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Subjective Age at Work: Feeling Younger or Older Than One's Actual Age Predicts Perceived Control and Motivation at Work

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ABSTRACT

Using a life-span theoretical perspective, the present study examined how subjective age relates to perceived control and motivational investment in the work domain. Data from the Midlife in the United States National Study of Health and Well-Being (MIDUS I, II, and III; 1995–2013; *n* = 2,395) were analyzed using parallel process growth curve modeling. Our analyses used a mediation framework and focused on how changes in subjective age relate to changes in work-specific perceived control and motivational investment over time. Results suggested that feeling progressively younger than one's actual age predicted increased levels of perceived control over and motivational investment in one's work situation, as mediated by domain-general perceived control capacity and selective primary control striving, respectively. Results are discussed within the motivational theory of life-span development, specifically, how subjective age operates as a secondary control strategy that enhances or diminishes motivational investment and perceived control in work during midlife.

A rapidly aging work force (Toossi & Torpey, 2017) has underscored the need for a better understanding of how age relates to work-related outcomes (Bohlmann, Rudolph, & Zacher, 2017; Kanfer, Beier, & Ackerman, 2013; D. T. A. M. Kooij, De Lange, Jansen, Kanfer, & Dikkers, 2011; Ng & Feldman, 2008, 2010, 2012; Rudolph, 2016; Wanberg, Kanfer, Hamann, & Zhang, 2016; Zacher, 2015). An increasingly common approach to understanding how age and development are related is to differentiate between an individual's actual age (*chronological age*) and how they themselves perceive their own age (*subjective age*; e.g., Barrett & Montepare, 2015; Diehl et al., 2014; Diehl, Wahl, Brothers, & Miche, 2015; Kotter-Grühn, Kornadt, & Stephan, 2015; Miche, Brothers, Diehl, & Wahl, 2015; Montepare, 2009). While this approach has gained some traction in the work domain (e.g., Cleveland & Hanscom, 2017; Kunze, Raes, & Bruch, 2015; Zacher & Rudolph, 2018), comparatively less is known about the mechanisms through which subjective age influences individuals' work life (Zacher & Rudolph, 2018).

The present study offers a theoretical framework that accounts for why individuals might deliberately perceive themselves to be relatively older or younger than their chronological age, and applies this framework using a population-based study to examine how feeling different than one's actual age is linked with work outcomes. Our study uses the motivational theory of life-span development (Heckhausen, Wrosch, & Schulz, 2010, 2019) to guide a process-oriented examination of how changes in subjective age are related to changes in work outcomes. Briefly, we propose that individuals are aware of normative age-graded changes in control potential and modify their own perceived control and motivational investment by identifying as older or younger than they actually are (Heckhausen, 1997). Thus, subjective age can operate as an internal, volitionally directed secondary control strategy that indirectly modulates individual's motivational investment and perceived control in their work life over time. While this framework for understanding why individuals would subjectively view themselves as younger or older than they actually are has been introduced and examined in earlier work (e.g., Heckhausen, 1997), it has not yet gained traction in the psychology and work literature (cf., Rudolph & Baltes, 2017). In addition to outlining and applying our theoretical framework to better understand how age and subjective age are related to outcomes in the work domain, we further contribute to the literature by taking a developmental approach in our method by leveraging longitudinal data from the Midlife in the United States (MIDUS) Study to examine how changes in subjective age predict changes in work outcomes over time.

AGE, SUBJECTIVE AGE, AND WORK

With the prolongation of careers, research has focused on the associations between individuals' chronological age and their work-related functioning (Bohlmann et al., 2017). General patterns can be gleaned by theoretical reviews and meta-analyses, which suggest that aging does not generally have a negative impact on individual's work performance (e.g., Ng & Feldman, 2008, 2010; Salthouse, 2012). The findings across these studies also draw attention to the inherent variability of the aging process itself (Heckhausen et al., 2019; Schulz & Heckhausen, 1996), and the need for more process-oriented approaches to how age relates to individual's work-life (Bohlman et al., 2017).

Individual differences in the aging process have also given rise to an increased interest in alternative measures of aging, particularly those that tap into individuals' subjective view of how they themselves are aging (*subjective age*; Barrett & Montepare, 2015; Diehl et al., 2014, 2015; Kotter-Grühn et al., 2015; Miche et al., 2015; Montepare, 2009). While subjective age is generally found to be negatively related with work outcomes (Cleveland & Hanscom, 2017; Kunze et al., 2015), controversy over the mechanisms driving these relationships has led some to argue that they are simply a by-product of other factors, such as core self-concept (Zacher & Rudolph, 2018). This controversy underscores the need for more theoretically driven and process-oriented approaches to understanding how subjective age may be related to work outcomes.

Our perspective is framed by the motivational theory of life-span development (Heckhausen et al., 2010, 2019), which has been productively applied to development and aging in the work domain (e.g., Hamm, Heckhausen, Shane, Infurna, & Lachman, 2019; Heckhausen & Shane, 2015; Heckhausen, Shane, & Kanfer, 2017; Rudolph, 2016; D. T. Kooij, 2015; D. Kooij, Zacher, Wang, & Heckhausen, in press; Scheibe & Zacher, 2013; Shane & Heckhausen, 2012, 2016a, 2016b, 2019; Zacher, 2015; Zacher & Rudolph, 2018). According to the theory, individuals are primarily motivated to maximize control over their own development (*primary control striving*). However, due to biological and societal factors, individuals ability to do so (*primary control capacity*) follows an inverted U-shaped trajectory of rising through midlife, before declining in old age. Aging, thus, involves changing opportunities and constraints that affect individual's engagement with domains of life (Heckhausen, 1999). Noteworthy is that individuals are aware of the age-graded structuring of development, expecting to shift from gain-oriented goals, to maintenance, and subsequently loss-preventative goals as they themselves move through progressive states of adulthood (Baltes, 1997; Heckhausen, 1997; Heckhausen, Dixon, & Baltes, 1989). This awareness can be seen in perceptions of age-appropriate work status and progression (Settersten & Hägestad, 1996) and in how these age-graded goal selections vary across career-fields (Heckhausen et al., 2017; Salthouse, 2012; Shane & Heckhausen, 2019; Simonton, 1997).

Individuals' strategies to maximize their primary control capacity are grouped into those directed toward the external environment (*primary control striving*) and those directed at internal processes (*secondary control striving*) (Heckhausen et al., 2010, 2019). Primary control striving, such as an individual's investment of thought and effort toward a goal, promotes goal pursuit and attainment, and has accordingly been linked to a number of positive outcomes in the work domain, including career entry (Haase, Heckhausen, & Köller, 2008; Shane & Heckhausen, 2016b), satisfaction (Haase, Heckhausen, &

Silbereisen, 2011), and salary and occupational prestige (Converse, Pathak, Depaul-Haddock, Gotlib, & Merbedone, 2012). Secondary control strategies commonly involve enhancing (*selective secondary control strategy*) or diminishing (*compensatory secondary control strategy*) the perceived value of a given goal and expectancy of obtaining the goal. These internally directed, volition-focused strategies are used to help the individual to either stay committed and engaged with a chosen goal or to disengage from the goal once it has become unattainable (see Shane & Heckhausen, 2016b for applications in the work domain). The optimization of goal-directed selection and compensation through effective coordination of primary and secondary control processes allows individuals to maximize their control capacity across domains and throughout the life course.

Subjective Age as a Secondary Control Strategy

While individuals are unable to change their chronological age, they are able to subjectively perceive themselves as younger or older than they actually are. This cognitive reframing of one's age may function as a secondary control strategy by altering one's perceived control capacity (Barrett & Montepare, 2015; Diehl et al., 2014, 2015; Heckhausen, 1997; Kornadt & Rothermund, 2015; Kornadt, Hess, Voss, & Rothemund, 2015). Most relevant to the present study, individuals typically associate advanced stages of midlife with peak levels of control capacity (Barrett & Montepare, 2015; Diehl et al., 2014, 2015; Heckhausen, 1997, 1999; Montepare, 2009). While individuals in general may be at peak-levels of life span control capacity during midlife, feeling relatively older or younger than one actually is during this life stage can shift perceptions of whether one is on the incline or decline. Indeed, we propose that individuals vary their subjective age for the specific purpose of altering their perceived control over their own life and domains of engagement (Heckhausen, 1997). For instance, feeling relatively younger than one's actual age may enhance perceived vitality and resourcefulness and facilitate motivational investment and confidence in goal pursuit (*selective secondary control strategy*). In contrast, feeling older than one actually is may activate normative expectations of diminishing control and thereby facilitate disengagement from overly taxing goals (*compensatory secondary control strategy*).

PRESENT STUDY

We propose that feeling relatively older or younger than one's actual age reflects a secondary control strategy that modifies individuals' perceived control capacity and motivational investment (*selective primary control striving*). In other words, individuals are aware of age-graded differences in control potential (Heckhausen et al., 1989; Heckhausen, 1999), and use this awareness to increase or decrease their own perceived control and motivational investment by identifying with an age that reflects desired control potential (Heckhausen, 1997; Weiss & Lang, 2012) Furthermore, individual's use of subjective age as a secondary control strategy is global, and as such can be expected to have an indirect relationship on specific domains of life (e.g., work) through domain-general processes of motivational investment and perceived control capacity. Based on this logic and the motivational theory of life-span development (Heckhausen et al., 2010, 2019), we expected that feeling relatively younger than one's actual age will promote work-specific perceived control via domain-general perceived control capacity (Hypothesis 1), and promote motivational investment via

domain-general selective primary control striving (Hypothesis 2). We explicitly take a developmental approach in our analyses, whereby we focus on how changes over time in subjective age predict changes over time in our mediators and outcomes.

METHODS

Participants and Procedure

Study data were from the Midlife in the United States National Study of Health and Well-Being (MIDUS I, II, and III; Ryff et al., 2004). Three waves of MIDUS were used for our analyses, with each wave separated by an average of 9 years. To focus on midlife and to ensure that all study participants had at least some longitudinal data, participants were included in the analyzed sample if they completed at least two of the three waves of the study when they were between 40 and 60 years of age (n = 2,395). Demographics and summary statistics on central study variables from the full sample, and the analyzed sample by wave are presented in Table 1 (see Table 2 for zero-order correlations).

Attrition analyses comparing participants from the retained sample to the original sample indicated that participants in the retained sample began the study more likely to: be chronologically younger, feel closer to their actual age, be working for pay, have a higher household income, and have a higher level of education. Attrition analyses comparing participants who participated in all three waves versus those who only participated in two waves indicated that those who completed all three waves were more likely to begin the study: chronologically younger, feeling closer to their actual age, working for pay, with a higher household income, and with a higher level of education. Little's MCAR test (Little, 1988) was performed on the variables included in the analyses and suggested that the data was not missing completely at random [$\chi^2(786) = 1209.06$, $p < .001$]. Missing data were handled using full information maximum likelihood (FIML) estimation in Mplus 7

(Muthén & Muthén, 1998–2015), which is appropriate when data is not missing completely at random (B. Muthén, Kaplan, & Hollis, 1987; B. Muthén, 2015).

Measures

Relative subjective age

Participants' chronological age was calculated as the difference, in years, between their birth year and the year they completed each wave of the study. Participants were also asked the following question: "Many people feel older or younger than they actually are. What age do you feel most of the time?" A subjective age difference variable was created by subtracting the age that individuals reported feeling from their chronological age (relative subjective age = chronological age − felt age), so that *higher scores* indicated *feeling relatively younger* than one actually was. Raw scores ranged from −63 to 52. However, 96.8% of scores fell between −15 and 30. To diminish the influence of outliers (>2.5 SD from the mean), the final subjective age variable was recoded so that scores below −15 were grouped into a −15 and lower category and scores above 30 were grouped into a 30 and greater category. This measure of subjective age was constructed at all three study waves. For brevity, this variable is referred to as subjective age throughout the remainder of the article.

Work-specific perceived control

Participant's perceived control over their work situation was measured with the single item, "Using a 0 to 10 scale where 0 means 'no control at all' and 10 means 'very much control', how would you rate the amount of control you have over your work situation these days?" Participants were instructed to answer the question in relation to the work situation they were currently in (e.g., part-time, full-time, paid, unpaid, at home, at a job). Work-specific perceived control was measured at all three study waves.

Table 1. Demographics, and Summary Statistics for the Original Sample and the Analyzed Samples

Demographic	Original Sample	Analyzed Sample: MIDUS I	Analyzed Sample: MIDUS II	Analyzed Sample: MIDUS III
Number of participants	7,108	2,395	2,395	1,974
Age	46.38 (13.00) [20, 75]	42.00 (5.79) [30, 52]	50.96 (5.74) [40, 60]	59.32 (5.90) [48, 70]
Relative subjective age (age − subjective age)	7.40 (8.37) [−15, 30]	6.41 (7.29) [−15, 30]	8.72 (8.66) [−15, 30]	10.23 (8.87) [−15, 30]
Thought/effort into work situation	7.91 (2.30) [0, 10]	8.12 (1.87) [0, 10]	7.88 (2.19) [0, 10]	7.25 (2.75) [0, 10]
Perceived control over work situation	7.15 (2.60) [0, 10]	7.00 (2.41) [0, 10]	6.98 (2.59) [0, 10]	7.02 (2.87) [0, 10]
Domain-general selective primary control striving	3.24 (.54) [1, 4]	3.21 (.54) [1, 4]	3.18 (.55) [1.33, 4]	3.20 (.55) [1.25, 4]
Domain-general control capacity	5.50 (1.03) [1, 7]	5.55 (.99) [1.75, 7]	5.55 (1.01) [1.17, 7]	5.52 (1.02) [1, 7]
% Female	51.70	52.73	52.73	54.05
% Working-for-pay	62.99	74.45	67.68	55.60
Household income (in U.S. dollars)	$71,729 (61,248) [1,000, 300,000]	$85,123 (64,719) [1,000, 300,000]	$85,361 (63,008) [1,000, 300,000]	$96,948 (73,825) [1,000, 300,000]
Education	6.77 (2.49) [1, 12]	7.33 (2.42) [1, 12]	7.51 (2.46) [1, 12]	7.55 (2.47) [1, 12]
% White	89.72	92.11	92.11	92.71

Note. Numbers in parentheses are standard deviations. Numbers in brackets are ranges. Education ranged from 1 (no school/some grade school) to 12 (PhD, EdD, MD, DDS, LLB, LLD, JD, or other professional degree), 6 = 1–2 years of college, no degree yet, 7 = 3 or more years of college, no degree yet, 8 = graduated from a 2-year college or vocational school, or associate's degree.

Table 2. Pairwise Correlations Between Central Study Variables, by Wave

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
(1) Age 1	1														
(2) Relative subjective age 1	.25*	1													
(3) Relative subjective age 2	.15*	.48*	1												
(4) Relative subjective age 3	.18*	.44*	.55*	1											
(5) Motivational investment work 1	.01	.08*	.08*	.07*	1										
(6) Motivational investment work 2	.00	.06*	.06*	.08*	.29*	1									
(7) Motivational investment work 3	−.04	.03	.07*	.11*	.20*	.29*	1								
(8) Perceived control work 1	−.03	.13*	.11*	.08*	.35*	.15*	.11*	1							
(9) Perceived control work 2	.05	.13*	.12*	.11*	.15*	.31*	.15*	.32*	1						
(10) Perceived control work 3	.14	.13*	.12*	.14*	.14*	.16*	.28*	.21*	.31*	1					
(11) Domain-general perceived control 1	−.04*	.12*	.16*	.15*	.21*	.18*	.09*	.39*	.29*	.27*	1				
(12) Domain-general perceived control 2	.03	.16*	.24*	.17*	.18*	.22*	.12*	.31*	.39*	.32*	.62*	1			
(13) Domain-general perceived control 3	.04	.18*	.19*	.22*	.18*	.20*	.21*	.26*	.33*	.43*	.60*	.67*	1		
(14) Domain-general selective primary control 1	.07*	.14*	.14*	.13*	.22*	.21*	.14*	.24*	.21*	.13*	.47*	.36*	.35*	1	
(15) Domain-general selective primary control 2	.07*	.17*	.21*	.14*	.17*	.25*	.17*	.17*	.26*	.15*	.36*	.46*	.36*	.60*	1
(16) Domain-general selective primary control 3	.08*	.14*	.15*	.17*	.21*	.24*	.21*	.17*	.20*	.18*	.32*	.35*	.44*	.56*	.64*

*p < .05.

Work-specific motivational investment

Participants' motivational investment in their work situation was measured with the single item, "Using a scale from 0 to 10 where 0 means 'no thought or effort' and 10 means 'very much thought and effort', how much thought and effort do you put into your work situation these days?" Participants were instructed to answer the question in relation to the work situation they were currently in (e.g., part-time, full-time, paid, unpaid, at home, at a job). Work-specific motivational investment was measured at all three study waves.

Domain-general perceived control capacity

Participant's domain-general perceived control capacity was assessed using the 12-item Sense of Control scale (Lachman & Weaver, 1998). The Sense of Control scale consists of the four-item Personal Mastery subscale (e.g., "I can do just about anything I really set my mind to") and the eight-item Perceived Constraints subscale (e.g., "There is little I can do to change the important things in my life"). Participants indicated their level of agreement with each item using a 7-point scale with 1 = *strongly agree* and 7 = *strongly disagree*. Responses to the subscale items were combined to create an overall measure of domain-general control capacity with higher values indicating greater domain-general control (αs = .85, .87, .87). Domain-general perceived control capacity was measured at all three study waves.

Domain-general primary control striving

Participant's domain-general primary control striving was assessed using the five-item Primary Control Persistence in Goal Striving subscale of the Primary and Secondary Control Scale (Wrosch, Heckhausen, & Lachman, 2000; e.g., "Even when I feel I have too much to do, I find a way to get it all done"; αs = .77, .78, .78). Participants indicated the extent to which each item represented themselves using a 4-point scale with 1 = *a lot* and 4 = *not at all*. Responses were reverse coded so that positive values indicated greater domain-general engagement. Domain-general primary control striving was measured at all three study waves.

Analytic Plan

All structural equation modeling analyses were conducted in Mplus 7 using full-information maximum likelihood estimation (Muthén & Muthén, 1998–2015). A sequential model-building approach was used, which began with the construction of separate growth curve models using structural equation modeling (Meredith & Tisak, 1990) for each of the time-varying variables of interest (subjective age, work-specific perceived control and motivational investment, domain-general perceived control, and primary control striving). Study wave was used as the time variable. To construct the growth curve models, a latent intercept variable was created with factor loadings fixed at one on the indicator variables from each of the three study waves. A latent slope variable was also created, which had a factor loading of 0 on the Wave 1 indicator variable, a factor loading of 1 on the Wave 2 indicator variable, and a factor loading of 2 on the Wave 3 indicator variable (Grimm, Ram, & Estabrook, 2017). This produced a latent baseline level (intercept) and a latent trajectory of change over the course of the study (slope) for each variable of interest.

Next, subjective age and the work-situation variable (perceived control or motivational investment) growth curve models were

combined into a parallel process model (B. Muthén, 1997; L. K. Muthén & Muthén, 1998–2015). The variables were organized so that the hypothesized indirect, mediating pathway could be examined. Two parallel process models for each outcome (work-specific perceived control and work-specific motivational investment) were examined. In the first model, exogenous variables were allowed to covary and the slope of the work-situation variable (perceived control or motivational investment) was regressed on the slope of subjective age (C path). In the second model, the growth curve for the domain-general variable (perceived control capacity or selective primary control striving) was added to the parallel process model. The slope of the domain-general mediator variable (perceived control capacity or selective primary control striving) was regressed on the slope of subjective age (A path). The slope of the work-situation variable (perceived control or motivational investment) was regressed on the slopes of the domain-general mediator variable (perceived control capacity or selective primary control striving; B path) and subjective age (C′ path). Indirect effects were calculated for the hypothesized mediating pathways. All models were run controlling for participant's age at the start of the study. However, the results were consistent when age at baseline was not included as a covariate in the models.

Our analyses are focused on the slope components of the latent growth curve models. In so doing, we are modeling how changes in subjective age relate to changes in work-specific motivational investment and perceived control over time.

RESULTS

Perceived Control

A parallel process growth curve model was constructed to examine the hypothesized mediating pathway, that feeling relatively younger is related to increased work-specific perceived control via increased domain-general perceived control. The results are presented in Figure 1 and Table 3.

As shown in Figure 1 and Table 3, controlling for age at baseline, the slope of subjective age positively predicted the slope of work-specific perceived control ($B = .052$ [.020]; $\beta = .279$, 95% CI = [.074,

.485], $p = .008$; C path). In other words, individuals who felt progressively younger relative to their chronological age reported increased perceived control over their work situation over time. Next, the slope of domain-general perceived control was positioned as a mediator in the parallel process growth curve model. The slope of subjective age positively predicted the slope of domain-general perceived control ($B = .028$ [.007]; $\beta = .366$, 95% CI = [.208, .523], $p < .001$; A path). In turn, the slope of domain-general perceived control positively predicted the slope of work-specific perceived control ($B = 3.092$ [.637]; $\beta = 1.124$, 95% CI = [.738, 1.510], $p < .001$; B path). Finally, the slope of subjective age was no longer significantly related to the slope of work-specific perceived control when domain-general perceived control was included in the model ($B = -.013$ [.030]; $\beta = -.063$, 95% CI = [−.347, .221], $p = .665$; C′ path). Taken together, the mediation results indicated that feeling relatively younger than one's actual age predicted increasing perceived control over one's work situation over time (total effect $B = .073$ [.024]; $\beta = .349$, 95% CI = [.145, .552], $p = .001$). This relationship was mediated via increased domain-general perceived control (indirect effect $B = .086$ [.029]; $\beta = .411$; 95% CI = [.151, .672], $p = .002$). These results supported Hypothesis 1, in that feeling relatively younger than one's actual age predicted increased perceived control over one's work situation over time via enhanced domain-general perceived control.

Motivational Investment

A parallel process growth curve model was constructed to examine the hypothesized mediating pathway, that feeling relatively younger is related to increased work-specific motivational investment by way of increased domain-general selective primary control striving (SPC). The results are presented in Figure 2 and Table 4.

As shown in Figure 2 and Table 4, controlling for age at baseline, the slope of subjective age positively predicted the slope of work-specific motivational investment ($B = .048$ [.018]; $\beta = .251$, 95% CI = [.068, .434], $p = .007$; C path). In other words, individuals who felt progressively younger relative to their chronological age reported increased motivational investment in their work situation over time. Next, the slope of domain-general SPC was positioned as a mediator
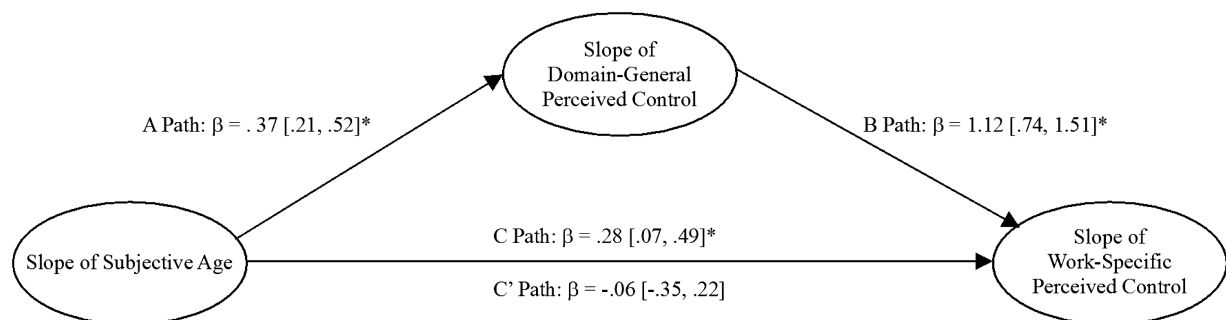

Figure 1. Simplified depiction of mediational analyses derived from the parallel process models with: the slope the domain-general perceived control regressed on the slope of subjective age (A path); the slope of the work-specific perceived control regressed on the slope of domain-general perceived control (B path) and on the slope of subjective age when the slope of domain-general perceived control was included in the model (C′ path) and was not included in the model (C path). Age at baseline was included in the model as an additional predictor of the slopes of domain-general perceived control and work-specific perceived control but is not depicted here. Covariances between exogenous variables were also included in the model but not depicted here. *$p < .05$.

Table 3. Unstandardized and Standardized Path Coefficients From the Parallel Process Models Predicting Work-Specific Perceived Control

Model Components	Model 1		Model 2	
	B (SE)	β [95% CI]	*B* (SE)	β [95% CI]
Path coefficients				
Slope of work-specific perceived control on				
Age at baseline	.04 (.01)*	.38 [.22, .54]*	.02 (.01)*	.19 [.02, .35]*
Slope of subjective age	.05 (.02)*	.28 [.07, .49]*	−.01 (.03)	−.06 [−.35, .22]
Slope of domain-general perceived control			3.09 (.64)*	1.12 [.74, 1.51]*
Slope of domain-general perceived control on				
Age at baseline			.01 (.00)*	.15 [.05, .24]*
Slope of subjective age			.03 (.01)*	.37 [.21, .52]*
Model fit statistics				
RMSEA [90% CI]	.02 [.01, .03]		.04 [.03, .05]	
CFI	.99		.98	
TLI	.99		.96	
SRMR	.02		.03	

Note. Covariances between exogenous latent variables included in all models.
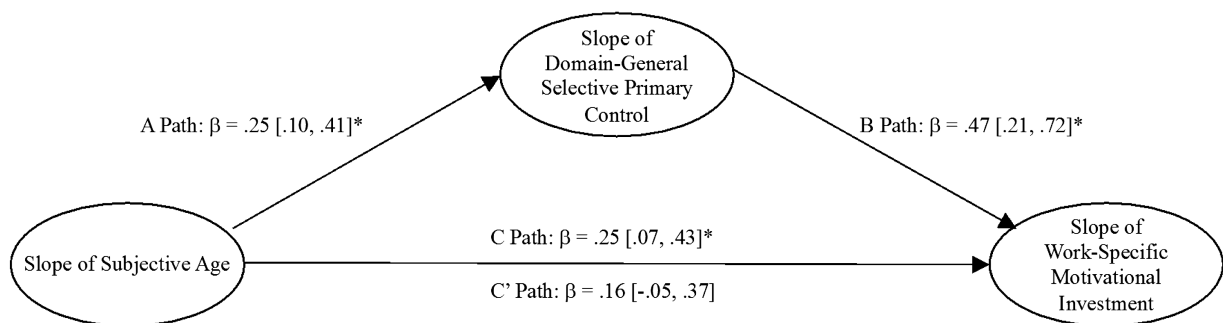*p < .05.

Figure 2. Simplified depiction of mediational analyses derived from the parallel process models with: the slope the domain-general selective primary control regressed on the slope of subjective age (A path); the slope of the work-specific motivational investment regressed on the slope of domain-general selective primary control (B path) and on the slope of subjective age when the slope of domain-general selective primary control was included in the model (C′ path) and was not included in the model (C path). Age at baseline was included in the model as an additional predictor of the slopes of domain-general selective primary control and work-specific motivational investment but is not depicted here. Covariances between exogenous variables were also included in the model but not depicted here. *p < .05.

in the parallel process growth curve model. The slope of subjective age positively predicted the slope of domain-general SPC (B = .010 [.003]; β = .253, 95% CI = [.095, .411], p = .002; A path). In turn, the slope of domain-general SPC positively predicted the slope of work-specific motivational investment (B = 2.310 [.741]; β = .467, 95% CI = [.211, .724], p < .001; B path). Finally, the slope of subjective age was no longer significantly related to the slope of work-specific motivational investment when domain-general SPC was included in the model (B = .030 [.020]; β = .158, 95% CI [−.049, .365], p = .135; C′ path). Taken together, the mediation results indicated that feeling relatively younger than one's actual age predicted increasing motivational investment in one's work situation over time (total effect B = .052 [.019]; β = .276, 95% CI = [.089, .464], p = .004). This relationship was mediated via increased domain-general selective primary control striving (indirect effect B = .022 [.010]; β = .118; 95% CI = [.015, .222],

p = .025). These results supported Hypothesis 2, in that feeling relatively younger than one's actual age predicted increased motivational investment in one's work situation over time via enhanced domain-general selective primary control striving.

DISCUSSION

The present study employed a theoretically informed approach to examine processes through which subjective age relates to work outcomes over time. Our analyses and results focus on how changes in one's subjective age relate to changes over time in work outcomes via changes over time in domain-general mediators. More specifically, our results indicated that feeling progressively younger than one's actual age promoted increasing work-specific perceived control and motivational investment via increasing domain-general perceived control

Table 4. **Unstandardized and Standardized Path Coefficients From the Parallel Process Models Predicting Work-Specific Motivational Investment**

Model Components	Model 1		Model 2	
	B (SE)	β [95% CI]	B (SE)	β [95% CI]
Path coefficients				
Slope of work-specific motivational investment on				
Age at baseline	−.01 (.01)	−.11 [−.23, .00]	−.01 (.01)	−.11 [−.24, .01]
Slope of subjective age	.05 (.02)*	.25 [.07, .43]*	.03 (.02)	.16 [−.05, .37]
Slope of domain-general selective primary control			2.31 (.74)*	.47 [.21, .72]*
Slope of domain-general selective primary control on				
Age at baseline			.00 (.00)	.01 [−.10, .11]*
Slope of subjective age			.01 (.00)*	.25 [.10, .41]*
Model fit statistics				
RMSEA [90% CI]	.03 [.02, .04]		.03 [.02, .03]	
CFI	.99		.99	
TLI	.98		.98	
SRMR	.02		.02	

Note. Covariances between exogenous latent variables included in all models.
*$p < .05$.

and selective primary control striving, respectively. These findings are now discussed in the context of our theoretical approach (Heckhausen et al., 2010, 2019) and its application to the work domain (Heckhausen et al., 2017; Shane & Heckhausen, 2019).

Subjective Age as a Secondary Control Strategy

According to our theoretical perspective (Heckhausen et al., 2010, 2019), individuals are aware of both their own primary control capacity as well as the typical control capacity at different ages in the life span (Barrett & Montepare, 2015; Diehl et al., 2014, 2015; Heckhausen, 1997, 1999; Weiss & Lang, 2012). By viewing oneself as relatively younger or older than one is, individuals can subjectively align themselves with different phases of a typical life-span trajectory of control capacity (Heckhausen, 1997; Weiss & Lang, 2012). In so doing, adults who report feeling relatively younger than they actually are, are in effect employing a selective secondary control strategy that should increase their overall perceived control capacity and encourage selective primary control striving. Conversely, feeling older than one actually is presumably acts as a compensatory secondary control strategy that should decrease perceived control capacity and discourage selective primary control striving, and in turn facilitate greater goal disengagement capacities. In line with this theoretical framework, we proposed and found evidence to support that subjective age acts as a secondary control strategy, in turn, modifying individual's perceived control and motivational investment.

Subjective age can act on global (Diehl et al., 2014, 2015) or domain-specific (Kornadt et al., 2018; Kornadt & Rothermund, 2015) perceptions of control capacity and similarly direct global or domain-specific selective primary control striving through the mechanisms outlined previously. In the current study, subjective age was measured at a global level, and as such, we hypothesized that its relationship with work-specific outcomes would be indirect. We further chose to focus on midlife and one's subjective age relative to one's chronological age. This allowed us to examine how feeling relatively younger or older than one's actual age was related to work-specific

outcomes during a period where control capacity is theorized to be at its peak (Heckhausen et al., 2010, 2019). We expected and found that feeling relatively younger than one's actual age was linked with increased perceived control over one's work situation via domain-general perceived control capacity, and with increased motivational investment in one's work situation via domain-general selective primary control striving.

While we found support for a linear relationship between changes in subjective age and changes in control beliefs, the motivational theory of life-span development (Heckhausen et al., 2010, 2019) suggests a curvilinear age–control relationship across the life span that peaks in midlife. By restricting our analyzed sample to individuals who completed at least two assessments between the ages of 40 and 60, our analyses focused on individuals within the range of peak-control. This then allowed us to predict that feeling relatively older or younger should shift control perceptions in a linear fashion. However, we did not capture the relationship between how old individuals feel and the inflection point of their life-span trajectory of primary control capacity. Future research that spans a larger age range and contains sufficient measurement points to capture quadratic or higher-order trajectories is needed to extend and more fully test the midlife-peak model.

Similarly, we did not isolate progression across the inflection point of whether one feels younger, the same as, or older than one's actual age. This leads to the open question of whether all movement along the continuum of differences between one's subjective and actual age operates similarly, or whether there is unique meaning attributed to crossing the threshold between feeling younger and feeling older than one actually is. Our theoretical approach proposes that any difference between one's subjective and chronological age is a secondary control strategy (Heckhausen, 1997), but the type of secondary control strategy employed depends on which side of the younger/older distinction one's perceived age lies. Specifically, we propose that feeling subjectively younger than one's actual age acts as a selective secondary control strategy that enhances perceived control and motivational investment. On the other hand, feeling subjectively older than one's age

acts as a compensatory secondary control strategy that allows one to more effectively reduce motivational investment by diminishing perceptions of perceived control. Thus, while the degree of difference between one's actual and subjective age should reflect the intensity of secondary control strategy use, the type of secondary control strategy used should be qualitatively different as individuals cross the inflection point between feeling younger or older than they actually are. Future research implementing a measure of subjective age that is sensitive to this qualitative shift between feeling younger versus older than one actually is and measures of different secondary control strategies would help extend the present study and further examine our theoretical propositions regarding how age, subjective age, and motivational processes are related.

The indirect paths from global subjective age to domain-specific outcomes show that aligning oneself with ages associated with typically higher or lower levels of control capacity expands or constricts individuals' engagement with specific domains of life and functioning. This suggests that interventions designed to either normalize higher levels of control capacity at older ages or to facilitate individuals' perceptions of their own "youthfulness" could lead to greater engagement across various domains of life. Conversely, for adults who suffer a crisis event or precipitous decline in their actual control capacity, more closely calibrating subjective and chronological age may help activate compensatory secondary control strategies. These may in turn allow for more efficient disengagement and subsequent reengagement with reprioritized goal domains. While these potential interventions may be promising (Miche et al., 2015), further research is needed to more fully identify and isolate the mechanisms through which subjective aging is related to individual's perceived control capacity and motivational strivings. For example, domain-specific measures of subjective age and control strivings and perceptions would provide insight into whether these processes are better captured at the global or domain-specific level, and accordingly help tailor interventions that target control striving (e.g., Hamm, Perry, Chipperfield, Heckhausen, & Parker, 2016; Hamm, Perry, Chipperfield, Parker, & Heckhausen, 2019).

Limitations and Future Directions

The present study has several limitations. First, the study relies on single-item measures of key constructs, including subjective age, and work-specific motivational investment and perceived control. However, previous research using these measures supports their validity and reliability (Hamm, Heckhausen, et al., 2019; Lachman & Weaver, 1998; Shane & Heckhausen, 2012, 2016a). Moreover, the work-specific motivational item was predictably and consistently associated at each study wave with the skill discretion ($rs = .38, .37, .33, ps < .001$), decision authority ($rs = .26, .27, .21, ps < .001$), job demands ($rs = .17, .16, .18, ps < .001$), coworker support ($rs = .13, .16, .15, ps < .001$), and supervisor support ($rs = .13, .13, .14, ps < .001$) subscales of the Job Characteristics scale (Schwartz, Pieper, & Karasek, 1988). The work-specific perceived control measure was also predictably and consistently associated at each study wave with individual's job characteristics, including skill discretion ($rs = .25, .25, .25, ps < .001$), decision authority ($rs = .44, .39, .34, ps < .001$), job demands ($rs = −.20, −.22, −.15, ps < .001$), coworker support ($rs = .24, .22, .21, ps < .001$), and supervisor support ($rs = .29, .30, .30, ps < .001$). Of note, discriminant validity can also be gleaned from these findings, in that individuals

who reported greater demands at work also reported increased work-specific motivational investment and decreased perceived control. In addition to the methodological limitations of relying on single-item measures, there is a growing body of research suggesting that subjective age is a multi-faceted construct (e.g., Kornadt et al., 2018; Kornadt & Rothermund, 2015). We did observe significant correlations between our measure of subjective age over time (Wave 1 to Wave 2 $r = .48$; Wave 2 to Wave 3 $r = .55$; Wave 1 to Wave 3 $r = .44$; $ps < .001$), suggesting some measurement stability. Despite this supporting evidence for the meaningfulness of our chosen measures, future research using multi-item measures would help lend more confidence in the present study findings.

Second, the study assessments were separated by an average of 9 years. This large time-gap makes it difficult to isolate and examine longitudinal associations among the variables due to entire cycles of change likely occurring within the assessment gaps. While the longitudinal associations we observed were consistent with our theoretical framework and study hypotheses, causality or directionality cannot be determined from the current findings. Moreover, the large time-gap between longitudinal assessments increased the likelihood that individuals would drop out of the study. To counteract possible selection effects, we restricted our analyses to participants who completed at least two study assessments when they were between 40 and 60 years of age and used full-information maximum likelihood modeling to account for missing data. However, the data were not missing completely at random, and selection effects cannot be ruled out for the participants who remained in the study versus those who dropped out. Future research using more closely spaced assessment time points and higher retention rates would allow a more detailed analysis of interrelated, codeveloping, or directional change over time.

Fourth, while the sample was relatively large and age-diverse, it was predominantly white and middle to upper-middle class. A more diverse sample would help clarify how generalizable these current study findings are. Finally, although we did explore specific theory-guided mechanisms through which subjective age is related to work outcomes, there likely exist other pathways or processes. Future process-oriented research is needed to more fully understand how subjective age is related to an individual's work life.

Conclusion

The present study uses the motivational theory of life-span development (Heckhausen et al., 2010, 2019) as it applies to the work domain (Heckhausen et al., 2017; Shane & Heckhausen, 2019) to frame hypotheses about how and under what circumstances changes in subjective age relates to changes in individuals' perceived control over and motivational investment into their work situation. Through midlife, feeling relatively younger than one's actual age was predicted and found to be related to increasing perceived control over one's work situation via changes in domain-general perceived control capacity, and to increasing motivational investment in one's work situation via changes in domain-general primary control striving. These results suggest that individuals are able to activate different perceptions of age-graded control capacity by varying how old they feel. This secondary control strategy, in turn, allows individuals to enhance or diminish their work-specific perceived control and motivational investment.

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