

20 to 18 - Final Scale Definitions of the Bifactor Engagement Scale

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## Abstract

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11 We finalize the scale definitions for a bifactor engagement measure that is comprised of  
12 intentionally complex items.

13 *Keywords:* keywords

14 Word count: X

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The roots of employee [aka work; e.g., W. Schaufeli and Bakker (2010)] engagement research likely started with theoretical expansions of forms of employee participation (see, for example, Ferris & Hellier, 1984) and job involvement (e.g., Elloy, Everett, & Flynn, 1991). This exploration extended into broader considerations of attitudes and emotions (Staw, Sutton, & Pelled, 1994) and were informed by further exploration of the dimensionality of constructs such as organizational commitment (Meyer & Allen, 1991). The 1990's saw focused development and refinement [for example, a dissertation; Leone (1995) or actual semantic reference; William A. Kahn (1990a)]. Staw et al. (1994) investigated the relationships between *positive emotions* and favorable work outcomes, and although they do not use the word, "engagement", their distinction between felt and expressed emotion likely held influence upon the burgeoning interest in the engagement construct.

Clear in this history is the specification of engagement as a work *attitude*.

Although occasionally referred to as residing on the opposing pole to *burnout* (Christina Maslach & Leiter, 2008), these two constructs are currently most commonly conceptualized as being distinct (Goering, Shimazu, Zhou, Wada, & Sakai, 2017; Kim, Shin, & Swanger, 2009; Wilmar B. Schaufeli, Taris, & Van Rhenen, 2008; Timms, Brough, & Graham, 2012), although certainly not universally (Cole, Walter, Bedeian, & O'Boyle, 2012; Taris, Ybema, & Beek, 2017). Comparing the two, Goering et al. (2017) concluded that they have a moderate (negative) association, but also distinct nomological networks. Wilmar B. Schaufeli et al. (2008) investigated both internal and external association indicators, concluding that engagement and burnout (as well as *workaholism*) should be considered three distinct constructs.

Burnout can be defined as a psychological syndrome characterized by exhaustion (low energy), cynicism (low involvement), and inefficacy (low self-efficacy), which is experienced

in response to chronic job stressors (e.g., Leiter & Maslach, 2004; C. Maslach & Leiter, 1997). Alternatively, engagement refers to an individual worker's involvement and satisfaction as well as enthusiasm for work (Harter, Schmidt, & Hayes, 2002). W. B. Schaufeli and Bakker (2003) further specify a "positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (p. 74). Via their conceptualization, vigor is described as high levels of energy and mental resilience while working. Dedication refers to being strongly involved in one's work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work (Wilmar B. Schaufeli, Salanova, González-Romá, & Bakker, 2002). The dimension of absorption has been noted as being influenced in conceptual specification by (Csikszentmihalyi, 1990)'s concept of "flow".

Regarding measurement, Gallup is widely acknowledged as an early pioneer in the measurement of the construct (see, for example, Coffman & Harter, 1999). The Utrecht Work Engagement Scale (UWES) is another self-report questionnaire developed by W. B. Schaufeli and Bakker (2003) that directly assesses the vigor, dedication, and absorption elements.

## Attitudes

### TRIPARTITE MODEL—work here

The first, to our knowledge, use of the word "engagement" as a construct came in William A. Kahn (1990b), defining it as: "the harnessing of organization members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances." Although this definition was quickly bypassed by subsequent papers (see, for example, (Baumruk, 2004) and (Shaw,

2005), who framed it in terms of one’s cognitive and affective *commitment* to one’s organization), William A. Kahn (1990b)’s definition is notable in that it conforms to the then-ascendant tripartite model of attitudes proposed by Rosenberg (1960). This model frames attitudes as latent variables that manifest cognitively, affectively and behaviorally.

Although falling out of favor in the decades following its construction, interest in the tripartite model was revived by Kaiser and Wilson (2019),

The present article explores two methods for constructing a scale that incorporates both the substantive and attitudinal models into one, a more classical one based on corrected item-total correlations and one based on modification indices.

Existing measures include Soane et al. (2012)

Our conceptualization of work engagement is a mental state wherein employees: a) feel energized (*Vigor*), b) are enthusiastic about the content of their work and the things they do (*Dedication*), and c) are so immersed in their work activities that time seems compressed (*Absorption*). We further decompose each of these facets into three attitudinal components: d) feeling (e.g., affect), e) thought (e.g., cognition), and f) action (e.g., behavior). Development and construct validation of the focal 18-item measure of engagement is described in Russell, Ossorio Duffoo, Garcia Prieto Palacios Roji, and Kulas (2022) whereas the current study on administrative response cues in the form of order of item presentation. The expectation is that either model (attitudinal or substantive) will exhibit stronger factorial validity when item administration parallels latent structure.

Our contributions:

## 1. Methodological

- Intentional bi-factor structure

## 2. Practical

- A new public domain measure of engagement
- Scalable to two aggregations (research [DAC] and actionable [ABC])

### 3. Theoretical

- Possibly help explain some of the high inter-scale correlations reported with other measures

## Methods

### Participants

Of the 743 total Qualtrics panel respondents, 366 were excluded based on conservative indices of carelessness across the larger survey (consistent non-differentiating responses across more than 20 consecutive items or greater than 50% missing responses). For Prolific panel respondents, 568 were retained of 785 total participants due to the same exclusion criteria. The smaller ( $n = 232$ ) snowball sample retained all participants for a total combined analysis sample of 1177.

### Material

### Procedure

A previous instrument administration reduced 36 candidate items to 20. Primarily for reason of equal balance, we wanted to ultimately land on 18 items (6 per attitudinal/substantive scale dimension, 2 per bifactor subscale). Two primary considerations were given to the decision to retain or delete the 6 deletion candidates: 1) is the content of the item necessary for the definitional content domain, and 2) does the empirical functioning of the item implicate possible revision/deletion. The items considered deletion candidates were from the Absorption-Cognition subscale (Item 1: *I am able to*

concentrate on my work without getting distracted, Item 3: *Time passes quickly while I'm working*, and Item 4: *I find it difficult to mentally disconnect from work*) and the Dedication-Cognition subscale (Item 25: *I plan to stay with this company as my career advances*, Item 26: *I believe this company cares about my career goals*, and Item 28: *This organization challenges me to work at my full potential*).

## Data analysis

We used R (Version 4.2.1; R Core Team, 2022) and the R-packages *careless* (Version 1.2.1; Yentes & Wilhelm, 2021), *descr* (Version 1.1.5; Dirk Enzmann, Schwartz, Jain, & Kraft, 2021), *lavaan* (Version 0.6.12; Rosseel, 2012), *papaja* (Version 0.1.1; Aust & Barth, 2022), and *tinylabels* (Version 0.2.3; Barth, 2022) for all our analyses.

Looking first at the Absorption-Cognition candidate items, Item 4 stood out as a candidate for exclusion based on empirical indices (corrected item-total correlations, inter-item correlations, and bifactor analysis fit [ $\chi^2_{with} = 676.51$ ,  $\chi^2_{without} = 499.05$ ]). Conceptually we also agreed that Item 4 was not uniquely critical for comprehensive coverage across either the Cognition or Absorption constructs. Figure 1 presents the visual CFA.

## Results

The final recommended scale definitions are located in Table 1.

## Discussion

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217 *responding*.

Table 1

*Suggested final scale definitions.*

Substantive	Attitudinal	Item.Number	Item.Stem
Absorption	Cognitive	1	I am able to concentrate on my work without getting distracted
Absorption	Cognitive	3	Time passes quickly while I'm working
Absorption	Affective	5	I enjoy thinking about work even when I'm not at work
Absorption	Affective	8	I love starting my workday
Absorption	Behavioral	10	I have to be reminded to take breaks while I'm at work
Absorption	Behavioral	11	I never miss a work deadline
Vigor	Cognitive	14	Thinking about work saps my energy
Vigor	Cognitive	16	I'm able to maintain good levels of energy throughout the workday
Vigor	Affective	17	I enjoy spending time completing my job tasks
Vigor	Affective	19	I feel motivated to go beyond what is asked of me at work
Vigor	Behavioral	21	When work is slow I find ways to be productive
Vigor	Behavioral	22	I express enthusiasm for my job while at work
Dedication	Cognitive	25	I plan to stay with this company as my career advances
Dedication	Cognitive	26	I believe this company cares about my career goals
Dedication	Cognitive	28	This organization challenges me to work at my full potential
Dedication	Affective	31	I feel proud of my accomplishments within this organization

Table 1 continued

Substantive	Attitudinal	Item.Number	Item.Stem
Dedication	Affective	32	My job makes me feel like I'm part of something meaningful
Dedication	Behavioral	34	I embrace challenging situations at work
Dedication	Behavioral	35	I speak positively about this organization to others

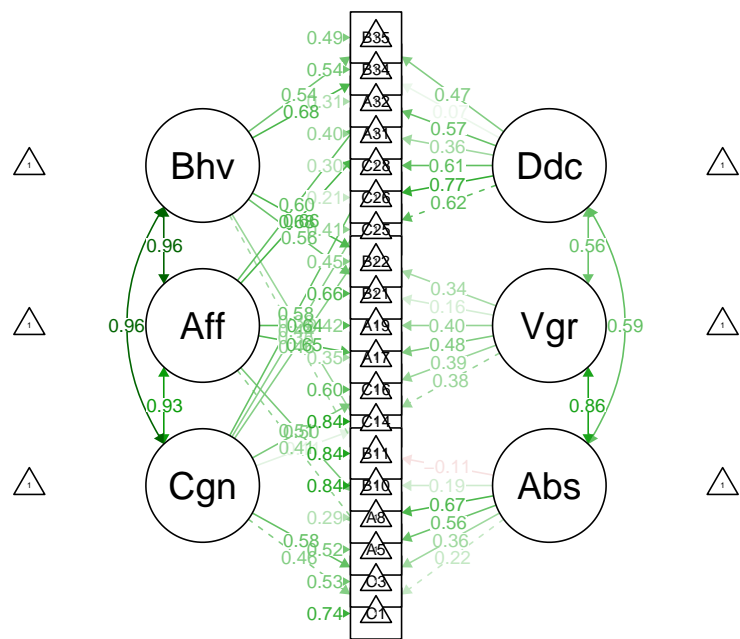


Figure 1. Bifactor analysis minus Item 4.