Engaging age-diverse workers with autonomy and feedback: the role of task variety

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Received 3 May 2022
Revised 24 September 2022
7 January 2023
Accepted 23 February 2023

Abstract

Purpose – The aging of the population is changing the composition of the workforce in most developed countries. With increasingly older and age-diverse workforces, organizations need to redesign jobs to keep their workers healthy, happy and productive across the lifespan. In the current research, the authors integrate socioemotional selectivity theory and selection, optimization and compensation theory with job design to investigate how certain job characteristics influence the work engagement of older and younger workers.

Design/methodology/approach – In a two-wave survey with age-diverse employees from multiple organizations ($N = 372$), the authors explore how autonomy and feedback contribute to the engagement of older and younger workers, depending on levels of task variety.

Findings – In the case of older workers the relationships between autonomy and engagement, and feedback and engagement are positive when task variety is low but non-significant when task variety is high. Conversely, in the case of younger workers the relationships between autonomy and engagement, and feedback and engagement are positive when task variety is high but non-significant when task variety is low.

Research limitations/implications – The research contributes to the growing body of knowledge on aging and work, particularly the lifespan perspective on job design. Nonetheless, the correlational design warrants caution about drawing causal inferences.

Practical implications – The findings inform managers on how to combine autonomy, feedback and task variety to design jobs that can engage the multi-age workforce.

Originality/value – The research is among the first to investigate the combined effects of different job characteristics on age-diverse employees' engagement at work.

Keywords Aging, Job characteristics, Work engagement

Paper type Research paper

This research was partially funded with a A PhD scholarship awarded to the first author by the Portuguese Foundation for Science and Technology (FCT) with the Reference SFRH/BD/115648/2016.

Journal of Managerial Psychology
Emerald Publishing Limited
0268-3946
DOI 10.1108/JMP-04-2022-0160

With the unprecedented aging of the global population (United Nations, 2019), workforces are becoming older in most developed countries, with a steady increase in the proportion of workers aged 50 or over and a simultaneous fall in the proportion of younger individuals entering the labor force (e.g. Eurofound, 2017). To deal with these changes organizations need to support workers' well-being across longer career spans and adapt jobs to keep employees of all ages engaged – i.e. physically, cognitively and emotionally connected with their work roles (Kahn, 1990). When employees are engaged, they tend to report better health, perform better, be more committed to their organization and have lower intentions to leave the organization (Halbesleben, 2010).

Previous research has shown that job resources such as autonomy (i.e. the extent to which a job provides freedom, independence and discretion in scheduling and determining how to perform the work) and feedback (i.e. the extent to which the work activities provide clear information about the effectiveness of one's performance) are drivers of work engagement (Bakker *et al.*, 2005). Yet, how these job characteristics might influence the engagement of *age-diverse* workers is still largely unknown. In a lifespan approach to job design, Truxillo *et al.* (2012) proposed that autonomy should be more beneficial to the engagement of older workers while feedback should be more beneficial to the engagement of younger workers. However, the empirical evidence available has not provided support for these propositions. Instead, research has found that autonomy and feedback can have positive effects for both younger and older employees.

For instance, a meta-analysis has shown that autonomy is associated with engagement and commitment more strongly for younger than older employees while it is associated with job self-efficacy and performance more strongly for older than younger employees (Ng and Feldman, 2015). While we could not find any studies analyzing the moderating effect of age on the relationship between feedback and engagement, Wang *et al.* (2015) have shown that feedback can have positive effects on both younger and older workers. Specifically, they found that feedback is associated with positive reactions to feedback but for different reasons: while older workers see feedback as a manifest of the quality of their social relations at work, younger workers see feedback as a way to improve their performance and achieve desired career goals.

In the current research, we use lifespan approaches to development – particularly, selective optimization with compensation theory (SOC; Baltes and Baltes, 1990) and socioemotional selectivity theory (SST; Carstensen *et al.*, 1999) – as theoretical frameworks to investigate: (1) the moderating role of employee age in the relationships between autonomy and engagement and feedback and engagement, and (2) if these relationships vary depending on employees' perceived levels of task variety.

With this research, our contributions are threefold. First, our research responds to calls to investigate job design in the context of increased workforce aging (Grant *et al.*, 2010): we investigate how the relationships between job characteristics and engagement might depend on employee age. Second, we build on the conceptual work by Truxillo *et al.* (2012) and Cadiz *et al.* (2019) who proposed age differences in the relationships between autonomy and engagement, and feedback and engagement, and go beyond what was proposed to argue that such relationships are dependent upon levels of task variety. By doing that, we answer the calls to investigate the effects of interactions between multiple job characteristics (Truxillo *et al.*, 2012). Third, by using SOC (Baltes and Baltes, 1990) and SST (Carstensen *et al.*, 1999) as theoretical frameworks, we extend the applications of lifespan theories to the work context (Rudolph, 2016). From a practitioner viewpoint, we provide valuable insights to managers on how they can (re)design jobs that are engaging for an increasingly older and age-diverse workforce.

Theory and hypotheses

Selective optimization and compensation theory, socioemotional selectivity theory and job design

Lifespan developmental psychology proposes that human development is a fluid, continuous and lifelong process (Baltes *et al.*, 1980). Lifespan developmental theories such as selective optimization and compensation theory (SOC; Baltes and Baltes, 1990) and socioemotional selectivity theory (SST; Carstensen *et al.*, 1999) have recently emerged as important foundations to the study of aging and work (Rudolph, 2016).

Both theories are focused on the goals that individuals pursue across the lifespan. SOC identifies three adaptive strategies that individuals use to successfully adapt to older age: (1) selection strategies, which involve making decisions about what goals to pursue depending on the resources to face environmental demands; (2) optimization strategies, which consist of allocating available resources to optimize performance; and (3) compensation strategies, which can be used as a way of maintaining performance when available resources are not enough to attain desired goals (Baltes and Baltes, 1990).

In a complementary perspective, SST proposes that the social goals that individuals pursue across the lifespan depend on their perception of time. When individuals perceive that there is plentiful time available in the future (typically, when they are young), they tend to pursue a greater number of social relationships from which they extract knowledge that can be valuable in the future. As individuals age they start to perceive less time available in the future and become more present-focused and tend to pursue fewer but closer social relationships, from whom they derive emotional well-being (Carstensen *et al.*, 1999).

Both SOC and SST have been used as theoretical frameworks in the study of age differences in attitudes and behaviors at work, including in response to job design. Job design was initially defined as the content and structure of tasks employees perform on the job and included five job characteristics: autonomy, skill variety, task identity, task significance and feedback (Hackman and Oldham, 1976). More recent definitions also incorporate the content and organization of activities, relationships and responsibilities (Morgeson and Humphrey, 2006). Job characteristics affect work attitudes including job satisfaction and organizational commitment, work behaviors including performance, turnover and absenteeism, and psychological outcomes including work motivation, stress and burnout (Humphrey *et al.*, 2007). In recent decades research has looked into job design through the lens of age, mostly following the publication of the "lifespan perspective on job design", a conceptual piece that advanced propositions on how employee age would moderate relationships between job characteristics and employee outcomes (Truxillo *et al.*, 2012).

In the following sections, we use SOC and SST to discuss the mixed findings on the moderating effect of age on the relationships between autonomy and engagement, and feedback and engagement, and propose task variety as a boundary condition for such effects.

Autonomy, engagement and age: the moderating role of task variety

According to Truxillo *et al.* (2012), older workers should be more effective than younger workers in using autonomy due to age-related gains in crystallized intelligence and accumulated job skills. From the point of view of SOC, autonomy should benefit older workers as it provides opportunities to align resources with work demands through job crafting. Increased job autonomy should allow older workers to use the three adaptive strategies (i.e. selection, optimization and compensation), and indeed empirical research has provided support for this relationship (Weigl *et al.*, 2013).

However, from the point of view of SST autonomy might contribute to positive work outcomes for *both* younger and older workers. On one hand, autonomy should benefit older workers by allowing them to engage in more positive work experiences that satisfy their

emotional regulation goals; on the other hand, autonomy should benefit younger workers by providing opportunities to acquire knowledge and skills, thus satisfying their knowledge acquisition goals. Ng and Feldman (2015) found meta-analytical support for the two hypotheses: while older workers had stronger relationships between autonomy and self-efficacy and performance, younger workers had stronger relationships between autonomy and job satisfaction, engagement and commitment.

These mixed results on the moderating effect of age on the relationships between autonomy and work outcomes hint at a multitude of different moderators affecting these relationships (Cadiz *et al.*, 2019). In the current study we propose task variety as an important moderator. According to SST, task variety may lead to greater engagement of younger workers because it provides learning and career development opportunities, whereas it should be less useful to older workers who have already accumulated skills and experience and are less focused on career advancement and more focused on emotional well-being (Carstensen *et al.*, 1999). Additionally, in line with SOC, high task variety requires extended effort that might prevent older workers from optimizing their resources. Empirical research has shown that task variety is indeed more strongly related to the engagement of younger than older employees (Zaniboni *et al.*, 2014) and to the burnout of older workers than younger ones (Zaniboni *et al.*, 2013).

Therefore, high task variety should allow younger workers to fully take advantage of autonomy in terms of acquiring knowledge and skills, whereas high task variety might exhaust older workers and impede them in taking advantage of autonomy to align resources with work demands and to decide on participating in positive work experiences. Thus, we propose that levels of task variety will differently moderate the relationship between autonomy and engagement for younger and older employees, so that.

H1. Autonomy is associated with work engagement (1) more strongly for older than younger workers when task variety is low and (2) more strongly for younger than older workers when task variety is high.

Feedback, engagement and age: the moderating role of task variety

Truxillo *et al.* (2012) proposed that feedback from the job should be important to employees of all ages while especially important to younger workers who need increased job knowledge. However, from the perspective of SST, *both* younger and older workers might be motivated by feedback. While younger workers may appreciate feedback because they have increased motivation for knowledge acquisition and career development, older workers may appreciate feedback as a way to develop and maintain close social relationships at work. Indeed, a study by Wang *et al.* (2015) found that older workers place more importance on the relational aspects of feedback, whereas younger workers are more oriented toward feedback utility and quality. Additionally, from a SOC viewpoint, feedback may provide information to older workers about whether they need to implement SOC strategies to better align their current resources with job demands.

As high levels of task variety lead to greater engagement and well-being of younger workers (Zaniboni *et al.*, 2014) but higher burnout of older workers (Zaniboni *et al.*, 2013), we argue that levels of task variety will moderate relationships between feedback and engagement for younger versus older employees. With low levels of task variety, older workers should be able to use feedback not only to better utilize SOC strategies (Baltes and Baltes, 1990), but also to focus on positive relationships in the workplace, which should positively affect their engagement (Carstensen *et al.*, 1999). On the other hand, high levels of task variety will especially contribute to knowledge acquisition goals of younger workers, which combined with high levels of feedback on how to improve their skills and advance their careers, should be especially engaging for younger workers. Thus, we propose:

H2. Feedback is associated with work engagement (1) more strongly for older than younger workers when task variety is low and (2) more strongly for younger than older workers when task variety is high.

Method

Procedure

Data were collected by a team of researchers and doctoral and masters candidates, in organizations in Portugal and through social networks, which resulted in a heterogeneous convenience sample. This type of sample is not substantially different from non-student recruited samples (Wheeler *et al.*, 2014) and can be especially helpful when researchers need heterogeneous samples, which is the case of the current study in terms of age diversity (Demerouti and Rispens, 2014).

We used a time-lagged design with two waves of data collection to alleviate concerns regarding common method bias by temporally separating the measurement of predictors and outcome variables (Podsakoff *et al.*, 2012). The first survey was launched in October 2019 and was live for three weeks (Time 1). The second survey was launched in December 2019 (three weeks after closing the first survey) and was live for three weeks (Time 2). At Time 1 participants answered to measures of job characteristics, including autonomy, feedback and task variety. At Time 2 participants answered to the measure of work engagement, along with demographic questions. To match responses between Time 1 and Time 2, participants were instructed to create and input a personal code on both surveys.

In companies the surveys were disseminated to employees by the HR departments both online and in a paper-and-pencil version. Participants invited via social networks responded to online surveys. In all cases, anonymity and confidentiality were guaranteed and participants provided their informed consent to participate. Participation was voluntary, i.e. participants were not paid for their participation in the study.

Participants

In the first wave we recruited a total of 815 participants: 304 (37.3%) through companies and 511 (62.7%) through social networks. In the second wave we recruited a total of 659 participants: 298 (45.2%) through companies and 361 (54.8%) through social networks. We were able to match 372 participants between Time 1 and Time 2, which constitutes our final sample [1]. Of these, only 17 participants responded to a paper-and-pencil survey – the remaining responded to an online survey.

The mean age was 37.77 ($SD = 9.85$) with 43.3% of participants between 22 and 35 years old, 42.5% of participants between 36 and 45 years old, and 14.2% of participants between 50 and 66 years old. In terms of gender, 61% were male, and in terms of education, 6.2% had elementary school, 34.1% had high school, 32.8% had university, and 25.0% had graduate school. On average, participants had 8 years of job tenure. The vast majority of participants (83.9%) were employed in private organizations, while 14.5% worked in public organizations and only 1.6% worked in non-profit organizations. The sectors of activity of these organizations were diverse, with the most-represented being manufacturing industry (25.3%), banking (20.4%), consulting (14.0%) and commerce and sales (7.8%).

Measures

All measures were translated to Portuguese using the back-translation method (Brislin, 1980). First, the measures were translated to Portuguese by a bilingual speaker. A second bilingual speaker back-translated the same items to English without access to the original measures. Finally, the few inconsistencies between the original and the new English versions were

discussed among the two translators, and the Portuguese version was revised to accommodate any changes.

Autonomy. To measure the degree to which individuals have decision-making autonomy in their jobs, three items from Morgeson and Humphrey (2006) were used, including "My job allows me to make a lot of decisions on my own". Items were responded to on a Likert scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*) ($\alpha = 0.91$).

Feedback. We used three items from Morgeson and Humphrey (2006) to assess the extent to which others within the organization provide information about work performance, including "I receive a great deal of information from my manager and coworkers about my job performance". Items were responded to on a Likert scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*) ($\alpha = 0.86$).

Task variety. Task variety refers to the extent to which a job requires the performance of diverse tasks, and it was measured with three items from Morgeson and Humphrey (2006). Items included "My job involves doing a number of different things" and were responded to on a Likert scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*) ($\alpha = 0.91$).

Work engagement. We used the 15-item Utrecht Work Engagement Scale (UWES) by Schaufeli and Bakker (2003). Items included "My job inspires me" and were responded to on a frequency scale from 0 (*Never*) to 6 (*Everyday*). Work engagement was treated as a unidimensional construct ($\alpha = 0.93$).

Age. Age was measured as chronological age (number of years since birth).

Demographic variables. Data were collected on gender, education and job tenure. Although we had no reason to expect different effects of gender, education and job tenure on engagement, we used them as covariates in the regression analyses to verify if that was true.

Analytical strategy

We first assessed the reliability of measures and conducted confirmatory factor analyses (CFA). We tested the two hypothesized moderated moderation models through two hierarchical multiple regression models with engagement as the criterion variable. To test H1, the first model included control variables in Step 1; autonomy, age and task variety in Step 2; the two-way interactions in Step 3; and the three-way interaction in Step 4. Similarly, to test H2, the second model included control variables in Step 1; feedback, age and task variety in Step 2; the two-way interactions in Step 3; and the three-way interaction in Step 4. In both models the interaction terms were computed with the centered variables to avoid potential multicollinearity problems. Gender, education, job tenure, data source and data collection method were included as control variables [2]. We conducted simple slope analyses and depicted the interactions in plots at one and a half standard deviations above and below the mean of employee age, at approximately 23 and 53 years old (representing younger and older workers, respectively).

Results

Measurement assessment

Means, standard deviations, Cronbach's alphas and correlations among the study variables are shown in Table 1. Older workers are less educated than younger workers, and men are less educated than women, accurately reflecting the Portuguese workforce (Pordata, 2022a). Older workers are also more engaged than younger workers, which is consistent with previous research (e.g. Kim and Kang, 2017), and men are more engaged than women.

The Cronbach's alphas ranged from 0.86 to 0.93, indicating very good reliability. Through CFA, we estimated a four-factor model (i.e. autonomy, feedback, task variety and work engagement), which provided good fit to the data, χ^2 ($df = 246$) = 705.872, $p < 0.001$, CFI = 0.92, RMSEA = 0.07, SRMR = 0.06. All the items loaded significantly onto the

Predictor	*M*	*SD*	1	2	3	4	5	6	7
1. Autonomy	4.74	1.55	(0.91)						
2. Feedback	4.07	1.52	0.47***	(0.86)					
3. Task variety	5.69	1.30	0.49***	0.30***	(0.91)				
4. Work engagement	5.62	1.04	0.29***	0.28***	0.25***	(0.93)			
5. Age	37.77	9.85	0.03	−0.09	0.07	0.12*			
6. Gender[1]	0.61	0.49	0.22***	0.09	0.07	0.11*	0.05		
7. Education[2]	0.59	0.49	0.04	0.10*	−0.04	−0.15**	−0.32***	−0.15**	
8. Job tenure	8.12	7.63	0.06	−0.07	0.05	0.13*	0.56***	0.07	−0.36***

Note(s): [1]0 = Female, 1 = Male; [2]0 = Without higher education, 1 = With higher education. Cronbach's alpha values are in parentheses on the diagonal. Although work engagement was measured through a 0–6 response scale, the responses were transformed to a 1–7 response scale in order to obtain consistency with the other scales and ease the interpretation of findings. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table 1. Descriptive statistics, correlations, and reliability of study variables

expected latent construct (standardized factor loadings ranged from 0.50 to 0.90). Given the sizable correlation between task variety and autonomy, we also estimated a three-factor model (i.e. task variety and autonomy combined, feedback and work engagement), which fit the data less well, χ^2 (df = 249) = 1280.08, $p < 0.001$, CFI = 0.82, RMSEA = 0.11, SRMR = 0.07, $\Delta\chi^2 = 574.208$, $\Delta df = 3$, $p < 0.001$. Additionally, given the sizable correlation between task variety and feedback, we estimated another three-factor model (i.e. task variety and feedback combined, autonomy and work engagement), which also fit the data less well, χ^2 (df = 249) = 1076.196, $p < 0.001$, CFI = 0.85, RMSEA = 0.10, SRMR = 0.07, $\Delta\chi^2 = 370.324$, $\Delta df = 3$, $p < 0.001$. Finally, we estimated a one-factor model (Harman's single-factor test), which also fit the data less well, χ^2 (df = 252) = 2729.807, $p < 0.001$, CFI = 0.56, RMSEA = 0.16, SRMR = 0.14, $\Delta\chi^2 = 2023.935$, $\Delta df = 6$, $p < 0.001$, reducing the probability that common method variance is an alternative explanation for our findings.

Hypotheses testing

H1 proposed that autonomy is associated with work engagement (1) more strongly for older than younger workers when task variety is low and (2) more strongly for younger than older workers when task variety is high. As shown in Table 2, the three-way interaction between autonomy, age, and task variety to predict engagement was significant ($\beta = -0.15$, $t = -2.64$, $p = 0.009$), and so was the change in R^2. Simple slope analysis revealed that when task variety is low, the relationship between autonomy and engagement is positive for older employees ($\beta = 0.57$, $p = 0.001$) but non-significant for younger employees ($\beta = 0.09$, $p = 0.494$), whereas when task variety is high, the relationship between autonomy and engagement is positive for younger employees ($\beta = 0.38$, $p = 0.004$) but non-significant for older employees ($\beta = 0.01$, $p = 0.959$). These results provide support for H1.

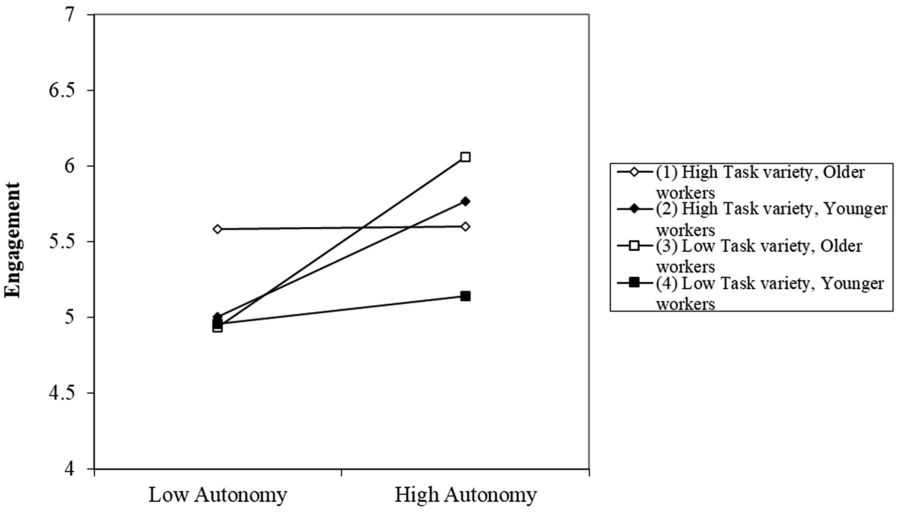
As depicted in Figure 1, younger employees report more engagement when they perceive high task variety and high autonomy. On the other hand, older workers report greater engagement when they perceive low task variety and high autonomy. These results are even more meaningful considering that the two-way interaction between autonomy and age to predict engagement is non-significant. This means that task variety uncovers the moderator effect of age on the relationship between autonomy and engagement.

H2 proposed that feedback is associated with work engagement (1) more strongly for older than younger workers when task variety is low and (2) more strongly for younger than older workers when task variety is high. As shown in Table 3, the three-way interaction between feedback, age, and task variety to predict engagement was significant ($\beta = -0.14$, $t = -2.76$, $p = 0.006$), and so was the change in R^2. Simple slope analysis revealed that when task variety is low, the relationship between feedback and engagement is positive for older employees

Predictor	Step 1 β	Step 1 t	Step 2 β	Step 2 t	Step 3 β	Step 3 t	Step 4 β	Step 4 t
Constant		19.302		20.664		20.475		20.796
Gender[1]	0.090	1.741	0.034	0.676	0.034	0.667	0.031	0.622
Education[2]	−0.121*	−2.177	−0.136*	−2.526	−0.137*	−2.539	−0.145**	−2.705
Job tenure	0.079	1.445	0.045	0.751	0.040	0.656	0.021	0.342
Data source[3]	0.006	0.114	−0.079	−1.458	−0.082	−1.531	−0.097	−1.806
Data collection method[4]	0.098	1.882	0.104*	2.094	0.112*	2.247	0.116*	2.333
Age (a)			0.016	0.267	0.026	0.412	0.105	1.541
Autonomy (b)			0.240***	3.989	0.236***	3.837	0.251***	4.111
Task variety (c)			0.132*	2.355	0.123*	1.945	0.102	1.620
a*b					−0.001	−0.009	0.015	0.256
a*c					0.064	1.063	−0.040	−0.562
b*c					−0.044	−0.801	−0.074	−1.347
a*b*c							−0.184**	−2.757
R^2	0.045		0.141		0.146		0.164	
ΔR^2			0.095***		0.005		0.018**	

Note(s): [1]0 = Female, 1 = Male; [2]0 = Without higher education, 1 = With higher education; [3]0 = Organizations, 1 = Social networks; [4]0 = Paper-and-pencil, 1 = Online. ***$p < 0.001$ **$p < 0.01$ *$p < 0.05$

Table 2.
Results of hierarchical regression analyses of age, autonomy, and task variety predicting work engagement



Pair of slopes	t-value for slope difference	p-value for slope difference
(1) and (2)	−1.64	0.10
(1) and (3)	−2.79	0.01
(1) and (4)	−0.42	0.68
(2) and (3)	−0.86	0.39
(2) and (4)	1.75	0.08
(3) and (4)	1.88	0.06

Figure 1.
Three-way interaction between age, autonomy, and task variety predicting work engagement

Predictor	Step 1		Step 2		Step 3		Step 4	
	β	t	β	t	β	t	β	t
Constant		19.302		20.799		20.620		20.904
Gender[1]	0.090	1.741	0.056	1.136	0.059	1.193	0.054	1.104
Education[2]	−0.121*	−2.177	−0.135*	−2.542	−0.140**	−0.623	−0.149**	−2.806
Job tenure	0.079	1.445	0.058	0.976	0.058	0.961	0.052	0.876
Data source[3]	0.006	0.114	−0.025	−0.498	−0.032	−0.633	−0.043	−0.849
Data collection method[4]	0.098	1.882	0.099*	2.011	0.104*	2.105	0.106*	2.174
Age (a)			0.048	0.796	0.047	0.766	0.088	1.416
Feedback (b)			0.252***	4.917	0.241***	4.577	0.250***	4.789
Task variety (c)			0.165**	3.224	0.185***	3.382	0.164**	2.990
a*b					−0.010	−0.191	0.011	0.218
a*c					0.079	1.508	0.009	0.154
b*c					0.031	0.607	0.013	0.245
a*b*c							−0.150**	−0.643
R^2	0.045		0.159		0.165		0.181	
ΔR^2			0.113***		0.006		0.016**	

Note(s): [1]0 = Female, 1 = Male; [2]0 = Without higher education, 1 = With higher education; [3]0 = Organizations, 1 = Social networks; [4]0 = Paper-and-pencil, 1 = Online. ***$p < 0.001$ **$p < 0.01$ *$p < 0.05$

Table 3. Results of hierarchical regression analyses of age, feedback, and task variety predicting work engagement

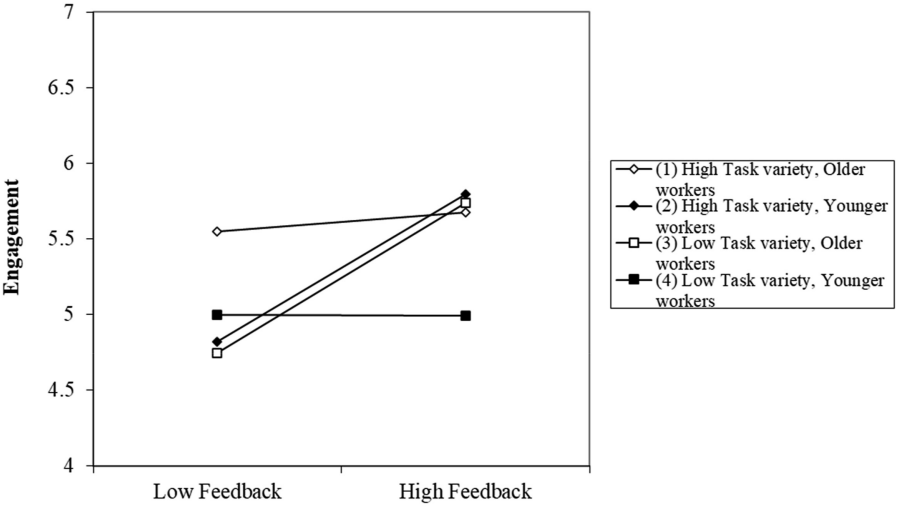
($\beta = 0.50$, $p = 0.003$) but non-significant for younger employees ($\beta = -0.00$, $p = 0.986$), whereas when task variety is high, the relationship between feedback and engagement is positive for younger employees ($\beta = 0.49$, $p < 0.001$) but non-significant for older employees ($\beta = 0.06$, $p = 0.650$). These results provide support for H2.

As depicted in Figure 2, younger employees report more engagement when they perceive high task variety and high feedback. On the other hand, in the case of older workers, reported engagement is not affected by levels of feedback when task variety is high; however, when task variety is low, low levels of feedback are associated with lower engagement. If we consider that the two-way interaction between feedback and age to predict engagement is non-significant, our results are especially important as they expose the moderator effect of age on the relationship between feedback and engagement.

Discussion

Our research sought to investigate how the relationships between autonomy and engagement, and feedback and engagement depend on employee age and levels of task variety. Our findings show that task variety is an important boundary condition for the effects of autonomy and feedback on engagement: younger employees who perceive low levels of task variety do not benefit from high versus low levels of autonomy or feedback and the same happens for older workers who perceive high levels of task variety. In the first case, it seems that younger workers need high levels of task variety to feel engaged because performing several different tasks could contribute to their knowledge acquisition and career development goals proposed by SST (Carstensen *et al.*, 1999). Younger workers' engagement is boosted when they are given autonomy on how to perform such tasks and feedback on how they can improve their skills to evolve professionally.

The case of older workers is a different one. Our findings show that jobs with high levels of task variety contribute to a medium level of engagement that is not affected by different levels of autonomy and feedback. However, it is when task variety is low that autonomy and feedback become especially important to older workers' engagement. In jobs with low levels of task variety combined with low levels of autonomy and feedback – a poor



Pair of slopes	*t*-value for slope difference	*p*-value for slope difference
(1) and (2)	−1.84	0.07
(1) and (3)	−2.02	0.04
(1) and (4)	0.32	0.75
(2) and (3)	−0.06	0.95
(2) and (4)	2.55	0.01
(3) and (4)	1.86	0.06

Figure 2.
Three-way interaction between age, feedback, and task variety predicting work engagement

job design – older workers' engagement is low. However, for older workers, low levels of task variety can still be very engaging when autonomy and feedback are present in their jobs, which do not happen with younger workers. It might be that older workers are engaged in low task variety jobs because autonomy allows them to apply the SOC strategies that help them remain productive. It might also be that older workers opt in for such jobs as research has shown that they tend to craft their work to optimize their well-being (Kooij *et al.*, 2015). Finally, even in low task variety jobs feedback can signal to older workers that they are valued members of the organization, contributing to maintaining close relationships with their supervisor and co-workers, which they value in the workplace (Carstensen *et al.*, 1999).

Theoretical implications

Our study has several important theoretical implications. First, we shed light on the role of employee age as an important boundary condition for the effects of job design on work engagement. By using SST and SOC as theoretical frameworks to derive our hypotheses, we expand the applications of lifespan theories to the work context and further confirm their relevance to investigate aging at work. More specifically, the current study builds on the lifespan approach to job design by Truxillo *et al.* (2012) and empirically tests their propositions on the moderating role of age in the relationships between autonomy and engagement, and feedback and engagement.

Second, we go beyond what was proposed by Truxillo *et al.* (2012) to argue that task variety is an important moderator of the relationships between autonomy and engagement, and feedback and engagement. In doing so, we contribute to unravel the effects of combined job characteristics on employee engagement for age-diverse workers. Our study shows that the interaction between different job characteristics matters to engagement and that studying the effect of a single job characteristic is insufficient to comprehend the complex effects of the design of jobs on employees' well-being.

Third, our research provides a possible explanation for mixed empirical findings on age differences in the relationships between autonomy and employee attitudes (Ng and Feldman, 2015): these relationships might depend on levels of task variety.

Finally, our research contributes to a deeper understanding of age differences in reactions to feedback, a topic on which research is still sparse and recent. We challenge the proposition made by Truxillo and colleagues that feedback would be more engaging for younger than older employees and concur with the work by Wang *et al.* (2015) who found that feedback is associated with positive reactions for both older and younger workers because it addresses different goals of each age group. We show that feedback is positively associated with the engagement of both younger and older employees, depending on how much task variety their jobs have.

Practical implications

Our findings suggest that optimal levels of engagement are attained by younger and older employees in different job configurations, which has important practical implications. First of all, managers should be encouraged to give employees autonomy and feedback: that is, more freedom and discretion to make decisions on their jobs and more information about their performance. Such changes can be especially engaging for younger employees working in jobs with high task variety, and for older employees working in jobs with low task variety.

Second, as different jobs and occupations vary in terms of task variety, managers can design their recruitment strategy by targeting employees of different ages to fill in different jobs. In jobs with high task variety, both younger and older workers might achieve high engagement and be a good fit. However, in jobs with low task variety, older workers seem to be a better fit than younger workers, provided that these jobs give them autonomy and feedback.

Third, as part of their talent management strategy, organizations can design their career management policies in ways that allow employees to progress not only vertically but also laterally as they grow older. Additionally, organizations should give employees opportunities to craft their jobs – i.e. to implement changes in their work tasks and relationships – for a greater fit with their abilities, needs and preferences.

Finally, our findings also suggest that replacing an older worker with a younger one upon retirement might be an inadequate workforce planning strategy, as levels of engagement of older and younger workers seem to differ in jobs with similar characteristics. Ultimately, our findings challenge the popular belief that older workers should exit the workforce to give room for younger workers, and suggest instead that more than competing for the same jobs, workers of different ages might be especially engaged in different and complementary jobs and occupations. With this insight in mind, managers can plan and build an engaged workforce by positioning age-diverse employees in the different jobs that fit their preferences.

Limitations and future research directions

Despite the contributions of our research, some limitations should be acknowledged when interpreting our findings. Although we separated the data collection of predictor and criterion variables to alleviate concerns of common method bias (Podsakoff *et al.*, 2012), our research is

still correlational and therefore no causal inferences should be drawn. Future studies should consider using experimental or quasi-experimental designs. Regarding our sample, given that data were collected in Portugal, its national and cultural context might have affected the results. Approximately 96% of Portuguese companies have no more than ten employees (Pordata, 2022b) which often means that there is no human resources departments that could provide feedback to employees. Additionally, men hold more management roles than do women (roles that typically entail more autonomy) while women are more represented in service and social jobs than men (roles that typically entail less autonomy). From a cultural standpoint, Portugal is a country with high power distance, in which autonomy and feedback might be less expected by employees and therefore more appreciated and impactful on engagement levels. Moreover, given the heterogeneity of our sample in terms of occupations, it is plausible that task variety might have different meanings depending on the occupation. Future research should control for occupations when testing the relationships investigated.

Although we used SST and SOC to hypothesize age differences in the relationships under study, we did not measure the psychological mechanisms proposed by these theories to justify the age differences. Future studies should test the roles that future time perspective as well as the use of SOC strategies might have on channeling the age effects on the relationships studied. Additionally, subjective age (how old people *feel*) might be different from chronological age (how old people *are*) and might be more strongly associated with well-being outcomes (Barnes-Farrell and Piotrowski, 1991). Finally, although we found differences in the relationships between job characteristics and work engagement for younger versus older employees, that does not mean that such differences apply to all individuals. Research has shown that aging is an individual and unique process in which interindividual differences in work outcomes become more pronounced as people grow older (Dannefer, 2003).

Our research also suggests avenues for future research. Given our findings, we encourage future researchers to investigate if levels of task variety also influence how workers of different ages respond to different but related job characteristics: job complexity, information processing and feedback from the job (Morgeson and Humphrey, 2006). Another possible avenue for future research is to examine how organizations can incentivize feedback-seeking behavior among employees, given the positive effects of feedback for both older and younger workers' engagement. Finally, our research demonstrated how complex the relationships between different job characteristics can be. Thus, we encourage scholars to continue investigating the combined effects of multiple job characteristics on employees' attitudes, behaviors and well-being at work.

Conclusion

The current study integrates SOC and SST with job design to propose that autonomy and feedback are differently associated with older versus younger workers' engagement depending on levels of task variety. We found that the relationships between autonomy and engagement, and feedback and engagement are stronger for younger workers when they perceive high task variety, whereas the relationships between autonomy and engagement, and feedback and engagement are stronger for older workers when they perceive low task variety. Our findings contribute to expand the growing body of research on job design and aging and inform managers and organizations on how to (re)design jobs that are engaging for age-diverse employees.

Notes

1. We followed Goodman and Blum's (1996) recommendations to test for possible response bias due to attrition. We classified our participants as stayers (i.e. those who responded to the two questionnaires) or leavers (those who left at Time 2) and compared our interest variables' means between stayers and

leavers with independent samples *t*-tests. Results showed that the mean of autonomy is not significantly different between stayers ($M = 4.74$, $SD = 1.55$) and leavers ($M = 4.81$, $SD = 1.55$), $t(813) = 638$, $p = 0.109$, the mean of feedback is not significantly different between stayers ($M = 4.07$, $SD = 1.52$) and leavers ($M = 4.37$, $SD = 1.52$), $t(813) = 2.035$, $p = 0.107$, and the mean of task variety is not significantly different between stayers ($M = 5.69$, $SD = 1.30$) and leavers ($M = 5.87$, $SD = 1.18$), $t(813) = 2.812$, $p = 0.087$. Thus, attrition does not influence our variables of interest.

2. We conducted the regressions with and without the control variables following best practice recommendations of Bernerth and Aguinis (2016), and the pattern of results remains unchanged: the three-way interactions remained significant with effects of similar magnitude.

References

Bakker, A.B., Demerouti, E. and Euwema, M.C. (2005), "Job resources buffer the impact of job demands on burnout", *Journal of Occupational Health Psychology*, Vol. 10 No. 2, pp. 170-180, doi: 10.1037/1076-8998.10.2.170.

Baltes, P.B. and Baltes, M.M. (1990), "Psychological perspectives on successful aging: the model of selective optimization with compensation", in Baltes, P.B. and Baltes, M.M. (Eds), *Successful Aging: Perspectives from the Behavioral Sciences*, New York, NY, pp. 1-34.

Baltes, P.B., Reese, H.W. and Lipsitt, L.P. (1980), "Life-span developmental psychology", *Annual Review of Psychology*, Vol. 31 No. 1, pp. 65-110, doi: 10.1146/annurev.ps.31.020180.000433.

Barnes-Farrell, J.L. and Piotrowski, M.J. (1991), "Discrepancies between chronological age and personal age as a reflection of unrelieved worker stress", *Work and Stress*, Vol. 5 No. 3, pp. 177-187, doi: 10.1080/02678379108257016.

Bernerth, J.B. and Aguinis, H. (2016), "A critical review and best-practice recommendations for control variable usage", *Personnel Psychology*, Vol. 69 No. 1, pp. 229-283, doi: 10.1111/peps.12103.

Brislin, R.W. (1980), "Translation and content analysis of oral and written material", in Triandis, H.C. and Berry, J.W. (Eds), *Handbook of Cross-Cultural Psychology*, Allyn & Bacon, Boston, MA, pp. 389-444.

Cadiz, D.M., Rineer, J.R. and Truxillo, D.M. (2019), "Lifespan perspectives on job and work design", in Baltes, B.B., Rudolph, C.W. and Zacher, H. (Eds), *Work across the Lifespan*, Academic Press, pp. 263-290.

Carstensen, L.L., Isaacowitz, D.M. and Charles, S.T. (1999), "Taking time seriously: a theory of socioemotional selectivity", *American Psychologist*, Vol. 54 No. 3, pp. 165-181, doi: 10.1037/0003-066X.54.3.165.

Dannefer, D. (2003), "Cumulative advantage/disadvantage and the life course: cross-fertilizing age and social science theory", *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, Vol. 58 No. 6, pp. S327-S337, doi: 10.1093/geronb/58.6.S327.

Demerouti, E. and Rispens, S. (2014), "Improving the image of student-recruited samples: a commentary", *Journal of Occupational and Organizational Psychology*, Vol. 87 No. 1, pp. 34-41, doi: 10.1111/joop.12048.

Eurofound (2017), *Sixth European Working Conditions Survey – Overview Report (2017 Update)*, Publications Office of the European Union, Luxembourg.

Goodman, J.S. and Blum, T.C. (1996), "Assessing the non-random sampling effects of subject attrition in longitudinal research", *Journal of Management*, Vol. 22 No. 4, pp. 627-652, doi: 10.1177/014920639602200405.

Grant, A.M., Fried, Y., Parker, S.K. and Frese, M. (2010), "Putting job design in context: introduction to the special issue", *Journal of Organizational Behavior*, Vol. 31 Nos 2-3, pp. 145-157, doi: 10.1002/job.679.

Hackman, J.R. and Oldham, G. (1976), "Motivation through the design of work: test of a theory", *Organizational Behavior and Human Performance*, Vol. 16 No. 2, pp. 250-279, doi: 10.1016/0030-5073(76)90016-7.

Halbesleben, J.R. (2010), "A meta-analysis of work engagement: relationships with burnout, demands, resources, and consequences", in Bakker, A.B. and Leiter, M.P. (Eds), *Work Engagement: A Handbook of Essential Theory and Research*, Psychology Press, New York, pp. 102-117.

Humphrey, S.E., Nahrgang, J.D. and Morgeson, F.P. (2007), "Integrating motivational, social, and contextual work design features: a meta-analytic summary and theoretical extension of the work design literature", *Journal of Applied Psychology*, Vol. 92 No. 5, pp. 1332-1356, doi: 10.1037/0021-9010.92.5.1332.

Kahn (1990), "Psychological conditions of personal engagement and disengagement at work", *Academy of Management Journal*, Vol. 33, pp. 692-724, doi: 10.5465/256287.

Kim, N. and Kang, S.W. (2017), "Older and more engaged: the mediating role of age-linked resources on work engagement", *Human Resource Management*, Vol. 56 No. 5, pp. 731-746, doi: 10.1002/hrm.21802.

Kooij, D.T., Tims, M. and Kanfer, R. (2015), "Successful aging at work: the role of job crafting", in Bal, P., Kooij, D. and Rousseau, D. (Eds), *Aging Workers and the Employee-Employer Relationship,* Springer, pp. 145-161.

Morgeson, F.P. and Humphrey, S.E. (2006), "The work design questionnaire (WDQ): developing and validating a comprehensive measure for assessing job design and the nature of work", *Journal of Applied Psychology*, Vol. 91 No. 6, pp. 1321-1339, doi: 10.1037/0021-9010.91.6.1321.

Ng, T.W. and Feldman, D.C. (2015), "The moderating effects of age in the relationships of job autonomy to work outcomes", *Work, Aging and Retirement*, Vol. 1 No. 1, pp. 64-78, doi: 10.1093/workar/wau003.

Podsakoff, P.M., MacKenzie, S.B. and Podsakoff, N.P. (2012), "Sources of method bias in social science research and recommendations on how to control it", *Annual Review of Psychology*, Vol. 63, pp. 539-569, doi: 10.1146/annurev-psych-120710-100452.

Pordata (2022a), "Portugal: educational attainment", available at: https://www.pordata.pt/en/Subtheme/Portugal/Educational+Attainment-45

Pordata (2022b), "Small and medium-sized enterprises as a % of total enterprises", available at: https://www.pordata.pt/en/portugal/small+and+medium+sized+enterprises+as+a+percentage+of+total+enterprises+total+and+by+size-2859

Rudolph, C.W. (2016), "Lifespan developmental perspectives on working: a literature review of motivational theories", *Work, Aging and Retirement*, Vol. 2 No. 2, pp. 130-158, doi: 10.1093/workar/waw012.

Schaufeli, W. and Bakker, A. (2003), *UWES Utrecht Work Engagement Scale: Preliminary Manual [Version 1, November 2003]*, Utrecht University: Occupational Health Psychology Unit.

Truxillo, D.M., Cadiz, D.M., Rineer, J.R., Zaniboni, S. and Fraccaroli, F. (2012), "A lifespan perspective on job design: fitting the job and the worker to promote job satisfaction, engagement, and performance", *Organizational Psychology Review*, Vol. 2 No. 4, pp. 340-360, doi: 10.1177/2041386612454043.

United Nations (2019), "World population prospects 2019: highlights (ST/ESA/SER.A/423)", Department of Economic and Social Affairs, Population Division.

Wang, M., Burlacu, G., Truxillo, D., James, K. and Yao, X. (2015), "Age differences in feedback reactions: the roles of employee feedback orientation on social awareness and utility", *Journal of Applied Psychology*, Vol. 100 No. 4, pp. 1296-1308, doi: 10.1037/a0038334.

Weigl, M., Müller, A., Hornung, S., Zacher, H. and Angerer, P. (2013), "The moderating effects of job control and selection, optimization, and compensation strategies on the age–work ability relationship", *Journal of Organizational Behavior*, Vol. 34 No. 5, pp. 607-628, doi: 10.1002/job.1810.

Wheeler, A.R., Shanine, K.K., Leon, M.R. and Whitman, M.V. (2014), "Student-recruited samples in organizational research: a review, analysis, and guidelines for future research", *Journal of Occupational and Organizational Psychology*, Vol. 87 No. 1, pp. 1-26, doi: 10.1111/joop.12042.

Zaniboni, S., Truxillo, D.M. and Fraccaroli, F. (2013), "Differential effects of task variety and skill variety on burnout and turnover intentions for older and younger workers", *European Journal of Work and Organizational Psychology*, Vol. 22 No. 3, pp. 306-317, doi: 10.1080/1359432X.2013.782288.

Zaniboni, S., Truxillo, D.M., Fraccaroli, F., McCune, E.A. and Bertolino, M. (2014), "Who benefits from more tasks? Older versus younger workers", *Journal of Managerial Psychology*, Vol. 29 No. 5, pp. 508-523, doi: 10.1108/JMP-12-2012-0381.

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