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**Article — Published Version**

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The Career Development Quarterly

**Provided in Cooperation with:**

John Wiley & Sons

*Suggested Citation:* Fasbender, Ulrike; Vignoli, Michela; Topa, Gabriela (2022) : Understanding how aging experiences shape late career development, The Career Development Quarterly, ISSN 2161-0045, Wiley, Hoboken, NJ, Vol. 70, Iss. 3, pp. 174-189, <https://doi.org/10.1002/cdq.12301>

This Version is available at:

<https://hdl.handle.net/10419/264992>

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## ARTICLE

# Understanding how aging experiences shape late career development

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## Abstract

Mature workers' aging experiences are central in transforming the self and as such can shape career-related outcomes, such as late career work engagement and motivation to continue working. We therefore investigate the relations between aging experiences (i.e., personal growth, gaining self-knowledge, social loss, and physical loss) and career-related outcomes. Moreover, we explore psychological capital as an adaptive set of resources that can explain how aging experiences are linked to mature workers' motivation to continue working and late career work engagement. We test our hypotheses using structural equation modeling based on two-wave data from a sample of 346 Spanish mature workers. Results showed that psychological capital mediated the positive effects of personal growth and gaining self-knowledge as well as the negative effect of social loss on career-related outcomes. By highlighting the links between mature workers' experiences, resources, and career-related outcomes, we contribute to a more profound understanding of late career development.

## KEYWORDS

aging experiences, late career work engagement, motivation to continue working, older workers, psychological capital

## INTRODUCTION

Late career development has gained increasing attention (Le Blanc et al., 2019; Peng & Min, 2020; Van Dalen et al., 2015), mainly due to global workforce aging. The extension of working lives provides an opportunity for people's late career choices and is a tool for retaining valued knowledge and expertise accumulated by mature workers during their professional life. During their late career, people

experience plenty of expertise and knowledge; nevertheless, this phase could also include tiredness, dullness, and lack of motivation (Topa & Alcover, 2015). Exploring specific career-related outcomes, such as late career work engagement and motivation to continue working beyond retirement age, can help to gain a more profound understanding of late career development (Armstrong-Stassen, 2008; Bal et al., 2012; Wöhrmann et al., 2016, 2017).

Considering the personal experiences of aging and the psychological resources that predict a successful late career could benefit us with a better understanding of how people adapt to getting older at work (Kooij et al., 2020). From lifespan theory, we know that people's interpretation of reality changes with age (Baltes, 1987), and that the experience of getting older may shape people's late career development (Fasbender et al., 2019). Aging experiences include personal cognitions, such as personal growth, gaining self-knowledge, social loss, and physical loss, reflecting what aging personally means to people. Previous research highlighted the relevance of aging experiences for people's health and well-being (Steverink et al., 2001; Wurm et al., 2007) and career outcomes (Fasbender et al., 2014, 2019). In their recent review, Zacher and Froidevaux (2021) point out that much research has investigated the relations between age and career outcomes, but we know very little about the mechanisms behind these relations. Specifically, we lack an understanding of the underlying resources that explain how aging experiences shape late career development. Knowing the underlying resources, such as the role of psychological capital, is important from a theoretical perspective (cf. Kooij et al., 2020; Zacher & Froidevaux, 2021) and also from a practical perspective for human resource managers, who are responsible for the design of organizational practices that facilitate mature workers' successful inclusion and productivity at work (Hennekam & Herrbach, 2015), and for employees, who need to understand how they can handle the psychological resources relevant for managing the tasks inherent to remaining active and attached to their late career. Following these avenues, we aim at extending and further specifying the relation between aging experiences and late career development.

In order to explain how and through which mechanism aging experiences are linked to mature workers' motivation to continue working and late career work engagement, we combine lifespan theory (Baltes, 1987) with research on positive psychology (Seligman & Csikszentmihalyi, 2000). Based on lifespan theory, we frame late career development as a multidirectional development that conjoins the experience of gains and losses as well as changes of the self that are crucial for the career development over the second half of life. Utilizing a positive psychology perspective, we argue that late career development requires psychological capital because mature workers need psychological resources to explore and engage in late career opportunities. Psychological capital is an adaptive set of psychological resources consisting of self-efficacy, hope, resilience, and optimism (Luthans et al., 2007). It is likely that psychological capital changes over the lifespan due to people's aging experiences that can augment or exploit psychological resources (Freund & Baltes, 2002; Steverink et al., 2001). Psychological capital can therefore help to explain the relation between aging experiences and career-related outcomes.

Our research likely contributes to the literature in three ways. First, we add to the current theorizing of career development as a flexible and continuous development that is driven by the way people experience the process of getting older, rather than a fixed age cut-off (Zacher & Froidevaux, 2021), because depending on how people interpret their own aging process, they are more or less motivated and engaged in their late career. Second, we add to the positive psychology literature by explaining how aging experiences can shape psychological capital. While many studies explored organizational antecedents, we focus on the aging experiences as individual antecedents of psychological capital and therewith contribute to a more profound understanding of how age-related variables shape psychological capital (Luthans et al., 2007). Third, we uncover the mediating role of psychological capital in the link between aging experiences and career-related outcomes, therewith clarifying the underlying processes through which the experience of getting older drives people's late career work engagement and motivation to continue working beyond retirement age. By highlighting the connecting links between people's experiences, resources, and their career-related outcomes, we contribute to a better understanding of late career development and offer practical ways for career counselors,

corporate trainers, and policy-makers who aim at supporting mature workers' inclusion and productivity at work.

## THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Late career development is a process that includes work-related plans, decisions, and choices of mature workers oriented to consolidate their careers or to develop new skills that facilitate their transitions to new jobs or to alternative activities (Fasbender & Deller, 2017). Taking a lifespan perspective (Baltes, 1987), we frame late career development as a multidirectional development that conjoins the experience of gains and losses as well as changes of the self that are crucial for the career development over the second half of life. Late career development can be operationalized as *late career work engagement*, which describes the level of energy that mature workers dedicate to their work (Damman et al., 2013; see also Bayl-Smith & Griffin, 2014), and *motivation to continue working*, which refers to the wish to extend one's working life beyond the traditional retirement age (Armstrong-Stassen, 2008; Pak et al., 2019; Templer et al., 2010). Although there are other conceptualizations of late career development (e.g., as career planning; Fasbender et al., 2019; Wöhrmann et al., 2014), we refer to late career work engagement and motivation to continue working as two motivational components that refer to the current career and the anticipated and wished for future career. Understanding people's career motivation is relevant in predicting their actual career behavior and decision-making (Pundt et al., 2015; Zaniboni, 2015). It is therefore useful to study late career work engagement and motivation to continue working as indicators of late career development.

### Psychological capital and career-related outcomes

Psychological capital is a positive, adaptive set of resources characterized by having confidence to take over and make the necessary effort to succeed at challenging tasks (self-efficacy); making positive attributions about current and future success (optimism); persevering toward goals and, when necessary, redirecting paths to those goals in order to be successful (hope); and staying and recovering to attain success when beset by problems and adversity (resilience; Luthans et al., 2007). Because of its resource providing role, psychological capital can support late career work engagement and motivation to continue working.

Previous empirical research showed that psychological capital is positively related to career commitment (Singhal & Rastogi, 2018). In this sense, psychological capital can help to meet these demanding requirements of being engaged at work because it provides people with the necessary self-efficacy, optimism, hope, and resilience. Hence, we argue that late career work engagement requires resources to anticipate changes at work, monitor future opportunities, envision challenges instead of threats, strengthen the social network as well as adjust to layoffs or lack of new professional avenues.

Motivation to continue working relies on the social ties that embed mature workers within their organization (Bamberger & Bacharach, 2014) and also on the knowledge, energy, and expertise that people possess. From previous research, we know that resilience as component of psychological capital is positively linked to a forward momentum career orientation among mature workers (Arnold & Clark, 2016). We therefore assume that psychological capital facilitates motivation to continue working because it provides the psychological resources to successfully explore and pursue late career avenues, such as specific knowledge, energy, expertise, and social networks. Taken together, our hypothesis is as follows:

**Hypothesis 1:** Psychological capital is positively related to (a) late career work engagement and (b) motivation to continue working.

## Aging experiences and psychological capital

Aging experiences refer to the different individual cognitions related to the process of getting older (Dittmann-Kohli et al., 1997). Aging experiences are multidimensional and include positive and negative experiences (Whiston et al., 2015). Personal growth and gains in self-knowledge are positive dimensions, while social loss and physical loss are negative dimensions. The four dimensions of aging experiences can be linked to psychological capital as an adaptive resource that is characterized by plasticity (Luthans et al., 2007; Luthans & Youssef-Morgan, 2017). Scholars have emphasized that psychological capital solidifies over the lifespan due to the people's aging experiences that can augment or exploit psychological resources (Freund & Baltes, 2002; Steverink et al., 2001).

*Personal growth:* Personal growth captures the experience of aging as a process of individual development through acquiring new competencies or learning new skills (Steverink et al., 2001). Hence, personal growth entails the acquisition of new abilities and the development of capacities that, in turn, can promote positive assessment of uncertain situations, allowing mental reframing and triggering a reinterpretation process. Moreover, research showed that personal growth leads to mastery experiences that allow people to build self-efficacy, hope, optimism, and resilience (Meyers et al., 2015). We therefore expect a positive relation between personal growth and psychological capital.

**Hypothesis 2:** Personal growth is positively related to psychological capital.

*Gaining self-knowledge:* Self-knowledge focuses on self-acceptance and compensation, such as awareness of one's own abilities and the development of methods to overcome personal limitations (Fasbender et al., 2014). We argue that gaining self-knowledge contributes to psychological capital because of its self-regulatory component. As Masten and Coatsworth (1998) stated, the capacity to control one's own behavior is widely implicated in psychological capital. In general, aging experiences seem to contribute to self-regulation, as studies showed that older adults were less vulnerable to stress than middle-aged adults when being exposed to severe traumas (Goenjian et al., 1994; Phifer, 1990). Gaining self-knowledge allows people to regulate their emotional experiences, which helps in showing more resilient responses to stressing events (Mancini & Bonanno, 2010). We therefore assume a positive link between gaining self-knowledge and psychological capital.

**Hypothesis 3:** Gaining self-knowledge is positively related to psychological capital.

*Social loss:* Social loss refers to the experience of aging as a loss of social contacts, feeling less appreciated and less respected (Fasbender et al., 2014). The experience of social loss can threaten one's psychological capital, in particular positivity and hope, because aging is experienced as reduction of personal contacts that would otherwise provide social support. Even though psychological capital is internalized, Luthans and Youssef-Morgan (2017) recognized that "it is not devoid of social mechanisms" (p. 1710). In other words, psychological capital can be increased through support from others (Youssef-Morgan & Ahrens, 2017), and the experience of social loss is therefore a threat to one's psychological capital.

**Hypothesis 4:** Social loss is negatively related to psychological capital.

*Physical loss:* Physical loss captures one's bodily experiences of getting older, such as feeling less fit and healthy (Wurm et al., 2007). Physical loss may reduce mature workers' psychological capital because such negative evaluation of aging may lower a physical mastery of daily experiences leading to reduced self-efficacy, hope, optimism, and resilience (Meyers et al., 2015). Initial evidence shows

that physical loss is positively associated with negative affect (Steverink et al., 2001). It is therefore not implausible to assume that physical loss is negatively related to psychological capital.

**Hypothesis 5:** Physical loss is negatively related to psychological capital.

## The indirect relations between aging experiences and career-related outcomes

In combining lifespan theory with a positive psychology perspective, we explain that late career development is the result of changes to the self that are activated by experiencing aging-related gains and losses. In general support of the proposed mediating role of psychological capital, Li (2018) showed that psychological capital explained the relation between protean career orientation and well-being. Furthermore, research showed that psychological capital mediated the relation between high-commitment work systems and work engagement (Chen, 2018). In combination, these results are indicative of the mediating role of psychological capital. In order to increase or at least maintain late career work engagement and motivation to continue working, psychological capital can translate aging experiences to these career-related outcomes because psychological capital develops based on one's aging experiences to an adaptive set of resources that supports career-related outcomes (Luthans et al., 2007; Luthans & Youssef-Morgan, 2017). Specifically, personal growth and gaining self-knowledge are expected to increase psychological capital, whereas social loss and physical loss are expected to decrease psychological capital (Freund & Baltes, 2002; Steverink et al., 2001). In turn, psychological capital is assumed to enhance late career development due to its resource providing role (Arnold & Clark, 2016). In other words, mature workers react on their aging experiences with changes to the self (i.e., psychological capital) that support their late career development. Accordingly, we predict that psychological capital mediates the relations between aging experiences with late career work engagement and motivation to continue working. In sum, we state the following hypotheses:

**Hypothesis 6:** Psychological capital mediates the positive relation of personal growth with (a) late career work engagement and (b) motivation to continue working.

**Hypothesis 7:** Psychological capital mediates the positive relation of gaining self-knowledge with (a) late career work engagement and (b) motivation to continue working.

**Hypothesis 8:** Psychological capital mediates the negative relation of social loss with (a) late career work engagement and (b) motivation to continue working.

**Hypothesis 9:** Psychological capital mediates the negative relation of physical loss with (a) late career work engagement and (b) motivation to continue working.

## METHOD

### Sample and procedure

We collected two-wave data from a sample of Spanish employees in 2018. We chose a time lag of 6 weeks between the two waves to allow sufficient time for aging experiences via psychological capital to unfold their effects on late career development. Via e-mail, we invited workers aged 40 years and above to participate in the study. The threshold of 40 years was chosen as it refers to the second half of life (Dittmann-Kohli et al., 1997). Participants remained anonymous to their employer. Each participant was assigned a code to match the two questionnaires. Overall, 444 participants completed the first survey. Of these, 346 also completed the second survey (dropout rate = 22.1%). The final sample therefore consisted of 346 participants, of which 52.3% were female and 52.9% had a university degree. The average age was 50.6 years ( $SD = 6.9$ ; range: 40–68). Most of the participants were employed in the education/health sector (37.9%), in the trade sector (21.4%), and in the industrial

sector (20.8%), while the remaining were employed in the banking (8.1%), telecommunication (6.6%), and security (5.2%) sectors.

## Measures

All scales contained multiple items. Unless indicated otherwise, participants answered on a five-point scale ranging from 1 (totally disagree) to 5 (totally agree). We separated the measurement of study variables to offer a stronger causal support (Wang et al., 2017) and to reduce common-method bias (Podsakoff et al., 2012). Specifically, we measured aging experiences and psychological capital at Time 1, and late career work engagement and motivation to continue working at Time 2.

### Aging experiences

We captured aging experiences with the Spanish translation of the Aging Experience Scale developed by Dittmann-Kohli et al. (1997; for the English version see Fasbender et al., 2019). Participants responded on a seven-point scale from 1 (does not apply at all) to 7 (applies completely). Each of the dimensions consisted of four items. Example items were “Aging means to me that I can still learn new things” (personal growth,  $\alpha = 0.80$ ), “Aging means to me that I know myself better” (gaining self-knowledge,  $\alpha = 0.71$ ), “Aging means to me that I feel lonely more often” (social loss,  $\alpha = 0.68$ ), and “Aging means to me that I am less energetic and fit” (physical loss,  $\alpha = 0.86$ ).

### Psychological capital

We measured psychological capital with the Spanish version (León-Pérez et al., 2017) of the Psychological Capital Questionnaire (PCQ-12; Luthans et al., 2007). The scale is composed of four subdimensions. Self-efficacy consisted of three items (e.g., “I feel confident presenting information to a group of colleagues”), hope consisted of four items (e.g., “At the present time, I am energetically pursuing my work goals”), resilience consisted of three items (e.g., “I can get through difficult times at work because I’ve experienced difficulty before”), and optimism consisted of two items (e.g., “I always look on the bright side of things regarding my job”). The 12-item scale yielded a strong reliability ( $\alpha = 0.89$ ).

### Late career work engagement

We used the Spanish translation of the Late Career Work Disengagement scale developed by Damman et al. (2013), consisting of six items of which four were negatively and two were positively worded. A sample item is “They should no longer ask me to participate in new courses” ( $\alpha = 0.72$ ). We recoded the negatively worded items so that higher values of the scale indicate higher levels of late career work engagement.

### Motivation to continue working

We measured motivation to continue working with the Spanish translation of the three-item scale developed by Armstrong-Stassen (2008). An example item was “If I were completely free to choose, I would prefer to continue working after my retirement age” ( $\alpha = 0.96$ ).

## Control variables

We considered gender, age, and education as potential control variables due to their relevance for people's career and retirement decision-making (Boveda & Metz, 2016; Fisher et al., 2016).

## Analytic strategy

Preliminarily, we run the analyses concerning the kurtosis and skewness and for all the items used. Values did not exceed 1.72 for the kurtosis and  $-1.30$  for the skewness. As values comprised between  $-2$  and  $+2$  are considered acceptable (Curran et al., 1996; Gravetter & Wallnau, 2014), we decided to retain all the responses in the dataset. We conducted structural equation modeling using maximum likelihood estimation in Mplus version 8.4 to test our hypotheses. The fit of the models was evaluated using the chi-square test ( $\chi^2$ ), the comparative fit index (CFI), the Tucker–Lewis index (TLI), the root-mean-square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). We accepted CFI and TLI values  $> 0.90$ , RMSEA values  $< 0.06$ , and SRMR values  $< 0.08$  as indicators of adequate fit (Kline, 2016). We compared the fit of the models using likelihood ratio tests ( $\Delta\chi^2$ ). The more parsimonious model was considered to have similar fit to the comparison model if  $\Delta\chi^2$  was nonsignificant (likelihood ratio test; Kline, 2016). We applied item parceling technique to balance the number of parameters to be estimated in relation to the sample size (Little et al., 2002). Specifically, we parceled late career engagement to the more parsimonious three-per-factor solution and used the means of the four subdimensions (self-efficacy, hope, resilience, optimism) to scale psychological capital. To test the indirect effects of aging experiences on late career development through psychological capital, we controlled for the direct effects of aging experiences, as not including direct effects can spuriously inflate indirect effects (MacKinnon et al., 2002; Preacher & Hayes, 2008)<sup>1</sup>. To account for deviations from normality in testing the indirect effects, we used bootstrapping with 10,000 draws (Preacher & Hayes, 2008).

## RESULTS

### Preliminary analyses

Table 1 shows means, standard deviations, and correlations of all study variables. Table 2 shows the results of the confirmatory factor analyses. The intended seven-factor structure had a good model fit and fitted the data better than the alternative six-, five-, and one-factor models. In addition, the factor loadings of the items on their corresponding latent factors ranged from 0.36 to 0.97 and were all significant. These results demonstrate the construct validity of the measures used.

### Hypotheses testing

Overall, our hypothesized model (including control variables and the direct effects of aging experiences) showed a good model fit ( $\chi^2[335] = 639.95$ ,  $p < 0.001$ , RMSEA = 0.05, CFI = 0.93, SRMR = 0.05). Figure 1 and Table 3 present the direct effects. Among the control variables, we found

<sup>1</sup> Moreover, we tested different competing models: Model 1: Direct effects of the four aging experiences on late career work engagement and motivation to continue working included in the model (i.e., full model); Model 2: Direct effect of personal growth on motivation to continue working included; Model 3: Direct effects of personal growth on late career work engagement and motivation to continue working included; Model 4: No direct effects included (i.e., lean model). We compared the fit of these models using likelihood ratio tests ( $\Delta\chi^2$ ) and Model 1 resulted as the model with the best fit.

**TABLE 1** Means, standard deviations, correlations, and reliability of study variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Age	50.57	6.87	–									
2. Gender	0.48	0.50	–0.01	–								
3. Education	0.53	0.50	–0.03	–0.03	–							
4. Personal growth	5.38	1.11	–0.07	–0.04	<b>0.13</b>	(0.80)						
5. Gaining self-knowledge	5.33	1.02	–0.04	–0.09	0.06	<b>0.47</b>	(0.71)					
6. Social loss	2.74	1.17	0.08	0.06	<b>–0.12</b>	<b>–0.42</b>	<b>–0.25</b>	(0.68)				
7. Physical loss	2.50	1.30	<b>0.19</b>	0.05	<b>–0.15</b>	<b>–0.47</b>	<b>–0.17</b>	<b>0.44</b>	(0.86)			
8. Psychological capital	3.78	0.66	–0.04	–0.01	0.10	<b>0.54</b>	<b>0.50</b>	<b>–0.42</b>	<b>–0.29</b>	(0.89)		
9. Late career work engagement	3.79	0.74	<b>–0.16</b>	<b>–0.11</b>	<b>0.22</b>	<b>0.41</b>	<b>0.25</b>	<b>–0.42</b>	<b>–0.38</b>	<b>0.45</b>	(0.72)	
10. Motivation to continue working	2.27	1.35	0.02	–0.04	0.06	<b>0.24</b>	<b>0.12</b>	–0.02	–0.11	<b>0.23</b>	<b>0.22</b>	(0.96)

Note: *N* = 346. Reliabilities are shown in parentheses on the diagonal. Significant correlations are highlighted in bold (*p* < 0.05).

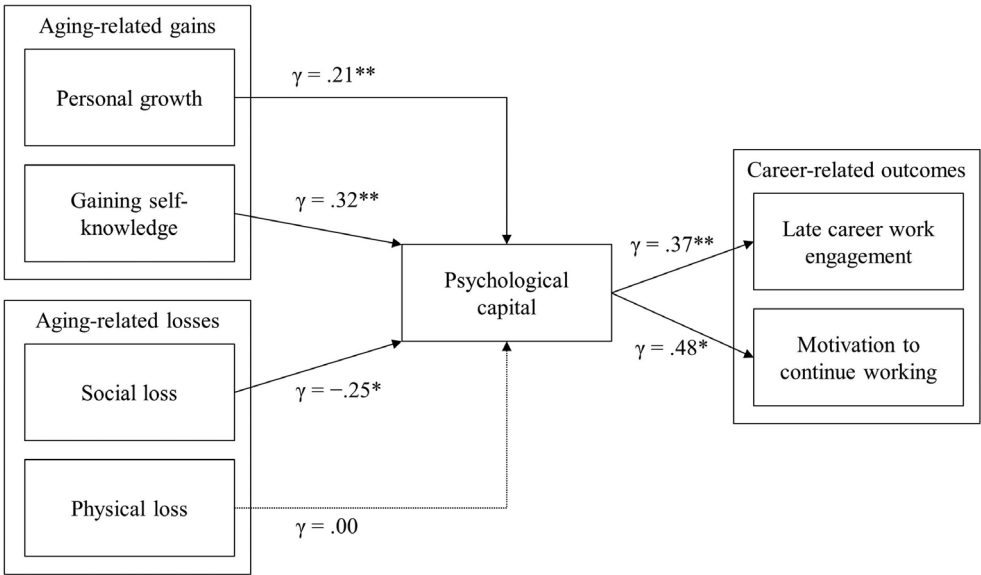
**TABLE 2** Confirmatory factor analysis fit indices for measurement model

Model	$\chi^2$	<i>df</i>	$\Delta\chi^2$ ( $\Delta df$ )	<i>p</i> -value $\Delta\chi^2$ ( $\Delta df$ )	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	<i>SRMR</i>
Seven-factor model	558.15	278	–	–	0.94	0.93	0.05	0.05
Six-factor model <sup>a</sup>	875.40	284	317.25 (6)	<0.001	0.86	0.85	0.08	0.11
Five-factor model <sup>b</sup>	906.30	289	30.9 (5)	<0.001	0.86	0.84	0.08	0.08
One-factor model	2,735.38	299	1,829.08 (10)	<0.001	0.44	0.40	0.15	0.12

Note. *N* = 346. Difference of chi-square values ( $\Delta\chi^2$ ) were estimated to compare to the seven-factor model. Abbreviations: CFI, Confirmatory Fit Index; TLI, Tucker–Lewis index; RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual.

<sup>a</sup>Late career work engagement and motivation to continue working loading on one factor.

<sup>b</sup>Personal growth and gaining knowledge loading on one factor, and social loss and physical loss loading on one factor.



**FIGURE 1** Results of structural equation modeling showing how aging experiences shape late career development. Unstandardized coefficients are shown for the hypothesized direct effects; \**p* < 0.05, \*\**p* < 0.01

TABLE 3 Direct effects of aging experiences and psychological capital on late career work engagement and motivation to continue working

Direct effects	Psychological capital			Late career work engagement			Motivation to continue working		
	Coeff (SE)	Std (SE)	p-value	Coeff (SE)	Std (SE)	p-value	Coeff (SE)	Std (SE)	p-Value
Age	0.00 (0.00)	0.03 (0.05)	0.628	−0.01 (0.01)	−0.11 (0.05)	0.054	0.01 (0.01)	0.04 (0.06)	0.502
Gender	0.06 (0.06)	0.05 (0.05)	0.330	−0.11 (0.07)	−0.09 (0.06)	0.121	−0.13 (0.15)	−0.05 (0.06)	0.381
Education	0.01 (0.06)	0.01 (0.05)	0.851	<b>0.17</b> (0.07)	0.13 (0.06)	0.021	0.07 (0.15)	0.03 (0.05)	0.628
Personal growth	<b>0.21</b> (0.08)	0.34 (0.11)	0.008	0.07 (0.07)	0.11 (0.11)	0.349	<b>0.35</b> (0.14)	0.27 (0.10)	0.012
Gaining self-knowledge	<b>0.32</b> (0.11)	0.33 (0.10)	0.004	−0.04 (0.11)	−0.04 (0.11)	0.724	−0.19 (0.21)	−0.10 (0.10)	0.375
Social loss	− <b>0.25</b> (0.11)	−0.24 (0.08)	0.026	−0.15 (0.13)	−0.15 (0.11)	0.246	0.48 (0.25)	0.22 (0.10)	0.052
Physical loss	0.00 (0.04)	0.00 (0.08)	0.991	−0.08 (0.05)	−0.16 (0.09)	0.085	−0.03 (0.11)	−0.02 (0.10)	0.789
Psychological capital	–	–	–	<b>0.37</b> (0.13)	0.38 (0.12)	0.003	<b>0.48</b> (0.23)	0.23 (0.11)	0.039
R <sup>2</sup>		<b>0.56</b>	<0.001		<b>0.47</b>	<0.001	<b>0.11</b>		<0.010

Note: N = 346. Significant coefficients are highlighted in bold ( $p < 0.05$ ). Abbreviations: Coeff, unstandardized coefficient; Std, standardized coefficient; SE, standard error.

**TABLE 4** Indirect effects of aging experiences on late career work engagement and motivation to continue working via psychological capital

Indirect effects via psychological capital	Late career work engagement				Motivation to continue working			
	Coeff	Coeff	Std	CI LL	Coeff	Std	CI LL	CI UL
Personal growth	<b>0.08</b>	0.13	0.02	0.20	<b>0.10</b>	0.08	0.02	0.26
Gaining self-knowledge	<b>0.12</b>	0.13	0.04	0.26	<b>0.15</b>	0.08	0.01	0.42
Social loss	<b>-0.09</b>	-0.09	-0.25	-0.02	<b>-0.12</b>	-0.06	-0.37	-0.01
Physical loss	0.00	0.00	-0.03	0.04	0.00	0.00	-0.05	0.05

Note:  $N = 346$ . Significant coefficients are highlighted in bold.

Abbreviations: Coeff, unstandardized coefficient; CI LL, lower level of 95% bootstrapped confidence interval of unstandardized coefficient; CI UL, upper level of 95% bootstrapped confidence interval; SE, standard error; Std, standardized coefficient.

only a positive relation between education and late career work engagement ( $\gamma = 0.17, p = 0.021$ ). Hypothesis 1 addressed the direct relations between psychological capital and career-related outcomes. The structural coefficients suggested that psychological capital was positively related to late career work engagement ( $\gamma = 0.37, p = 0.003$ ), and motivation to continue working ( $\gamma = 0.48, p = 0.039$ ), therewith supporting Hypothesis 1a and 1b. Furthermore, we investigated how aging experiences were related to psychological capital. Concerning personal growth, results showed a positive relation with psychological capital ( $\gamma = 0.21, p = 0.008$ ), supporting Hypothesis 2. Similarly, results showed that gaining self-knowledge was positively related to psychological capital ( $\gamma = 0.32, p = 0.004$ ), supporting Hypothesis 3. Conversely, social loss was negatively related to psychological capital ( $\gamma = -0.25, p = 0.026$ ), supporting Hypothesis 4. However, physical loss was not related to psychological capital ( $\gamma = 0.00, p = 0.991$ ), not supporting Hypothesis 5.

Table 4 shows the indirect effects of aging experiences on career-related outcomes via psychological capital. We found an indirect effect of personal growth via psychological capital on late career work engagement (indirect effect = 0.08, 95% confidence interval [CI] [0.02, 0.20]), supporting Hypothesis 6a. Also, we found an indirect effect of personal growth via psychological capital on motivation to continue working (indirect effect = 0.10, 95% CI [0.02, 0.26]). Yet, psychological capital only partially explained the relation between personal growth and motivation to continue working as we also found a direct effect of personal growth on motivation to continue working ( $\gamma = 0.35, p = 0.012$ ). These results partially support Hypothesis 6b. Moreover, we found indirect effects of gaining self-knowledge via psychological capital on late career work engagement (indirect effect = 0.12, 95% CI [0.04, 0.26]), and motivation to continue working, (indirect effect = 0.15, 95% CI [0.01, 0.42]), supporting Hypothesis 7a and 7b. Furthermore, we found indirect effects of social loss via psychological capital on late career work engagement (indirect effect = -0.09, 95% CI [-0.25, -0.02]), and motivation to continue working (indirect effect = -0.12, 95% CI [-0.37, -0.01]), supporting Hypothesis 8a and 8b. Lastly, we found that the indirect effects of physical loss via psychological capital on late career work engagement (indirect effect = 0.00, 95% CI [-0.03, 0.04]), and motivation to continue working (indirect effect = 0.00, 95% CI [-0.05, 0.05]) were not significant, not supporting Hypothesis 9a and 9b.

## DISCUSSION

With this study, we aimed to uncover how aging experiences are linked to career-related outcomes for mature workers. Based on lifespan theory and positive psychology, we explored psychological capital as an adaptive set of resources that can explain how aging experiences are linked to mature workers' late career work engagement and motivation to continue working. We found that psychological capital mediated the positive effects of personal growth and gaining self-knowledge as well as the negative effect of social loss on late career work engagement and motivation to continue working. It should

be noted however that we also found a direct effect of personal growth on motivation to continue working, which is why the positive effect of personal growth on motivation to continue working can only be partially explained by psychological capital. Physical loss did not show a significant effect on psychological capital, nor indirect effects on the two career-related outcomes.

## Theoretical implications

Our findings offer three theoretical implications. First, by showing that aging experiences can predict late career work engagement and motivation to continue working, we add to the emerging literature on career and retirement decision-making (e.g., Armstrong-Stassen, 2008; Bal et al., 2012; Damman et al., 2013; Fasbender et al., 2016; Le Blanc et al., 2019; Peng & Min, 2020; Templer et al., 2010; Wöhrmann et al., 2016, 2017). In line with previous research (Fasbender et al., 2014, 2019), we found that depending on how people interpret their own aging process (i.e., personal growth, gaining self-knowledge, or social loss), they are more or less engaged at work and motivated to continue working. These findings emphasize the current theorizing of career development as flexible and continuous development that is driven by the way people experience the process of getting older, rather than a fixed age cut-off (Zacher & Froidevaux, 2021). By acknowledging differences in aging experiences within the group of mature workers, we also pay credit to age heterogeneity (i.e., increasing interindividual variability as people age; Nagy et al., 2019).

Second, by highlighting that aging-related gains (i.e., personal growth and gaining self-knowledge) increase and aging-related losses (i.e., social loss) decrease psychological capital, we add to the positive psychology literature (Avey et al., 2011; Luthans et al., 2007; Luthans & Youssef-Morgan, 2017; Seligman & Csikszentmihalyi, 2000). While many studies investigated the outcomes of psychological capital (see meta-analysis from Avey et al., 2011), we contribute to the understanding of its antecedents. Our findings support previous conceptualizations of psychological capital as an adaptive set of resources (Luthans et al., 2007; Luthans & Youssef-Morgan, 2017). Specifically, we add to previous research that has concentrated on organizational antecedents, such as leadership and perceived organizational support (see meta-analysis from Wu & Nguyen, 2019), by highlighting that psychological capital can be shaped by mature workers' aging experiences as individual antecedents. While personal growth, gaining self-knowledge, and social loss predicted psychological capital, physical loss as a bodily experience of getting older did not show any significant effects, which emphasizes the psychological over the bodily experiences of aging in its predictive power on psychological capital. It should be noted, however, that the level of education was exceptionally high in our sample. This suggests that the majority of participants worked in rather cognitive demanding jobs, which may reduce the relevance of physical capabilities. Future research may replicate our findings by considering different job demands including cognitive as well as physical demands.

Third, by exploring the mediating role of psychological capital in the relation between aging experiences and career-related outcomes, we clarify the underlying processes by which aging may shape people's late career work engagement and motivation to continue working. In line with previous research (e.g., Arnold & Clark, 2016; Singhal & Rastogi, 2018), we found that psychological capital can explain career-related outcomes. Relatedly, our findings support previous research that has shown the mediating role of psychological capital in other contexts (Wu & Nguyen, 2019). By highlighting the links between people's experiences, resources, and their career-related outcomes, we thus contribute to a more profound understanding of late career development.

## Limitations and directions for future research

Despite its contributions, this study has limitations that must be addressed. The first limitation refers to the correlational design that prevents drawing causal conclusions. Some relations were tested using

a time-lagged design, such that late career work engagement and motivation to continue working were measured six weeks after the collection of the initial data including mature workers' aging experiences (personal growth, gaining self-knowledge, social loss, physical loss) and psychological capital. Compared with existing research that is often cross-sectional (e.g., Fasn timer et al., 2016; Le Blanc et al., 2019; Wöhrmann et al., 2017), this design offers stronger support for the findings on the antecedents of late career development. As aging experiences and psychological capital were measured at the same time, there could be a concern about the directionality of effects. Yet, previous research has shown the long-term effects of aging experiences on employment status, health, and well-being outcomes (Fasn timer et al., 2014; Steverink et al., 2001; Wurm et al., 2007), which reduces the concern for a potential reverse directionality of the relations between aging experiences and psychological capital. Nevertheless, future studies may use cross-lagged panel designs to further examine the directionality and dynamics of the relations between mature workers' aging experiences, psychological capital, late career work engagement, and motivation to continue working.

Further, given all our study variables were assessed via self-report, common-method bias may be a concern. However, the time-lagged nature of the data partly alleviates the concern for common-method bias because a temporal separation can reduce a potential inflation of effect sizes (Podsakoff et al., 2012). Furthermore, procedural means were used to reduce common method variance (Wöhrmann et al., 2017; Zaniboni, 2015). Participants' anonymity was protected regarding their employer. Moreover, we varied the answer formats by using different types of Likert scales to increase the complexity and therewith diminish participants' "theory-in-use" (Chang et al., 2010). Nevertheless, future studies may use the triangulation method (Creswell & Plano Clark, 2017), for example, complementing the quantitative survey with qualitative data (e.g., observations and interviews).

Another limitation refers to the generalizability of our findings. We only focused on "typical" employees. However, aging experiences and psychological capital may vary substantially among other groups of participants, such as small business owners (Alterman et al., 2020) or unemployed people (Fasn timer & Klehe, 2019; Watermann et al., 2021), which affect late career work engagement and motivation to continue working. Future research may widen its focus to gain a broader picture of the antecedents and resources (and their relative strength) that shape people's late career development. Lastly, the social loss dimension of the Spanish version of the aging experience scale used in this study showed a reliability of 0.68, due to one item that lowered the reliability (i.e., "Aging means to me that I feel less needed."). As structural equation modeling accounts for measurement errors, slightly lower levels of reliability can be tolerated (Kline, 2016). Nevertheless, we conducted a sensitivity analysis, which showed that the results remained robust and significant in the hypothesized direction regardless of whether we included or excluded this item. Previous studies reported a higher reliability of the scale (e.g., Fasn timer et al., 2014 reported 0.74 using the German version; Fasn timer et al., 2019 reported 0.84 using the English version). Given that the scale was translated to Spanish, it is possible that the mentioned item may be interpreted differently within a different cultural context. Future studies should take this into consideration (e.g., by testing measurement invariance when using data of different countries and/or different languages).

The present study also leaves some issues unaddressed, suggesting areas for further examination. One avenue for future research could be the examination of the relative importance of each sub-dimension of psychological capital in mediating the relationships between mature workers' aging experiences and their career outcomes. It is reasonable to assume that self-efficacy and resiliency, as deeply rooted in mature workers' past experiences, may exert stronger effects than hope and optimism, as more future-oriented resources. In this sense, using the 24-item version of Psychological Capital Questionnaire (Luthans et al., 2007) would enable a more fine-grained analysis. Moreover, research may investigate the role of opportunities to continue working as an important but often overlooked variable in mature workers' late career development (Pak et al., 2019). Opportunities to continue working may directly affect mature workers' late career work engagement and motivation to continue working and also interact with psychological capital on these career-related outcomes. As such, a lack of employment opportunities may buffer the positive effects of psychological capital on

career-related outcomes because employment opportunities represent the boundaries of the effects of individual resources on late career development.

## Practical implications

Our research offers practical implications for career counselors and organizations that aim at supporting mature workers' successful inclusion and productivity in the workplace. Our findings revealed psychological capital as the most proximal predictor of mature workers' late career work engagement and motivation to continue working, which is why career counselors and organizations should focus on ways to strengthen this set of resources. One way to increase psychological capital is to pay attention to mature workers' aging experiences. Organizations may design work for mature workers to enable learning and personal development but also allow social exchange between coworkers (Fasbender & Gerpott, 2021; Fasbender & Gerpott, 2022), which in turn should benefit mature workers' aging experiences (i.e., enhanced personal growth and self-knowledge, but reduced social loss).

Career counselors can effectively strengthen mature workers' psychological capital through training interventions. Positive psychology, stress management, and other interventions are particularly effective for training psychological capital (Lupşa et al., 2019). Relatedly, interventions delivered by a trainer or career counselor are more effective than interventions delivered with other materials (such as online materials). The duration of an intervention does not necessarily need to exceed one month to be effective. For example, an intervention study by Meyers et al. (2015) found that even a one-day strength training can be effective in boosting individual's psychological capital. Through specific training interventions targeted at enhancing mature workers' psychological capital, career counselors have therefore relevant options to support late career development.

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**How to cite this article:** Fasbender, U., Vignoli, M., & Topa, G. (2022). Understanding how aging experiences shape late career development. *The Career Development Quarterly, 70*, 174–189. <https://doi.org/10.1002/cdq.12301>