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Authentic leadership, employees' job satisfaction, and work engagement: a hierarchical linear modelling approach

Sandra Penger^{a,*} and Matej Černe^{a,b}

^a*Department of Management and Organization, Faculty of Economics, University of Ljubljana, Kardeljeva pl. 17, 1000 Ljubljana, Slovenia;* ^b*The Centre of Excellence for Biosensors, Instrumentation, and Process control, Open Innovation Systems Lab, Velika pot 22, 5250 Solkan, Slovenia*

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The purpose of this study is to develop and test empirically a multilevel model of cross-level interactions between authentic leadership at the team level and job satisfaction and work engagement at the individual level. Using data from 23 team supervisors and 289 team members, the study also investigates the mediating role of perceived supervisor support in the proposed cross-level relationships. For validation of the measurement instrument, we first applied confirmatory factor analysis using LISREL 8.80 software. The hierarchical linear modelling analysis demonstrated a positive relationship between authentic leadership, employees' job satisfaction, and work engagement. In addition, the relationship between authentic leadership and job satisfaction is fully mediated by perceived supervisor support, whereas we have also found support for partial mediation of perceived supervisor support in the relationship between authentic leadership and employees' work engagement. A key originality and the theoretical and methodological contribution of this study lies in a multilevel approach that builds upon a sample of leaders and a number of their followers. We also address managerial implications and discuss future research suggestions.

Keywords: authentic leadership; employees' job satisfaction; perceived supervisor support; work engagement; hierarchical linear modelling analysis

JEL classification: M10, M12, M19

1. Introduction

Authenticity in leadership is a construct that has been the subject of frequent research in recent years (e.g. George, 2007; Walumbwa, Wang, Wang, Schaubroeck, & Avolio, 2010). It describes leaders with great capacity to process information about themselves effectively (their values, beliefs, goals, and feelings), clear personal identities, an ability to adjust their behaviour in leadership in accordance with their identities, and an ability to harmonise their preferences with the demands of society (Chan, Hannah, & Gardner, 2005).

This study provides a more objective examination of the relationship between authentic leadership and both affective and behavioural outcomes from the employees' perspective. By using a multilevel approach, we address a future research suggestion made by Walumbwa, Gardner, Avolio, Wernsing, and Peterson (2008). Our research

*Corresponding author. Email: sandra.penger@ef.uni-lj.si

design resembles that of Walumbwa et al. (2010), who conducted a multilevel study gathering data from both supervisors and their direct reports, but not for measuring the same construct.

The aim of this study is to develop and test empirically a multilevel model to explain how authentic leadership at the group level influences job satisfaction and work engagement at the individual level. In addition, we examine how the cross-level relationships among authentic leadership and the aforementioned outcomes from the employees' perspective could be mediated by perceived supervisor support. Walumbwa et al. (2010) examined follower identification with the supervisor and follower empowerment as two intermediate mechanisms linking authentic leadership to employee outcomes. Deriving from the perceived organisational support theory (cf. Eisenberger, Huntington, Hutchison, & Sowa, 1986), social exchange theory (cf. Settoon, Bennett, & Liden, 1996; Wayne, Shore, & Liden, 1997), and the norm of reciprocity (cf. Gouldner, 1960), we focus on perceived supervisor support (cf. Eisenberger et al., 2002) and examine its intermediate role between authentic leadership and employee outcomes. This approach is theoretically important, because it provides further empirical evidence on how authentic leadership may result in positive outcomes from the employees' perspective, both affective (job satisfaction) and behavioural (work engagement).

The paper is structured as follows: the second part of the paper presents the theoretical model and hypothesis of the authentic leadership dimensions, and relationship between authentic leadership, perceived supervisors' support, work engagement, and job satisfaction. The third part refers to the research framework and methodology, outlining the sample, procedure, measures, and research methods used. The fourth part covers data analysis, including validity, reliability, and tests of the existence of a multilevel structure. The final part presents results of the empirical research; includes discussion and conclusions, summarises our methodological contributions, managerial implications, and limitations; and provides suggestions for future research.

2. Model with hypotheses

2.1. Authentic leadership dimensions

Walumbwa et al. (2008) distinguish between four dimensions of authentic leadership: self-awareness, balanced processing, internalised moral perspective, and relational transparency. Self-awareness is related to self-reflection and learning about oneself. Through introspection, authentic leaders observe and analyse their own mental state: their thoughts, feelings, and aspirations. They learn about and accept their fundamental values, feelings, identity, and motives or goals, which are the four components of self-awareness according to Avolio and Gardner (2005). Internal connection with one's true self is achieved by individuals delving into their own personality by recalling the important events in their life and their reactions and emotions of that time (Ladkin & Taylor, 2010).

Balanced processing is about analysing all relevant information objectively and free from bias before making a decision. It involves self-regulation, which means controlling one's own behaviour in accordance with one's own personality, while preserving clear, open relations with followers and co-workers. It is about internalised processes of managing, balanced processing of information, transparent relations, and authentic behaviour (Gardner, Avolio, Luthans, May, & Walumbwa, 2005). Balanced processing includes accurate and balanced perception independent from ego-based defence mechanisms, and evaluation of oneself (Gardner, Fischer, & Hunt, 2009).

Internalised moral perspective means that the managers possess and exhibit internal moral standards and values, instead of behaving dependent on external pressure. However, authenticity reflects managers' ability of harmonising responsibility to themselves, their followers and the wider public, to achieve collaboration within, and outside of, an organisation (Novicevic, Harvey, Ronald & Brown-Radford, 2006). Therefore, the managers' values should be in accordance with the values generally accepted in the manager's environment (e.g. society, organisation, or the like).

An important part of self-regulation is acting in accordance with generally accepted ethical rules (Sparrowe, 2005). Individuals with higher levels of self-regulation manage their own behaviour so it matches with moral standards (Begley, 2006; May, Hodges, Chan, & Avolio, 2003; Novicevic et al., 2006). Leadership is moral only if an individual's internalised values are moral (George, 2007), or if they are perceived as such by others (Sparrowe, 2005). It is, on one hand, a harmony of managers' behaviour with their own values, and on the other hand, a harmony of managers' behaviour with ethical rules that reign within the society. To earn the respect of followers and increase the possibility of affecting their actions, the manager must, besides authenticity, also demonstrate integrity; the manager must possess personal values harmonised with the ethical code (Duignan & Bhindi, 1997). Thus, authentic managers cannot be authentic in a negative sense (Fields, 2007). A manager must consistently reflect integrity to be perceived as authentic (Cooper, Scandura, & Schriesheim, 2005).

Relational transparency involves exhibiting open, transparent relations with co-workers. It includes representation of an individual's true interior (and not acting). Managers show their true interiors when they demonstrate openness, self-disclosure, and in close relations with followers, trust (Gardner et al., 2005). Such behaviour encourages trust through the leader–follower relationship, in which information is shared, and true thoughts and feelings are expressed (Kernis, 2003).

Besides these four dimensions, Luthans and Avolio (2003) also define positive psychological capital and one's own positive development as elements of authentic leadership. Positive psychological capacities have a key role in the development of individuals, teams, learning organisations, and communities with a goal of achieving a sustainable competitive advantage (Avolio & Gardner, 2005; Luthans & Avolio, 2003). Positive emotions are key components of the process of authentic leadership development, more specifically, of the positive modelling process (Gardner et al., 2005). On the other hand, both Endrissat, Müller, and Kaudela-Baum (2007), and Shamir and Eilam (2005), express scepticism towards inseparable linking of authentic leadership to positive psychological resources. In any case, the issue of including positive psychological capacities and the process of positive modelling in the research models is apparent, and researchers conducting empirical studies (e.g. Walumbwa et al., 2008; Walumbwa et al., 2010) have so far decided against it. For additional information on the construct of authentic leadership and different definitions that complement Walumbwa et al.'s (2008) four-dimensional model that we adopted in this study, please see a recent review by Gardner, Coglisier, Davis, and Dickens (2011).

2.2. The relationship between authentic leadership, perceived supervisor support, work engagement, and job satisfaction

Some theoretical conceptualisations have suggested that authentic leadership may positively affect employee attitudes and behaviours, such as job satisfaction, work engagement, organisational citizenship behaviour, and performance (Avolio, Gardner,

Walumbwa, Luthans, & May, 2004; Gardner et al., 2005; George, 2003; Ilies, Morgeson, & Nahrgang, 2005). Avolio et al. (2004) stated that authentic leadership directly influences follower work attitudes, including organisational commitment, job satisfaction, work meaningfulness, and engagement. This theory has received support from empirical studies (cf. Walumbwa et al., 2008; Walumbwa et al., 2010).

First, we focus on how authentic leadership stimulates employees' job satisfaction. Balanced processing of information, relational transparency, and consistency between values, words and behaviour exhibited by authentic leaders results in higher levels of commitment, and willingness to perform behaviours that are not necessarily included in the role, as well as in the satisfaction with the supervisor that develops among followers (Walumbwa et al., 2008). Accordingly, the theory suggests that authentic leadership should be positively related to job satisfaction (Gardner et al., 2005).

Ilies et al. (2005) suggested that authentic leaders positively influence followers' behaviours because such leaders provide support for followers' self-determination. Managers who engage in authentic behaviours are more effective at fostering intrinsic worker motivation (Deci, Connell, & Ryan, 1989), which in turn results in higher follower job satisfaction (Walumbwa et al., 2008). Gardner et al. (2005) also relate to self-determination when predicting that positive modelling by authentic managers would foster internalised regulation processes among followers, which contribute to greater levels of follower well-being, engagement, and performance (Deci et al., 1989). The research indicates that when the employees are treated in a fair and caring manner, they are more committed and more likely to have positive attitudes about their work (Dirks & Ferrin, 2002; Jensen & Luthans, 2006).

An important part of authentic leadership is the process of personal identification of employees with the manager. In doing so, authentic managers spread common cognitive behavioural patterns among all members of an organisation (Sparrowe, 2005). The followers absorb positive psychological states. Authentic managers build and develop positive psychological capital in their followers by increasing followers' self-confidence, creating hope, establishing trust (Ilies et al., 2005), enhancing resiliency, and raising the level of optimism (Avolio et al., 2004; Avolio & Gardner, 2005; Gardner & Schermerhorn, 2004; Gardner et al., 2005). Authentic managers also encourage learning in followers, creating conditions for the followers' own positive development (Mazutis & Slawinski, 2008). When employees deal with work and tasks that interest them and they are motivated intrinsically to do so, this should positively impact their job satisfaction (Lawler & Hall, 1970).

Hypothesis 1: *Authentic leadership is positively related to employees' job satisfaction.*

Social exchange theory explains a number of employee behaviours in organisations. It proposes that any actions depend on rewarding reactions from others (Blau, 1964). Therefore, it involves a series of interactions that generate obligations (Emerson, 1976). Researchers have used social exchange (cf. Blau, 1964) and the norm of reciprocity (cf. Gouldner, 1960) to explain a number of processes involving leadership, such as empowerment (e.g. Keller & Dansereau, 1995), perception of organisational support (e.g. Wayne et al., 1997), and citizenship behaviour (e.g. Konovsky & Pugh, 1994), to name just a few. We derive from social exchange theory to explain why perception of supervisor support would mediate the relationship between authentic leadership and employee outcomes.

First, we focus on how perceived supervisor support mediates the relationship between authentic leadership and employees' job satisfaction. Avolio et al. (2004) argued that authentic managers lead by example and act as role models, displaying high moral standards, honesty, and integrity, causing followers to personally identify with them. As followers model their behaviour on that of supervisors exhibiting high levels of authentic leadership, they come to view themselves as honest people of high integrity. Through this social identification, the employees come to identify with a group and see their group membership as an important part of their identities. The followers' social identification increases with a deeper sense of high moral values because these conditions establish a high-level group membership (Avolio et al., 2004). As this is a result of supervisors' role modelling, the employees should perceive higher levels of the supervisors' support for their work activities.

Deriving from social exchange and organisational support theory, perceived supervisor support links to employees' job satisfaction (e.g. Griffin, Patterson, & West, 2001). For example, lucrative exchange relationships with team members (Brass, 1984) may link with employee satisfaction (e.g. Settoon et al., 1996), as does supervisory leadership (e.g. Judge, Thoresen, Bono, & Patton, 2001). Leadership is an important determinant in models of team satisfaction (e.g. Cohen, Ledford, & Spreitzer, 1996). Supervisors play an important role in developing roles and expectations of employees (Graen & Scandura, 1987), which impacts employees' job satisfaction (Abramis, 1994) due to role clarity. In line with the organisational support theory (cf. Eisenberger et al., 2002), immediate supervisors also provide information about the support of the broader organisation. Therefore, the second hypothesis of this study is as follows:

Hypothesis 2: *The relationship between authentic leadership and employees' job satisfaction is mediated by perceived supervisor support.*

Next, we focus on how authentic leadership stimulates employees' engagement. Work engagement describes the state of mind in which the employees exhibit vigorous attention and dedication to work and a high level of enthusiasm while at work (Schaufeli & Bakker, 2004). Previous research has found it positively influences employee productivity and retention, customer satisfaction, turnover, and overall profitability (Harter, Schmidt, & Hayes, 2002). The same meta-analysis has identified leadership as one of the single biggest factors contributing to employee work engagement (Harter et al., 2002). The social context is crucial and may set the stage for a climate for engagement with an important role of leadership (Bakker, Albrecht, & Leiter, 2011).

Theoretical contributions suggest that authentic leadership has an effect on results from the employees' perspective (Gardner et al., 2005). Authentic managers raise authentic harmonic personalities in the followers, allowing the followers to satisfy their own needs, and develop and reach their own goals (Gardner et al., 2005). The managers train and develop all the employees in the organisation and transmit the vision, values, and goals of the organisation between them, while the employees supply the managers with feedback information.

Authentic managers behave in accordance with their values and strive to achieve openness and truthfulness in their relationships with followers (Gardner et al., 2005; Kernis, 2003). Such managers lead by example and demonstrate transparent decision-making (Avolio & Gardner, 2005). Leading by example demonstrates managers' commitment to their work and provides guidance to followers about how to remain

emotionally and physically involved in the work they are performing, which should raise levels of work engagement through observational learning (Bandura, 1977).

As followers internalise values and beliefs revealed to them by an authentic leader, the followers, in accordance with the authentic leadership development process, change their self-perceptions in the actual state, and therefore what they may become (Avolio & Gardner, 2005). Authentic leadership affects intrinsic motivation (Ilies et al., 2005). Employees take the initiative for their own development as they realise they can achieve more than they previously thought. This is not about transforming the followers to the desires of the manager, but about more engaged positive self-development by followers because of the manager's example. Thus, followers act in the direction of positive thinking, building self-confidence and creating hope on their own. This should be reflected in their work engagement.

Ilies et al. (2005) discussed how authentic leadership is likely to positively influence followers' behaviours because such managers provide support for followers' self-determination. George (2003) argued that authentic managers motivate the followers by creating a deep sense of purpose to deliver better products, superior services, and optimal quality. This is characteristic of employees with high levels of work engagement.

The influence of authentic leadership on employees' work engagement is also supported by the results of previously conducted empirical research, both in the field of authentic leadership and in the field of psychology. Improvements in satisfaction, commitment, and happiness at the workplace (cf. Jensen & Luthans, 2006) should lead to greater work engagement (Harter et al., 2002). When fluctuation decreases (Peterson & Luthans, 2003), employees' performance increases (Luthans, Avolio, Avey, & Norman, 2007), which may mean the employees exhibit greater levels of work engagement.

In the field of psychology, Kernis (2003) and Kernis and Goldman (2005) found higher levels of self-reported authenticity was related to higher student engagement in goal pursuits and determination. Kahn (1990) found that engagement increased in an environment where the managers promoted psychological safety – an environment where individuals felt accepted, supported, and were able to participate without much in the way of negative consequences in case they failed. Therefore, the third hypothesis of this study is as follows:

Hypothesis 3: *Authentic leadership is positively related to employees' work engagement.*

Authentic managers are engaged in empowering their followers to make a difference by fostering high-quality dyadic relationships based on the principles of social rather than economic exchange (Ilies et al., 2005). Walumbwa et al. (2008) argued that from a social exchange perspective (Blau, 1964), the followers of supervisors who exhibit higher levels of authenticity will be willing to put extra effort into their work to reciprocate the highly valued relationships with their leader. However, this might be dependent on or enhanced by perceived supervisor support.

Supportive supervisor relations are positive predictors of safety (May, Gilson, & Harter, 2004). Psychological safety involves a sense of being able to show and employ the self without negative consequences. Supportive and trusting interpersonal relationships characteristic for authentic leaders as well as supportive management promote psychological safety (Kahn, 1990). When the employees feel safe and are not under constant pressure of producing high-quality results, they feel less constrained, enabling them to be more engaged (Schaufeli & Bakker, 2004; Sonnentag, 2003). Organisational members feel safe in work environments characterised by openness and supportiveness (Kahn, 1990),

which is in line with the balanced processing and relational transparency dimensions of authentic leadership. Supportive environments allow members to experiment and to try new things and even fail without fear of the consequences (Kahn, 1990).

Employees are intrinsically motivated as a result of their supervisors' authentic leadership (Ilies et al., 2005), taking the initiative for their own development as they realise they can achieve more than they previously thought they could. Their intrinsic motivation may not result in higher levels of work engagement if they do not feel their efforts are not supported by their supervisor. Therefore, the final hypothesis of our study is as follows:

Hypothesis 4: *The relationship between authentic leadership and employees' work engagement is mediated by perceived supervisor support.*

3. Research framework and methodology

3.1. Sample and procedures

The measuring instrument we have used includes 33 variables for gathering data from the employees (leader's authenticity, perceived supervisor support, job satisfaction, and work engagement) that can be grouped with team supervisors. We collected empirical data in a Slovenian manufacturing and processing company in April 2010. The company manufactures composite materials, with an important role of R&D, which is why the work is organised in teams with team members who are highly engaged in interaction with each other and their supervisors.

In total, 23 team supervisors and 289 of their employees answered. The questionnaires included team and employee identification codes, so we could match data from the supervisors and the employees and group them for analysis. We asked the employees to complete the questionnaires individually, without talking to each other. The average response rate per team was 12.56 employees, whereas the number of direct reports per team supervisor that had answered ranged from 4 to 18. If we take into consideration only the 23 teams that participated (76.6% response rate regarding team responses), there was a 70.70% rate of response from the supervisors' direct reports. Demographics of survey respondents are presented in Table 1.

3.2. Measures

To avoid problems with common method bias, we used the following approaches. After the data collection, we conducted Harman's single factor test to address the common method variance issue. If common method variance was a serious problem in the study, we would expect a single factor to emerge from a factor analysis or one general factor to account for most of the covariance in the independent and dependent variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The results of the factor analysis for data gathered from the employees demonstrated that no general factor was apparent in the unrotated factor structure, with the first factor accounting for only 27.10% of the variance.

The items used in our study are part of a large-scale questionnaire; the respondents would therefore likely not have been able to guess the purpose of the study and force their answers to be consistent. We also reverse-coded some items in the questionnaire. We guaranteed all respondents confidentiality and anonymity, thus preventing social desirability responding.

Table 1. Demographics of survey respondents.

	Leaders	Team members
Number of respondents	<i>N</i> = 23	<i>N</i> = 289
<i>Age</i>		
Up to 25 years	6.8%	7.2%
26–35 years	37.7%	31.1%
36–45 years	34.9%	30.6%
46–55 years	19.9%	24.5%
Over 56 years	0.7%	6.6%
<i>Gender</i>		
Male	64.9%	72.2%
Female	35.1%	28.8%
<i>Work tenure</i>		
Up to 5 years	9.6%	12.3%
6–15 years	37.0%	38.9%
16–25 years	34.9%	28.8%
26–35 years	17.8%	18.6%
Over 36 years	0.7%	1.4%

Source: Authors' calculation.

Previous studies have found support for combining authentic leadership dimensions into one common core construct (e.g. Černe, Jaklič, & Škerlavaj, 2013; Walumbwa et al., 2010). Individual dimensions do not add any significant incremental validity beyond the common core highest factor (Walumbwa et al., 2008). Furthermore, as noted by Walumbwa et al. (2010), there are many conceptual similarities among the four factors, and each represents one aspect of a leader's authenticity. All the dimensions of authentic leadership are self-regulatory processes managed through individuals' internal standards and evaluations of their own behaviour (Gardner et al., 2005). The latent higher-order construct of authentic leadership can help explain the conceptual and empirical overlap among the dimensions (Walumbwa et al., 2010).

According to some authors, authenticity is introverted and does not include consideration of others (Avolio & Gardner, 2005). In addition, measuring authenticity by gathering data from leaders is an approach previously used by researchers, even more so in qualitative research (George, 2007). Many researchers have examined managers' authenticity through the perceptions of their followers (Černe, Dimovski, Marič, Penger, & Škerlavaj, 2014; Clapp-Smith, Vogelgesang, & Avey, 2009; Jensen & Luthans, 2006; Peterson & Luthans, 2003; Walumbwa et al., 2008). Recent research has carried this out through the use of the Authentic Leadership Questionnaire (ALQ), copyrighted in 2007 by Bruce Avolio, William Gardner, and Fred Walumbwa. Walumbwa et al. (2008) demonstrated the validity of the ALQ. Maric, Dimovski, Djuric, Cerne, and Djuric (2013) measured the same dimensions of authentic leadership as the ALQ, and present the psychometrics of the items we use in the following subsections.

We measured job satisfaction using four items taken from the Hackman and Oldham (1980) job diagnostic scale. We measured perceived supervisor support with a perceived organisational support scale (Eisenberger et al., 1986) adapted to concern the supervisor instead of the organisation. We measured work engagement using the 12-item Gallup Workplace Audit scale. We used a structured questionnaire with 5-point Likert scales to measure all the constructs in this study.

3.3. Research methods

To validate the measurement instrument, we first applied confirmatory factor analysis (CFA) using LISREL 8.80 software. We examined convergent validity and unidimensionality by the loading paths of all items, which are statistically significant if they exceed 0.50 (Prajojo & McDermott 2005). In the process of purifying the scales, we excluded several items (measurement variables) from further analysis. In the final version of the model, we used 26 of 32 items to measure seven constructs and four second-order factors. For the second-order factors, AL, perceived supervisor support, job satisfaction, and work engagement, we ran simple second-order models prior to combining the constructs into aggregates of involved variables.

Consequently, we performed discriminant validity testing with the purpose of examining the degree to which the constructs were different from each other. We evaluated the discriminant validity by constructing models for all possible pairs of hidden variables, and measuring it by pairwise correlations, as proposed by Venkatraman (1989). Constructs demonstrate discriminant validity if the variance extracted for each is higher than the squared correlation between the constructs (Fornell & Larcker, 1981). We calculated a composite reliability index (CRI) and average variance extracted (AVE) to test the composite (construct) reliability, following the suggestion by Škerlavaj, Štemberger, Škrinjar, and Dimovski (2007).

We used hierarchical linear modelling (HLM) to examine the multilevel relationships among the constructs. We first tested for the existence of a multilevel structure, validated the aggregation to the team level, and then tested for the cross-level effects of authentic leadership, as well as for the interaction effects between authentic leadership and perceived supervisor support (PSS) to examine the mediating effect of PSS.

4. Data analysis

4.1. Validity and reliability

In Tables 2 and 3 we report unstandardised and completely standardised factor loadings, together with corresponding t-values for each item and scale involved in the final solution of the measurement model. Analysis of second-order models for authentic leadership, perceived supervisor support, job satisfaction, and work engagement provided empirical justification for combining constructs into aggregates. Fit indices for all five second-order models were satisfactory. After CFA, we decided to exclude items AL8, PSS4, PSS5, and JS8 because of insufficient factor loadings.

The values of CRI as well as AVE are presented in Table 4 for all scales and constructs of the final measurement model. All CRI values exceeded the milder threshold for composite reliability (0.60); most of them also exceeded the stricter threshold of 0.80. The same can be said about AVE, where values for all latent variables and scales exceeded 0.50.

Discriminant validity tests (a matrix of Pearson's pairwise correlations for the 11 constructs) are presented in Table 5. The results indicate that discriminant validity was mostly achieved. In addition to pairwise correlations, we also present means and standard deviations for all the constructs.

4.2. Testing the existence of a multilevel structure

As suggested by Raudenbush and Bryk (2002), this study first tested the existence of a multilevel structure in the model we proposed. In the intercept-only model with job

Table 2. Construct validity for authentic leadership.

Second-order factors	Constructs	Measurement variables (final)	Unstandardised factor loadings		Completely standardised factor loadings		t-values	
Authentic leadership	Self-awareness	PAL1	0.96	1.12	0.84	0.88	17.6	18.82
		PAL2		1.15		0.7		13.37
		PAL3		0.89		0.77		15.44
		PAL4		0.85		0.87		18.39
	Relational transparency	PAL5	1.24	0.91	0.97	0.89	22.35	19.09
		PAL6		0.99		0.85		17.97
		PAL7		1.13		0.91		20.18
		PAL9		1.04		0.79		15.94
	Internalised moral perspective	PAL10	0.99	1.01	0.85	0.93	17.74	20.61
		PAL11		0.94		0.78		15.48
		PAL12		1.01		0.84		17.4
		PAL13		1.09		0.88		18.91
		PAL14	1.04	0.98	0.81	0.8	16.62	16.38
	Balanced processing	PAL15		1.04		0.91		19.89
		PAL16		1.05		0.88		18.99

Source: Authors' calculation.

Table 3. Construct validity for perceived supervisor support, job satisfaction, and work engagement.

Second-order factors	Constructs	Measurement variables (final)	Unstandardised factor loadings		Completely standardised factor loadings		t-values	
Perceived supervisor support	PSS1	PSS1	0.99	0.86	0.83	0.9	18.02	19.58
	PSS2	PSS2		0.97		0.88		19.06
	PSS3	PSS3		0.99		0.85		17.19
Job satisfaction	JS6	JS6	1.06	1.11	0.88	0.87	18.92	18.4
	JS7	JS7		0.94		0.95		21.25
	JS9	JS9		0.92		0.81		16.57
Work engagement	WE10	WE10	1.04	1.12	0.89	0.74	19.09	14.38
	WE12	WE12		0.97		0.88		18.28
	WE13	WE13		1.02		0.88		18.28
	WE11	WE11	1.12	1.14	0.85	0.68	17.92	12.9
	WE14	WE14		1.03		0.86		18.32
	WE15	WE15		1.06		0.88		19.04
	WE16	WE16		1.08		0.92		20.49
WE17	WE17		1.01		0.9		19.71	

Source: Authors' calculation.

Table 4. Construct reliability.

Latent variable	Aggregates of items	Number of items (final)	CRI	AVE
Authentic leadership	Self-awareness	4	0.84	0.67
	Relational transparency	4	0.85	0.68
	Internalised moral perspective	4	0.91	0.72
	Balanced processing	3	0.88	0.70
Perceived supervisor support	PSS1	1	0.82	0.67
	PSS2	1		
	PSS3	1		
Job satisfaction	JS6	1	0.98	0.79
	JS7	1		
	JS9	1		
Work engagement	WE10	1	0.87	0.68
	WE12	1		
	WE13	1		
	WE11	1		
	WE14	1		
	WE15	1		
	WE16	1		
	WE17	1		

Source: Authors' calculation.

Table 5. Descriptive statistics and correlations for individual- and team-level variables.

		N	M	SD	1	2	3	4
1	Perceived supervisor support	289	16.34	5.8	0.931			
2	Job satisfaction	289	13.23	3.98	0.28**	0.856		
3	Work engagement	289	34.54	7.45	0.38**	0.48**	0.745	
4	Authentic leadership	289	61.82	3.08	0.21	0.36**	0.32**	0.909

Notes: Values on the diagonal are inter-item reliability levels (Cronbach's alpha).

* $p < 0.05$; ** $p < 0.01$.

Source: Authors' calculation.

satisfaction as the dependent variable, the ICC (intraclass correlation) at the team level (level-2) was 0.078, which indicated a high degree of association on job satisfaction between individuals within the same team. Similarly, the employees from the same team in our study exhibited similar characteristics regarding their work engagement (ICC(2) = 0.83). Following Hayes' (2006) recommendation to use multilevel modelling in situations where intraclass correlations exceed 0.05, the ICC results of the intercept-only model justified our use of a multilevel analysis as an appropriate strategy for analysing the cross-level effects of authentic leadership on work engagement and job satisfaction.

To validate the aggregation of individual-level measures of authentic leadership and perceived supervisor support on a group level, we used the following approaches. We calculated the intraclass correlations (ICCs) and the within-group agreement (rwg). For authentic leadership (slight skewed shape), the average rwg was 0.75, ranging from

0.52 to 0.90, whereas ICC(1) was 0.13 and ICC(2) was 0.90. For perceived supervisor support (also slight skewed shape), the average rwg was 0.63, with ICC(1) at 0.03 and ICC(2) at 0.45. In light of this evidence, we proceeded to create aggregate measures of authentic leadership, but have decided to treat perceived supervisor support at the individual level, as both rwg and ICC(1) were below the traditional cutoff recommended for forming groups (0.05 and 0.70, respectively).

4.3. The relationship between authentic leadership and job satisfaction

To test our hypotheses, we developed a set of multilevel models based on the theoretical predictions using the incremental improvement procedure demonstrated by Hox (2010). In the construction of these models, all variables were grand-mean centred. The fixed effects with robust standard errors for all models are presented in Table 6. We started with the intercept-only model with team members’ job satisfaction as the dependent variable (Model 1).

To test the cross-level effects of authentic leadership, we added authentic leadership to Model 1 (Model 2). To test the hypotheses, we examined the coefficients of corresponding parameters estimated in the models. Authentic leadership had a positive statistically significant relationship with employees’ job satisfaction (Model 2: $\gamma = 0.21$, $SE = 0.01$, $p < 0.05$), confirming Hypothesis 1.

To test the effect of perceived supervisor support at the individual level, we added perception of support for innovation as a level-1 predictor of job satisfaction (Model 3). The results of the analysis showed perceived supervisor support was positively related to team members’ job satisfaction ($\gamma = 0.28$, $SE = 0.02$, $p < 0.01$). Hypothesis 2 proposes that perception of support for innovation would mediate the relationship between authentic leadership, respectively, and employees’ job satisfaction. Therefore, we tested for cross-level interactions. Full mediation would exist if the previously significant relationship between authentic leadership and job satisfaction would be reduced to non-significant levels when including the mediator variable in the analysis. Partial mediation could be claimed if the relationship between authentic leadership and job satisfaction remained significant but to a lesser degree.

Table 6. Multilevel analysis results for job satisfaction as the dependent variable.

	Model 1	Model 2	Model 3	Model 4
<i>Level 1</i>				
Intercept	12.171** (0.03)	11.876** (0.02)	11.972** (0.03)	11.828** (0.01)
Perceived supervisor support (PSS)			0.28** (0.02)	0.25* (0.01)
<i>Level 2</i>				
Authentic leadership		0.21* (0.01)		0.16 (0.01)
Deviance	1285.39	1249.85	1114.12	1008.76
Pseudo R^2	0.04	0.22	0.18	0.24

Notes: Entries are estimations of fixed effects with robust standard errors. Estimations of the random variance components are in parentheses. For the intercepts, they represent the between-group variance in job satisfaction.

* $p < 0.05$; ** $p < 0.01$.

Source: Authors’ calculation.

The results in Model 4b indicate that the relationship between authentic leadership and job satisfaction was also reduced to a non-significant level ($\gamma = 0.16$, $SE = 0.01$). Thus, Hypothesis 2 is also supported. In addition, we conducted Sobel's (1982) test to examine Hypothesis 2 further. The results supported the hypothesis for full mediation (H2: $z = 8.76$, $p < 0.01$).

4.4. The relationship between authentic leadership and work engagement

We started with the intercept-only model with team members' work engagement as the dependent variable (Model 5). To test the cross-level effects of authentic leadership, we added authentic leadership to Model 5 (Model 6). All the models that include work engagement as the dependent variable are presented in Table 7. To test the hypotheses, we examined the coefficients of corresponding parameters estimated in the models. Authentic leadership had a positive statistically significant relationship with employees' work engagement (Model 6: $\gamma = 0.26$, $SE = 0.01$, $p < 0.05$), confirming Hypothesis 3.

To test the effect of perceived supervisor support at the individual level, we added this construct as a level-1 predictor of work engagement (Model 7). The results of the analysis showed perceived supervisor support was positively related to team members' work engagement ($\gamma = 0.30$, $SE = 0.02$, $p < 0.01$). Hypothesis 4 proposes that perceived supervisor support would mediate the relationship between authentic leadership and employees' work engagement. Again, we tested for cross-level interactions.

The results in Model 8 indicate that the relationship between authentic leadership and work engagement was not reduced to a non-significant level ($\gamma = 0.21$, $SE = 0.01$, $p < 0.05$); however, it was reduced in size. Thus, partial mediation can be claimed and we can partially confirm Hypothesis 4. In addition, we conducted Sobel's (1982) test to examine this hypothesis further. The result supports the hypothesis for partial mediation (H4: $z = 3.42$, $p < 0.01$).

Table 7. Multilevel analysis results for work engagement as the dependent variable.

	Model 5	Model 6	Model 7	Model 8
<i>Level 1</i>				
Intercept	28.548** (0.08**)	33.239**(0.14**)	32.343**(0.13**)	33.254**(0.14**)
Perceived supervisor support (PSS)			0.30**(0.02)	0.25* (0.01)
<i>Level 2</i>				
Authentic leadership		0.26* (0.01)		0.21* (0.01)
Deviance	1285.39	1249.85	1114.12	1008.76
Pseudo R^2	0.04	0.22	0.18	0.24

Notes: Entries are estimations of fixed effects with robust standard errors. Estimations of the random variance components are in parentheses. For the intercepts, they represent the between-group variance in job satisfaction.

* $p < 0.05$; ** $p < 0.01$.

Source: Authors' calculation.

5. Discussion and conclusions

Theoretical models suggest that through the process of authentic leadership development, various outcomes from the employees' perspective would improve (Avolio et al., 2004; Avolio & Gardner, 2005; Gardner et al., 2005; Harvey, Martinko, & Gardner, 2006; Ilies et al., 2005). This notion was confirmed by previous empirical studies (e.g. Walumbwa et al., 2008; Walumbwa et al., 2010). We developed a series of multilevel models that examined how authentic leadership impacted on employees' job satisfaction and work engagement. In addition, we examined an intermediating mechanism – perceived supervisor support – and the role it plays in the investigated relationships.

Authentic leaders provide support for followers' self-determination and are better at fostering intrinsic worker motivation (Deci et al., 1989), which in turn results in higher follower job satisfaction. This finding is consistent with results of the study by Walumbwa et al. (2008), but we have provided additional insight by measuring authentic leadership from two perspectives, demonstrating that both influence authentic leadership in a similar manner.

Followers who work under the guidance of authentic supervisors are more satisfied in their workplace, enjoy their work, and are satisfied with the atmosphere in their department. They believe their work satisfies their goals and that their employment is secure. Satisfied employees are more motivated, which also contributes to their performance (e.g. Judge et al., 2001).

Based on the results of our study, we can argue in favour of the mediating effect of perceived supervisor support in the relationship between authentic leadership and employees' job satisfaction. Cross-level interactions showed that full mediation was present. In line with social exchange theory (Blau, 1964) and perceived organisational support theory (Eisenberger et al., 2002), authentic leaders establish higher levels of social identification in their followers via positive role modelling. This personal identification and information about support from the organisation and the supervisor facilitates employees' job satisfaction.

Full mediation of perceived supervisor support in the relationship between authentic leadership and employees' job satisfaction contrasts with the findings of Griffin et al. (2001), who asserted that the impact of perceived supervisor support in enhancing employees' job satisfaction was diminished when introducing teams that resulted in a changing role of supervision. Our study was related to authentic team supervision, but demonstrated that even in teams, the role of support from the supervisor is an important mechanism that helps to capitalise on positive modelling of authentic leadership in the form of enhanced employees' job satisfaction.

Hierarchical linear modelling results also demonstrated a positive relationship between authentic leadership and employees' work engagement. The influence of authentic leadership on employees work engagement showed that in line with the social exchange theory (Blau, 1964) and the norm of reciprocity (Gouldner, 1960), the followers of supervisors who view their supervisors as authentic are willing to put extra effort into their work to reciprocate the highly valued relationships with their leaders.

In terms of the relationship between authentic leadership and employees' work engagement, the results showed partial mediation of perceived supervisor support. Authentic managers who demonstrate openness and supportiveness, and foster trusting and supportive interpersonal relationships contribute to the development of employees'

psychological safety. The employees feel safe and are not under the constant pressure to produce high-quality results; they feel less constrained, which enables them to be more engaged (Schaufeli & Bakker, 2004; Sonnentag, 2003).

5.1. Contributions and implications

The questionnaire and associated measuring scales proved reliable and valid. The multi-level model, confirmed by Slovenian data, indicated a proper use of definitions and assumptions. In addition, our study pointed out a key role of perceived supervisor support when evaluating the impact of authentic leadership on job satisfaction and work engagement.

Another methodological contribution is our multilevel research on a Slovenian sample of leaders and a great number of their followers in a particular industry. This approach differs from the usual research in the field of authentic leadership, which involves sending questionnaires to randomly picked key informants in different organisations and with unidentified leaders. The approach we have used provides a better, more accurate treatment of a specific leader's authenticity, as it was evaluated not only by one, but by several followers.

Our study also has important managerial implications. The empirical validation of the model of authentic leadership confirmed that the expression of authenticity by the leaders is reasonable and useful, as it leads to employees' work engagement and job satisfaction. The positive influence of authentic leadership found in this study is in line with previous research. Clapp-Smith et al. (2009) studied the impact of authentic leadership on trust (as an element of authentic followership) and through it on results from the employees' perspective. Walumbwa et al. (2008) showed a positive impact of authentic leadership on job satisfaction and organisational citizenship behaviour. Walumbwa et al. (2010) studied and proved the cross-level effect of authentic leadership on empowerment and work engagement. This further depicts authentic leadership as a suitable leadership style for enhancing employee outcomes and leads to the conclusion that the supervisors, if they want to improve results from the employees' perspective, should develop their own personality traits and particularly their behaviour in the direction of authenticity. The leaders should actively develop the skills and capacities of authentic leadership.

5.2. Limitations and future research suggestions

One limitation of the research model is associated with previously developed conceptual schemes; namely, the lack of consensus of the researchers in the field of authentic leadership regarding the constructs and elements. For the questionnaire for the leaders that we adapted from previously developed research instruments, it would be necessary to determine whether it measures authentic leadership as a discrete category from the other theories of leadership, especially of ethical, transformational, and servant leadership, similarly to what Walumbwa et al. (2008) have done for the ALQ questionnaire for employees.

The measuring instrument we used also includes some limitations or imperfections, endemic to the research of leadership by means of questionnaires in general. Thus, it does not include consideration of various contextual factors that impact leaders' behaviour, as well as the perception of this behaviour. It would be useful to include the relationship between authentic leadership and organisational climate or culture in the model, as well as to measure the impact of authentic leadership on performance.

As the construct of authentic leadership is still in development, additional work in defining the theoretical conceptualisation, as well as further empirical confirmation, will be needed. The researchers should include various research models, not only follow academics from the field of positive organisational behaviour. For example, a lack of inclusion of authentic followership is apparent in empirical studies (cf. Woolley, Caza, & Levy, 2011). This process could prove to have an important mediating role between authentic leadership and employee outcomes, but is crucially dependent on employees' characteristics. Therefore, individual differences among the employees should also be included in future research. Furthermore, a final decision on whether authentic leadership in itself includes the elements of positive psychological capital, and what influence those elements may have on the followers' performance, will have to be made. In addition, future research should test the impact of work tenure as a mediating factor in the cross-level relationships between authentic leadership and behavioural and affective outcomes, or perhaps focus on organisational-level outcomes, such as corporate responsibility (Peterlin, Dimovski, Uhan, & Penger, 2011) and business innovation (Rašković, Mõrec, & Makovec Brenčič, 2012).

The proposition that authentic leadership might directly influence the employees' performance and directly (or indirectly) impact on financial and non-financial organisational performance should also be verified empirically. Although Walumbwa et al. (2008) found a positive relationship between authentic leadership and supervisor-rated performance, the measurement of the construct as a whole (Cooper et al., 2005; Walumbwa et al., 2008) and its influence on organisational performance present a great challenge. This has also been previously observed, as Toor and Ofori (2008) point out the lack of empirical research that would prove the impact of authentic leadership on the results.

For future research, we also suggest measuring the direct influence of particular authentic leadership elements (not aggregated in latent variables) on authentic followership or even on various non-aggregated elements of authentic followership. In part, this was addressed by Spitzmuller and Ilies (2010), who investigate the influence of relational authenticity on different group members. However, it would be beneficial to examine all the dimensions of authentic leadership and their respective outcomes. It would also be useful to fully follow the conceptual model of authentic leadership (Gardner et al., 2005) in future research models. This would make it possible to examine the structural relationships between elements of authentic leadership, which are – in theory – united in the structural model. Furthermore, a thorough study of the impact of organisational context, the factors that are beyond the direct influence of the leader, is essential for a comprehensive understanding of relations in the organisation and the factors that influence performance.

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