportunities. However, as argued by Schooler et al. (1999), age-related deficits in cognitive resources may render it even more important that older employees' work tasks enable them to practice and develop their intellectual skills. I suggest that the positive effects of high-complexity jobs on intellectual flexibility are also responsible for the finding that older employees in high-complexity jobs are better able to maintain a focus on opportunities.

Future research could investigate additional work characteristics that enable employees to maintain a focus on opportunities at work. For example, knowledge work

characteristics such as specialization, problem solving, and skill variety (Morgeson & Humphrey, 2006) may have beneficial effects at higher ages because they allow older employees to utilize and transfer their increased experiential knowledge. In addition, contextual characteristics such as ergonomics and physical demands (Morgeson & Humphrey, 2006) should influence the negative relationship between age and focus on opportunities because older employees generally have fewer physical resources than younger employees (Baltes, 1997). Research on age and work characteristics has important implications for designing jobs for an aging workforce. Focus on opportunities is associated with important work outcomes (see next section); thus, work that takes the altered resources and preferences of older employees into account may indirectly enhance these outcomes.

SOC strategy use. After Study 1 had shown that low levels of job complexity strengthened the negative relationship between age and focus on opportunities, I investigated in Study 2 what employees in low-complexity jobs might do to maintain a focus on opportunities at higher ages. Study 2 showed that high levels of SOC strategy use weakened the negative relationship between age and focus on opportunities in low-complexity jobs. In contrast, in high-complexity jobs high levels of SOC strategy use did not weaken the negative relationship between age and focus on opportunities. This finding is consistent with research by Young et al. (2007), who suggested that SOC strategy use is particularly effective when the work environment provides only few external resources. SOC strategy use facilitates the optimal allocation of personal resources, helps to adapt to changes in personal resources and work demands, and enhances autonomous goal setting, adaptation, and pursuit (Freund & Baltes, 2002). The findings of Study 2 suggest that SOC strategy use is more important in terms of maintaining a focus on opportunities at higher ages when the work environment does not provide resources that have this effect in the first place (i.e., high job complexity). Future research could investigate how different personal resources, action regulation strategies, and resources provided by the work environment interact in predicting focus on opportunities at work. Practitioners could obtain important information from such research on how to design workplaces for an aging workforce and on how to train younger and older employees, such that a strong focus on opportunities is maintained at higher ages.

Mental health. Study 4 showed that high levels of mental health buffered the negative relationship between age and focus on opportunities in a sample of small business owners, and weakened the negative and indirect effect of age on venture growth (through focus on opportunities). Interestingly, the results suggest that mental health had a stronger buffering

effect in Study 4 than job complexity did in the other studies. Whereas the negative relationship between age and focus on opportunities remained significant for employees in high-complexity jobs in Studies 1, 2, and 3, the relationship between age and focus on opportunities was small and non-significant among small business owners high in mental health. I suggest that the combination of stimulating and challenging work tasks (i.e., high job complexity) and high levels of mental health among small business owners is particularly beneficial in terms of maintaining a focus on opportunities at higher ages. Again, future research could investigate how other combinations of internal and external resources may predict focus on opportunities, and how they indirectly influence (through focus on opportunities) important employee and organizational outcomes.

6.3 Relationships between Focus on Opportunities and Work Outcomes

Seijts (1998) suggested more than ten years ago that the way individuals perceive their personal future may influence work-related outcomes. Studies 3 and 4 of this dissertation were the first to empirically investigate this proposition. Specifically, I examined relationships between focus on opportunities and two important performance criteria in the work context: Employees' work performance and small business owners' venture growth.

Work performance. Work performance is the most important criterion variable in work and organizational psychology research (Sonnentag & Frese, 2002). Even though several meta-analyses have investigated the overall relationship between age and work performance (e.g., Ng & Feldman, 2008), no empirical study had so far examined potential mediators of the age-performance relationship. Study 3 showed that focus on opportunities was positively related to overall work performance as well as four more specific work performance dimensions (i.e., task, career, team member performance, and organizational citizenship behavior [OCB]). In addition, focus on opportunities mediated the indirect effects of age and job complexity on overall work performance and task, career, team member performance, and OCB. I drew on possible selves theory (Cross & Markus, 1991, 1994; Markus & Nurius, 1986) to suggest that focus on opportunities at work is positively related to work performance because it fulfills a motivating (i.e., individuals want to pursue their future opportunities) as well as a self-evaluative function (i.e., individuals want to reduce the perceived discrepancy between their current situation and their future opportunities). Future research should investigate more comprehensive models of the age-performance relationship,

which include both positive and negative age-related mediators. In addition, future research could investigate whether focus on opportunities predicts work performance beyond more established predictors, such as general cognitive ability and trait conscientiousness (Schmidt & Hunter, 1998). In addition, researchers could investigate whether focus on opportunities also predicts other important work behaviors such as proactive and adaptive performance (M. A. Griffin et al., 2007). Study 3 presents an important contribution to the literature because it suggests that practitioners' efforts to increase employees' focus on opportunities through work design interventions may benefit work performance.

Venture growth. Venture growth is the ultimate criterion of entrepreneurial efforts (Covin & Slevin, 1997; Stevenson & Jarillo, 1990). However, no empirical research existed on the mediating processes of the negative relationship between business owners' age and venture growth. Study 4 of this dissertation found that focus on opportunities was positively related to venture growth (e.g., changes in sales, profits, and number of employees over one year). In addition, focus on opportunities mediated the indirect effects of age and mental health on venture growth. Similar to the theoretical explanation for the relationship between focus on opportunities and employees' work performance, I suggested that a strong focus on opportunities facilitates the setting of specific and challenging growth goals for the venture, directs attention to and influences information processing with regard to business opportunities, and motivates business owners to exploit business opportunities. These mechanisms should in turn result in higher venture growth. I suggest that focus on opportunities has the potential to become an important variable in entrepreneurial cognition research (Mitchell et al., 2007), as it describes how business owners think about opportunities in the future. Not only is "opportunity" a central concept in entrepreneurship research (Shane & Venkataraman, 2000), also its relationship with age renders focus on opportunities important, as it is expected that there will be significantly higher numbers of older entrepreneurs in the near future (Minerd, 1999; Rogoff, 2007). Thus, future research should further explore the role of focus on opportunities in entrepreneurship.

From a broader theoretical perspective, the positive relationships found between focus on opportunities on the one hand and the important criteria of work performance and venture growth on the other hand are consistent with research on how positive thinking about the future leads to better performance (Aspinwall, 2005; Oettingen & Mayer, 2002). In the following section, I suggest that focus on opportunities should be integrated into a broader approach to individuals' positive psychological capital at work (Luthans et al., 2007).

6.4 Focus on Opportunities as an Aspect of Older Adults'

Positive Psychological Capital

Focus on opportunities can be conceived as a criterion of successful aging at work (Hansson et al., 1997), which is negatively related to age and positively related to job complexity and the use of a successful aging strategy called SOC (see Study 2). Based on Ryff's (1989) suggestions concerning successful aging criteria, I argued that a strong focus on opportunities – particularly at higher ages when many age-related changes in resources occur and individuals face more age-related constraints – indicates that employees still perceive many possibilities for progress, advancement, and development at work. Thus, focus on opportunities may be a better criterion of successful aging at work than rather passive job attitude concepts such as job satisfaction. In addition, I suggest that future research should conceptualize focus on opportunities as an aspect of (especially older) employees' "positive psychological capital" as described by the emerging "positive organizational behavior" (POS) approach (Luthans, 2002a, 2002b; Youssef & Luthans, 2007). The POS approach has been defined as "the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement" (Luthans, 2002b, p. 59).

In order to be included in the POS framework, psychological concepts have to fulfill a number of inclusion criteria set by POS researchers (Luthans et al., 2007). First, concepts must be based on theory and subject to empirical research. Second, the concepts should be unique to the field of organizational behavior. Third, concepts should be state-like, that is, open to change and development as opposed to fixed traits. Finally, concepts must be positively related to important work outcomes. So far, the concepts that have been suggested to meet these criteria are self-efficacy, hope, optimism, and resilience (Luthans & Youssef, 2004). Briefly, self-efficacy has been defined as an individual's belief in his or her capabilities necessary to attain specified outcomes (Bandura, 1997). Hope is an individual's positive motivational state that is grounded in beliefs about successful expenditure of goal-directed energy and planning to meet goals (Snyder, Irving, & Anderson, 1991). Optimism has been defined by Seligman (1998) as a tendency to attribute positive events to internal, stable, and global causes and negative events to external, unstable, and specific causes. Finally, resilience is characterized by positive coping and adaptation in the face of significant risk, uncertainty, or adversity (Masten, 2001). When combined into a higher-order factor, self-efficacy, hope, optimism, and resilience have been conceived as positive psychological

capital, or the “positive appraisal of circumstances and probability for success based on motivated effort and perseverance” (Luthans et al., 2007, p. 550). Research showed that a higher-order factor of positive psychological capital explained variance above and beyond its lower-order components in work performance and job satisfaction (Luthans et al., 2007).

I suggest that focus on opportunities could be included in the POS framework because it fulfills all of the inclusion criteria set by POS researchers. First, focus on opportunities is based on future time perspective theory from the fields of adult development and life span psychology (Cate & John, 2007; Seijts, 1998). The studies compiled in this dissertation show that its empirical investigation adds to a better understanding of the role of age in the work context. Second, focus on opportunities is a unique concept to the field of organizational behavior due to its relationship with age (Zacher & Frese, in press) and because the concept of “opportunity” has so far been a rather neglected concept in organizational research (Blumberg & Pringle, 1982; Stewart & Nandkeolyar, 2007). Third, the studies in this dissertation showed that focus on opportunities is a flexible and state-like concept that is related to age, job control and complexity, and SOC strategy use. Finally, Studies 3 and 4 of this dissertation provided the first empirical evidence that focus on opportunities at work is positively related to two important performance criteria in the work context: Employee work performance and business owners’ venture growth.

It is also important to delineate how focus on opportunities differs from the other concepts so far included in the POS framework. First, the difference between self-efficacy and focus on opportunities is that self-efficacy refers to individuals’ perceived *capabilities* to achieve certain outcomes (Bandura, 1977, 2000), whereas focus on opportunities describes individuals’ beliefs of their personal *future opportunities* at work. Second, hope differs from focus on opportunities because hope includes individuals’ planning to meet goals (i.e., “pathways,” Snyder et al., 1991), whereas focus on opportunities does not necessarily imply planning. Focus on opportunities is also different from the widely-accepted scientific conceptualization of optimism as an attributional style (C. Peterson, 2000; Seligman, 1998), because it does not describe what attributions individuals make when positive or negative events happen at work. Finally, even though a strong focus on opportunities may also be useful in order to cope with negative events and experiences in the long term, it is different from the concept of resilience, because resilience emphasizes only the positive consequences when facing and conquering significant challenges and risks (Greve & Staudinger, 2006; Masten, 2001; Staudinger, Freund, Linden, & Maas, 1999).

In summary, I argue that focus on opportunities at work fulfills the inclusion criteria of the POS approach (Luthans, 2002a, 2002b; Luthans et al., 2007) and is sufficiently different from the other concepts so far included as “positive psychological capital” into POS. Future research on successful aging at work might conceptualize focus on opportunities as an additional aspect of individuals’ positive psychological capital and investigate its separate and combined effects with self-efficacy, hope, optimism, and resilience on work outcomes, especially at higher ages. So far, research on older individuals’ positive psychological capital has only been theoretical (S. J. Peterson & Spiker, 2005). Empirical investigations may yield important implications for the human resource management of older individuals. For example, practitioners could find ways to maintain and increase older adults’ positive psychological capital, including focus on opportunities, such that organizations are better able to retain older employees and help them to maintain high levels of work performance.

6.5 Limitations of a Cross-Sectional Approach to Aging Research

All of the four studies compiled in this dissertation had a cross-sectional design, comparing individuals born at different times on a single occasion. It is therefore important to note that statistical analyses based on cross-sectional data cannot disentangle intraindividual changes due to aging from potential effects due to birth cohort or generational differences, average between-person trends, and selection, attrition, and mortality effects (P. B. Baltes & Nesselroade, 1979; Hofer & Sliwinski, 2006). Cross-sectional studies on age are also limited with regard to more complex statistical analyses. For example, cross-sectional studies allow conclusions to be made about how employees from different age groups respond to high or low levels of job complexity, but they do not allow for investigation of the effects of job complexity levels on intraindividual change trajectories over time. Solutions to the problems associated with cross-sectional designs are longitudinal and cohort-sequential studies (Hofer & Sliwinski, 2006), which allow for the investigation of intraindividual change processes over years and decades, the identification of interindividual differences in intraindividual change, the analysis of interrelationships of change processes, and cross-sectional as well as longitudinal comparisons across different birth cohorts (P. B. Baltes & Nesselroade, 1979; Hofer & Sliwinski, 2006; Singer & Willett, 2003). In the domain of work and organizational psychology, Frese (1982; 1984; Frese & Stewart, 1984) has emphasized early the importance of such longitudinal designs in order to study the socialization effects of the work context on individuals’ personality, beliefs, and functioning, as well as their development over time.

However, despite the manifold advantages of longitudinal designs and recent statistical advances that facilitate the analysis of longitudinal data (McArdle & Bell, 2000), collecting such data over years and decades is still very complicated. As Ng and Feldman (2008) recently noted, “In perhaps no area of organizational research is the legitimate barrier to longitudinal research greater than it is in the area of aging” (p. 405). While a number of exceptional longitudinal studies exists, especially in the fields of sociology and gerontology (Aldwin, Spiro, Levenson, & Cupertino, 2001; P. B. Baltes & Mayer, 1999; Schooler et al., 1999), it is hardly possible to implement such studies in a single researcher’s career (Ng & Feldman, 2008). Warr et al. (2001) and Ng and Feldman (2008) argued that cross-sectional studies on the role of age in the work context are not only inevitable, but also important in their own right. For example, cross-sectional studies on the relationship between age and work performance allow for conclusions about existing age patterns in the current population of employees, and therefore may help to refute age stereotypes in organizations (Hassell & Perrewe, 1995). In addition, results from cross-sectional studies may help to stimulate subsequent, more intensive longitudinal research (Avolio & Waldman, 1990).

Thus, as much as longitudinal study designs would be desirable and important, future cross-sectional research on focus on opportunities seems to be inevitable. Following Ng and Feldman’s (2008) recent recommendations, I would like to suggest two possibilities to improve future studies on age and focus on opportunities at work. First, future studies should make sure to include balanced numbers of older and younger employees in their samples in order to arrive at valid conclusions about focus on opportunities in different age groups. Middle-aged and older employees have so far been severely underrepresented groups in organizational research (Ng & Feldman, 2008). The mean age across all samples included in the present dissertation ($N = 561$) was 39.8 years, with an age range from 16 to 74 years, and a standard deviation of 12.13 years. The median age of participants was 41 years, which is comparable to the median age of the current U.S. workforce (Ng & Feldman, 2008) and only about one year less than the median age of the current German workforce (Tivig & Hetze, 2007). Considering that 40 years is the official age for individuals in the United States to be considered “older employees” according to the “The Age Discrimination in Employment Act” of 1967 (Avolio et al., 1990; O’Meara, 1989), the studies in this dissertation included about equal numbers of older and younger employees.

A second possibility to improve future research on focus on opportunities is to apply *short-term* longitudinal designs in which intraindividual data is collected only across critical

transition periods in employees' careers (Ng & Feldman, 2008). For example, researchers might investigate how employees' focus on opportunities changes in the first few years on the job (e.g., between 20 and 30 years) or across the transition from middle to late adulthood (e.g., between 55 and 65 years). Such studies are less complicated to implement than long-term longitudinal studies over several decades and may be useful to identify critical factors that contribute to changes in focus on opportunities over time.

6.6 Summary

In summary, this dissertation contributes to research on the role of age in the work context and to human resource management of older employees in at least three ways. First, with focus on work-related opportunities a new and important age-related concept is introduced to the literature (Zacher & Frese, in press). Even though Seijts (1998) suggested more than ten years ago that work and organizational psychologists should investigate the role of future time perspective in the work context, the studies compiled in this dissertation are the first to follow this call. The suggestions for future empirical research and implications for theory development outlined in the different chapters of this dissertation assemble several ideas for researchers to continue the study of focus on opportunities at work.

Second, this dissertation contributes to research and practice by investigating focus on opportunities as a mediator of the relationships between age and work performance and between age and venture growth. So far, research has mostly focused on bivariate relationships between age and these outcomes (Lévesque & Minniti, 2006; Ng & Feldman, 2008). The studies of this dissertation therefore contribute to further theory development and empirical research. The identification of mediating mechanisms between age and work-related outcomes is important for organizational practitioners and policy makers to design and implement interventions that enable older individuals to maintain high levels of functioning.

Finally, this dissertation identified several factors that moderate the generally negative relationship between age and focus on opportunities. So far, only very few studies on interactions between age and work characteristics (Farr & Ringseis, 2002), and between age and mental health (Keyes, 2007), have been conducted. This dissertation provides empirical evidence that a sharp decrease in focus on opportunities at higher ages is not inevitable. This result has implications for individuals, organizations, and society as a whole, considering that focus on opportunities is positively associated with important work outcomes.

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Appendices

Appendix A: Scales Used in the Studies

Appendix B: Questionnaires

Appendix C: German Summary

Appendix A: Scales Used in the Studies

Appendix A.1: Scales Used in Study 1	174
Appendix A.2: Scales Used in Study 2	185
Appendix A.3: Scales Used in Study 3	191
Appendix A.4: Scales Used in Study 4	198

Appendix A.1: Scales used in Study 1

A.1.1 Focus on Opportunities at Work

References:

- Carstensen, L. L., & Lang, F. R. (1996). *Future Time Perspective Scale*. Unpublished manuscript, Stanford University.
- Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17*(1), 125-139.
- 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.

Format: 7-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 7 (*applies completely* [trifft voll und ganz zu]).

Alpha	.94
Mean	4.36
Standard deviation	1.68
N	176

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
opp1	Auf mich warten viele Möglichkeiten in meiner beruflichen Zukunft. <i>Many opportunities await me in my occupational future.</i>	.86	4.43	1.77
opp2	Ich glaube, dass ich in meiner beruflichen Zukunft viele neue Ziele haben werde. <i>I expect that I will set many new goals in my occupational future.</i>	.85	4.33	1.76
opp3	Meine berufliche Zukunft ist voller Möglichkeiten. <i>My occupational future is filled with possibilities.</i>	.89	4.34	1.80

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.1.2 Remaining Time at Work

References:

- Carstensen, L. L., & Lang, F. R. (1996). *Future Time Perspective Scale*. Unpublished manuscript, Stanford University.
- Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17*(1), 125-139.
- 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.

Format: 7-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 7 (*applies completely* [trifft voll und ganz zu]).

Alpha	.81
Mean	3.88
Standard deviation	1.77
N	176

Code		ITC	M	SD
time1	Der größte Teil meines Berufslebens liegt vor mir. <i>Most of my occupational life lies ahead of me.</i>	.73	4.25	2.41
time2	Meine berufliche Zukunft erscheint mir unendlich. <i>My occupational future seems infinite to me.</i>	.69	2.97	1.82
time3	Mit zunehmendem Alter beginne ich, die Zeit im Beruf als begrenzt zu erleben. ^a <i>As I get older, I begin to experience my time at work as limited.^a</i>	.59	4.38	1.94

Note. ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.

A.1.3 Job Control

References:

- 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.
- Semmer, N. (1982). Stress at work, stress in private life and psychological well-being. In W. Bachmann & I. Udris (Eds.), *Mental load and stress in activity: European approaches* (pp. 42-55). Amsterdam: Elsevier.
- Semmer, N. (1984). *Stressbezogene Tätigkeitsanalyse: Psychologische Untersuchungen zur Analyse von Stress am Arbeitsplatz*. Weinheim: Beltz.
- Zapf, D. (1993). Stress-oriented job analysis of computerized office work. *The European Work and Organizational Psychologist*, 3, 85-100.

Format: 7-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 7 (*applies completely* [trifft voll und ganz zu]).

Alpha	.80
Mean	4.99
Standard deviation	1.25
N	176

Code		ITC	M	SD
con1	Wenn ich meine Arbeit insgesamt betrachte, bietet sie mir viele Möglichkeiten zu eigenen Entscheidungen. <i>If I look at my job as a whole, it allows me to make many own decisions.</i>	.65	5.15	1.42
con2	Ich kann meine Arbeit selbstständig planen und einteilen. <i>I can plan and arrange my work on my own.</i>	.68	5.14	1.62
con3	Ich kann selber bestimmen, auf welche Art und Weise ich meine Arbeit erledige. <i>I can determine how I do my work.</i>	.68	5.15	1.51
con4	Ich kann an Entscheidungen meines Vorgesetzten stark mitwirken (z. B.: fragt mich nach meiner Meinung; bittet mich um Vorschläge zu gewissen betrieblichen Problemen). <i>I can participate a great deal in decisions being made by my superior (e.g., he/she asks for my opinion and suggestions).</i>	.47	4.47	1.75

ITC = Item-total-correlation, M = mean, SD = standard deviation.

A.1.4 Job Complexity

References:

- 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.
- Semmer, N. (1982). Stress at work, stress in private life and psychological well-being. In W. Bachmann & I. Udriș (Eds.), *Mental load and stress in activity: European approaches* (pp. 42-55). Amsterdam: Elsevier.
- Semmer, N. (1984). *Stressbezogene Tätigkeitsanalyse: Psychologische Untersuchungen zur Analyse von Stress am Arbeitsplatz*. Weinheim: Beltz.
- Zapf, D. (1993). Stress-oriented job analysis of computerized office work. *The European Work and Organizational Psychologist*, 3, 85-100.

Format: 7-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 7 (*applies completely* [trifft voll und ganz zu]).

Alpha	.74
Mean	4.80
Standard deviation	1.22
N	176

Code		ITC	M	SD
com1	Ich erhalte Arbeitsaufträge, die ungewöhnlich und besonders schwierig sind. <i>I receive tasks that are extraordinary and particularly difficult.</i>	.53	4.18	1.65
com2	Ich muss bei meiner Arbeit oft sehr komplizierte Entscheidungen treffen. <i>I often have to make very complicated decisions in my work.</i>	.58	4.05	1.81
com3	Ich kann bei meiner Arbeit mein Wissen und Können voll einsetzen. <i>I can use all my knowledge and skills in my work.</i>	.63	5.35	1.59
com4	Ich kann bei meiner Arbeit Neues dazulernen. <i>I can learn new things in my work.</i>	.41	5.63	1.48

ITC = Item-total-correlation, M = mean, SD = standard deviation.

A.1.5 Extraversion

References:

- Lang, F. R., Lüdtke, O., & Asendorpf, J. B. (2001). Testgüte und psychometrische Äquivalenz der deutschen Version des Big Five Inventory (BFI) bei jungen, mittelalten und alten Erwachsenen [Validity and psychometric equivalence of the German version of the Big Five Inventory in young, middle-aged and old adults]. *Diagnostica, 47*, 111-121.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-138). New York: The Guilford Press.

Format: 7-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 7 (*applies completely* [trifft voll und ganz zu]).

Alpha	.90
Mean	5.05
Standard deviation	1.08
N	176

Code	Ich sehe mich selbst als jemand, der... <i>I am someone who...</i>	ITC	M	SD
ex1	... aus sich herausgeht, gesellig ist. <i>... is outgoing, sociable.</i>	.73	4.99	1.37
ex2	... gesprächig ist, sich gerne unterhält. <i>... is talkative.</i>	.70	5.32	1.40
ex3	... durchsetzungsfähig und energisch ist. <i>... has an assertive personality.</i>	.66	4.88	1.44
ex4	... begeisterungsfähig ist, andere mitreißen kann. <i>... generatives a lot of enthusiasm.</i>	.68	5.09	1.30
ex5	... voller Energie und Tatendrang ist. <i>... is full of energy.</i>	.67	5.09	1.29
ex6	... eher zurückhaltend und reserviert ist. ^a <i>... is reserved.^a</i>	.71	4.85	1.51
ex7	... manchmal schüchtern und gehemmt ist. ^a <i>... is sometimes shy, inhibited.^a</i>	.59	4.65	1.60
ex8	... eher still und wortkarg ist. ^a <i>... tends to be quiet.^a</i>	.70	5.53	1.46

ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.

A.1.6 Agreeableness

References:

- Lang, F. R., Lüdtke, O., & Asendorpf, J. B. (2001). Testgüte und psychometrische Äquivalenz der deutschen Version des Big Five Inventory (BFI) bei jungen, mittelalten und alten Erwachsenen [Validity and psychometric equivalence of the German version of the Big Five Inventory in young, middle-aged and old adults]. *Diagnostica*, *47*, 111-121.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-138). New York: The Guilford Press.

Format: 7-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 7 (*applies completely* [trifft voll und ganz zu]).

Alpha	.73
Mean	4.97
Standard deviation	.80
N	176

Code	Ich sehe mich selbst als jemand, der... <i>I am someone who...</i>	ITC	M	SD
ag1	... rücksichtvoll und einfühlsam zu anderen ist. <i>... is considerate and kind to almost everyone.</i>	.43	5.41	1.07
ag2	... hilfsbereit und selbstlos gegenüber anderen ist. <i>... is helpful and unselfish with others.</i>	.49	5.16	1.07
ag3	... nicht nachtragend ist, anderen leicht vergibt. <i>... has a forgiving nature.</i>	.34	4.72	1.56
ag4	... anderen Vertrauen schenkt. <i>... is generally trusting.</i>	.40	5.14	1.18
ag5	... dazu neigt, andere zu kritisieren. ^a <i>... tends to find fault with others.^a</i>	.33	3.87	1.32
ag6	... häufig in Streitereien verwickelt ist. ^a <i>... starts quarrels with others.^a</i>	.35	5.57	1.29
ag7	... sich kalt und distanziert verhalten kann. ^a <i>... can be cold and aloof.^a</i>	.55	4.78	1.70
ag8	... schroff und abweisend zu anderen sein kann. ^a <i>... is sometimes rude to others.^a</i>	.55	5.11	1.61

ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.

A.1.7 Conscientiousness

References:

- Lang, F. R., Lüdtke, O., & Asendorpf, J. B. (2001). Testgüte und psychometrische Äquivalenz der deutschen Version des Big Five Inventory (BFI) bei jungen, mittelalten und alten Erwachsenen [Validity and psychometric equivalence of the German version of the Big Five Inventory in young, middle-aged and old adults]. *Diagnostica, 47*, 111-121.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-138). New York: The Guilford Press.

Format: 7-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 7 (*applies completely* [trifft voll und ganz zu]).

Alpha	.82
Mean	5.43
Standard deviation	.82
N	176

Code	Ich sehe mich selbst als jemand, der... <i>I am someone who...</i>	ITC	M	SD
co1	... Aufgaben gründlich erledigt. <i>... does a thorough job.</i>	.63	5.94	.92
co2	... tüchtig ist und flott arbeitet. <i>... does things efficiently.</i>	.65	5.67	1.06
co3	... Pläne macht und diese auch durchführt. <i>... makes plans and follows through with them.</i>	.50	5.49	1.15
co4	... zuverlässig ist und gewissenhaft. <i>... is a reliable worker.</i>	.65	6.02	.84
co5	... nicht aufgibt, ehe die Aufgabe erledigt ist. <i>... perseveres until the task is finished.</i>	.50	5.78	.95
co6	... leicht ablenkbar ist, nicht bei der Sache bleibt. ^a <i>... is easily distracted.^a</i>	.44	4.93	1.56
co7	... etwas achtlos sein kann. ^a <i>... can be somewhat careless.^a</i>	.59	5.21	1.25
co8	... bequem ist und zur Faulheit neigt. ^a <i>... tends to be lazy.^a</i>	.55	5.18	1.59
co9	... dazu neigt, unordentlich zu sein. ^a <i>... tends to be disorganized.^a</i>	.45	4.72	1.73

ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.

A.1.8 Neuroticism

References:

- Lang, F. R., Lüdtke, O., & Asendorpf, J. B. (2001). Testgüte und psychometrische Äquivalenz der deutschen Version des Big Five Inventory (BFI) bei jungen, mittelalten und alten Erwachsenen [Validity and psychometric equivalence of the German version of the Big Five Inventory in young, middle-aged and old adults]. *Diagnostica, 47*, 111-121.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-138). New York: The Guilford Press.

Format: 7-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 7 (*applies completely* [trifft voll und ganz zu]).

Alpha	.86
Mean	3.60
Standard deviation	1.11
N	176

Code	Ich sehe mich selbst als jemand, der... <i>I am someone who...</i>	ITC	M	SD
ne1	... sich viele Sorgen macht. <i>... worries a lot.</i>	.65	4.50	1.75
ne2	... leicht angespannt reagiert. <i>... can be tense.</i>	.73	3.94	1.59
ne3	... leicht nervös und unsicher wird. <i>... gets nervous easily.</i>	.70	3.32	1.54
ne4	... deprimiert, niedergeschlagen ist. <i>... is depressed, blue.</i>	.45	2.57	1.51
ne5	... ruhig bleibt, selbst in angespannten Situationen ausgeglichen ist. ^a <i>... remains calm in tense situations.^a</i>	.63	3.56	1.41
ne6	... nicht leicht aus der Fassung zu bringen ist. ^a <i>... is emotionally stable, not easily upset.^a</i>	.58	3.52	1.45
ne7	... entspannt ist, sich durch Stress nicht aus der Ruhe bringen lässt. ^a <i>... is relaxed, handles stress well.^a</i>	.66	3.76	1.38

ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.

A.1.9 Openness to Experience

References:

- Lang, F. R., Lüdtke, O., & Asendorpf, J. B. (2001). Testgüte und psychometrische Äquivalenz der deutschen Version des Big Five Inventory (BFI) bei jungen, mittelalten und alten Erwachsenen [Validity and psychometric equivalence of the German version of the Big Five Inventory in young, middle-aged and old adults]. *Diagnostica*, *47*, 111-121.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-138). New York: The Guilford Press.

Format: 7-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 7 (*applies completely* [trifft voll und ganz zu]).

Alpha	.84
Mean	5.03
Standard deviation	.91
N	176

Code	Ich sehe mich selbst als jemand, der... <i>I am someone who...</i>	<i>ITC</i>	<i>M</i>	<i>SD</i>
op1	... erfinderisch und einfallsreich ist. <i>... is inventive.</i>	.47	5.03	1.23
op2	... originell ist, neue Ideen entwickelt. <i>... is original, comes up with new ideas.</i>	.58	4.73	1.27
op3	... künstlerische und ästhetische Eindrücke schätzt. <i>... values artistic, aesthetic experiences.</i>	.62	5.09	1.62
op4	... eine lebhaftere Vorstellungskraft hat, fantasievoll ist. <i>... has an active imagination.</i>	.65	5.18	1.33
op5	... gerne Überlegungen anstellt, mit Ideen spielt. <i>... likes to reflect, play with ideas.</i>	.65	5.31	1.27
op6	... tief sinnig ist, gern über Sachen nachdenkt. <i>... is ingenious, a deep thinker.</i>	.46	5.35	1.30
op7	... sich gut in Musik, Kunst und Literatur auskennt. <i>... is sophisticated in art, music, or literature.</i>	.60	4.14	1.59
op8	... vielseitig interessiert ist. <i>... is curious about many different things.</i>	.53	5.46	1.20
op9	... routinemäßige und einfache Aufgaben bevorzugt. ^a <i>... prefers work that is routine.^a</i>	.32	5.01	1.43
op10	... nur wenig künstlerische Interessen hat. ^a <i>... has few artistic interests.^a</i>	.56	5.02	1.83

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation. ^a = reverse coded.

A.1.10 Physical Health

References:

- Bullinger, M., & Kirchberger, I. (1998). *SF-36 Fragebogen zum Gesundheitszustand [SF-36 Scale on health]*. Göttingen: Hogrefe.
- 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.

Format: Item 1: 5-point scale ranging from 1 (*excellent* [ausgezeichnet]) to 5 (*poor* [schlecht]); Items 2 and 3: 3-point scale ranging from 1 (*yes, limited a lot* [stark eingeschränkt]) to 3 (*no, not limited at all* [überhaupt nicht eingeschränkt]); Items 4 and 5: 1 (*yes* [ja]), 2 (*no* [nein]); Item 6: 5-point scale ranging from 1 (*not at all* [überhaupt nicht]) to 5 (*extremely* [sehr])

Alpha	.83
Mean	52.38
Standard deviation	7.65
N	176

Code		ITC ^b	M	SD
ph1	Wie würden Sie Ihren Gesundheitszustand im Allgemeinen beschreiben? ^a <i>In general, would you say your health is...^a</i>	.49	3.53	.79
ph2	Sind Sie durch Ihren derzeitigen Gesundheitszustand bei diesen Tätigkeiten eingeschränkt? Wenn ja, wie stark? Mittelschwere Tätigkeiten, z.B. einen Tisch verschieben, staubsaugen, kegeln, Golf spielen. <i>Does your health now limit you in these activities? If so, how much? Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf.</i>	.56	2.87	.40
ph3	Mehrere Treppenabsätze steigen. <i>Climbing several flights of stairs.</i>	.58	2.89	.35
ph4	Hatten Sie in den vergangenen vier Wochen aufgrund Ihrer körperlichen Gesundheit irgendwelche Schwierigkeiten bei der Arbeit oder anderen alltäglichen Tätigkeiten im Beruf bzw. zu Hause? Ich habe weniger geschafft als ich wollte. <i>During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health? Accomplished less than you would like.</i>	.54	1.82	.39
ph5	Ich konnte nur bestimmte Dinge tun. <i>Were limited in the kind of work or other activities.</i>	.66	1.90	.30
ph6	Inwieweit haben die Schmerzen Sie in den vergangenen vier Wochen bei der Ausübung Ihrer Alltagsaktivitäten zu Hause und im Beruf behindert? ^a <i>During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home, and housework)?^a</i>	.68	4.44	.82

ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.
^b = based on z-standardized item scores.

A.1.11 Mental Health

References:

- Bullinger, M., & Kirchberger, I. (1998). *SF-36 Fragebogen zum Gesundheitszustand [SF-36 Scale on health]*. Göttingen: Hogrefe.
- 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.

Format: Items 1 and 2: 1 (yes [ja]), 2 (no [nein]); Items 3, 4, and 5: 6-point scale ranging from 1 (all of the time [immer]) to 6 (none of the time [nie]); Item 6: 5-point scale ranging from 1 (all of the time [immer]) to 5 (none of the time [nie])

Alpha	.82
Mean	49.15
Standard deviation	9.92
N	176

Code		ITC ^b	M	SD
ps1	Hatten Sie in den vergangenen vier Wochen aufgrund seelischer Probleme irgendwelche Schwierigkeiten bei der Arbeit oder anderen alltäglichen Tätigkeiten im Beruf bzw. zu Hause (z.B. weil Sie sich niedergeschlagen oder ängstlich fühlten)? Ich habe weniger geschafft als ich wollte. <i>During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (Such as feeling depressed or anxious)? Accomplished less than you would like.</i>	.60	3.53	.79
ps2	Ich konnte nicht so sorgfältig wie üblich arbeiten. <i>Didn't do work or other activities as carefully as usual.</i>	.55	2.87	.40
ps3	Wie oft waren Sie in den vergangenen vier Wochen... ... ruhig und gelassen? ^a <i>How much of the time during the past 4 weeks... ... have you felt calm and peaceful?^a</i>	.52	2.89	.35
ps4	... voller Energie? ^a <i>... did you have a lot of energy?^a</i>	.50	1.82	.39
ps5	... entmutigt und traurig? <i>... have you felt downhearted and blue?</i>	.67	1.90	.30
ps6	Wie häufig haben Ihre körperliche Gesundheit oder seelischen Probleme in den vergangenen vier Wochen Ihre Kontakte zu anderen Menschen (Besuche bei Freunden, Verwandten usw.) beeinträchtigt? <i>During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?</i>	.62	4.44	.82

ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.

^b = based on z-standardized item scores.

Appendix A.2: Scales used in Study 2

A.2.1 Focus on Opportunities

References:

- Carstensen, L. L., & Lang, F. R. (1996). *Future Time Perspective Scale*. Unpublished manuscript, Stanford University.
- Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17*(1), 125-139.
- 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.

Format: 5-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 5 (*applies completely* [trifft voll und ganz zu]).

Alpha	.91
Mean	2.84
Standard deviation	.95
N	133

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
opp1	Auf mich warten viele Möglichkeiten in meiner beruflichen Zukunft. <i>Many opportunities await me in my occupational future.</i>	.82	2.90	1.08
opp2	Ich glaube, dass ich in meiner beruflichen Zukunft viele neue Ziele haben werde. <i>I expect that I will set many new goals in my occupational future.</i>	.80	2.74	1.01
opp3	Meine berufliche Zukunft ist voller Möglichkeiten. <i>My occupational future is filled with possibilities.</i>	.86	2.98	1.14
opp4	In meinem zukünftigen Berufsleben kann ich noch alles tun, was ich möchte. <i>I could do anything I want in my occupational future.</i>	.67	2.71	1.09

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.2.2 Job Complexity

References:

- 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.
- Semmer, N. (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. (1984). *Stressbezogene Tätigkeitsanalyse: Psychologische Untersuchungen zur Analyse von Stress am Arbeitsplatz*. Weinheim: Beltz.
- Zapf, D. (1993). Stress-oriented job analysis of computerized office work. *The European Work and Organizational Psychologist*, 3, 85-100.

Format: 5-point scale ranging from 1 (*very little* [sehr wenig]) to 5 (*very much* [sehr viel]).

Alpha	.76
Mean	3.33
Standard deviation	.78
N	133

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
com1	Erhalten Sie Arbeitsaufträge, die ungewöhnlich und besonders schwierig sind? <i>Do you receive tasks that are extraordinary and particularly difficult?</i>	.62	2.80	1.04
com2	Müssen Sie bei Ihrer Arbeit oft sehr komplizierte Entscheidungen treffen? <i>Do you often have to make very complicated decisions in your work?</i>	.61	2.85	1.09
com3	Können Sie bei Ihrer Arbeit Ihr Wissen und Können voll einsetzen? <i>Can you use all your knowledge and skills in your work?</i>	.64	3.81	1.03
com4	Können Sie bei Ihrer Arbeit Neues dazulernen? <i>Can you learn new things in your work?</i>	.38	3.81	.99

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.2.3 SOC Strategy Use

References:

- 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.
- 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.
- 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.
- 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.

Format: 5-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 5 (*applies completely* [trifft voll und ganz zu]).

Alpha	.77
Mean	3.21
Standard deviation	.48
N	133

(Items and item characteristics see next page)

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
soc1	Bei der Arbeit konzentriere ich meine ganze Energie auf wenige Dinge. <i>At work, I concentrate all my energy on few things.</i>	.17	2.99	.97
soc2	Bei der Arbeit konzentriere ich mich immer auf das wichtigste Ziel zu einem bestimmten Zeitpunkt. <i>At work, I always focus on the one most important goal at a given time.</i>	.33	3.65	.82
soc3	Ich habe bei meiner Arbeit ein oder zwei wichtige Ziele. <i>At work, I commit myself to one or two important goals.</i>	.39	3.10	.94
soc4	Wenn Dinge bei der Arbeit nicht mehr so gut gehen wie früher, wähle ich mir ein oder zwei wichtige Ziele aus. <i>When things at work don't go as well as they have in the past, I choose one or two important goals.</i>	.56	2.74	.94
soc5	Wenn ich etwas Wichtiges bei der Arbeit nicht mehr so tun kann wie früher, suche ich mir ein neues Ziel. <i>When I can't do something important at work the way I did before, I look for a new goal.</i>	.40	2.46	1.02
soc6	Wenn ich bei der Arbeit etwas nicht mehr so gut tun kann wie früher, denke ich darüber nach, was mir wirklich wichtig ist. <i>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.</i>	.54	2.75	1.07
soc7	Bei der Arbeit arbeite ich immer weiter an meinen Plänen, bis ich erfolgreich bin. <i>At work, I keep working on what I have planned until I succeed.</i>	.29	3.58	.85
soc8	Ich muss mich bei der Arbeit sehr anstrengen, um ein bestimmtes Ziel zu erreichen. <i>At work, I make every effort to achieve a given goal.</i>	.47	2.79	.97
soc9	Wenn mir etwas bei der Arbeit wichtig ist, widme ich mich ihm voll und ganz. <i>If something matters to me at work, I devote myself fully and completely to it.</i>	.27	3.97	.75
soc10	Wenn etwas bei der Arbeit nicht mehr so gut geht wie früher, probiere ich andere Wege aus, um dasselbe Ergebnis zu erreichen wie früher. <i>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.</i>	.63	3.50	.93
soc11	Wenn etwas bei der Arbeit nicht mehr so gut funktioniert wie früher, frage ich andere um Hilfe und Rat. <i>When something at work isn't working as well as it used to, I ask others for advice or help.</i>	.27	3.46	.95
soc12	Wenn es für mich schwieriger wird, dieselben Ergebnisse bei der Arbeit zu erzielen wie früher, bemühe ich mich stärker, bis ich es genauso gut tun kann wie früher. <i>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.</i>	.51	3.46	.94

soc1-3 = elective selection, soc4-6 = loss-based selection, soc7-9 = optimization, soc10-12 = compensation. *ITC* = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.2.5 Positive Affect

References:

- 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.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.

Format: 5-point scale ranging from 1 (*not at all* [gar nicht]) to 5 (*very much* [sehr stark]).

Alpha	.76
Mean	3.65
Standard deviation	.55
N	133

Code	Ich bin im Allgemeinen... <i>I am generally...</i>	<i>ITC</i>	<i>M</i>	<i>SD</i>
panas1	... angeregt. ... <i>inspired</i> .	.45	3.47	.77
panas2	... wach. ... <i>alert</i> .	.58	3.85	.75
panas3	... freudig erregt. ... <i>excited</i> .	.49	3.43	.85
panas4	... begeistert. ... <i>enthusiastic</i> .	.63	3.61	.79
panas5	... entschlossen. ... <i>determined</i> .	.48	3.84	.70

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.2.10 Physical Health

References:

- Bullinger, M., & Kirchberger, I. (1998). *SF-36 Fragebogen zum Gesundheitszustand [SF-36 Scale on health]*. Göttingen: Hogrefe.
- 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.

Format: Item 1: 5-point scale ranging from 1 (*excellent* [ausgezeichnet]) to 5 (*poor* [schlecht]); Items 2 and 3: 3-point scale ranging from 1 (*yes, limited a lot* [stark eingeschränkt]) to 3 (*no, not limited at all* [überhaupt nicht eingeschränkt]); Items 4 and 5: 1 (*yes* [ja]), 2 (*no* [nein]); Item 6: 5-point scale ranging from 1 (*not at all* [überhaupt nicht]) to 5 (*extremely* [sehr])

Alpha	.82
Mean	50.12
Standard deviation	8.44
N	133

Code		ITC ^b	M	SD
ph1	Wie würden Sie Ihren Gesundheitszustand im Allgemeinen beschreiben? ^a <i>In general, would you say your health is...^a</i>	.60	3.33	.73
ph2	Sind Sie durch Ihren derzeitigen Gesundheitszustand bei diesen Tätigkeiten eingeschränkt? Wenn ja, wie stark? Mittelschwere Tätigkeiten, z.B. einen Tisch verschieben, staubsaugen, kegeln, Golf spielen. <i>Does your health now limit you in these activities? If so, how much? Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf.</i>	.48	2.79	.48
ph3	Mehrere Treppenabsätze steigen. <i>Climbing several flights of stairs.</i>	.50	2.81	.43
ph4	Hatten Sie in den vergangenen vier Wochen aufgrund Ihrer körperlichen Gesundheit irgendwelche Schwierigkeiten bei der Arbeit oder anderen alltäglichen Tätigkeiten im Beruf bzw. zu Hause? Ich habe weniger geschafft als ich wollte. <i>During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health? Accomplished less than you would like.</i>	.62	1.80	.40
ph5	Ich konnte nur bestimmte Dinge tun. <i>Were limited in the kind of work or other activities.</i>	.68	1.86	.35
ph6	Inwieweit haben die Schmerzen Sie in den vergangenen vier Wochen bei der Ausübung Ihrer Alltagsaktivitäten zu Hause und im Beruf behindert? <i>During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home, and housework)?</i>	.67	4.18	1.00

ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.
^b = based on z-standardized item scores.

Appendix A.3: Scales used in Study 3

A.3.1 Focus on Opportunities

References:

Carstensen, L. L., & Lang, F. R. (1996). *Future Time Perspective Scale*. Unpublished manuscript, Stanford University.

Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17*(1), 125-139.

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.

Format: 5-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 5 (*applies completely* [trifft voll und ganz zu]).

Alpha	.88
Mean	3.21
Standard deviation	1.04
N	168

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
opp1	Meine berufliche Zukunft ist voller Möglichkeiten. <i>My occupational future is filled with possibilities.</i>	.86	3.23	1.18
opp2	Ich glaube, dass ich in meiner beruflichen Zukunft viele neue Ziele haben werde. <i>I expect that I will set many new goals in my occupational future.</i>	.80	3.15	1.13
opp3	Meine Möglichkeiten in meiner beruflichen Zukunft sind begrenzt. ^a <i>There are only limited possibilities in my occupational future.^a</i>	.65	3.24	1.18

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation. ^a = reverse coded.

A.3.2 Job Complexity

References:

- 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.
- Semmer, N. (1982). Stress at work, stress in private life and psychological well-being. In W. Bachmann & I. Udris (Eds.), *Mental load and stress in activity: European approaches* (pp. 42-55). Amsterdam: Elsevier.
- Semmer, N. (1984). *Stressbezogene Tätigkeitsanalyse: Psychologische Untersuchungen zur Analyse von Stress am Arbeitsplatz*. Weinheim: Beltz.
- Zapf, D. (1993). Stress-oriented job analysis of computerized office work. *The European Work and Organizational Psychologist*, 3, 85-100.

Format: 5-point scale ranging from 1 (*very little* [sehr wenig]) to 5 (*very much* [sehr viel]).

Alpha	.72
Mean	3.55
Standard deviation	.73
N	168

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
com1	Erhalten Sie Arbeitsaufträge, die ungewöhnlich und besonders schwierig sind? <i>Do you receive tasks that are extraordinary and particularly difficult?</i>	.63	3.11	1.03
com2	Müssen Sie bei Ihrer Arbeit oft sehr komplizierte Entscheidungen treffen? <i>Do you often have to make very complicated decisions in your work?</i>	.53	3.32	1.08
com3	Können Sie bei Ihrer Arbeit Ihr Wissen und Können voll einsetzen? <i>Can you use all your knowledge and skills in your work?</i>	.46	3.92	.92
com4	Können Sie bei Ihrer Arbeit Neues dazulernen? <i>Can you learn new things in your work?</i>	.43	3.85	.95

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.3.3 Task Performance

Reference: Welbourne, T. M., Johnson, D. E., & Erez, A. (1998). The role-based performance scale: Validity analysis of a theory-based measure. *Academy of Management Journal*, 41, 540-555.

Format: 5-point scale ranging from 1 (*needs much improvement* [muss stark verbessert werden]) to 5 (*excellent* [hervorragend]).

Alpha	.85
Mean	4.27
Standard deviation	.56
N	168

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
rbps1	Quantität der Arbeitsergebnisse. <i>Quantity of work output.</i>	.66	4.16	.70
rbps2	Qualität der Arbeitsergebnisse. <i>Quality of work output.</i>	.71	4.27	.63
rbps3	Genauigkeit der Arbeit. <i>Accuracy of work.</i>	.73	4.35	.70
rbps4	Kundendienst leisten (intern und extern). <i>Customer service provided (internal and external).</i>	.65	4.30	.66

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.3.3 Career Performance

Reference: Welbourne, T. M., Johnson, D. E., & Erez, A. (1998). The role-based performance scale: Validity analysis of a theory-based measure. *Academy of Management Journal*, 41, 540-555.

Format: 5-point scale ranging from 1 (*needs much improvement* [muss stark verbessert werden]) to 5 (*excellent* [hervorragend]).

Alpha	.91
Mean	3.69
Standard deviation	.75
N	168

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
rbps5	Erreichen persönlicher Karriereziele. <i>Obtaining personal career goals.</i>	.77	3.74	.84
rbps6	Entwicklung von Fertigkeiten, die für seine/ihre zukünftige Karriere notwendig sind. <i>Developing skills needed for his/her future career.</i>	.77	3.84	.81
rbps7	Fortschritte in seiner/ihrer Karriere machen. <i>Making progress in his/her career.</i>	.86	3.64	.90
rbps8	Karrieremöglichkeiten ausfindig machen. <i>Seeking out career opportunities.</i>	.76	3.53	.85

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.3.3 Innovative Performance

Reference: Welbourne, T. M., Johnson, D. E., & Erez, A. (1998). The role-based performance scale: Validity analysis of a theory-based measure. *Academy of Management Journal*, 41, 540-555.

Format: 5-point scale ranging from 1 (*needs much improvement* [muss stark verbessert werden]) to 5 (*excellent* [hervorragend]).

Alpha	.91
Mean	3.88
Standard deviation	.76
N	168

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
rbps9	Sich bei der Arbeit neue Ideen ausdenken. <i>Coming up with new ideas.</i>	.75	3.86	.88
rbps10	Daran arbeiten, neue Ideen bei der Arbeit umzusetzen. <i>Working to implement new ideas.</i>	.82	3.92	.87
rbps11	Verbesserte Wege finden um Dinge bei der Arbeit zu tun. <i>Finding improved ways to do things.</i>	.84	3.87	.83
rbps12	Bessere Prozesse und Routinen bei der Arbeit entwickeln. <i>Creating better processes and routines.</i>	.75	3.86	.80

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.3.3 Team Member Performance

Reference: Welbourne, T. M., Johnson, D. E., & Erez, A. (1998). The role-based performance scale: Validity analysis of a theory-based measure. *Academy of Management Journal*, 41, 540-555.

Format: 5-point scale ranging from 1 (*needs much improvement* [muss stark verbessert werden]) to 5 (*excellent* [hervorragend]).

Alpha	.87
Mean	4.13
Standard deviation	.61
N	168

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
rbps13	Als Teil eines Teams oder einer Arbeitsgruppe arbeiten. <i>Working as a part of a team or work group.</i>	.72	4.17	.72
rbps14	Informationen von anderen in seiner/ihrer Arbeitsgruppe einholen. <i>Seeking information from others in his/her work group.</i>	.71	4.20	.64
rbps15	Sicherstellen, dass seine/ihre Arbeitsgruppe erfolgreich ist. <i>Making sure his/her work group succeeds.</i>	.70	4.09	.76
rbps16	Auf die Bedürfnisse anderer in seiner/ihrer Arbeitsgruppe eingehen. <i>Responding to the needs of others in his/her work group.</i>	.78	4.07	.74

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation.

A.3.3 Organizational Citizenship Behavior

Reference: Welbourne, T. M., Johnson, D. E., & Erez, A. (1998). The role-based performance scale: Validity analysis of a theory-based measure. *Academy of Management Journal*, 41, 540-555.

Format: 5-point scale ranging from 1 (*needs much improvement* [muss stark verbessert werden]) to 5 (*excellent* [hervorragend]).

Alpha	.91
Mean	4.03
Standard deviation	.72
N	168

Code		ITC	M	SD
rbps17	Dinge tun die anderen bei der Arbeit helfen, auch wenn es nicht Teil seiner/ihrer Aufgaben ist. <i>Doing things that help others when it's not part of his/her job.</i>	.64	4.01	.79
rbps18	Für das allgemeine Wohlergehen der Firma arbeiten. <i>Working for the overall good of the company.</i>	.85	4.04	.82
rbps19	Dinge tun, um die Firma voranzubringen. <i>Doing things to promote the company.</i>	.84	3.98	.83
rbps20	Dabei helfen, dass die Firma ein gutes Umfeld ist. <i>Helping so that the company is a good place to be.</i>	.84	4.10	.81

ITC = Item-total-correlation, M = mean, SD = standard deviation.

Appendix A.4: Scales used in Study 4

A.4.1 Focus on Opportunities

References:

- Carstensen, L. L., & Lang, F. R. (1996). *Future Time Perspective Scale*. Unpublished manuscript, Stanford University.
- Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17*(1), 125-139.
- 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.

Format: 5-point scale ranging from 1 (*does not apply at all* [trifft überhaupt nicht zu]) to 5 (*applies completely* [trifft voll und ganz zu]).

Alpha	.84
Mean	3.58
Standard deviation	1.01
N	84

Code		<i>ITC</i>	<i>M</i>	<i>SD</i>
opp1	Auf mich warten viele Möglichkeiten in meiner beruflichen Zukunft. <i>Many opportunities await me in my occupational future.</i>	.71	3.60	1.12
opp2	Meine berufliche Zukunft ist voller Möglichkeiten. <i>My occupational future is filled with possibilities.</i>	.77	3.62	1.19
opp3	Meine Möglichkeiten in meiner beruflichen Zukunft sind berenzt. ^a <i>There are only limited possibilities in my occupational future.^a</i>	.65	3.52	1.18

ITC = Item-total-correlation, *M* = mean, *SD* = standard deviation. ^a = reverse coded.

A.4.2 Venture Growth

References:

- Frese, M., Krauss, S. I., Keith, N., Escher, S., Grabarkiewicz, R., Tonje Luneng, S., Heers, C., Unger, J. M., and Friedrich, C. (2007). Business owners' action planning and its relationship to business success in three African countries. *Journal of Applied Psychology, 92*(6), 1481-1498.
- Krauss, S. I., Frese, M., Friedrich, C., & Unger, J. M. (2005). Entrepreneurial orientation: A psychological model of success among southern African small business owners. *European Journal of Work and Organizational Psychology, 14*(3), 315-344.

Format: Percent increases/decreases (*stay the same* [ist gleich geblieben] = 100%)

Alpha	.79
Mean	115.75
Standard deviation	33.83
N	84

Code	Im Vergleich zum Jahr 2006, hat im Jahr 2007...	Compared to the year 2006, did in 2007...	ITC	M	SD
grow1	... Ihr Umsatz zugenommen ____% abgenommen ____% ist gleich geblieben O	... your transaction volume increase ____% decrease ____% stay the same O	.68	119.08	52.54
grow2	... Ihr Gewinn zugenommen ____% abgenommen ____% ist gleich geblieben O	... your profit increase ____% decrease ____% stay the same O	.84	112.13	32.22
grow3	... Ihr Einkommen zugenommen ____% abgenommen ____% ist gleich geblieben O	... your income increase ____% decrease ____% stay the same O	.55	114.10	44.59
grow4	... die Zahl Ihrer Mitarbeiter zugenommen ____% abgenommen ____% ist gleich geblieben O	... the number of your employees increase ____% decrease ____% stay the same O	.41	120.00	68.66
grow5	... die Zahl Ihrer Verkäufe zugenommen ____% abgenommen ____% ist gleich geblieben O	... the number of your sales increase ____% decrease ____% stay the same O	.58	111.92	28.85

ITC = Item-total-correlation, M = mean, SD = standard deviation.

A.4.3 Physical Health

References:

- Bullinger, M., & Kirchberger, I. (1998). *SF-36 Fragebogen zum Gesundheitszustand [SF-36 Scale on health]*. Göttingen: Hogrefe.
- 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.

Format: Item 1: 5-point scale ranging from 1 (*excellent* [ausgezeichnet]) to 5 (*poor* [schlecht]); Items 2 and 3: 3-point scale ranging from 1 (*yes, limited a lot* [stark eingeschränkt]) to 3 (*no, not limited at all* [überhaupt nicht eingeschränkt]); Items 4 and 5: 1 (*yes* [ja]), 2 (*no* [nein]); Item 6: 5-point scale ranging from 1 (*not at all* [überhaupt nicht]) to 5 (*extremely* [sehr])

Alpha	.76
Mean	53.03
Standard deviation	6.00
N	84

Code		ITC ^b	M	SD
ph1	Wie würden Sie Ihren Gesundheitszustand im Allgemeinen beschreiben? ^a <i>In general, would you say your health is...^a</i>	.30	2.90	.30
ph2	Sind Sie durch Ihren derzeitigen Gesundheitszustand bei diesen Tätigkeiten eingeschränkt? Wenn ja, wie stark? Mittelschwere Tätigkeiten, z.B. einen Tisch verschieben, staubsaugen, kegeln, Golf spielen. <i>Does your health now limit you in these activities? If so, how much? Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf.</i>	.48	2.88	.36
ph3	Mehrere Treppenabsätze steigen. <i>Climbing several flights of stairs.</i>	.54	1.85	.36
ph4	Hatten Sie in den vergangenen vier Wochen aufgrund Ihrer körperlichen Gesundheit irgendwelche Schwierigkeiten bei der Arbeit oder anderen alltäglichen Tätigkeiten im Beruf bzw. zu Hause? Ich habe weniger geschafft als ich wollte. <i>During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health? Accomplished less than you would like.</i>	.61	1.90	.30
ph5	Ich konnte nur bestimmte Dinge tun. <i>Were limited in the kind of work or other activities.</i>	.63	4.49	.78
ph6	Inwieweit haben die Schmerzen Sie in den vergangenen vier Wochen bei der Ausübung Ihrer Alltagsaktivitäten zu Hause und im Beruf behindert? ^a <i>During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home, and housework)?^a</i>	.48	1.80	.40

ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.
^b = based on z-standardized item scores.

A.4.4 Mental Health

References:

- Bullinger, M., & Kirchberger, I. (1998). *SF-36 Fragebogen zum Gesundheitszustand [SF-36 Scale on health]*. Göttingen: Hogrefe.
- 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.

Format: Items 1 and 2: 1 (yes [ja]), 2 (no [nein]); Items 3, 4, and 5: 6-point scale ranging from 1 (*all of the time* [immer]) to 6 (*none of the time* [nie]); Item 6: 5-point scale ranging from 1 (*all of the time* [immer]) to 5 (*none of the time* [nie])

Alpha	.77
Mean	48.88
Standard deviation	9.57
N	84

Code		ITC ^b	M	SD
ps1	Hatten Sie in den vergangenen vier Wochen aufgrund seelischer Probleme irgendwelche Schwierigkeiten bei der Arbeit oder anderen alltäglichen Tätigkeiten im Beruf bzw. zu Hause (z.B. weil Sie sich niedergeschlagen oder ängstlich fühlten)? Ich habe weniger geschafft als ich wollte <i>During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (Such as feeling depressed or anxious)? Accomplished less than you would like</i>	.62	1.80	.40
ps2	Ich konnte nicht so sorgfältig wie üblich arbeiten <i>Didn't do work or other activities as carefully as usual</i>	.59	1.80	.40
ps3	Wie oft waren Sie in den vergangenen vier Wochen... ... ruhig und gelassen? ^a <i>How much of the time during the past 4 weeks... ... have you felt calm and peaceful?^a</i>	.41	4.06	1.26
ps4	... voller Energie? ^a <i>... did you have a lot of energy?^a</i>	.29	4.38	1.13
ps5	... entmutigt und traurig? <i>... have you felt downhearted and blue?</i>	.50	4.69	1.09
ps6	Wie häufig haben Ihre körperliche Gesundheit oder seelischen Probleme in den vergangenen vier Wochen Ihre Kontakte zu anderen Menschen (Besuche bei Freunden, Verwandten usw.) beeinträchtigt? <i>During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?</i>	.70	4.35	.93

ITC = Item-total-correlation, M = mean, SD = standard deviation. ^a = reverse coded.
^b = based on z-standardized item scores.

Appendix B: Questionnaires⁸

Appendix B.1: Questionnaire Study 1	203
Appendix B.2: Questionnaire Study 2	207
Appendix B.3: Questionnaire Study 3	210
Appendix B.4: Questionnaire Study 4	214

⁸ The questionnaires included additional pages with scales not used in the four studies of this dissertation. In this section, only the scales relevant for this dissertation are displayed. The complete questionnaires can be obtained from the author.

Appendix B.1: Questionnaire Study 1

Abteilung Arbeits- und Organisationspsychologie



Studie zu arbeitsbezogenen Zielen

Vielen Dank für Ihre Teilnahme! In dieser Studie geht es um Ihre Ziele bei der Arbeit. Der Fragebogen dauert ca. 20-30 Minuten. Alle Angaben werden anonym behandelt.

Im Folgenden geht es um Ihr zukünftiges Berufsleben, d.h. die Zeit in Ihrem Leben, in der Sie noch arbeiten werden. Bitte kreuzen Sie auf einer Skala von 1 = „trifft überhaupt nicht zu“ bis 7 = „trifft voll und ganz zu“ an, inwieweit die folgenden Aussagen auf Sie persönlich **zutreffen**.

		trifft überhaupt nicht zu		trifft mittelmäßig zu			trifft voll und ganz zu	
opp1	Auf mich warten viele Möglichkeiten in meiner beruflichen Zukunft.	1	2	3	4	5	6	7
opp2	Ich glaube, dass ich in meiner beruflichen Zukunft viele neue Ziele haben werde.	1	2	3	4	5	6	7
opp3	Meine berufliche Zukunft ist voller Möglichkeiten.	1	2	3	4	5	6	7
time1	Der größte Teil meines Berufslebens liegt vor mir.	1	2	3	4	5	6	7
time2	Meine berufliche Zukunft erscheint mir unendlich.	1	2	3	4	5	6	7
time3	Mit zunehmendem Alter beginne ich, die Zeit im Beruf als begrenzt zu erleben.	1	2	3	4	5	6	7

Die folgenden Fragen beziehen sich auf Ihre Arbeit.

Was lautet die offizielle Bezeichnung Ihrer derzeitigen Tätigkeit?

Wie lange in Ihrem Leben sind Sie bereits berufstätig?

Seit _____ Jahren und _____ Monaten

Wie lange arbeiten Sie schon in Ihrer derzeitigen Tätigkeit?

Seit _____ Jahren und _____ Monaten

Bitte geben Sie an, inwieweit die folgenden Aussagen auf Sie persönlich zutreffen.

		trifft überhaupt nicht zu		trifft mittelmäßig zu			trifft voll und ganz zu	
con1	Wenn ich meine Arbeit insgesamt betrachte, bietet sie mir viele Möglichkeiten zu eigenen Entscheidungen.	1	2	3	4	5	6	7
con2	Ich kann meine Arbeit selbstständig planen und einteilen.	1	2	3	4	5	6	7
con3	Ich kann selber bestimmen, auf welche Art und Weise ich meine Arbeit erledige.	1	2	3	4	5	6	7
con4	Ich kann an Entscheidungen meines Vorgesetzten stark mitwirken (z. B.: fragt mich nach meiner Meinung; bittet mich um Vorschläge zu gewissen betrieblichen Problemen).	1	2	3	4	5	6	7
com1	Ich erhalte Arbeitsaufträge, die ungewöhnlich und besonders schwierig sind.	1	2	3	4	5	6	7
com2	Ich muss bei meiner Arbeit oft sehr komplizierte Entscheidungen treffen.	1	2	3	4	5	6	7
com3	Ich kann bei meiner Arbeit mein Wissen und Können voll einsetzen.	1	2	3	4	5	6	7
com4	Ich kann bei meiner Arbeit Neues dazulernen.	1	2	3	4	5	6	7

Die folgenden Fragen beziehen sich auf Ihre Person.

Geschlecht: männlich weiblich

Wie alt sind Sie? _____ Jahre

Höchster Bildungsabschluss:

Hauptschulabschluss Mittlere Reife Abitur / Hochschulreife
 Hochschulstudium Sonstiges: _____

Bezeichnung Ihrer beruflichen Ausbildung: _____

Bitte kreuzen Sie auf einer Skala von 1 = "trifft überhaupt nicht zu" bis 7 = "trifft voll und ganz zu" an, inwieweit folgenden Aussagen auf Sie persönlich zutreffen oder nicht zutreffen.

	Ich sehe mich selbst als jemand der ...	trifft überhaupt nicht zu		trifft mittelmäßig zu			trifft voll und ganz zu	
ex1	... aus sich herausgeht, gesellig ist.	1	2	3	4	5	6	7
ex2	... gesprächig ist, sich gerne unterhält.	1	2	3	4	5	6	7
ex3	... durchsetzungsfähig und energisch ist.	1	2	3	4	5	6	7
ex4	... begeisterungsfähig ist, andere mitreißen kann.	1	2	3	4	5	6	7
ex5	... voller Energie und Tatendrang ist.	1	2	3	4	5	6	7
ex6	... eher zurückhaltend und reserviert ist.	1	2	3	4	5	6	7
ex7	... manchmal schüchtern und gehemmt ist.	1	2	3	4	5	6	7
ex8	... eher still und wortkarg ist.	1	2	3	4	5	6	7
ag1	... rücksichtvoll und einfühlsam zu anderen ist.	1	2	3	4	5	6	7
ag2	... hilfsbereit und selbstlos gegenüber anderen ist.	1	2	3	4	5	6	7
ag3	... nicht nachtragend ist, anderen leicht vergibt.	1	2	3	4	5	6	7
ag4	... anderen Vertrauen schenkt.	1	2	3	4	5	6	7
ag5	... dazu neigt, andere zu kritisieren.	1	2	3	4	5	6	7
ag6	... häufig in Streitereien verwickelt ist.	1	2	3	4	5	6	7
ag7	... sich kalt und distanziert verhalten kann.	1	2	3	4	5	6	7
ag8	... schroff und abweisend zu anderen sein kann.	1	2	3	4	5	6	7
co1	... Aufgaben gründlich erledigt.	1	2	3	4	5	6	7
co2	... tüchtig ist und flott arbeitet.	1	2	3	4	5	6	7
co3	... Pläne macht und diese auch durchführt.	1	2	3	4	5	6	7
co4	... zuverlässig ist und gewissenhaft.	1	2	3	4	5	6	7
co5	... nicht aufgibt, ehe die Aufgabe erledigt ist.	1	2	3	4	5	6	7
co6	... leicht ablenkbar ist, nicht bei der Sache bleibt.	1	2	3	4	5	6	7
co7	... etwas achtlos sein kann.	1	2	3	4	5	6	7
co8	... bequem ist und zur Faulheit neigt.	1	2	3	4	5	6	7
co9	... dazu neigt, unordentlich zu sein.	1	2	3	4	5	6	7
ne1	... sich viele Sorgen macht.	1	2	3	4	5	6	7
ne2	... leicht angespannt reagiert.	1	2	3	4	5	6	7
ne3	... leicht nervös und unsicher wird.	1	2	3	4	5	6	7
ne4	... deprimiert, niedergeschlagen ist.	1	2	3	4	5	6	7
ne5	... ruhig bleibt, selbst in angespannten Situationen ausgeglichen ist.	1	2	3	4	5	6	7
ne6	... nicht leicht aus der Fassung zu bringen ist.	1	2	3	4	5	6	7
ne7	... entspannt ist, sich durch Stress nicht aus der Ruhebringen lässt.	1	2	3	4	5	6	7
op1	... erfinderisch und einfallsreich ist.	1	2	3	4	5	6	7
op2	... originell ist, neue Ideen entwickelt.	1	2	3	4	5	6	7
op3	... künstlerische und ästhetische Eindrücke schätzt.	1	2	3	4	5	6	7
op4	... eine lebhafte Vorstellungskraft hat, fantasievoll ist.	1	2	3	4	5	6	7
op5	... gerne Überlegungen anstellt, mit Ideen spielt.	1	2	3	4	5	6	7
op6	... tief sinnig ist, gern über Sachen nachdenkt.	1	2	3	4	5	6	7
op7	... sich gut in Musik, Kunst und Literatur auskennt.	1	2	3	4	5	6	7
op8	... vielseitig interessiert ist.	1	2	3	4	5	6	7
op9	... routinemäßige und einfache Aufgaben bevorzugt.	1	2	3	4	5	6	7
op10	... nur wenig künstlerische Interessen hat.	1	2	3	4	5	6	7

Die folgenden Fragen beziehen sich auf Ihre Gesundheit. Bitte kreuzen Sie bei den Antwortmöglichkeiten die Zahl an, die am besten auf Sie zutrifft.

ph1	Wie würden Sie Ihren Gesundheitszustand im Allgemeinen beschreiben?	(1) Ausgezeichnet	(2) Sehr gut	(3) Gut	(4) Weniger gut	(5) Schlecht
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Im Folgenden sind einige Tätigkeiten beschrieben, die Sie vielleicht an einem normalen Tag ausüben. Sind Sie durch Ihren derzeitigen Gesundheitszustand bei diesen Tätigkeiten eingeschränkt? Wenn ja, wie stark?

		Ja, stark eingeschränkt	Ja, etwas eingeschränkt	Nein, überhaupt nicht eingeschränkt
ph2	Mittelschwere Tätigkeiten, z.B. einen Tisch verschieben, staubsaugen, kegeln, Golf spielen	(1)	(2)	(3)
ph3	Mehrere Treppenabsätze steigen	(1)	(2)	(3)

Hatten Sie in den vergangenen vier Wochen aufgrund Ihrer körperlichen Gesundheit irgendwelche Schwierigkeiten bei der Arbeit oder anderen alltäglichen Tätigkeiten im Beruf bzw. zu Hause?

		Ja	Nein
ph4	Ich habe weniger geschafft als ich wollte	(1)	(2)
ph5	Ich konnte nur bestimmte Dinge tun	(1)	(2)

ph6	Inwieweit haben die Schmerzen Sie in den vergangenen vier Wochen bei der Ausübung Ihrer Alltagstätigkeiten zu Hause und im Beruf behindert?	(1) Überhaupt nicht	(2) Ein bisschen	(3) Mäßig	(4) Ziemlich	(5) Sehr
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Hatten Sie in den vergangenen vier Wochen aufgrund seelischer Probleme irgendwelche Schwierigkeiten bei der Arbeit oder anderen alltäglichen Tätigkeiten im Beruf bzw. zu Hause (z.B. weil Sie sich niedergeschlagen oder ängstlich fühlten)?

		Ja	Nein
ps1	Ich habe weniger geschafft als ich wollte	(1)	(2)
ps2	Ich konnte nicht so sorgfältig wie üblich arbeiten	(1)	(2)

In diesen Fragen geht es darum, wie Sie sich fühlen und wie es Ihnen in den vergangenen vier Wochen gegangen ist. Bitte kreuzen Sie in jeder Zeile die Zahl an, die Ihrem Befinden am ehesten entspricht. Wie oft waren Sie in den vergangenen vier Wochen...

		Immer	Meistens	Ziemlich oft	Manchmal	Selten	Nie
ps3	...ruhig und gelassen?	(1)	(2)	(3)	(4)	(5)	(6)
ps4	...voller Energie?	(1)	(2)	(3)	(4)	(5)	(6)
ps5	... entmutigt und traurig?	(1)	(2)	(3)	(4)	(5)	(6)

ps6	Wie häufig haben Ihre körperliche Gesundheit oder seelischen Probleme in den vergangenen vier Wochen Ihre Kontakte zu anderen Menschen (Besuche bei Freunden, Verwandten usw.) beeinträchtigt?	(1) Immer	(2) Meistens	(3) Manchmal	(4) Selten	(5) Nie
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Vielen Dank für Ihre Teilnahme!

Appendix B.2: Questionnaire Study 2



Studie zum Übergang in die Rente



Ihr geheimes **Kenwort** zur Sicherstellung der Anonymität, z.B. „XYZ1“:

Demografische Angaben

In welchem Alter werden Sie persönlich voraussichtlich in Rente gehen?
Mit _____ Jahren

Ihr jetziges Alter: _____ Jahre

Ihr Geschlecht: männlich weiblich

Im Vergleich mit den anderen Mitgliedern Ihrer Arbeitsgruppe, sind Sie:
 jünger älter ungefähr gleich alt?

Wie lange in Ihrem Leben sind Sie bereits berufstätig? Seit _____ Jahren

Wie lange arbeiten Sie schon in Ihrer derzeitigen Tätigkeit? Seit _____ Jahren

Ihr höchster Bildungsabschluss:

Hauptschulabschluss Mittlere Reife Fachhochschulreife

Abitur / Hochschulreife abgeschlossenes Hochschulstudium

Sonstiges: _____

Bezeichnung Ihrer beruflichen Ausbildung: _____

Bezeichnung Ihrer derzeitigen Tätigkeit: _____

Fragen zu Ihrer Arbeit

Merkmale Ihres Arbeitsplatzes

		sehr wenig	ziemlich wenig	etwas	ziemlich viel	sehr viel
com1	Erhalten Sie Arbeitsaufträge, die ungewöhnlich und besonders schwierig sind?	1	2	3	4	5
com2	Müssen Sie bei Ihrer Arbeit oft sehr komplizierte Entscheidungen treffen?	1	2	3	4	5
com3	Können Sie bei Ihrer Arbeit Ihr Wissen und Können voll einsetzen?	1	2	3	4	5
com4	Können Sie bei Ihrer Arbeit Neues dazulernen?	1	2	3	4	5

		trifft über- haupt nicht zu	trifft wenig zu	trifft mittel- mäßig zu	trifft über- wiegend zu	trifft völlig zu
opp1	Auf mich warten viele Möglichkeiten in meiner beruflichen Zukunft.	1	2	3	4	5
opp2	Ich glaube, dass ich in meiner beruflichen Zukunft viele neue Ziele haben werde.	1	2	3	4	5
opp3	Meine berufliche Zukunft ist voller Möglichkeiten.	1	2	3	4	5
opp4	In meinem zukünftigen Berufsleben kann ich noch alles tun, was ich möchte.	1	2	3	4	5

Herangehensweise an Ihre Arbeit

		trifft über- haupt nicht zu	trifft wenig zu	trifft mittel- mäßig zu	trifft über- wiegend zu	trifft völlig zu
soc1	Bei der Arbeit konzentriere ich meine ganze Energie auf wenige Dinge.	1	2	3	4	5
soc2	Bei der Arbeit konzentriere ich mich immer auf das wichtigste Ziel zu einem bestimmten Zeitpunkt.	1	2	3	4	5
soc3	Ich habe bei meiner Arbeit ein oder zwei wichtige Ziele.	1	2	3	4	5
soc4	Wenn Dinge bei der Arbeit nicht mehr so gut gehen wie früher, wähle ich mir ein oder zwei wichtige Ziele aus.	1	2	3	4	5
soc5	Wenn ich etwas Wichtiges bei der Arbeit nicht mehr so tun kann wie früher, suche ich mir ein neues Ziel.	1	2	3	4	5
soc6	Wenn ich bei der Arbeit etwas nicht mehr so gut tun kann wie früher, denke ich darüber nach, was mir wirklich wichtig ist.	1	2	3	4	5
soc7	Bei der Arbeit arbeite ich immer weiter an meinen Plänen, bis ich erfolgreich bin.	1	2	3	4	5
soc8	Ich muss mich bei der Arbeit sehr anstrengen, um ein bestimmtes Ziel zu erreichen.	1	2	3	4	5
soc9	Wenn mir etwas bei der Arbeit wichtig ist, widme ich mich ihm voll und ganz.	1	2	3	4	5
soc10	Wenn etwas bei der Arbeit nicht mehr so gut geht wie früher, probiere ich andere Wege aus, um dasselbe Ergebnis zu erreichen wie früher.	1	2	3	4	5
soc11	Wenn etwas bei der Arbeit nicht mehr so gut funktioniert wie früher, frage ich andere um Hilfe und Rat.	1	2	3	4	5
soc12	Wenn es für mich schwieriger wird, dieselben Ergebnisse bei der Arbeit zu erzielen wie früher, bemühe ich mich stärker, bis ich es genauso gut tun kann wie früher.	1	2	3	4	5

Fragen zu Ihrer Person

Ich bin im Allgemeinen...

	gar nicht	ein wenig	etwas	sehr	sehr stark
panas1 ... angeregt	1	2	3	4	5
panas2 ... wach	1	2	3	4	5
panas3 ... freudig erregt	1	2	3	4	5
panas4 ... begeistert	1	2	3	4	5
panas5 ... entschlossen	1	2	3	4	5

Gesundheit

ph1	Wie würden Sie Ihren Gesundheitszustand im Allgemeinen beschreiben?	schlecht	weniger gut	gut	sehr gut	ausgezeichnet
-----	---	----------	-------------	-----	----------	---------------

Sind Sie durch Ihren Gesundheitszustand bei den folgenden Tätigkeiten eingeschränkt?

ph2	Mittelschwere Tätigkeiten, z.B. einen Tisch verschieben, staubsaugen, kegeln	nein, überhaupt nicht eingeschränkt	ja, etwas eingeschränkt	ja, stark eingeschränkt
ph3	Mehrere Treppenabsätze steigen	nein, überhaupt nicht eingeschränkt	ja, etwas eingeschränkt	ja, stark eingeschränkt

Hatten Sie in den vergangenen vier Wochen aufgrund Ihrer körperlichen Gesundheit irgendwelche Schwierigkeiten bei der Arbeit oder zu Hause?

ph4	Ich habe weniger geschafft als ich wollte	nein	ja
ph5	Ich konnte nur bestimmte Dinge tun	nein	ja

ph6	Inwieweit haben Schmerzen Sie in den vergangenen vier Wochen bei der Ausübung Ihrer Alltagsaktivitäten zu Hause und im Beruf behindert?	überhaupt nicht	ein bisschen	mäßig	ziemlich	sehr
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Vielen Dank für Ihre Mitwirkung!

Appendix B.3: Questionnaire Study 3

CODE _ _ _ _ _

Teil 1 (Bitte selber ausfüllen!)

Die folgenden Fragen beziehen sich auf die **Merkmale Ihrer Arbeit**. Dabei geht es um die **Arbeitsbedingungen** und **nicht darum**, wie gut oder wie schlecht Sie persönlich die Arbeit verrichten.

		sehr wenig	ziemlich wenig	etwas	ziemlich viel	sehr viel
com1	Müssen Sie bei Ihrer Arbeit oft sehr komplizierte Entscheidungen treffen?	1	2	3	4	5
com2	Erhalten Sie Arbeitsaufträge, die ungewöhnlich und besonders schwierig sind?	1	2	3	4	5
com3	Können Sie bei Ihrer Arbeit Neues dazulernen?	1	2	3	4	5
com4	Können Sie bei Ihrer Arbeit Ihr Wissen und Können voll einsetzen?	1	2	3	4	5

Bitte kreuzen Sie an, inwieweit die folgenden Aussagen auf Sie zutreffen.

		trifft gar nicht zu	trifft wenig zu	trifft mittelmäßig zu	trifft überwiegend zu	trifft völlig zu
opp1	Ich glaube, dass ich in meiner beruflichen Zukunft viele neue Ziele haben werde.	1	2	3	4	5
opp2	Meine berufliche Zukunft ist voller Möglichkeiten.	1	2	3	4	5
opp3	Meine Möglichkeiten in meiner beruflichen Zukunft sind begrenzt.	1	2	3	4	5

Die folgenden Fragen beziehen sich auf Ihre Person.

Geschlecht: weiblich männlich

Wie alt sind Sie? _____ Jahre

Höchster Bildungsabschluss:

- Hauptschulabschluss Mittlere Reife Abitur / Hochschulreife
 abgeschlossenes Hochschulstudium Sonstiges: _____

Bezeichnung Ihrer beruflichen Ausbildung: _____

Wie viele Jahre haben Sie insgesamt in der Ausbildung verbracht? _____ Jahre

Bezeichnung Ihrer aktuellen Berufstätigkeit: _____

Wie lange sind Sie schon bei Ihrem jetzigen Arbeitgeber angestellt? _____ Jahre

Wie lange sind Sie insgesamt schon berufstätig? _____ Jahre

Wie lange arbeiten Sie schon in Ihrer derzeitigen Tätigkeit? _____ Jahre

Überprüfen Sie bitte noch einmal, ob Sie keine Frage übersprungen haben.

Überprüfen Sie bitte auch, ob Sie Ihren persönlichen Code bereits auf dem 2. Fragebogen („Kollegen-Fragebogen“) vermerkt haben.

CODE _ _ _ _ _

Teil 2 (Bitte an eine Kollegin oder einen Kollegen weitergeben)

- Kollegenfragebogen -

Bitte bestimmen Sie **die Leistung der Person**, die Sie einschätzen, auf einer Skala von 1 = „muss stark verbessert werden“ bis 5 = „hervorragend“.

		Muss stark verbessert werden	Muss etwas verbessert werden	Befriedigend	Gut	Hervorragend
rbps1	Quantität der Arbeitsergebnisse.	1	2	3	4	5
rbps2	Qualität der Arbeitsergebnisse.	1	2	3	4	5
rbps3	Genauigkeit der Arbeit.	1	2	3	4	5
rbps4	Kundendienst (intern und extern).	1	2	3	4	5

		Muss stark verbessert werden	Muss etwas verbessert werden	Befriedigend	Gut	Hervorragend
rbps5	Erreichen persönlicher Karriereziele.	1	2	3	4	5
rbps6	Entwicklung von Fertigkeiten, die für ihre zukünftige Karriere notwendig sind.	1	2	3	4	5
rbps7	Fortschritte in ihrer Karriere machen.	1	2	3	4	5
rbps8	Karrieremöglichkeiten ausfindig machen.	1	2	3	4	5

		Muss stark verbessert werden	Muss etwas verbessert werden	Befriedigend	Gut	Hervorragend
rbps9	Sich neue Ideen ausdenken.	1	2	3	4	5
rbps10	Daran arbeiten, neue Ideen umzusetzen.	1	2	3	4	5
rbps11	Verbesserte Wege finden, um Dinge zu tun.	1	2	3	4	5
rbps12	Bessere Prozesse und Routinen entwickeln.	1	2	3	4	5

		Muss stark verbessert werden	Muss etwas verbessert werden	Befriedigend	Gut	Hervorragend
rbps13	Als Teil eines Teams oder einer Arbeitsgruppe arbeiten.	1	2	3	4	5
rbps14	Informationen von anderen in ihrer Arbeitsgruppe einholen.	1	2	3	4	5
rbps15	Sicherstellen, dass ihre Arbeitsgruppe erfolgreich ist.	1	2	3	4	5
rbps16	Auf die Bedürfnisse anderer in ihrer Arbeitsgruppe eingehen.	1	2	3	4	5

		Muss stark verbessert werden	Muss etwas verbessert werden	Befriedigend	Gut	Hervorragend
rbps17	Anderen helfen, wenn es nicht Teil ihrer Aufgaben ist.	1	2	3	4	5
rbps18	Für das allgemeine Wohlergehen der Firma arbeiten.	1	2	3	4	5
rbps19	Die Firma voran bringen.	1	2	3	4	5
rbps20	Dabei helfen, dass die Firma ein gutes Umfeld ist.	1	2	3	4	5

Die folgenden Fragen beziehen sich auf Ihre Person.

Geschlecht: weiblich männlich

Wie alt sind Sie? _____ Jahre

Wie lange sind Sie schon bei Ihrem jetzigen Arbeitgeber angestellt? _____ Jahre

Wie lange sind Sie insgesamt schon berufstätig? _____ Jahre

Wie lange arbeiten Sie schon in Ihrer derzeitigen Tätigkeit? _____ Jahre

Wie lange sind Sie bereits in dieser Arbeitsgruppe / diesem Team? _____ Jahre

Wie lange arbeiten Sie bereits mit der Person zusammen, die Sie eingeschätzt haben? _____ Jahre

In welchem beruflichen Verhältnis stehen Sie zu der Person, die Sie eingeschätzt haben? Die Person ist ...

- ... meine Mitarbeiterin / mein Mitarbeiter
- ... meine Kollegin / mein Kollege
- ... meine Vorgesetzte / mein Vorgesetzter

Überprüfen Sie bitte noch einmal, ob Sie keine Frage übersprungen haben.

Appendix B.4: Questionnaire Study 4

Fragen zu Ihrer Person

		trifft über- haupt nicht zu	trifft wenig zu	trifft mittel- mäßig zu	trifft über- wie- gend zu	trifft völlig zu
opp1	Auf mich warten viele Möglichkeiten in meiner beruflichen Zukunft.	1	2	3	4	5
opp2	Meine berufliche Zukunft ist voller Möglichkeiten.	1	2	3	4	5
opp3	Meine Möglichkeiten in meiner beruflichen Zukunft sind begrenzt.	1	2	3	4	5

Beantworten Sie bitte einige Fragen zu Ihrem Gesundheitszustand

ph1	Wie würden Sie <u>Ihren Gesundheitszustand im Allgemeinen</u> beschreiben?	schlecht	weniger gut	gut	sehr gut	ausge- zeichnet
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Sind Sie durch Ihren Gesundheitszustand bei den folgenden Tätigkeiten eingeschränkt?

ph2	Mittelschwere Tätigkeiten, z. B. einen Tisch verschieben, staubsaugen, kegeln	nein, überhaupt nicht eingeschränkt	ja, etwas eingeschränkt	ja, stark eingeschränkt
ph3	Mehrere Treppenabsätze steigen	nein, überhaupt nicht eingeschränkt	ja, etwas eingeschränkt	ja, stark eingeschränkt

Hatten Sie in den vergangenen vier Wochen aufgrund Ihrer körperlichen Gesundheit irgendwelche Schwierigkeiten bei der Arbeit oder zu Hause?

ph4	Ich habe weniger geschafft als ich wollte.	nein	ja
ph5	Ich konnte nur bestimmte Dinge tun.	nein	ja

ph6	Inwieweit haben Schmerzen Sie in den vergangenen vier Wochen bei der Ausübung Ihrer Alltagstätigkeiten zu Hause und im Beruf behindert?	über- haupt nicht	ein biss- chen	mäßig	ziem- lich	sehr
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Hatten Sie in den vergangenen vier Wochen aufgrund **seelischer Probleme** irgendwelche Schwierigkeiten bei der Arbeit oder zu Hause (z. B. weil Sie sich niedergeschlagen oder ängstlich fühlten)?

ps1	Ich habe weniger geschafft als ich wollte.	nein	ja
ps2	Ich konnte nicht so sorgfältig wie üblich arbeiten.	nein	ja








Wie oft waren Sie in den vergangenen vier Wochen...

ps3	... ruhig und gelassen?	Nie	selten	manchmal	ziemlich oft	meistens	immer
ps4	... voller Energie?	Nie	selten	manchmal	ziemlich oft	meistens	immer
ps5	... entmutigt und traurig?	Nie	selten	manchmal	ziemlich oft	meistens	immer

ps6	Wie häufig haben Ihre körperliche Gesundheit oder seelische Probleme in den vergangenen vier Wochen <u>Ihre Kontakte zu anderen Menschen</u> (Besuche bei Freunden, Verwandten usw.) beeinträchtigt?	nie	selten	manchmal	meistens	immer
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Fragen zu Ihrem **Erfolg und Zufriedenheit** als Unternehmer/in

Bitte kreuzen Sie an: Wie **zufrieden** sind Sie mit Ihrer Arbeit als Unternehmer/in?

						
(-3)	(-2)	(-1)	(0)	(1)	(2)	(3)

		überhaupt nicht	ein bisschen	mäßig	ziemlich	vollkommen
succ1	Hat Ihr Unternehmen <u>im letzten Jahr sein wichtigstes Ziel</u> erreicht?	1	2	3	4	5

		überhaupt nicht erfolgreich	etwas erfolgreich	mittelmäßig erfolgreich	ziemlich erfolgreich	sehr erfolgreich
succ2	Wie erfolgreich sind Sie <u>aus Sicht anderer Leute</u> als Unternehmer/in?	1	2	3	4	5
succ3	Wie erfolgreich sind Sie als Unternehmer/in <u>im Vergleich</u> mit Ihren Wettbewerbern?	1	2	3	4	5

Im Vergleich zum Jahr 2006, hat im Jahr 2007 ...			
grow1	...Ihr Umsatz zugenommen ____%	abgenommen ____%	ist gleich geblieben <input type="radio"/>
grow2	...Ihr Gewinn zugenommen ____%	abgenommen ____%	ist gleich geblieben <input type="radio"/>
grow3	...Ihr Einkommen zugenommen ____%	abgenommen ____%	ist gleich geblieben <input type="radio"/>
grow4	...die Zahl Ihrer Mitarbeiter zugenommen ____%	abgenommen ____%	ist gleich geblieben <input type="radio"/>
grow5	...die Zahl Ihrer Verkäufe zugenommen ____%	abgenommen ____%	ist gleich geblieben <input type="radio"/>
grow6	...die Zahl Ihrer Kunden zugenommen ____%	abgenommen ____%	ist gleich geblieben <input type="radio"/>

Abschlussfragen

Geschlecht: männlich weiblich

Wie alt sind Sie? _____ Jahre

Höchster Bildungsabschluss:

- Hauptschulabschluss Mittlere Reife Abitur/Hochschulreife
 Berufsausbildung Hochschulstudium Promotion
 Sonstiges: _____

Bezeichnung Ihrer beruflichen Ausbildung: _____

Dauer Ihrer Ausbildung: _____ Jahre

Zu welcher Branche gehört Ihr Unternehmen? _____

Wie viele Mitarbeiter beschäftigen Sie derzeit?
 _____ Vollzeit-Mitarbeiter _____ Teilzeit-Mitarbeiter

Wie lange in Ihrem Leben sind Sie **bereits berufstätig?** Seit _____ Jahren

Wie lange führen Sie bereits Ihr jetziges Unternehmen? Seit _____ Jahren

Vielen Dank für Ihre Teilnahme !

Appendix C: German Summary

[Deutsche Zusammenfassung]

1. Einleitung

Die Bevölkerungsalterung in den westlichen Industrienationen (J. E. Cohen, 2003) wird in den kommenden Jahrzehnten dazu führen, dass Unternehmen immer stärker auf ältere Erwerbspersonen angewiesen sind (Farr & Ringseis, 2002). Der demografische Wandel hat das Interesse von Forschern und Praktikern an der Rolle des Alters im Arbeitskontext neu belebt (Hedge et al., 2006; Kanfer & Ackerman, 2004; Shultz & Adams, 2007; Warr, 2001). Ein Teil der entsprechenden Forschungsliteratur übernimmt eine "Positive Psychologie"-Perspektive, welche unter anderem Faktoren untersucht, die ältere Personen dazu befähigen, positiv in ihre arbeitsbezogene Zukunft zu blicken (S. J. Peterson & Spiker, 2005).

In Übereinstimmung mit dieser Forschungsperspektive steht in dieser Dissertation das Konzept "Fokus auf arbeitsbezogene Möglichkeiten" im Mittelpunkt, welches aus der Literatur zur individuellen Zukunftsperspektive stammt (Carstensen, 2006; Cate & John, 2007). Kurt Lewin schrieb bereits in den 1930er Jahren, dass "Personen allen Alters von der Art und Weise beeinflusst sind, wie sie die Zukunft sehen" (Lewin, 1939, S. 878). In einer neueren Definition beschrieben Cate und John (2007) die individuelle Zukunftsperspektive als Wahrnehmungen, Überzeugungen und Erwartungen bezüglich der persönlichen Zukunft. Nach Cate und John (2007) glauben Personen mit einem ausgeprägten "Fokus auf Möglichkeiten" (englisch *focus on opportunities*), dass sie viele neue Ziele und Pläne sowie viele Optionen und Möglichkeiten in ihrer persönlichen Zukunft haben werden. Sie regten an, dass zukünftige Studien nicht nur Mittelwertsunterschiede zwischen verschiedenen Altersgruppen, sondern auch Zusammenhänge zwischen Fokus auf Möglichkeiten und personen- und kontextbezogenen Merkmalen sowie wichtigen Erfolgsmaßen untersuchen sollten. Weiterhin forderten Cate und John (2007), Moderatoren des Zusammenhangs zwischen Alter und Fokus auf Möglichkeiten zu identifizieren: "Was kann getan werden, um das Gefühl zu verlängern, dass es noch viele Möglichkeiten in der Zukunft gibt?" (S. 200).

In dieser Dissertation werden vier empirische Studien berichtet, die das Konzept Fokus auf Möglichkeiten erstmalig im Arbeitskontext untersuchten und auf die von Cate und John (2007) aufgeworfenen Fragestellungen Antwort zu geben versuchen. Die Theorie, Hypothesen, Methoden und Ergebnisse dieser Studien werden im Folgenden vorgestellt.

2. Studie I: Verbleibende Zeit und Möglichkeiten im Arbeitskontext: Zusammenhänge zwischen Alter, Arbeitsmerkmalen und beruflicher Zukunftsperspektive

Ziel dieser empirischen Studie war es, zwei Dimensionen des Konzepts der individuellen Zukunftsperspektive (Carstensen, 2006; Cate & John, 2007) im Arbeitskontext zu untersuchen. Die erste Dimension – *Verbleibende Zeit* – beschreibt Wahrnehmungen bezüglich der Länge der persönlichen verbleibenden Zeit im Arbeitskontext. Die zweite Dimension – *Fokus auf Möglichkeiten* – beschreibt Wahrnehmungen bezüglich der Anzahl neuer Ziele, Pläne, Optionen und Möglichkeiten in der persönlichen Zukunft im Arbeitskontext. Es wurde erwartet, dass Alter negativ mit verbleibender Zeit und Fokus auf Möglichkeiten zusammenhängt. Aufbauend auf der Literatur zu Arbeitsmerkmalen als wichtige situationale Ressourcen (Frese, 1987b; Fried & Ferris, 1987) wurde erwartet, dass Arbeitskomplexität und Handlungsspielraum positiv mit Fokus auf Möglichkeiten zusammenhängen. Weiterhin wurde erwartet, dass Arbeitskomplexität und Handlungsspielraum den Zusammenhang zwischen Alter und Fokus auf Möglichkeiten moderieren, so dass der Zusammenhang für Personen mit hoher Arbeitskomplexität und hohem Handlungsspielraum schwächer ist als für Personen mit niedriger Arbeitskomplexität und niedrigem Handlungsspielraum. Ein möglicher Grund für diese Annahmen könnte die bessere Passung zwischen diesen Arbeitsmerkmalen und altersbezogenen Ressourcen und Präferenzen sein.

Die Daten für die Studie wurden von 176 Erwerbstätigen aus verschiedenen Berufen (mittleres Alter = 39 Jahre, Standardabweichung = 13 Jahre, Altersspanne = 19 bis 60 Jahre) über Fragebogenskalen erhoben. Die Teilnehmer waren Bekannte und Verwandte von Studierenden der Psychologie. Die Überprüfung der Hypothesen erfolgte mittels hierarchisch moderierter Regressionsanalysen, in denen für Geschlecht, Bildung, die „Big Five“-Persönlichkeitsmerkmale (Extraversion, Gewissenhaftigkeit, Verträglichkeit, Neurotizismus, Offenheit für Erfahrungen), physische und psychische Gesundheit sowie kurvilineare Effekte des Alters (Alter^2) kontrolliert wurde. Zusätzlich wurde ein Strukturgleichungsmodell zur Auswertung herangezogen, um für Messfehler in den beobachteten Variablen zu korrigieren und um die Effekte der Prädiktorvariablen und des Interaktionsterms auf beide abhängigen Variablen (Verbleibende Zeit und Fokus auf Möglichkeiten) gleichzeitig zu überprüfen.

Die Ergebnisse zeigten, dass alle Hypothesen bestätigt werden konnten. Einschränkungen der Studie bestehen im Querschnittsdesign und der Erhebung der Daten aus nur einer Quelle.

3. Studie II: Aufrechterhaltung eines Fokus auf arbeitsbezogene Möglichkeiten: Das Zusammenspiel von Alter, Arbeitskomplexität und der Nutzung von Selektion, Optimierung und Kompensation

Das Ziel dieser Studie war es, neben einer wichtigen situationalen Ressource des Arbeitskontexts (Arbeitskomplexität) auch den moderierenden Einfluss der Nutzung einer „Strategie erfolgreichen Alterns“ auf den Zusammenhang zwischen Alter und Fokus auf Möglichkeiten im Arbeitskontext zu untersuchen. Die wohl bekannteste Strategie erfolgreichen Alterns ist die Selbstmanagement-Strategie genannt „Selektion, Optimierung und Kompensation“ (SOK) von P. B. Baltes und Baltes (1990). In Übereinstimmung mit Studie 1 wurde erwartet, dass Arbeitnehmer in hoch komplexen Tätigkeiten eher einen Fokus auf Möglichkeiten im höheren Alter aufrechterhalten können als Arbeitnehmer in weniger komplexen Tätigkeiten. Weiterhin wurde erwartet, dass Arbeitnehmer in weniger komplexen Tätigkeiten, die die SOK-Strategie stärker nutzen, eher einen relativ hohen Fokus auf Möglichkeiten aufrechterhalten können als Arbeitnehmer in weniger komplexen Tätigkeiten, die weniger häufig die SOK-Strategie nutzen. Letztere Hypothese basiert auf einer neueren Untersuchung von Young, Baltes und Pratt (2007), nach der die Nutzung der SOK-Strategie im Arbeitskontext besonders dann wirksam ist, wenn die externen Ressourcen von Arbeitnehmern (z. B. Unterstützung durch den Vorgesetzten) gering sind.

Die Daten für die Studie wurden von 133 Beschäftigten eines mittelständischen metallverarbeitenden Unternehmens (mittleres Alter = 38 Jahre, Standardabweichung = 13, Altersspanne = 16 bis 65 Jahre) über Fragebogenskalen erhoben. Die Hypothesen wurden mittels hierarchisch moderierter Regressionanalyse getestet, in der für Geschlecht, Bildung, positiven Affekt und physische Gesundheit kontrolliert wurde.

Die Ergebnisse zeigten, dass Alter negativ, und Arbeitskomplexität und SOK-Strategie-Nutzung positiv mit Fokus auf Möglichkeiten im Arbeitskontext zusammenhingen. Außerdem konnten die beiden oben genannten Hauptannahmen der Studie bestätigt werden: Arbeitnehmer in komplexeren Tätigkeiten konnten eher einen Fokus auf Möglichkeiten im höheren Alter aufrechterhalten als Arbeitnehmer in weniger komplexen Tätigkeiten. Arbeitnehmer in weniger komplexen Tätigkeiten, die die SOK-Strategie stärker nutzten, konnten eher einen Fokus auf Möglichkeiten aufrechterhalten als Arbeitnehmer in weniger komplexen Tätigkeiten, die die SOK-Strategie weniger nutzten. Einschränkungen der Studie bestehen in der subjektiven Erfassung von Arbeitskomplexität und SOK-Strategie-Nutzung.

4. Studie III: Fokus auf Möglichkeiten als Mediator der Zusammenhänge zwischen Alter, Arbeitskomplexität und Arbeitsleistung

In dieser Studie wurde Fokus auf Möglichkeiten im Arbeitskontext als Mediator der Zusammenhänge zwischen Alter und Arbeitsleistung sowie zwischen Arbeitskomplexität und Arbeitsleistung untersucht. Es wurde erwartet, dass Alter negativ und Arbeitskomplexität positiv mit Fokus auf Möglichkeiten zusammenhängt, und dass Fokus auf Möglichkeiten positiv mit Arbeitsleistung zusammenhängt. Letzterer Zusammenhang wurde mit Markus' (z.B. Markus & Nurius, 1986) Theorie der "Möglichen Selbst" begründet. Weiterhin wurde erwartet, dass Arbeitskomplexität sowohl den negativen Zusammenhang zwischen Alter und Fokus auf Möglichkeiten puffert als auch den negativen und indirekten Effekt von Alter auf Arbeitsleistung (durch Fokus auf Möglichkeiten) moderiert, so dass der indirekte Effekt schwächer für Arbeitnehmer in hoch komplexen Tätigkeiten als für Arbeitnehmer in weniger komplexen Tätigkeiten ist. Arbeitsleistung wurde in der Studie sowohl als ein übergeordneter „p-Faktor“ als auch multidimensional (Aufgaben-, Karriere-, Innovations-, Teammitgliedsleistung und Engagement für die Organisation) konzeptualisiert und operationalisiert.

Die Daten für die Studie wurden von 168 Arbeitnehmern aus 41 Organisationen (mittleres Alter = 40 Jahre, Standardabweichung = 10, Altersspanne = 19 bis 64 Jahre) über Fragebogenskalen erhoben. Die Arbeitsleistungsdimensionen wurden über Fremdeinschätzungen von jeweils einer zweiten Person aus derselben Organisation erhoben. Die Hypothesen wurden mittels einfacher und moderierter Mediationsanalysen getestet, in denen für mögliche kurvilineare Effekte des Alters (Alter²; z.B. Sturman, 2003) kontrolliert wurde.

Die Ergebnisse zeigten, dass alle oben genannten Hypothesen für die Gesamtarbeitsleistung sowie für drei der einzelnen Arbeitsleistungsdimensionen (Aufgaben- und Karriereleistung sowie besonderes Engagement für die Organisation) bestätigt werden konnten.

Die Ergebnisse der Studie erweitern die Literatur zu Alter und Arbeitsleistung (Ng & Feldman, 2008), indem erstmalig ein Mediator des Gesamtzusammenhangs untersucht wurde. Es wird vorgeschlagen, dass zukünftige Studien weitere Mediatoren berücksichtigen (z.B. Erfahrung und Gewissenhaftigkeit), um gegenläufige Mediationseffekte (MacKinnon, Fairchild & Fritz, 2007) in der Beziehung zwischen Alter und Arbeitsleistung aufzudecken. Praktiker sollten sowohl auf der Tätigkeitsebene (z.B. Erhöhung der Arbeitskomplexität) als auch auf gesellschaftlicher Ebene (z.B. Flexibilisierung des Renteneintritts) Anstrengungen unternehmen, um einen Fokus auf Möglichkeiten mit dem Alter aufrechtzuerhalten.

5. Studie IV: Das Alter von Kleinunternehmern, Fokus auf Möglichkeiten, und Unternehmenswachstum: Die Rolle der psychischen Gesundheit

In dieser Studie wurde Fokus auf Möglichkeiten als Mediator der Zusammenhänge zwischen dem Alter von Kleinunternehmern und Unternehmenswachstum sowie zwischen psychischer Gesundheit und Unternehmenswachstum untersucht. Erwartet wurde, dass Alter negativ und psychische Gesundheit positiv mit Fokus auf Möglichkeiten zusammenhängen. Fokus auf Möglichkeiten sollte positiv mit Unternehmenswachstum zusammenhängen, da Unternehmer mit hohem Fokus auf Möglichkeiten eher hohe und spezifische Ziele setzen, Information eher in Bezug auf Möglichkeiten auswählen und interpretieren sowie motivierter sein sollten, Möglichkeiten zu nutzen. Weiterhin wurde erwartet, dass psychische Gesundheit als wichtige Ressource im Alter den negativen Zusammenhang zwischen Alter und Fokus auf Möglichkeiten puffert sowie den negativen und indirekten Effekt von Alter auf Unternehmenswachstum (durch Fokus auf Möglichkeiten) moderiert, so dass der indirekte Effekt schwächer für Personen mit hoher im Gegensatz zu niedriger psychischer Gesundheit ist.

Die Daten für die Studie wurden von 84 Kleinunternehmern (mittleres Alter = 44 Jahre, Standardabweichung = 10, Altersspanne = 24 bis 74 Jahre) über Fragebogenskalen erhoben. Unternehmenswachstum wurde über Einschätzungen der Unternehmer bezüglich der prozentualen Veränderungen in Verkäufen, Profit, Transaktionsvolumen, Einkommen und Anzahl der Mitarbeiter über ein Jahr gemessen (Frese, Krauss et al., 2007). Die Hypothesen wurden mittels einfacher und moderierter Mediationsanalysen getestet, in denen für Geschlecht, physische Gesundheit, Unternehmensgröße und Branche kontrolliert wurde.

Die Ergebnisse zeigten, dass alle oben genannten Hypothesen bestätigt werden konnten. Die Befunde erweitern die Forschungsliteratur zu Unternehmertum folgendermaßen. Erstens existieren bislang kaum Theorien und empirische Befunde, die den negativen Zusammenhang zwischen Alter und Unternehmenserfolg erklären (Lévesque & Minniti, 2006). Zweitens wird die kognitive Unternehmertum-Forschung (Mitchell et al., 2007) mit Fokus auf Möglichkeiten um ein potentiell bedeutsames Konstrukt ergänzt. Drittens existieren in der Forschungsliteratur bislang kaum Theorien und empirische Befunde zur Rolle der psychischen Gesundheit von Kleinunternehmern (Hisrich, Langan-Fox, & Grant, 2007).

Neben Maßnahmen zur Verbesserung der psychischen Gesundheit von Kleinunternehmern sollten Praktiker auch auf gesellschaftlicher Ebene intervenieren (z.B. Flexibilisierung von starren Altersgrenzen), um einen Fokus auf Möglichkeiten aufrechtzuerhalten.

6. Fazit

Die Ergebnisse der vier Studien dieser Dissertation lassen sich im Hinblick auf die drei in der Einleitung genannten übergeordneten Forschungsziele folgendermaßen zusammenfassen. Erstens konnte gezeigt werden, dass Fokus auf Möglichkeiten mit bestimmten Personen- und Kontextmerkmalen zusammenhängt. Während ältere Personen einen geringeren Fokus auf Möglichkeiten berichteten als jüngere Personen, zeigten sich positive Zusammenhänge zwischen Fokus auf Möglichkeiten und Bildungsstand, physischer und psychischer Gesundheit, SOK-Strategie-Nutzung sowie Arbeitskomplexität und Handlungsspielraum.

Zweitens konnte gezeigt werden, dass der negative Zusammenhang zwischen Alter und Fokus auf Möglichkeiten durch ein hohes Ausmaß an Arbeitskomplexität (Studie 1, 2, und 3) und Handlungsspielraum (Studie 1) abgeschwächt wurde. Weiterhin konnte gezeigt werden, dass die Nutzung der SOK-Strategie insbesondere ältere Arbeitnehmer in weniger komplexen Tätigkeiten befähigt, einen Fokus auf Möglichkeiten aufrechtzuerhalten (Studie 2). In Studie 4 konnte zudem gezeigt werden, dass hohe psychische Gesundheit Kleinunternehmer dazu beiträgt, einen Fokus auf Möglichkeiten im Alter aufrechtzuerhalten.

Bezüglich des dritten Ziels konnte gezeigt werden, dass Fokus auf Möglichkeiten positiv mit zwei wichtigen Erfolgsmaßen im Arbeitskontext zusammenhängt: Arbeitsleistung von Arbeitnehmern (Studie 3) und Unternehmenswachstum von Kleinunternehmern (Studie 4).

Insgesamt betrachtet legen die Ergebnisse der vier Studien dieser Dissertation nahe, Fokus auf arbeitsbezogene Möglichkeiten in zukünftigen Studien als einen Aspekt „Positiven Psychologischen Kapitals“ (Luthans et al., 2007) – insbesondere von älteren Personen – zu konzeptualisieren, da es die vier Einschlusskriterien des Forschungsansatzes zum „Positiven Organisationalen Verhalten“ (z.B. Luthans, 2002b) erfüllt. Erstens, Fokus auf Möglichkeiten basiert auf Theorie zu Zukunftsperspektive (Cate & John, 2007) und wurde bereits empirisch untersucht (Zacher & Frese, in press). Zweitens, Fokus auf Möglichkeiten ist aufgrund des negativen Zusammenhangs mit Alter ein besonderes Konstrukt in der arbeits- und organisationspsychologischen Forschung. Drittens, Fokus auf Möglichkeiten ist kein stabiles Persönlichkeitsmerkmal, sondern ein veränderbares, weil alters- sowie kontextabhängiges Konstrukt. Viertens konnte gezeigt werden, dass Fokus auf Möglichkeiten mit wichtigen Erfolgsmaßen (Arbeitsleistung und Unternehmenswachstum) zusammenhängt.

Eine zu beachtende Einschränkung der vier Studien in dieser Dissertation ist jedoch, dass Querschnittsdesigns nicht zwischen Alters- und Kohorteneffekten differenzieren können.

Erklärung

Ich erkläre: Ich habe die vorgelegte Dissertation selbständig und nur mit den Hilfen angefertigt, die ich in der Dissertation angegeben habe. Alle Textstellen, die wörtlich oder sinngemäß aus veröffentlichten oder nicht veröffentlichten Schriften entnommen sind, und alle Angaben, die auf mündlichen Auskünften beruhen, sind als solche kenntlich gemacht.

Gießen, den 27. April 2009

(Hannes Zacher)