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CHAPTER 4

**BRIDGING THE GAP BETWEEN ORGANIZATIONAL ENGAGEMENT
RESEARCH AND PRACTICE: DEVELOPMENT AND VALIDATION OF
THE ENGAGEMENT-INDEX (ENG-I) IN A SCHOLAR-PRACTITIONER
COLLABORATION**

ABSTRACT

Researchers have proposed different definitions of work engagement, along with a range of different approaches to assess this construct. Furthermore, the organizational practice of measuring employee engagement can diverge greatly from scientific approaches. In the present study, we introduce the Engagement-Index (ENG-I) as an instrument that aims to bridge this science-practice divide. In close collaboration with a German service organization, the ENG-I was developed and validated by means of four samples measured at four points in time, once per year ($n = 1,432$; $n = 31,590$; $n = 30,956$; $n = 29,917$). The results indicated good internal consistency and retest reliability values, as well as a stable and replicable factor structure. The ENG-I showed positive relationships with performance and turnover intentions in terms of its predictive validity. In terms of theoretical and practical contributions, the ENG-I was shown to be a measure that meets scientific and practical requirements, such as validity, reliability, acceptability, and practicality.

Keywords:

HR Measurement issues; Motivation; Scale development/validation; Strategic HR;

Organizational development

INTRODUCTION

Work engagement has gained considerable attention by both practitioners and academics during the past 20 years (Bailey, in press; Guest, 2014a; Peccei, 2013). However, it can be observed that practitioner approaches to engagement have rarely been influenced by academic findings (Guest, 2014b) and that research and practice on engagement tend to develop away from each other (Bailey, in press; Wefald & Downey, 2008). As evidence-based management is more and more advocated (Rousseau, 2012), it would be beneficial if research and practice concerning the topic of engagement would move closer again (Guest, 2014a). Thus, the topic of employee engagement seems to be an example of a gap between research and practice in the field of HRM, which goes in line with previous findings that found that there is a stable research-practice gap in general and for motivation-related HR topics (Beer, Boselie, & Brewster, 2015; Deadrick & Gibson, 2009; Zhang, Levenson, & Crossley, 2015). This paper aims to bridge that gap by following an action research approach (Zhang et al., 2015) in which a new measurement of employee engagement was developed, validated, and applied together with and in the collaborating organization. The measure intends to fit scientific psychometric properties as well as practical requirements by allowing an effective human resource management with regard to the requirement of establishing continuous and dialogue-based follow-up processes after an employee survey. Combining personnel and organizational development for continuous improvement is a crucial aspect from HR practitioner's point of view regarding engagement surveys. The instrument has been applied in a nationwide German network of service organizations since 2013.

In the academic literature there are two main definitions of work engagement. Kahn (1990) was the first author who introduced work engagement as a scientific concept, which he defined in a behavioral way in terms of employees' willingness to fully invest themselves in their work roles. About a decade later, Schaufeli and colleagues (Schaufeli, Salanova,

Gonzalez-Roma, & Bakker, 2002) introduced work engagement as a positive, fulfilling, work-related state of mind, therewith positioning it in a more attitudinal way (Guest, 2014; Peccei, 2013).

Work engagement has been linked to numerous positive outcomes, such as commitment, performance, and reduced turnover intentions (Gutermann, Lehmann-Willenbrock, Boer, Born, & Voelpel, 2017; Halbesleben, 2010; Halbesleben & Wheeler, 2008). Owing to these beneficial effects, employee engagement is often seen as a competitive advantage for organizations (Gruman & Saks, 2011), thus receiving increasing attention from both researchers and practitioners in recent years (Schaufeli & Bakker, 2010).

Despite the general agreement that work engagement is an important construct within organizations, there is no consensus to date on its definition and measurement (Macey & Schneider, 2008). According to Kahn's definition (1990) of engagement as employees' willingness to physically, cognitively, and emotionally invest themselves in their work roles, the Job Engagement Survey describes Kahn's definition best until now (JES; Rich, Lepine, & Crawford, 2010). Schaufeli and colleagues (2002) define engagement as an attitude, with the Utrecht Work Engagement Scale representing their definition best (UWES; Schaufeli et al., 2002). In addition to these two different scientific approaches to defining and measuring work engagement, organizational practice has also worked on capturing employee engagement, often developing practical approaches independently from academe (Bailey, in press). In particular, consultancy firms have developed specific approaches and measurement instruments for assessing work engagement (Bailey, in press; Peccei, 2013, Wefald & Downey, 2009). However, in terms of practical approaches of employee engagement, research and practice drive seriously away from each other, which can be seen as problematic (Bailey, in press; Wefald & Downey, 2008). The Gallup organization defines employee engagement as "individual's involvement and satisfaction with as well as enthusiasm for

work” (Harter, Schmidt, & Hayes, 2002: 269). Yet, with the exception of Gallup’s Q12 employee engagement scale (Harter et al., 2002), most of these practice instruments have not been scientifically developed and evaluated (Bailey, in press; Peccei, 2013; Wefald & Downey, 2009). In sum, there are only a few scientifically validated engagement measures (Byrne, 2015; Byrne, Peters, & Weston, 2016). Since the few existing assessments (scientific and practitioner approaches) have been criticized for either not being practical enough in the work context, or for not being scientifically validated, scholars have proposed taking a step back and focusing on the measurement issues to clarify the diverging understandings of the engagement construct, which was one initial point of the present scholar-practitioner-project as well (Byrne, 2015; Cole, Walter, Bedeian, & O’Boyle, 2012).

By and large, scientific and practical approaches to measuring work engagement have often developed independently of one another. Typical causes for this have been differing logics, interests and incentives between researchers and practitioners, differing communication styles, and differing rigor and relevance (Bartunek & Rynes, 2014). Accordingly, a measurement instrument that combines and integrates practitioners’ needs, that is acceptability and practicality, as well as scientific needs and requirements, that is a psychometrically valid instrument, is yet to be developed (Byrne, 2015). To address this need, the present study introduces the Engagement-Index (ENG-I) as a means of bridging the science-practice divide in the context of measuring employee work engagement. The ENG-I was collaboratively developed between a large German service organization and researchers of the VU Amsterdam and Jacobs University Bremen. By introducing this instrument, we follow Kahn’s (1990) behavioral definition of work engagement, thereby addressing calls for more research into work engagement’s behavioral components (Peccei, 2013). We assess work engagement in the field by combining the scientific principles of psychometrically sound scale development with practitioners’ requirements. Simultaneously, this approach

links the scientifically sound diagnostics of engagement to an effective human resource management practice. Therefore, a structured follow-up process with regard to continuous development of the organization is necessary. We present findings from the collaborative instrument development process and show results of four samples at four measurement points with $n = 1,432$ to $n = 31,590$ employees in a German service organization.

THEORETICAL BACKGROUND

There are two important scientific definitions of work engagement each emphasizing different nuances. Kahn (1990) defined the concept of engagement from a behavioral perspective, describing it as employees' willingness to fully invest themselves in their work roles. A central tenet in Kahn's definition of engagement is the idea that employees can express themselves in their work roles and simultaneously fulfill their job's role requirements (Fletcher, Bailey, & Gilman, 2017; Kahn, 1990). Rich and colleagues summarized Kahn's behavioral approach by describing it as "investing the 'hands, head and heart' in active, full work performance" (Rich et al., 2010, p. 619). The second well-known definition of work engagement stems from Schaufeli and colleagues (2002), who define work engagement as a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption (Schaufeli et al., 2002). An important distinction between the behavioral approach by Kahn (1990) on the one hand and the attitudinal approach by Schaufeli and colleagues (2002) on the other hand concerns the focus of the two definitions and the respective measurements that come along with them. Peccei (2013) summarizes this distinction in terms of two broader categories: Attitudinal (state) work engagement (Schaufeli et al., 2002) and behavioral work engagement (Kahn, 1990). In our study, we follow Kahn's (1990) approach, which means that we emphasize the behavioral components of work engagement. Such an emphasis is important given the social context in which expressions of work engagement

typically occur and are observed by others, such as colleagues and managers (e.g., Breevaart, Bakker, Demerouti, & Van den Heuvel, 2015). Moreover, a focus on behavioral engagement aligns with important behavioral outcomes of work engagement, for example, organizational performance (e.g., Halbesleben, 2010; Harter, Schmidt, & Hayes, 2002).

Another reason for the development of an engagement measure in organizational contexts is that organizations not only conduct engagement surveys to assess employee engagement, but also use the results as a starting point for improvement processes in the organization. By doing so, one goal of practitioners is to improve their organization in terms of a cultural, transformational change by fostering good working relationships and working conditions. HR departments, managers, and executives thus need measures that are not only closely related to performance outcomes, but that can also yield insights to influence the employee-organization relationship positively (Eldor & Vigoda-Gadot, 2016).

The assessment of work engagement

Despite the distinction between behavioral and attitudinal work engagement in the literature (cf. Peccei, 2013), most scientific approaches to measuring engagement have focused exclusively on engagement as a work attitude. One of the most popular and frequently used instruments for research purposes is the Utrecht Work Engagement Scale, UWES (e.g., Schaufeli et al., 2002; Schaufeli, Bakker, & Salanova, 2004). The UWES comprises the following three dimensions: vigor, dedication, and absorption. The first version of the UWES comprised 17 items, which was later reduced to a nine-item version for improved efficiency (Schaufeli, Bakker & Salanova, 2006). However, despite its widespread use in psychological research, some scholars have also pointed out the UWES's shortcomings, particularly regarding the proposed three-dimensional structure (e.g., Shirom, 2003; Sonnentag, 2003).

In comparison to attitudinal engagement, which can be assessed with the well-known, validated UWES, the literature has, to date, less to offer for those researchers or practitioners interested in measuring behavioral rather than attitudinal work engagement. A reason for the paucity of research on behavioral engagement is the lack of a widely accepted measurement of behavioral engagement (Peccei, 2013). Rich, Lepine, and Crawford (2010) introduced an 18-item measure that corresponds to Kahn's (1990) definition by considering the physical, cognitive, and emotional components of work engagement. However, the scale is still in need of some clarification (Peccei, 2013). For example, it is not clear whether the sub-facet of emotional engagement actually represents Kahn's (1990) behavioral definition of engagement (Peccei, 2013).

Besides the emerging scientific interest in work engagement, it is also a construct of interest for many companies and consultancy firms. Accordingly, several instruments have been developed to measure engagement within organizations (Wefald & Downey, 2009). One of these instruments used in business settings is the Gallup Q-12. This measure consists of 12 items. The Gallup Q-12 to our knowledge is the only practitioner instrument that has been evaluated and published in scientific journals (e.g., Harter et al., 2002). However, there is also some criticism of the scale. Specifically, most researchers argue that the Gallup index does not assess employee engagement itself, but its antecedents (e.g., Schaufeli & Bakker, 2010).

Owing to the disagreement about the conceptualization of work engagement, the behavioral approach that follows Kahn's (1990) definition is a promising way of bringing more clarity to its conceptualization (Peccei, 2013; Wefald & Downey, 2009). First, a focus on behavioral rather than attitudinal engagement may help us bridge the gap between practitioner needs and scientific requirements for scale development, since the observable behavior that employees show is often more important than their attitude for organizational

functioning (Harter et al., 2002). Second, there are calls for more research to compare the behavioral and attitudinal engagement constructs (Peccei, 2013). We address these concerns by developing the ENG-I, and establishing its psychometric properties.

Towards a valid engagement measure that bridges the science-practice divide

Consistent with scientific requirements, we define several conditions which should be fulfilled in order to establish the psychometric quality of our new engagement measure, the ENG-I.

First, the ENG-I should show a robust and replicable construct validity (Coolican, 2014) by assessing different factors of engaged behavior, such as active participation in discussions or working on tasks persistently. We aim to check these components of engaged behavior by applying exploratory and confirmatory factor analyses (Coolican, 2014).

Second, an important aspect of construct validity is to check for the convergent validity of a new measure. The convergent validity describes the amount of variance shared by alternative measures of a construct (Coolican, 2014; see also Poropat & Jones, 2009). Since we aim to assess work engagement, we consider the UWES (Schaufeli et al., 2006) an appropriate comparison point for establishing the convergent validity of our new measure. Even though the ENG-I aims to assess behavioral engagement and the UWES assesses attitudinal engagement, the correlation between the two measures may be substantial. Intuitively, employees who have an engagement attitude will indeed show engaged behavior (Ajzen, 1991). Accordingly, we expect the correlation to be quite high, but not perfect.

Third, because reliability is an important requirement for construct validity (Coolican, 2014), we calculate two reliability measures, namely internal consistency and test-retest reliability (Coolican, 2014). The internal consistency, estimated by the alpha coefficient, indicates the extent to which items assess the same construct under the assumption of unidimensionality (Coolican, 2014). The test-retest reliability indicates the degree to which a

scale-result is related to a time-lagged result of the scale in the same sample (Coolican, 2014).

Fourth, the predictive validity of an instrument is a further important validity condition. Given that one of the core characteristic of work engagement is its relationship to performance (e.g., Bakker, 2009; Halbesleben & Wheeler, 2008), we expect the ENG-I to predict performance. Furthermore, we aim to test if the ENG-I is related to turnover intentions, as previous studies showed linkages between work engagement and turnover intentions (e.g., Brunetto, Teo, Shacklock, & Farr-Wharton, 2012; Halbesleben & Wheeler, 2008).

Fifth, as we describe that the ENG-I assesses behavioral work engagement whereas the UWES assesses attitudinal work engagement, we expect that attitudinal engagement (measured by the UWES) predicts behavioral engagement (measured by the ENG-I). Peccei (2013) already describes this idea in a theoretical manner, although empirical evidence to this end has yet to be provided. When considering the link between attitudinal and behavioral engagement in concert with our assumption that the ENG-I can predict performance (i.e., predictive validity, see above), this suggests a mediator model for ENG-I. In other words, we expect that attitudinal engagement (measured by the UWES) relates to performance via behavioral engagement (measured by the ENG-I).

In summary, we describe a series of conditions that should be met in order to support the psychometric quality of the ENG-I. These are as follows:

1. The ENG-I should show a robust construct validity by assessing different factors of engaged behavior, such as communication and willingness to strive.
2. The ENG-I is a reliable measure in terms of having a) a good internal consistency and b) high test-retest reliability at different points in time.

3. The ENG-I shows good convergent validity, which is an important aspect of construct validity, by exhibiting a high correlation with the UWES.
4. The ENG-I shows good predictive validity by predicting important engagement outcomes, such as performance and reduced turnover intentions.
5. The ENG-I forms a behavioral engagement measure, by mediating the relationship between attitudinal engagement (UWES) and performance.

METHODS

Sample and procedure

All data for this study were gathered in a nationwide network of service organizations in Germany. Data for developing and validating the instrument were gathered starting in 2012 within a pretest of the ENG-I in ten comparable organizations within this network (sample 1; $n = 1,432$ employees). This pretest was conducted in order to statistically develop the instrument and test its acceptability and practicality in the organization. After that, the survey was applied annually across the entire nationwide network of organizations, in 2013 (sample 2; $n = 31,590$), in 2014 (sample 3; $n = 30,956$), and in 2015 (sample 4; $n = 29,917$). Samples 2, 3, and 4 were mostly drawn from the same employees, although, due to strong legal privacy regulations we were unable to establish the exact percentage of overlap, or the relationships among variables across these years at the individual level but at the organizational level. Sample 1 was a subset of samples 2, 3, and 4.

The goal of the organizations that participated in the survey was to make work engagement a core value of their personnel and organizational development. They wanted to promote good working relationships and favorable working conditions, and to strengthen leadership and collaboration. Accordingly, they aimed to implement a scientifically

developed annual engagement assessment. The organization in our sample provide labor market services for the promotion of employment opportunities, the placement of potential candidates for job interview procedures, and services regarding unemployment benefits. A central department responsible for distributing employee surveys within the organization sent the surveys by email once per year at all four measurement points. Participation was voluntary, and the participants were informed that all the data would remain anonymous. The workers' council approved the study.

In sample 1, 68.2% of the employees were female, 25.3% worked part-time, and 13.5% held an executive function. The majority of the participants were older than 40 years (70%). In sample 2, 64.9% were female, 24.5% worked part-time, and 10.8% held an executive function. The majority of the participants were older than 44 years (51.4%). In sample 3, 65.7% were female, 24.5% worked part-time, and 10.8% held an executive function. The majority of the participants were older than 44 years (56%). In sample 4, 66.1% were female, 26.1% worked part-time, and 10.8% held an executive function. The majority of the participants were older than 44 years (55.2%). These values correspond to the representation of the mentioned groups in the whole organization.

Instrument development

With regard to the goal to implement a scientifically developed annual engagement assessment the development process was established as a collaborative research project between the participating Universities in Bremen and Amsterdam (VU) and the central HRM department of the German service organization. To support the project, to implement the survey in the organization, and to ensure continuous transfer of knowledge in both directions, a doctoral student of the University worked in the organization for two years.

In order to develop an empirically funded model of behavioral work engagement, an interdisciplinary focus group was formed (about 12 persons) comprised of researchers,

management staff, HR survey experts in the organization, employees, and work council representatives. This focus group first identified 90 items as indicators of engagement behavior in their organizational context. In line with Kahn's (1990) definition, the item development process was focused on specifying observable engagement behaviors of employees in an organization, such as showing active participation in discussions or working on tasks persistently and in a goal-oriented manner. The focus group discussed and selected items if their peers and colleagues did indeed experience their content as engaged behavior in the work context.

After an initial item selection, group discussions were held with employees at the company headquarter, during which the item pool was reduced to 31 items. In the first pretest online survey, we used the 31 ENG-I items, as well as other relevant scales, such as performance and turnover intentions, to test the instrument's validity. Moreover, along with the pretest, we simultaneously administered the UWES (Schaufeli, Bakker, & Salanova, 2006; translated version taken from Hering, 2008) to establish the ENG-I's convergent validity. After the pretest, we conducted individual interviews with the executives of all ten participating organizations in order to verify the practical feasibility and acceptance of the survey.

Measures

Work engagement was measured with 31 ENG-I items, such as "I use my competencies in order to perform my job well" and "I actively participate in meetings." The response format was a six-point Likert scale ranging from 1 (very often) to 6 (never).

Second, we also used the nine-item version of the UWES (Schaufeli, Bakker, & Salanova, 2006; translated version taken from Hering, 2008; overall $\alpha = .92$). The scale comprises three sub-facets of work engagement (vigor, dedication, absorption) with three

items each. A sample item was, “At my work, I feel bursting with energy”. The response format was a six-point Likert scale ranging from 1 (very often) to 6 (never).

Performance was assessed by asking participants to indicate the result of their annual performance assessment they received from their supervisor. Due to confidentiality agreements with the workers’ council, we could not obtain the official performance records. Instead, we asked the participants to report their annual performance appraisal. Lending support to this approach, previous research has shown that there is substantial convergence between employees' self-reports of their performance appraisal and official performance appraisal records in organizations ($r = .86$; Levy & Williams, 1998). The assessments are graded from A to E. In order to link the performance ratings to other survey scales, we converted the performance assessment letters into numbers from 1 (best performance) to 5 (worst performance) respectively.

Turnover intentions were assessed using a single item adapted from Spector, Dwyer, and Jex (1988): “During the last six months, how often did you think about quitting your job?” We applied a six-point Likert scale ranging from 1 (very often) to 6 (never). The item was translated into German by two translators following a translation-back-translation procedure (Brislin, 1970).

Control variables. We controlled for gender (0 = male, 1 = female), age, leadership role (0 = leadership role, 1 = no leadership role), and full- or part-time employment (0 = part-time, 1 = full-time) in all analyses. Owing to data confidentiality agreements with the workers’ council, we could not measure the exact individual age, but rather assessed age in four clusters: 1 (under 30 years), 2 (30-39 years), 3 (40-49 years), and 4 (over 50 years) in sample 1, and 9 clusters in 5-year steps in samples 2-4.

Data analysis

Applying exploratory factor analysis, a possible factor structure was extracted. Those items were selected that showed high factor loadings and, simultaneously, an unequivocal structure. Additional criteria for the selection of items were derived from item analysis concerning item difficulty, precision, and internal consistency. In order to secure the external construct validity, we applied regression analyses with relevant external variables, simultaneously with the UWES and the ENG-I in sample 1. In addition, we tested the construct validity further by using confirmatory factor analyses (CFA) in Mplus 6.0 in samples 2-4. Finally, we ensured the retest-reliability at the organizational level in samples 2-4.

RESULTS

The means, standard deviations, and intercorrelations of all the study variables of the pretest (sample 1) and the final ENG-I scale are presented in Table 4.1.

Table 4.1

Means, Standard Deviations, and Zero-order Correlations of the Study Variables (sample 1)

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Work engagement (ENG-I)	2.24	.66																
2. Identification (ENG-I)	2.78	1.01	.85**															
3. Willingness to strive (ENG-I)	1.51	.54	.75**	.48**														
4. Workability (ENG-I)	2.25	.94	.67**	.45**	.43**													
5. Individual fulfillment (ENG-I)	2.50	.99	.82**	.66**	.50**	.45**												
6. Proactive Communication (ENG-I)	2.27	.84	.76**	.47**	.60**	.35**	.54**											
7. Work engagement (UWES)	2.51	.92	.79**	.67**	.54**	.50**	.77**	.54**										
8. Vigor (UWES)	2.48	.98	.75**	.62**	.50**	.54**	.72**	.48**	.91**									
9. Dedication (UWES)	2.52	1.08	.74**	.63**	.48**	.45**	.75**	.52**	.92**	.77**								
10. Absorption (UWES)	2.53	1.01	.63**	.54**	.46**	.35**	.59**	.44**	.87**	.67**	.68**							
11. Performance	2.73	.57	.23**	.14**	.20**	.09**	.24**	.24**	.19**	.20**	.19**	.14**						
12. Turnover intention	5.30	1.28	-.43**	-.46**	-.24**	-.28**	-.45**	-.17**	-.42**	-.42**	-.41**	-.30**	-.14**					
13. Gender	.68	.47	-.09**	-.09**	-.11**	-.08**	-.04	-.01	-.08**	-.06*	-.03	-.13**	.03	.07**				
14. Age	2.98	1.02	-.04	.01	.01	.01	-.17**	-.02	-.17**	-.16**	-.16**	-.14**	-.03	.14**	-.08**			
15. Leadership function	.86	.34	.07*	.04	.02	-.10**	.08**	.22**	.05	.04	.05	.04	.12**	-.03	.21**	-.10**		
16. Full- or part-time employment	.75	.44	.03	-.04	-.01	.03	.03	-.08**	.03	.06*	-.01	.04	-.04	-.06*	-.32**	-.09**	-.15**	

Note. $n = 1,432$; * $p < .05$; ** $p < .01$. Age was coded as follows: 1 (under 30 years), 2 (30-39 years), 3 (40-49 years), and 4 (over 50 years); gender was coded as 0 = male, 1 = female; leadership function was coded as 0 = yes, 1 = no; and full/part-time employment was coded as 0 = part-time, 1 = full-time.

Construct Validity

In order to establish the construct validity and to obtain a first impression of the developed items' factor structure, we conducted exploratory factor analyses using a varimax rotation including factors with eigenvalues equal or higher than 1 by means of SPSS. The results indicated a five-factor structure, explaining 67% of the total score variance. We selected those items of the original 31 that showed high factor loadings and, simultaneously, had an unequivocal structure (see Table 4.2). Furthermore, we checked the item difficulty, precision, and internal consistencies. Of the original 31 items, we chose 19 items that met these criteria best (see Table 2 for the final items). The five resulting factors can be described as follows:

Willingness to strive means the contribution to individual and team tasks and the support of colleagues. A sample item is, "I work on my tasks in a persistent and goal-oriented manner". The sub-facet is assessed with five items.

Proactive Communication means that employees interact actively with colleagues and managers, share and pass on knowledge, and actively involve themselves in discussions. A sample item is "I actively participate in meetings". The sub-facet is assessed with four items.

Identification means that employees act according to the organization's mission, support changes, and enjoy working for their employer. A sample item is "I align my daily work according to the goals of my organization". The sub-facet is assessed with four items.

Individual fulfillment means that employees highly merge with their work role, can realize their expectations, are able to use their professional strengths, and can express themselves in their work roles. A sample item is "In my current job, I can adequately contribute my expectations and ideas". The sub-facet is assessed with four items.

Work ability means to be able to cope with the job requirements and fulfill necessary tasks in the long term. A sample item was, “I actively contribute to the compatibility of my work and private obligations”. The sub-facet is assessed with three items.

Table 4.2

Results of exploratory factor analysis (ENG-I; sample 1)

	1	2	3	4	5
Item					
1. I work on my tasks in a persistent and goal-oriented manner.	.76	.11	.15	.25	.13
2. I have a strong drive to achieve high quality work results.	.75	.23	.24	.09	.17
3. My colleagues can rely on my support even under difficult circumstances.	.67	.27	.16	.08	.06
4. I am willing to give my best for the achievement of team goals.	.62	.23	.58	.11	.07
5. I use my competencies in order to perform my job well.	.64	.22	.07	.32	.27
6. I actively participate in meetings.	.24	.77	.10	.03	.07
7. In everyday work life I actively contribute in order to excite my colleagues for ideas.	.14	.76	.18	.15	.27
8. I actively contribute to successful information exchange within the team.	.27	.75	.10	.15	.08
9. I encourage colleagues to do their utmost to support team goals.	.18	.72	.33	.09	.24
10. I identify with the mission of my organization.	.07	.17	.73	.12	.36
11. I support changes in my organization as much as possible.	.27	.19	.69	.14	.09
12. I align my daily work with the goals of my organization.	.37	.23	.65	.14	.10
13. If I had the choice once more today, I would again choose my organization as an employer.	.01	.08	.64	.24	.42
14. Overall, I can manage my workload (amount and quality) well.	.11	.09	.20	.83	.08
15. I am convinced that I can handle my job requirements in the long run.	.18	.14	.18	.80	.12
16. I actively contribute to the compatibility of my work and private obligations.	.21	.08	.06	.68	.17
17. At work I have the possibility to do what I can do best.	.25	.15	.15	.19	.76
18. In my current job, I can adequately contribute my expectations and ideas.	.08	.18	.33	.34	.67

19. My work is more than just a job for me.	.21	.29	.27	.01	.67
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Note. Sample 1 ($n = 1,432$); Factor 1: Willingness to strive; factor 2: proactive communication; factor 3: identification; factor 4: workability; factor 5: individual fulfillment

In line with our earlier exploratory factor analysis of sample 1, a confirmatory factor analysis was first conducted in sample 2. The results showed that the second-order five factor structure of the ENG-I provided the best fit to the data ($\chi^2 = 27021.49$, $df = 147$, $\chi^2/df = 183.82$, RMSEA = .08, CFI = .91, TLI = .90, SRMR = .06; see Table 4.3; due to the large sample size, χ^2 is not interpretable, see Raykov, 2012). We replicated these analyses in samples 3 and 4. The second-order five-factor structure provided a good fit for both additional samples (sample 3: $\chi^2 = 27109.19$, $df = 147$, $\chi^2/df = 184.42$, RMSEA = .08, CFI = .93, TLI = .92, SRMR = .06; sample 4: $\chi^2 = 27755.26$, $df = 147$, $\chi^2/df = 188.81$, RMSEA = .08, CFI = .93, TLI = .91, SRMR = .07). Taken together, these findings satisfy condition 1 regarding the ENG-I's construct validity.

Table 4.3

Results of the confirmatory factor analysis

	χ^2	df	χ^2/df	RMSEA	SRMR	CFI	TLI
1-factor model (sample 2)	310323.07	171	1814.75	.24	.35	.00	.00
2-factor model (sample 2)	95535.17	151	632.68	.14	.09	.69	.65
3-factor model (sample 2)	82457.63	149	553.41	.13	.09	.74	.70
4-factor model (sample 2)	51073.57	146	349.82	.11	.07	.84	.81
5-factor second order model (sample 2)	27021.49	147	183.82	.08	.06	.91	.90
5-factor second order model (sample 3)	27109.19	147	184.42	.08	.06	.93	.92
5-factor second order model (sample 4)	27755.26	147	188.81	.08	.07	.93	.91

Note. Sample 2-4 at the individual level (sample 2: $n = 31,590$; sample 3: $n = 30,956$; sample 4: $n = 29,917$)

Reliability

In order to ensure the reliability (prediction 3), we calculated the internal consistency and the test-retest reliability. First, in terms of the internal consistency, the ENG-I showed good values for the full scale ($\alpha = .91$), as well as for its five sub-facets: willingness to strive ($\alpha = .84$), communication ($\alpha = .84$), identification ($\alpha = .79$), individual fulfillment ($\alpha = .77$), and workability ($\alpha = .77$).

Second, owing to the participating organizations aiming to assess organization-wide work engagement, we could calculate the test-retest reliability at the organizational level. We ran the analyses of samples 2-4 at three measurement points (with one year in between each measurement). The ENG-I total score, as well as its sub-facets, showed high correlations between samples 2 and 3 (r 's ranging from $r = .61$ to $r = .79$), between samples 3 and 4 (r 's ranging from $r = .60$ to $r = .81$), and slightly lower, but still significant, correlations between samples 2 and 4 (r 's ranging from $r = .53$ to $r = .66$). All the values were significant at a level of $p < .01$ (see Table 4.4). In sum, these findings support condition 2 regarding the reliability of the ENG-I.

Table 4.4

Test-retest reliabilities of the ENG-I at the organizational level

ENG-I sample 2	Samples 2 and 3	Samples 2 and 4	Samples 3 and 4
ENG-I	.76**	.66**	.75**
Willingness to strive	.61**	.53**	.62**
Proactive Communication	.70**	.57**	.60**
Identification	.79**	.72**	.81**
Individual fulfillment	.74**	.64**	.75**
Workability	.72**	.63**	.77**

Notes. Test-retest reliabilities established for samples 2-4 at the organizational level, respectively (total $N = 156$ organizations).

Convergent validity

As presented in Table 4.1, the ENG-I showed a high correlation with the UWES total score ($r = .79, p < .01$). Since our aim was to assess work engagement, we considered the UWES (Schaufeli et al., 2006) to be an important comparison point for establishing the convergent validity of the ENG-I. However, the ENG-I aims to assess behavioral engagement in organizations, whereas the UWES assesses attitudinal engagement, which may be a predictor of engaged behavior. Accordingly, it is likely that the correlation is high but not perfect. Taken together, these findings satisfy condition 3 regarding the convergent validity of the ENG-I.

Predictive validity

We conducted regression analyses in order to establish the predictive validity of the ENG-I (sample 1). The respective results of these analyses are shown in Table 4.5. When controlling for gender, age, leadership function, and full-/part-time employment, we found that the ENG-I was positively related to performance ($\beta = .23, p < .01$) and turnover intention ($\beta = -.42, p < .01$). These findings support condition 4 regarding the predictive validity of the ENG-I.

Table 4.5

Results of regression analysis of the ENG-I (sample 1)

Predictor	Performance (<i>n</i> = 1,036) β	Turnover intention (<i>n</i> = 1,179) β
Gender	.02	.03
Age	.01	.11**
Leadership function	.09**	-.004
Full- or part-time employment	-.01	-.05
ENG-I	.23**	-.42**
R ²	.07	.20
R ² _{adj}	.06	.20
F	15.02**	58.66**
Df	5	5

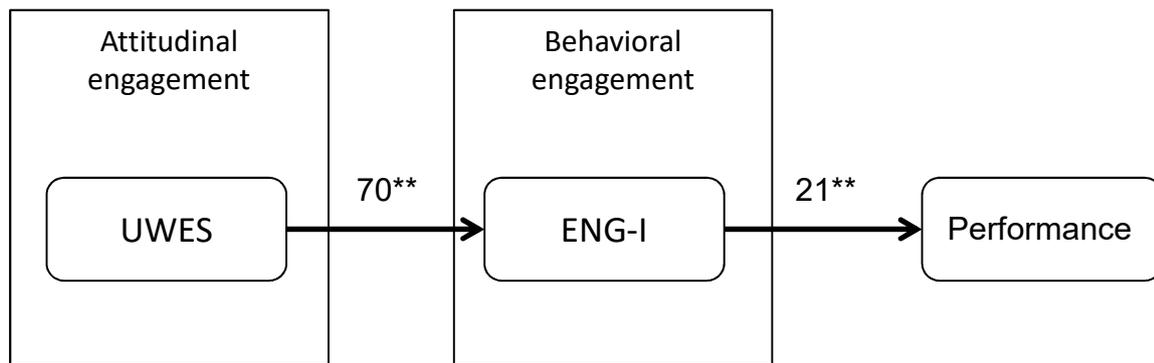
Note. Sample 1 (*n* = 1,432); * $p < .05$; ** $p < .01$

Gender was coded as 0 = male, 1 = female; leadership function was coded as 0 = yes, 1 = no; and full/part-time employment was coded as 0 = part-time, 1 = full-time.

Mediation model on attitudinal and behavioral engagement

In order to examine how attitudinal engagement and behavioral engagement work in concert in order to predict performance, we calculated a mediation path model for sample 1 at the individual level, with attitudinal engagement (UWES) the predictor, behavioral engagement (ENG-I) the mediator, and performance the outcome variable (see Figure 4.1).

The model showed a good fit to the data ($\chi^2/df = 3.85$; RMSEA = .05; CFI = 1.00; TLI = .99; SRMR = .01). Furthermore, we found that attitudinal engagement (UWES) was positively related to behavioral engagement (ENG-I; $\beta = .70, p < .01$), which in turn positively predicted performance ($\beta = .21, p < .01$). Additionally, by applying bootstrapping analysis (CI = .07, .12; 95% confidence interval), we found that attitudinal engagement had a significant indirect effect on performance via behavioral engagement. As such, this finding satisfies condition 5.



$\chi^2/df = 3.85$; RMSEA = .05; CFI = 1.00; TLI = .99; SRMR = .01; 95% CI = .07, .12

Figure 4.1. Path model of attitudinal work engagement's effect on behavioral engagement and performance.

Note. **p < .01

DISCUSSION

This study developed and validated a new instrument, the ENG-I, for measuring behavioral work engagement in practice. The results show that the ENG-I is a valid measure for assessing work engagement within organizations and to provide a valid starting point for HR and organizational development. Across four samples, the ENG-I exhibited good psychometric properties and met the specified conditions for a reliable and valid organizational engagement measure.

Findings

First, by applying a combination of exploratory factor analysis in our pre-test and confirmatory factor analyses in additional samples, we showed that the five-factor, second-order solution is stable and can be replicated in three samples. By calculating alternative models, we showed that the five-factor solution consistently provided the best fit to the data. As such, we established the construct validity of the ENG-I across four organizational samples.

Second, ENG-I showed high internal consistency and good test-retest reliabilities (organizational level) across three measurement points. The time lag of one year in between each set of measurement points seems to be an appropriate gap, as it prevents biases due to learning and recall. Our observation that the correlations between samples 2 and 4 were smaller than those between samples 2 and 3 and samples 3 and 4, respectively, aligns with the fact that test-retest values decrease according to the time that lies between two measurement points (Coolican, 2014).

Third, the ENG-I was highly correlated with the UWES. This finding indicates convergent validity of the ENG-I, and shows that attitudinal and behavioral work engagement

can be closely related. Fourth, the ENG-I showed good predictive validity in terms of affecting performance and turnover intentions.

Finally, a path model revealed a mediator effect, such that attitudinal engagement (UWES) predicted behavioral engagement (ENG-I), which was in turn related to performance. In other words, behavioral engagement mediated the effects of attitudinal engagement on performance. Simultaneously it shows the relationship between attitudinal engagement and behavioral engagement, which reflects the high correlation between the UWES and the ENG-I.

Theoretical implications

This study addressed previous calls to capture work engagement in a way that fulfills practical as well as scientific requirements (Vance, 2006; Wefald & Downey, 2009).

Moreover, our study addressed calls to investigate attitudinal and behavioral engagement (Macey & Schneider, 2008; Peccei, 2013, Wefald & Downey, 2009) and their relationship. Our findings extend research on work engagement as a meaningful construct in three key ways:

First, our study addresses the definition and assessment of work engagement by focusing on behavioral expressions of engagement (Macey & Schneider, 2008; Peccei, 2013; Wefald & Downey, 2009). Our choice to focus on behavioral rather than attitudinal components of engagement aligns with the idea that behavior is more observable than attitudes and may therefore be more strongly related to important organizational outcomes such as performance (Cascio, 2007; Wefald & Downey, 2009). For instance, the ENG-I includes items such as “I actively participate in meetings,” and “I work on my tasks in a persistent and goal-oriented manner”. These items align with the notion of behavioral engagement as described by Kahn (1990). Kahn (1990) describes that engaged employees

can fully express themselves in their work roles. The ENG-I addresses this point with the sub-facet ‘individual fulfillment.’

Second, by evaluating the predictive validity of the ENG-I we found that the ENG-I was positively related to performance and negatively related to turnover intentions. Given the importance of performance outcomes for organizations, our finding is not only theoretically but as well practically meaningful (Gruman & Saks, 2011) because many organizations aim to implement regular engagement measures in order to start continuous, dialog-based, follow-up improvement processes and thereby increase performance (Vance, 2006; OECD, 2016).

Third, the ENG-I is an instrument that bridges the gap between science and practice by meeting both organizational and research-based requirements for engagement measures: Organizations typically aim to implement measures that are accepted by the employees and that yield applicable results. However, these needs have not always been met by scientific measures developed to date (Bailey, in press). Several authors (e.g., Bailey, in press; Guest, 2014a; Wefald & Downey, 2009) have pointed out that engagement research and practice have drifted apart. As Wefald and Downey (2009) point out, a lack of consensus on the conceptualization of engagement in research and practice carries the risk of increasing diversity in the measurement and understanding of this construct, which would deepen the gap between research and practice. In a qualitative study, Bailey (in press) interviewed practitioners in the UK who considered it important that practitioners know academic research on work engagement in order to foster an evidence-based engagement approach (Rousseau, 2012). This finding is in line with the finding of a research-practice-gap regarding motivational topics in HRM (Deadrick & Gibson, 2009). With the aim to bridge this research-practice divide, the ENG-I was developed out of an organizational need and by integrating the views and opinions of both practitioners and researchers, while simultaneously

establishing good psychometric properties. The specific perspectives of practitioners and academics could thus be integrated (Bartunek & Rynes, 2014).

Practical implications

The psychometric qualities of the ENG-I as established in the present study have implications for organizations that aim to foster an engaged workforce. Developed in an interdisciplinary collaboration between practitioners and researchers, the ENG-I is a scientifically validated instrument that meets practical requirements. The practical experiences with the ENG-I in the organizational context are good to date. In the meantime, the instrument has been applied in a nationwide network of service organizations for four years. Moreover, the instrument has been included in best practice documentations of the OECD (2016) as well as of the EU commission (2016).

The ENG-I can be applied in a fixed rhythm (e.g., annually) and therewith may identify strengths and weaknesses in organizations and organizational units. In doing so, a continuous process to review and a sound follow-up process to improve employee engagement in that organization can be established. The organizational follow-up process can, for example, comprise workshops in which employees and their supervisors discuss the ENG-I results, identify possibilities for improving their working conditions and working relationships, and commit themselves to an action plan that helps foster a positive engagement climate. By doing so, it becomes possible to analyze engagement improvements, which may follow organizational actions aimed at fostering employee engagement. In the organization that implemented the ENG-I, the results of the corresponding employees have also become part of executives' performance appraisals. Results at the level of the organization as a whole and of diverse groups (like older or younger employees, male or female employees) can be used to implement differentiated HR policies in an evidence-based way (e.g. regarding reconciliation of work and family).

The collaborating organization conducted a follow-up process as follows. As the organization comprises 156 sub-organizations, each of these units analyzed the results and conducted workshops in which employees and supervisors worked out improvements that foster good work environments and work relationships. The improvements that have been worked out, can be roughly clustered in four categories. These are: Work organization, leadership, team, and appreciation. Specific improvements are for example the optimization of collaboration between different departments, an increased presence of the management, teambuilding activities, and the fostering of a culture of appreciation.

Finally, it would be a possibility to study a “business case for engagement” by analyzing the working conditions of top scoring organizations and the relative changes in the distribution of engagement results in organizational units. Such information can expand knowledge about possible levers or predictors of engagement within organizations and provide an intra-organizational benchmark.

Limitations and future research directions

As in any empirical study, several limitations need to be acknowledged, which indicate opportunities for future research. First, all of the data in the present study were obtained from questionnaires and relied on employees’ self-reports, which may induce common-method bias. Accordingly, it is difficult to investigate causal influences in these data. However, we also asked the employees to indicate their formal annual performance assessment, which was based on external ratings. Levy and Williams (1998) were able to show that there is considerable convergence between official performance appraisal records within organizations and employees’ self-reports of these records ($r = .86$). Future research could address this issue by applying multi-data sources and time-lagged designs in order to explore a framework of more antecedents and consequences of behavioral-based employee engagement and address causality issues.

Second, in order to assess real behavior in the field, behavioral observations by experts are needed. However, it is hard to implement such observations in field studies with the sample sizes we investigated and to obtain realistic and generalizable findings. We aimed to address this issue by forming an interdisciplinary focus group to develop and discuss items for behavioral engagement in the work context.

Third, all our organizational samples comprised white collar workers in German service organizations. This may limit the generalizability of our findings in terms of the culture and kind of industry. Our study's aim was to develop and validate a German version of the ENG-I that can be used across a range of different organizations. Future research could develop the ENG-I for other languages, organizations, and cultural settings.

The ENG-I is an instrument for measuring behavioral engagement in the work context that aims to initiate a process for the fostering work engagement in practice. As research and practice diverge in this respect (Wefald & Downey, 2009), the ENG-I provides an assessment that covers scientific and practical requirements. Since employee engagement surveys within organizations aim to foster an engaged workforce, it would be an important research question under which conditions changes and improvements in engagement occur.

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