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Remaining Time and Opportunities at Work: Relationships Between

Age, Work Characteristics, and Occupational Future Time Perspective

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Abstract

The authors adapted the concept of future time perspective (FTP) to the work context and examined its relationships with age and work characteristics (job complexity and control). Structural equation modeling of data from 176 employees of various occupations showed that age is negatively related to two distinct dimensions of occupational FTP, remaining time and remaining opportunities. Work characteristics (job complexity and control) were positively related to remaining opportunities and moderated the relationship between age and remaining opportunities, such that the relationship became weaker with increasing levels of job complexity and control.

Keywords: age, future time perspective, remaining time, opportunities, work characteristics

3585 words

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Demographic changes and the outlook of a rapidly aging workforce in the 21st century have led to an increased interest in issues surrounding older workers 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 (Hedge, Borman, & Lammlein, 2006) render perceptions of the 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' 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.

The FTP concept describes how much time individuals believe they have left in their future and how they perceive that time (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 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. Recently, Cate and John (2007) showed that FTP can also be conceived in terms of two qualitative dimensions: Focus on opportunities and focus on limitations. Individuals with a strong focus on opportunities perceive their futures in positive

ways. They concentrate on the options, plans, and goals they can still pursue 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 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). We focused in this study on two presumably related but distinct dimensions of *occupational FTP*. The first dimension is *remaining opportunities at work*, which we derived from Cate and John's (2007) focus on opportunities. Second, we adapted the dimension *remaining time at work* from Carstensen's (2006) notion of FTP as a temporal construct.

We assume that both of these occupational FTP dimensions are negatively related to age. Even though many companies have begun to invest more in their older workers in terms of training and development over the past years (Sterns & Subich, 2002), the number of available future goals, plans, and possibilities for older workers should be generally smaller than for younger workers who are just starting their careers. Older workers quit and change their jobs less often (Healy, Lehman, & McDaniel, 1995), and are generally less motivated to participate in development activities than younger workers (Colquitt, LePine, & Noe, 2000). It is likely that these behaviors lead to fewer remaining opportunities. Remaining time should also be negatively related to age because most employees exit the workforce within a narrowly defined retirement age range (Hedge et al., 2006).

Hypothesis 1: There are negative relationships between age and remaining opportunities at work and between age and remaining time at work.

We expect that certain characteristics of the work situation are related to occupational FTP. Job complexity and job control are considered to be two important work characteristics (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 are monotonous and repetitive in nature, whereas more complex jobs demand high levels of knowledge, skills, and abilities. *Job control* refers to the possibility to choose one's actions 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). Previous research has often combined job complexity and job control into one work characteristics factor (e.g., Frese et al., 2007; Karasek & Theorell, 1990) because both refer to decision possibilities and are highly correlated (Semmer, 1982).

Based on the proposition that these work characteristics are important situational resources for employees (Frese, 1989; Fried & Ferris, 1987), we expect them to be positively related to remaining opportunities at work. Employees in jobs high in complexity and control should perceive more remaining opportunities because their jobs can be expected to continue to provide them with many and varied possibilities in the future (e.g., the possibility for deciding how to carry out their tasks). In addition, we suggest that these work characteristics are especially important and useful resources as workers grow older. Jobs high in complexity and control should offer older workers more possibilities to compensate for the age-related loss of resources, such as physical strength and information processing abilities (Baltes, 1997). For example, more decision possibilities on the job enable older workers to adjust their tasks to their capabilities and

their preferred way of working. Higher complexity and control also allow older workers to better utilize and transfer their increased knowledge and work experience (Kanfer & Ackerman, 2004). Favorable work characteristics should therefore weaken the negative relationship between age and perceptions of remaining opportunities at work. In contrast, restricted jobs often require more "aging-sensitive" resources, such as physical strength, and do not offer older workers many possibilities to modify their tasks. Low job complexity and control should therefore strengthen the negative relationship between age and perceptions of remaining opportunities at work.

Hypothesis 2: There is a positive relationship between work characteristics (complexity and control) and remaining opportunities at work.

Hypothesis 3: Work characteristics (complexity and control) moderate the relationship between age and remaining opportunities, such that the relationship between age and remaining opportunities becomes weaker with increasing levels of complexity and control.

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 and found, for example, that conscientiousness was positively related to remaining opportunities in a sample of undergraduate students. Conscientious and open employees probably see more remaining 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 remaining opportunities because they generally perceive themselves and the future more positively (Rammstedt, 2007). For these reasons, we included the Big Five 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 (Griffin & Hesketh,

2008). We controlled for subjective physical and mental health because workers in poor health retire earlier (Beehr, Glazer, Nielson, & Farmer, 2000).

Method

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. All of the 182 questionnaires handed out to volunteering students were returned, and students received class credit for their help. Six participants were excluded due to missing data. The measures were presented in the following order: Occupational FTP, work characteristics, personality, subjective health, and demographic variables. 99 of the participants (56.3 percent) were women. 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). 4.5 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).

Measures

Unless indicated otherwise, all items were assessed on 7-point scales ranging from 1 (*does not apply at all*) to 7 (*applies completely*). *Occupational FTP: Remaining opportunities* were measured 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." *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). To test whether remaining time and opportunities are 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 ($\chi^2(8) = 7.70$; RMSEA = .00; CFI = 1.00). The items had loadings of .88, .89, and .95 for remaining 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 ($\chi^2(9) = 100.00$; RMSEA = .24; CFI = .87). A comparison of the models showed that the first model fit the data significantly better ($\Delta\chi^2(1) = 92.6$, *p* < .01). Thus, remaining time and opportunities should be distinguished.

Work characteristics: Complexity and control were measured with eight items from two well-validated German scales (Semmer, 1982; Zapf, 1993). A sample item for complexity is "I receive tasks that are extraordinary and particularly difficult," and a sample item for 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; Spector, 1992).

Control variables: Personality traits 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. *Subjective physical and mental health* were measured with 12 items from the German SF-12 health survey (Bullinger & Kirchberger, 1998; Ware, Kosinski, & Keller, 1996). The items cover different health domains such as bodily pain, 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 SF-12 has been shown to be a highly reliable, valid, and practical measure for subjective health (Ware et al., 1996).

Finally, participants indicated their chronological age, job and organizational tenure, job title, and type of industry, as well as their gender (0 = men and 1 = women), 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*).

Analyses

We applied structural equation modeling (AMOS 7, Arbuckle, 2006) to test our hypotheses. This analytic approach enabled us to correct for measurement error 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. For reasons outlined in the introduction, we used the aggregate measures of job complexity and control as two indicators with equal loadings

of a latent work characteristics construct.[1] We constructed the indicator of the latent interaction variable by multiplying age and the latent work characteristics variable (Schumacker, 2002), and orthogonalizing the product term from its first-order constructs (Little, Bovaird, & Widaman, 2006; see also Marsh et al., 2007). We did not specify more than one product indicator for the latent interaction because all indicators would have included age, thus leading to under-identification (Little, Lindenberger, & Nesselroade, 1999). To keep the number of estimated parameters low (Jackson, 2007), the measurement models of personality and subjective health variables were fixed using aggregate measures and their reliabilities (Hofmann & Morgeson, 1999). Specifically, we used the square root of the reliabilities of the observed variables as the factor loadings and (1 – 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). To determine the nature of the interaction effect, we additionally conducted hierarchical moderated regression and simple slope analyses (Aiken & West, 1991). Finally, Cate and John (2007) found that young adults differ from adults in early middle-age in perceived remaining 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 added the orthogonalized quadratic age effect (Little et al., 2006) to examine whether there were curvilinear relationships between age and the criterion variables.

<div align="center">Results</div>

Remaining time and opportunities were highly correlated with each other ($r = .60$) and with age ($r = -.82$ and $r = -.60$, respectively; cf. Table 1). Remaining time was also significantly related to extraversion ($r = .15$), conscientiousness ($r = -.22$), subjective physical health ($r = .34$), and subjective mental health ($r = -.20$). Remaining opportunities were also significantly related to education ($r = .19$), extraversion ($r = .24$), conscientiousness ($r = -.28$), subjective physical health ($r = .37$), and job complexity ($r = .17$). The structural equation model showed a good overall fit ($\chi^2(82) = 130.76$; RMSEA $= .058$; CFI $= .968$; cf. Figure 1).[2] The predictors explained 70 percent of the variance in remaining opportunities, and 88 percent of the variance in remaining time. Of the control variables, education was positively related to both remaining opportunities (.12) and time (.09), and conscientiousness was negatively related to remaining opportunities (-.30).

Age was negatively related to both dimensions of occupational FTP (Hypothesis 1), with path coefficients of -.64 for remaining opportunities and of -.96 for remaining time. Quadratic age was not significantly related to remaining opportunities (.05) or time (-.06). These findings support Hypothesis 1. As suggested by Hypothesis 2, work characteristics (complexity and control) were significantly related to remaining opportunities (.35). According to Hypothesis 3, work characteristics moderate the relationship between age and remaining opportunities, such that the relationship becomes weaker with increasing levels of complexity and control. Figure 1 shows that the path from the interaction to remaining opportunities was significant (.15). To determine the nature of this interaction effect, we applied moderated regression and simple slope analyses (Aiken & West, 1991). We entered the control variables, age, and either job complexity or control in the first step, and the product of the mean-centered predictor and moderator in the second step.[3] Both interaction terms significantly explained incremental variance in remaining

opportunities (age x job complexity: $\beta = .12$, $\Delta R = .01$; age x job control: $\beta = .14$, $\Delta R = .02$, $ps <$ .05). The effects were robust when quadratic age was included. The simple slopes showed that the relationship between age and remaining opportunities became weaker with increasing levels of complexity ($B = -.09$ and $\beta = -.70$ at one SD below the mean, $B = -.06$ and $\beta = -.46$ at one SD above the mean) and with increasing levels of control ($B = -.09$ and $\beta = -.73$ at one SD below the mean, $B = -.05$ and $\beta = -.43$ at one SD above the mean), supporting Hypothesis 3. The significant moderator effects are graphically displayed in Figure 2.

Discussion

We adapted the concept of FTP to the work context and investigated its relationships with age and two important work characteristics, job complexity and control. We found the two distinct dimensions of occupational FTP, remaining time and remaining opportunities, to be negatively related to age. Similar to findings on general FTP (Carstensen, 2006; Cate & John, 2007), we found that older employees perceive less remaining time and fewer remaining 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. Age was less strongly associated with remaining opportunities, which suggests that this dimension of occupational FTP is also influenced by factors other than age, such as person and work characteristics. Work characteristics (complexity and control) were positively related to remaining opportunities, even when age, personality, and subjective health were taken into account. This finding is consistent with the view of work characteristics as situational resources of employees (Frese et al., 2007; Fried & Ferris, 1987). The more decision possibilities workers have on the job, the more optimistically they perceived their future work opportunities. Finally, work characteristics (complexity and control) moderated the relationship between age and

remaining opportunities. With increasing age, employees working in jobs high in complexity and control perceive more remaining opportunities than their counterparts working in more restricted jobs. An explanation for this may be that jobs high in complexity and control allow older workers more compensation possibilities. Our findings have important implications for designing jobs for an aging workforce. Increasing the degree of complexity and control by providing workers with more possibilities to make decisions, schedule tasks, and choose their methods may be a way to maintain perceptions of remaining opportunities at work, especially among older employees.

Additionally, a number of noteworthy relationships emerged between occupational FTP and the control variables. Education was positively related to both remaining time and opportunities at work. This is consistent with Griffin and Hesketh (2008), as more highly educated workers are more likely to intend working in paid jobs after retirement. Conscientiousness was negatively related to remaining opportunities. This is in contrast to previous findings (Cate & John, 2007) and needs to be further investigated. At this point, we can only speculate at this point that conscientious workers may focus more strongly on their present tasks and duties instead of on their broader future goals and opportunities.

This study has a number of limitations. Most important, the cross-sectional design does not allow inferences about changes in occupational FTP over time. It is possible that part of the age-related differences in occupational FTP is due to differences between age cohorts which can only be detected with cohort-sequential designs. 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. Future studies need to replicate our findings

in 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, we controlled for affectivity by including personality traits such as extraversion and neuroticism, and significant moderator effects are less likely to be influenced by common method bias (Schriesheim & DeNisi, 1981). Finally, the strong relationship between the two criterion variables made it difficult to investigate the predictors' effects on each criterion independently. It could be argued that the interaction effect of age and work characteristics on remaining opportunities might 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.

Future research could adapt FTP dimensions to the work context that were not included in this study (e.g., directionality; Seijts, 1998), and investigate potential moderating influences of psychological resources such as hope and optimism (Peterson & Spiker, 2005), and of work characteristics such as coworker support, on the relationship between age and remaining opportunities. Research also needs to demonstrate that occupational FTP affects work behavior. For example, it could be investigated whether perceptions of remaining opportunities actually lead to a longer and maybe more engaged participation in the workforce. 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.

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Footnotes

[1] We 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] We computed models without personality and subjective health variables, and without all of the control variables, and the same pattern of results emerged.

[3] We computed separate analyses for job complexity and job control to avoid problems with multicollinearity. We ran additional analyses without the control variables and the same pattern of results emerged.

Table 1

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

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Remaining 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. Subjective physical health	52.38	7.65	.37**	.34**	-.33**	.06	.15*	.05	-.07	-.15*	.06	-.03	(.83)			
12. Subjective 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.
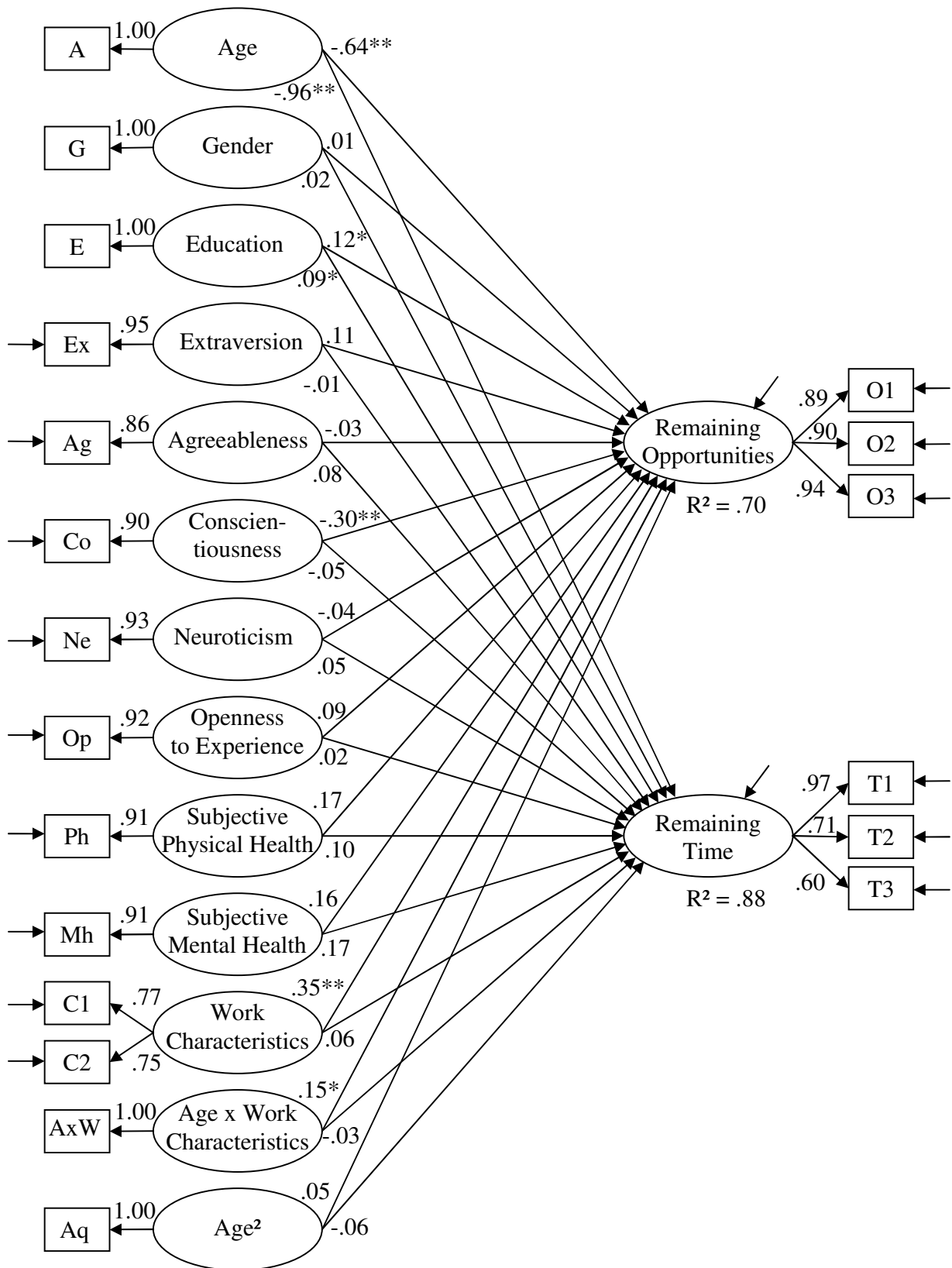
* *p* < .05. ** *p* < .01.

Figure Captions

Figure 1

Structural Equation Model of the Relationships between Demographic Variables, Personality, Subjective Health, Work Characteristics, and Occupational FTP Dimensions
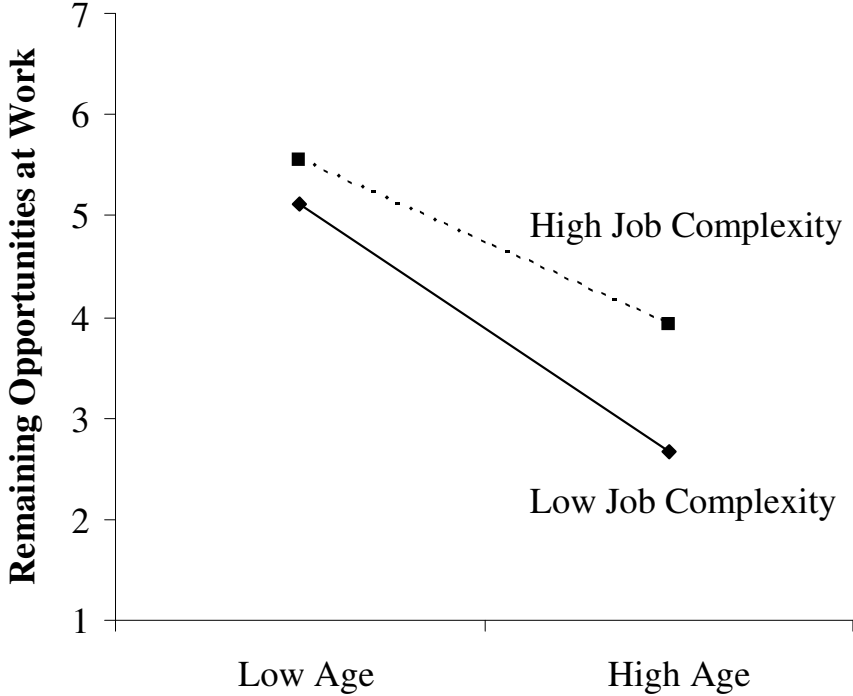

Figure 2

Job Complexity (a) and Job Control (b) as Moderators of the Relationship between Age and Remaining Opportunities at Work

Note. A = age; G = gender; E = education; Ex = extraversion; Ag = agreeableness; Co = conscientiousness; Ne = neuroticism; Op = openness to experience; Ph = subjective physical health; Mh = subjective mental health; C1 = job complexity; C2 = job control; AxW = product of age and the latent work characteristics variable orthogonalized from age and the latent work characteristics variable; Aq = quadratic age orthogonalized from age; O1-O3 = remaining opportunities items; T1-T3 = remaining time items. Standardized estimates are reported. The loadings of the single indicator variables were fixed and all latent predictor variables were allowed to correlate, except for age and the product of age and work characteristics, work characteristics and the product of age and work characteristics, and age and quadratic age. Fit statistics: $\chi^2(82) = 130.76$, $p < .01$; root mean square error of approximation (RMSEA) = .058; comparative fit index (CFI) = .968. * $p < .05$; ** $p < .01$.

a)

b)