



Is Autonomy Always Beneficial for Work Engagement? A Six-year Four-Wave Follow-Up Study

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Abstract: Work engagement is expected to result from job resources such as autonomy. However, previous results have yielded that the autonomy–work engagement relationship is not always particularly strong. Whereas previous longitudinal studies have examined this relationship as an average at a specific point in time, this study examined whether this relationship is different within individuals from one time to another over the years. Furthermore, experiences of work engagement are expected to affect how employees benefit from autonomy, but no studies have so far investigated whether the initial level of work engagement affects the autonomy–work engagement relationship. This study aimed to first identify the different kinds of longitudinal relationship patterns between autonomy and work engagement, and then to investigate whether the identified relationship patterns differ in terms of the initial mean level of work engagement. The four-wave study was conducted among Finnish managers ($n = 329$) over a period of six years. Multilevel regression mixture analysis identified five relationship patterns. Four of the patterns showed a positive predictive relationship between autonomy and work engagement. However, the relationship was statistically significant in only one of these patterns. Furthermore, when the initial mean level of work engagement was high, autonomy related more strongly to work engagement. However, an atypical pattern was identified that showed a negative association between autonomy and work engagement. In this pattern, the mean level of work engagement was low. Consequently, autonomy may not always enhance work engagement; sometimes this relationship may even be negative.

Keywords: work engagement, job resources, autonomy, multilevel regression mixture modeling, longitudinal

Introduction

Autonomy, an important job resource, is expected to lead to work engagement – positive, affective-motivational, work-related well-being (Bakker & Demerouti, 2017). Several empirical studies have supported the motivational potential of autonomy for work engagement (for reviews,

see Christian, Garza, & Slaughter, 2011; Halbesleben, 2010; Mauno, Kinnunen, Mäkikangas, & Feldt, 2010). However, the strength of the positive longitudinal relationships between autonomy and work engagement has been found to vary greatly in previous studies. The positive relationship between autonomy and work engagement has sometimes been rather weak (De Lange, De Witte, & Notelaers, 2008;

Weigl et al., 2010); and autonomy has not always boosted subsequent work engagement (Mauno, Kinnunen, & Ruokolainen, 2007).

Thus far, the longitudinal autonomy–work engagement relationship has been investigated as an average regression over the entire population at a specific point in time. Thus, the relationship between autonomy and work engagement is examined as a static phenomenon between employees in the dataset. However, theoretically it is assumed that this relationship may vary within individuals from one time to another, as employees' experiences of work engagement are expected to affect how they perceive and are able to utilize autonomy (and other job resources) in their work to impact future work engagement (Bakker & Demerouti, 2017). Indeed, recent empirical studies have shown that at times when employees are feeling work-engaged, they are motivated and capable of utilizing various job resources to further boost their work engagement (Hakanen, Peeters, & Schaufeli, 2018; Tims, Bakker, & Derks, 2015). However, no studies have yet explored whether the experiences of work engagement affect which kind of longitudinal relationship develops between autonomy and work engagement.

The present study tackled these issues and the first aim of this study was to examine whether the relationship between autonomy and work engagement is different within individuals from one time to another over the course of years. The present study utilized multilevel regression mixture modeling techniques (Muthén & Asparouhov, 2009) to capture the possible heterogeneity that may exist in this relationship. Whereas the traditional variable-oriented research methods (such as an average regression) are not able to capture the possible variation of ways in which autonomy may relate to work engagement within individuals between different points in time, multilevel regression mixture modeling makes it possible to reveal different kinds of regression coefficients within individuals between different time points. Furthermore, if different longitudinal relationship patterns between autonomy and work engagement existed, the second aim of this study was to investigate whether the initial mean level of work engagement varies between these patterns, and if the autonomy–work engagement relationship is stronger at times when the mean level of work engagement is high.

The present study contributes to the existing literature in two important ways. First, as the relationship between autonomy and work engagement may vary within individuals from one time period to another, this study provides a more complete understanding of the presumed beneficial relationship between autonomy and work engagement. Second, the present study illuminates whether the initial level of work engagement differs with respect to which kinds of relationships may develop over time. From a practical point of view, as organizational interventions aiming to increase work engagement by boosting job resources have recently become increasingly popular (for a review, see Knight, Patterson, & Dawson, 2016), this study contributes to the

development of organizational interventions by deepening the understanding of the complexity of long-term associations of autonomy and work engagement. The study was carried out among Finnish managers ($n = 329$) over a period of six years (2006–2012) in four waves. Autonomy is a very typical job resource for managers (e.g., Noblet, Rodwell, & McWilliams, 2001) and thus the present dataset provided a good basis to rigorously investigate the different autonomy–work engagement relationship patterns.

Theoretical background and hypothesis development

Longitudinal relationship between autonomy and work engagement. The Job Demands-Resources theory (JD-R; Bakker & Demerouti, 2017) was used to frame and operationalize this study. The JD-R theory is a comprehensive job characteristics theory that is commonly used in work engagement studies. Within this theory, work engagement describes how individuals experience their work, and it refers to a positive, fulfilling, work-related mental state. Work engagement is a multidimensional construct characterized by three subdimensions: vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Thus, work-engaged employees are energetic and eager to invest effort in their work (“vigor”), involved, enthusiastic and committed to their work (“dedication”) and are often so intensely absorbed in their work that it feels to them as if time is flying (“absorption”) (Schaufeli et al., 2002). Work engagement is also related to several beneficial outcomes desired by organizations and employees, such as high performance, higher financial turnover, organizational commitment, as well as recovery after work and mental and physical health (Bailey, Madden, Alfes, & Fletcher, 2017; Christian et al., 2011).

The JD-R theory proposes that, regardless of the type of job, every occupation has both general (such as autonomy) and occupation-specific job resources (such as craftsmanship) (Bakker & Demerouti, 2017). Job resources are defined as the health-protecting and motivating physical, psychological, social, or organizational conditions or aspects of a job. Furthermore, job resources are considered to both extrinsically and intrinsically motivate employees; extrinsically by providing the means by which work goals can be achieved and by reducing the demands of work, and intrinsically by stimulating growth, learning and development, and fulfilling basic psychological needs for autonomy, relatedness, and competence (Van den Broeck, Ferris, Chang, & Rosen, 2016). Through satisfaction of the basic psychosocial needs, job resources are expected to evoke a positive motivational process leading to work engagement (Bakker & Demerouti, 2017).

Within JD-R theory, job resources are widely defined, and job resources may be located at the level of organization (e.g., career opportunities), the interpersonal and social relations (e.g., social support), or at the level of work task (e.g., autonomy) (Bailey et al., 2017; Christian et al., 2011). The assumption of the JD-R theory, that is, that different

job resources enhance work engagement, is expected to apply to all job resources (Bakker & Demerouti, 2017). In this study, we focused on a very typical and universal work-task level job resource, namely autonomy. Autonomy refers to the employee's ability or freedom to make decisions about his or her work activities and the possibility to influence one's work, and it has been shown to be a main job characteristic already in the traditional work design theories explaining how work impacts on employee well-being (Karasek, 1979) and motivation (Hackman & Oldham, 1976). Autonomy has also been shown to be relevant to work engagement in many studies among different occupational groups in many professional fields, including managers (Christian et al., 2011; Mauno et al., 2010). However, the previous empirical results of the longitudinal relationships between autonomy and work engagement have not been entirely consistent.

On the one hand, the majority of the previous longitudinal studies have found support for the motivational assumption of the JD-R theory and showed that autonomy is related to higher work engagement over time (De Lange et al., 2008; Schaufeli, Bakker, & Van Rhenen, 2009; Weigl et al., 2010). On the other hand, not all longitudinal studies have supported the positive predictive relationship between autonomy and work engagement (De Lange et al., 2008; Mauno et al., 2007). These studies investigated the autonomy-work engagement relationship as an average for the whole dataset and at a specific point in time. However, as already mentioned, the relationship may not always be the same. Instead there may exist heterogeneity in the association between autonomy and work engagement within individuals between different time points that comprises all the relations presented above.

The first aim of this study was to investigate whether different kinds of relationship patterns between autonomy and work engagement can be identified within individuals over the course of time. Multilevel regression mixture modeling (Muthén & Asparouhov, 2009) was utilized for this aim. Mixture models in general aim to reveal the presence of possible unobserved heterogeneity within an overall study population (Wang, Sinclair, Zhou, & Sears, 2013). Multilevel regression mixture modeling is an extension of mixture models and it makes it possible to identify heterogeneity in relationship between variables that are measured in individuals in successive measurement periods (Muthén & Asparouhov, 2009). Thus, it may reveal different kinds of relationship patterns between autonomy and work engagement among the investigated sequential dataset if there is heterogeneity in the effects of autonomy on work engagement between times. This modeling technique follows the idea of the person-oriented research approach (Bergman, Magnusson, & El-Khoury, 2003; Laursen & Hoff, 2006). However, instead of identifying (or grouping) patterns of individuals, the focus of the present study was on identifying (or grouping) patterns of relationship.

In this study, we followed the well-established practice in person-oriented research to have no detailed expectations

regarding the number of potential relationship patterns (e.g., Bennett, Gabriel, Calderwood, Dahling, & Trougakos, 2016). Instead, on the basis of previous longitudinal studies that have found different kinds of long-term associations between autonomy and work engagement (De Lange et al., 2008; Mauno et al., 2007; Schaufeli et al., 2009; Weigl et al., 2010), it was hypothesized that different patterns can be identified in the longitudinal relationship between autonomy and work engagement.

Hypothesis 1: Different kinds of longitudinal relationship patterns can be identified between autonomy and work engagement.

The role of the initial level of work engagement in the different autonomy-work engagement relationship patterns. The JD-R theory also states that experiences of work engagement may affect how employees perceive and utilize different job resources (Bakker & Demerouti, 2007). When individuals feel energetic and motivated by their work, they are expected to be better able and more likely to utilize various job resources to further boost their work engagement, thus leading to even higher work engagement over time (Bakker & Demerouti, 2017). Indeed, a few recent studies have found that work engagement predicts the utilization of different job resources, and at times when experiencing high work engagement, it may be possible to become even more work-engaged in the future (Hakanen et al., 2018; Tims et al., 2015; see also Inceoglu & Warr, 2011).

This assumption of a reciprocal relationship between job characteristics and well-being is not new (e.g., De Lange, Taris, Kompier, Houtman, & Bongers, 2004; Zapf, Dormann, & Frese, 1996) and it is also presented in earlier motivational theories, such as in Conservation of Resources theory (COR, Hobfoll, 2001). COR theory has also been widely used in work engagement studies, and some of its assumptions have been integrated into the JD-R theory (Bakker & Demerouti, 2017). The main principle of COR theory is that individuals are motivated to maintain and accumulate the resources (such as job characteristics and well-being) that are valuable to them (Hobfoll, 2002). COR theory proposes that resources tend to generate new resources, thus resources tend to link to other resources in the future, which may in turn lead to an accumulation of reciprocal gain cycles (Hobfoll, 2001, 2002). COR theory also proposes that individuals must invest resources to gain new resources, and for these reasons, if an individual has greater initial resources, she/he is better able and more likely to attain and invest future resources (Hobfoll, 2001).

Following the theoretical assumptions of the JD-R and COR theories, work engagement can be considered an important resource, which may be utilized to benefit from autonomy and thus to further enhance work engagement (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014; ten Brummelhuis & Bakker, 2012). However, thus far, no studies have investigated whether the initial level of work engagement varies with respect to the predictive relationship between autonomy and work engagement, and

whether the positive autonomy–work engagement relationship is stronger at times when the initial mean level of work engagement is high.

Therefore, the second aim of this study was to investigate whether the initial level of work engagement is different with respect to the presence of a particular longitudinal autonomy–work engagement relationship pattern. Following the theoretical assumption that the gain of resources requires initial resources as presented in both the JD-R and COR theories (Bakker & Demerouti, 2017; Hobfoll, 2001), the positive longitudinal relationship between autonomy and work engagement was expected to be stronger at times when the initial level of work engagement was high. This is because it was expected that at those times there would be enough of the initial resources (such as enough energy and motivation) needed to best benefit from autonomy with respect to the future work engagement (Hakanen et al., 2018; Tims et al., 2015).

Hypothesis 2: The initial mean level of work engagement differs among the longitudinal relationship patterns between autonomy and work engagement, and when the initial mean level of work engagement is high the predictive autonomy–work engagement relationship is stronger.

Methods

Participants

The data consisted of a four-wave six-year longitudinal study among Finnish managers ($n = 329$; Feldt et al., 2016). The follow-up data, with two-year time lags, was collected in 2006 (T1), 2008 (T2), 2010 (T3), and 2012 (T4). In T1, a total of 1,904 questionnaires were sent to members of two Finnish national labor unions (the Union of Salaried Employees and the Union of Professional Engineers), who were under 35 years of age and held a managerial position. Altogether 933 questionnaires were returned. However, 186 respondents were omitted from the original sample because they were neither currently in a managerial position nor employed (e.g., on study or maternity leave), yielding a final sample size of 747 managers (response rate: 43%). In T2, 433 of the 621 participants who had participated in T1 and had indicated that they wished to participate in the longitudinal study responded (response rate: 70%). In T3, the questionnaires were sent to 595 participants, and returned by 380 (response rate: 64%). Finally, in T4, 329 out of 575 participants responded to the questionnaire (response rate: 58%). Thus, 45% of the initial 747 participants still responded at T4 and the drop-out percent at the final stage of the study was 55%. The informed consent procedure was followed in the research project as well as the ethical principles of the responsible conduct of research.

The present study focused on the managers who participated in the study at all four measurement points ($n = 329$). At baseline (T1) most of the participants were men (85%) and the mean age of the respondents was 31 years ($SD = 3.26$, range = 24–36). The participants worked in different

parts of Finland in both the private (95%) and public (5%) sectors. Nearly all (93%) were permanently employed and worked full-time (99%) in regular morning shifts (83%). Most of the participants (74%) still worked in a managerial position at T4. In the drop-out analyses, a comparison between the participants who took part on all four study points and those who participated only at T1 ($n = 232$) revealed that the participants who stayed in the study did not differ significantly from those who dropped out with respect to demographics (i.e., gender, $\chi^2(1) = 3.07$, $p = .08$; age, $F(556) = 2.45$, $p = .12$), or study variables (work engagement, $F(547) = 0.01$, $p = .91$; autonomy $F(559) = 1.44$, $p = .23$).

Measures

Autonomy was measured by utilizing three items, which measured autonomy at work, e.g., “Can you decide yourself how you execute your work?” (Feldt, Kivimäki, Rantala, & Tolvanen, 2004). The items were rated on a five-point scale (from 1 = not at all to 5 = very much).

Work Engagement was assessed by the nine-item Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006; see also Seppälä et al., 2009). Vigor was assessed using items such as “At my work, I feel bursting with energy”, dedication was measured using items such as “I am enthusiastic about my job”, and absorption was assessed using items such as “I feel happy when I am working intensely”. The items were judged on a seven-point scale (from 0 = never to 6 = every day).

The mean total scores of the autonomy and work engagement scales were calculated for four time points. The mean values, standard deviations, correlations between the study variables, and the reliability information for study variables are presented in Table 1. Autonomy and work engagement were positively related both at the same measurement point and over time ($r = .14-.37$).

Statistical analysis

The analyses were carried out utilizing multilevel regression mixture modeling (Muthén & Asparouhov, 2009) and the Mplus statistical package (version 8; Muthén & Muthén, 1998–2017). The analyses were carried out in three main phases. First, the dataset covers four repeated measurements of autonomy and work engagement conducted within individuals during a six-year time period. To take into account this non-independent structure of the data, we utilized multilevel regression modeling techniques for longitudinal data (Muthén, 1997). To build this multilevel model, the values for successive measurement periods were arranged as separate variables. This led to a two-level model, with the four repeated measurements of autonomy and work engagement at the first level (1,282 measurement occasions) and the individual employees at the second level ($n = 329$). Furthermore, the values for autonomy and work engagement at a previous measurement time were group mean-centered, with variations only at the within level. Consequently, this four-wave dataset enabled us to take the

multiple sequential time lags into account and to reveal the possible variation that may exist in the relationship between autonomy and work engagement during six-year time within individuals.

Second, we examined the extent to which autonomy at a given measurement time would predict work engagement at a subsequent measurement time (i.e., regression coefficient β_{2i}), after controlling for the level of work engagement at the previous measurement time (i.e., regression coefficient β_1). However, as the relationship between autonomy and work engagement may vary within individuals from one time period to another, the benefit of the used method is that it is able to capture this variation. Consequently, if there is heterogeneity in the effects of autonomy on work engagement within individuals between times, multilevel regression mixture modeling may find different kinds of regression coefficients between autonomy and work engagement among the investigated sequential dataset. Therefore, the gained regression coefficients may represent quantitatively (i.e., varying strength) but also qualitatively

(i.e., positive vs. negative) different relationships between autonomy and work engagement during different points in time.

To be able to investigate whether this relationship may vary within individuals between time points, we estimated latent patterns. The latent patterns were estimated based on the relationship between autonomy and work engagement from one time point to the next, i.e., by estimating various regressions from autonomy at a given measurement time to work engagement at the next measurement time. By estimating the latent patterns, it was possible to investigate whether naturally occurring, homogeneous, patterns of longitudinal relationship exist that differed from each other. As the latent patterns were formed on the basis of the regression coefficients between the variables of interest, each pattern defined a significantly different relationship pattern. All other regression paths and covariances were estimated as being equal across the latent patterns. The tested model is presented in Figure 1.

Table 1.

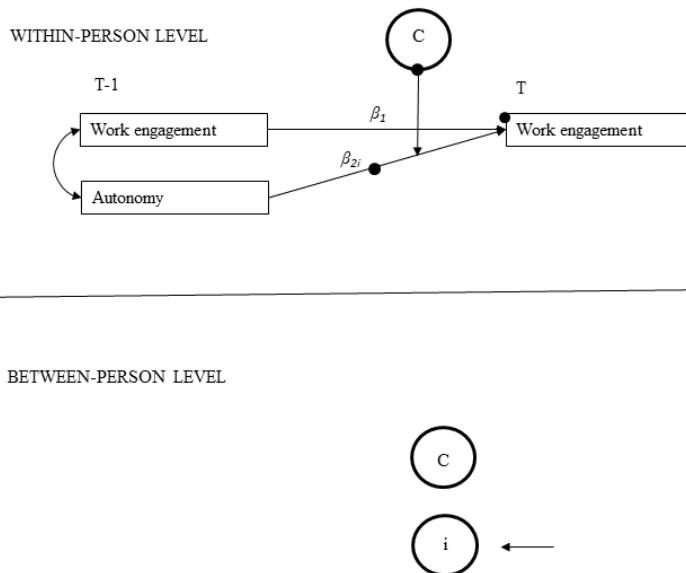
Means, standard deviations, correlations, and Cronbach's alphas of study variables.

Variables	M	SD	1.	2.	3.	4.	5.	6.	7.	8.
1. Work engagement T1	4.4	1.07	.88							
2. Work engagement T2	4.6	1.01	.43	.88						
3. Work engagement T3	4.5	1.10	.37	.51	.89					
4. Work engagement T4	4.5	1.16	.29	.42	.64	.92				
5. Autonomy T1	4.2	.63	.35	.21	.20	.14	.71			
6. Autonomy T2	4.2	.58	.22	.36	.27	.17	.40	.70		
7. Autonomy T3	4.3	.60	.17	.20	.37	.27	.33	.50	.72	
8. Autonomy T4	4.3	.66	.17	.20	.28	.34	.40	.53	.55	.77

Note. If $r \geq .14-.16, p < .05$; $r \geq .17-.20, p < .01$; $r \geq .21, p < .001$. Cronbach's alphas are presented on the diagonal (bolded).

Figure 1.

The tested multilevel regression mixture model



As the correct number of latent patterns is not known a priori, we tested models with different numbers of latent patterns. We started with a one-pattern solution and increased the number of patterns until model fit no longer improved. To decide the correct number of latent patterns, we utilized various types of criteria (Muthén, 2003; see also Tolvanen, 2007): (a) the fit of the model was assessed by the Bayesian Information Criterion (BIC): the lower the BIC value, the better the model (Muthén, 2003; Nylund, Asparouhov, & Muthén, 2007); and (b) the Bootstrapped likelihood ratio test (BLRT) of fit that compares solutions with different numbers of latent patterns (k or $k - 1$ number of patterns): a significant p value ($< .05$) indicates that the $k - 1$ model must be rejected in favor of a model with at least k patterns. We also considered (c) the usefulness and interpretativeness of the latent patterns in practice (e.g., the number of occasions in each pattern; Nylund et al., 2007).

Regression mixture modeling is highly sensitive to violations of underlying assumptions of the normality of the variables and of the homogeneous variance among the patterns (Wadsworth, Van Horn, & Jaki, 2018). In this study, the parameters of the models were estimated using maximum likelihood estimation with robust standard errors (MLR), which is considered to be robust to possible non-normality (Muthén & Muthén, 1998–2017). In addition, the homoscedastic assumptions of the patterns were tested on the basis of the posterior draw residuals as suggested by Wadsworth et al. (2018). Furthermore, the full information maximum likelihood estimation (FIML) method was used, which allowed us to use all observations in the dataset to estimate the parameters in the models without imputing data.

Third, after identifying the correct number of longitudinal relationship patterns, the initial mean level of work engagement in these patterns was computed. The possible differences between the initial mean levels of work engagement in the longitudinal relationship patterns were investigated using the BCH (Bolck-Croon-Hagenaars procedure) command implemented in Mplus (Asparouhov & Muthén, 2014). This command performs an overall test and pairwise comparisons between the auxiliary variables (i.e., the initial mean levels of work engagement) of the latent patterns using a Wald chi-square test. Therefore, with this test it was possible to explore if the initial mean level of work engagement was significantly different with respect to the presence of a particular relationship pattern.

Results

Longitudinal relationship patterns between autonomy and work engagement

The fit indices for the multilevel regression mixture models are presented in Table 2. Both the BIC index and the BLRT test supported a five-pattern solution. The patterns were not redundant, and the number of occasions was also admissible, and it was selected as the final solution. Furthermore, the homoscedastic assumptions for the patterns applied and thus we consider that the standard errors of the regression coefficients of the patterns are correctly estimated indicating that the found relationships are valid. The estimated values for the regression paths and standard errors are presented in Table 3.

Table 2.

Fit indices for multilevel regression mixture models of autonomy and work engagement with different numbers of latent patterns (1,282 measurement occasions)

<i>Number of patterns</i>	<i>Log likelihood (number of free parameters)</i>	<i>BIC</i>	<i>BLRT (p-value k-1 vs. k patterns)</i>	<i>Occasions</i>
1	-2940.101 (10)	5951.763	-	1282
2	-2840.244 (16)	5794.987	$p < .001$	224/1058
3	-2804.749 (22)	5766.933	$p < .001$	1025/189/68
4	-2770.550 (28)	5741.474	$p < .001$	967/86/160/69
5	-2740.062 (34)	5723.434	$p < .001$	933/47/180/49/73
6	-2725.618 (40)	5737.482	.11	44/950/162/8/69/49

Note. BIC = Bayesian information criterion, the lower the BIC value the better the model; BLRT = Bootstrapped likelihood ratio test, compares solutions with different numbers of latent patterns, and significant values ($p < .05$) indicate that the $k-1$ model must be rejected in favour of a model with at least k patterns.

Table 3.

Results of final pattern solution: standardized estimates for regression from job autonomy ($T-1$) to work engagement (T), standard errors, and pattern sizes (number of measurement occasions) for each latent pattern

Patterns	Standardized estimate of β_{2i}	SE	p	n	%	Mean level of WE $T-1$
1	.065	.067	.330	933	73	4.8
2	-.590	.143	< .001	47	4	2.7
3	.134	.101	.185	180	14	4.3
4	.423	.247	.087	49	4	2.5
5	.317	.137	.021	73	5	5.1
Equality test of work engagement mean levels across patterns		χ^2 (df)		p		
		460.859 (4)		< .001		

Note. SE = standard errors; WE = work engagement; $T-1$ = previous measurement time.

The first pattern consisted of 933 (73%) measurement occasions and was typified by a non-significant positive regression path from autonomy at a given measurement time to subsequent work engagement ($\beta = .067$, $p = .330$). The second pattern consisted of 47 (4%) measurement occasions and was typified by a strong negative regression path ($\beta = -.590$, $p < .001$). The third pattern consisted of 180 (14%) measurement occasions and was characterized by a non-significant positive regression path ($\beta = .134$, $p = .185$). The fourth pattern consisted of 49 (4%) measurement occasions and was also typified by a non-significant positive regression path ($\beta = .423$, $p = .087$). Finally, the fifth pattern consisted of 73 (5%) measurement occasions and was typified by a moderate positive regression path ($\beta = .317$, $p = .021$) from autonomy at a given measurement time to work engagement at the next measurement time.

To summarize, multilevel regression mixture modeling identified altogether five different relationship patterns between autonomy and work engagement, thus supporting H1.

The role of the initial level of work engagement

Furthermore, the results showed that the initial mean level of work engagement of the longitudinal autonomy–work engagement relationship patterns varied. The positive predictive relationship between autonomy and work engagement was stronger when the initial mean level of work engagement was high, thus supporting H2 (see Table 3). Indeed, only on those measurement occasions when the initial level of work engagement was very high ($M = 5.1$, on a scale ranging from 0 to 6) the longitudinal relationship between autonomy and work engagement was typified by a positive regression path ($\beta = .317$, $p = .021$). The differences in the initial mean levels of work engagement between the pattern typified by this positive relationship compared to the other four relationship patterns were significant (both the overall test and all the pairwise com-

parisons). Finally, the results also revealed that on those measurement occasions when the initial mean level of work engagement was very low ($M = 2.7$), the relationship between autonomy and future work engagement was characterized by a strong negative regression path ($\beta = -.590$, $p < .001$).

Supplementary analyses. We conducted supplementary analyses to test if the number of relationship patterns varies randomly between individuals. That is, that the relationship between autonomy and work engagement may vary from time to time within individuals, and that individuals were not characterized by only a certain kind of relationship pattern. This analysis showed that the number of relationship patterns varied randomly between individuals (estimate = 7.538, $SE = 3.055$, $p = .014$). However, because of the small pattern sizes, the estimation was possible to be conducted only when comparing the two largest latent patterns. Nevertheless, the supplementary results indicate that the relationship between autonomy and work engagement vary from time to time within individuals, and that individuals do not show only a certain kind of relationship pattern.

Discussion

The present study utilizing a six-year four-wave dataset contributes to the existing literature by exploring whether autonomy (an example of a general job resource) is always beneficial for work engagement (Bakker & Demerouti, 2017), as well as whether the greater initial mean level of work engagement helps to benefit better from autonomy (Bakker & Demerouti, 2017; Hobfoll, 2001). The results showed first that the relationship between autonomy and work engagement may vary from one time to another within individuals. Indeed, highly different kinds of relationships existed over the years, and the relationships were not always positive. Second, the preceding level of work engagement varied greatly across the identified relationship patterns. Below, these main study findings are discussed in detail.

Different autonomy–work engagement relationship patterns: the initial level of work engagement matters

The multilevel regression mixture modeling revealed, as hypothesized (H1), that different kinds of patterns of the longitudinal relationship between autonomy and work engagement exist. The majority, i.e., four out of five patterns (covering 96% of measurement occasions), showed a positive longitudinal relationship between autonomy and work engagement. The relationship was, however, significant in only one of these patterns. In addition, one identified pattern (covering four per cent of measurement occasions) was unexpected – this was characterized by a negative relationship between autonomy and work engagement.

Thus, in line with the theoretical assumptions of the JD-R theory (Bakker & Demerouti, 2017) and previous longitudinal studies (De Lange et al., 2008; Schaufeli et al., 2009; Weigl et al., 2010), this study showed that, in general, autonomy seems to be beneficial for work engagement in the long run. However, the results also revealed that only one of these positive relationship patterns was significant, meaning that in only five per cent of investigated measurement occasions did autonomy increase subsequent work engagement. In previous longitudinal studies, the strength of the relationships between autonomy and work engagement has in general appeared to be rather weak, i.e., $\beta \sim .10$ (De Lange et al., 2008; Mauno et al., 2007; Weigl et al., 2010). However, it is possible that these average regressions computed once over the whole datasets may be comprised of multiple patterns showing various strengths of the relationship.

This study also revealed, as hypothesized (H2), that the initial mean level of work engagement varied among these relationship patterns, and the positive relationship was stronger when the initial mean level of work engagement was high. On those measurement occasions in which autonomy predicted higher work engagement at the next time, the initial level of work engagement was very high and significantly higher compared to the other relationship patterns. This study also revealed a negative relationship pattern between autonomy and work engagement. It emerged that on those measurement occasions in which autonomy associated negatively with future work engagement, the initial mean level of work engagement was very low.

Although thus far very rare, a few previous studies have also detected negative associations between autonomy and work engagement (Kubicek, Korunka, & Tement, 2014; Sarti, 2014; see also Van Veldhoven et al., 2020). For example, decision authority (Sarti, 2014) and job control (i.e., a sum variable resembling autonomy, Kubicek et al., 2014) were found to be related to lower subsequent work engagement among healthcare and elderly care workers. These previous studies discussed that in healthcare and elderly care the ability to make decisions with, for, and on behalf of patients and too much control over one's work

may sometimes lead to pressure among employees, which negatively affect work engagement (Kubicek et al., 2014; Sarti, 2014; see also Warr, 1987). In these cases, the ability to make decisions was not considered an opportunity, but rather an unavoidable requirement, that is, it was considered a job demand. Job demands on the other hand are known to negatively affect work engagement (Halbesleben, 2010; Mauno et al., 2010).

On the one hand, it seems possible that these same kinds of experiences may occur among managers, regardless of the occupational field. However, the results of the post hoc analyses revealed that in the present study, the managers reported rather similar levels of autonomy despite the identified autonomy–work engagement relationship pattern (the initial mean levels of autonomy varied between 2.6 and 3.5). Furthermore, the mean level of autonomy was the lowest (not the highest) in the pattern characterized by a negative relationship between autonomy and work engagement, thus indicating that the managers did not experience overly high levels of autonomy. On the other hand, with respect to present study findings, on measurement occasions when the initial level of work engagement was very low, autonomy related negatively to future work engagement. Thus, it seems possible that the investigated job resource, the ability to make decisions about one's work, may not be perceived or utilized as motivating and health-protecting aspect of work-related well-being at times when an employee lacks the important initial resource, i.e., work engagement. In this case, autonomy may even be considered a burden, i.e., job demand.

Therefore, individuals may have different kinds of relationships between autonomy and work engagement from one time to another and in certain circumstances the relationship between autonomy and future work engagement may even be negative. The same theoretical antecedent of work engagement, that is autonomy, may generate different kinds of longitudinal relationships with work engagement, depending on the initial mean level of work engagement. As theorized, individuals need to have resources to allocate the existing resources and to initiate other resources (Hobfoll, 2001; see also Halbesleben et al., 2014). Work engagement can be seen as an important resource for helping to manage and make use of the other resources, such as job resources (ten Brummelhuis & Bakker, 2012).

Thus, a novel and unexpected finding of this study was that in addition to the strength of the relationship, the initial mean level of work engagement might play an important role in the generation of the direction of the longitudinal relationship between autonomy and work engagement. This negative relationship pattern could not be estimated on the basis of conventional multilevel regression analysis (i.e., variable-oriented analysis methods). The utilization of the multilevel regression mixture analysis (i.e., following the idea of person-oriented research approach; Bergman et al., 2003; Laursen & Hoff, 2006) enabled the identification of qualitatively different autonomy–work engagement relationship patterns among the sequential dataset.

The results of this study also have important practical contributions. To date, organizational interventions that utilize the premises of the JD-R theory and aim to boost work engagement via increasing job resources have become increasingly popular (Cifre, Salanova, & Rodríguez-Sánchez, 2011; Seppälä, Hakanen, Tolvanen, & Demerouti, 2018; van Wingerden, Bakker, & Derks, 2016). However, this study suggests that the relationship between autonomy and work engagement is not constant within individuals. Rather, employees may experience dissimilar benefits from building autonomy at different times, and the initial level of work engagement seems to be an important prerequisite that explains when employees benefit the best from increasing autonomy to boost work engagement. At times when an employee is experiencing high work engagement, she/he has enough energy, involvement, and motivation to be able to fully benefit from the ability to make decisions about his or her work activities, such as by choosing challenging work tasks which are further engaging. Whereas, at times when the initial level of work engagement is very low, perhaps social support or guidance, rather than autonomy, would be better to boost work engagement (Halbesleben et al., 2014). Through guidance, it may be possible to receive the needed motivation and support to learn how to best benefit from the possibility to influence one's work to facilitate work engagement in the long term.

Limitations and suggestions for future research

This study also has limitations. First, the dataset only consisted of managers. Thus, we can question whether the regression paths gained are generalizable beyond individuals working in managerial positions. Therefore, future studies are needed to explore the autonomy–work engagement relation among datasets consisting of different occupational groups. Second, the drop-out percentage of this study was 55%, and thus the generalizability of the results with respect to the original sample must be considered carefully. However, the drop-out percentage in previous longitudinal studies investigating work engagement and/or autonomy has been quite similar to that of the present study, that is, slightly over 50% (e.g., Schaufeli et al., 2009; Simbula, Guglielmi, & Schaufeli, 2011; Weigl et al., 2010). In addition, previous longitudinal studies have found that validity of regression estimates are only marginally affected by drop-out (Wolke et al., 2009) and estimates of associations between variables become biased only when attrition depends on both baseline and follow-up variables (Gustavson, Von Soest, Karevold, & Røysamb, 2012). In the current study, the baseline values of the investigated variables did not differ between those who dropped out and those who stayed in the study.

Third, we selected a very traditional job resource, autonomy, for this study, as it is a widely studied job characteristic that has been shown to be important for work engagement among various occupations. However, it could be possible to identify different relationship patterns with

some other job resources such as social support. Fourth, and finally, although the four-wave dataset made it possible to estimate different kinds of regressions by utilizing several sequential measurement times, all of the time lags in the current study were two years. These two-year time lags may somewhat mask the identified patterns. It is possible that although autonomy was beneficial for work engagement most of the time (the majority of the patterns found were characterized by a positive relationship), it may have lost some of its motivational potential during the two-year period. Therefore, managers may have adapted to the autonomy in a way that it no longer evoked work engagement (Headey & Wearing, 1989; see also Seppälä et al., 2015), at least at times when managers were not best able to make use of it, i.e., at times when they did not experience high initial work engagement. Future research could utilize diary studies to see if different autonomy–work engagement relationship patterns exist on a daily basis.

Conclusion

This study found that the longitudinal relationship between autonomy and work engagement may be positive, non-significant, and also negative. Thus, this study revealed that theorizing that autonomy is always beneficial for work engagement may not fully capture the relationship between autonomy and work engagement. Instead, the relationship seems to be more complex and may vary from one time to another within individuals. In certain circumstances, that is, at times when the initial level of employees' work engagement is high, autonomy may have a stronger motivational role for future work engagement; whereas at times when the initial mean level of work engagement is very low, autonomy may not only lack the motivational potential, but this relationship may even be negative. Therefore, this study suggests that a "one size fits all" solution to providing more job resources such as autonomy may not always be beneficial for employees' work engagement; it may be more useful to first determine employees' possibilities to make use of such job resources.

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Author contributions

PS designed the study, carried out the statistical analyses, and drafted the first version of the manuscript. AM was actively involved in revising the manuscript, and helped to design the statistical analyses. JH helped to design the study and to revise the manuscript. AT carried out the statistical analyses, and helped to revise the methods and results sections of the manuscript. TF organized the data collection, and helped to revise the manuscript. All authors

read and approved the final manuscript.

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