1   20 to 18 - Final Scale Definitions of the Bifactor Engagement Scale

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Abstract

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

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20   **Methods**

21   **Participants**

22   Of the 743 total Qualtrics panel respondents, 366 were excluded based on

23   conservative indices of carelessness across the larger survey (consistent non-differentiating

24   responses across more than 20 consecutive items or greater than 50% missing responses.

25   For Prolific panel respondents, 568 were retained of 785 total participants due to the same

26   exclusion criteria. The smaller ($n = 232$) snowball sample retained all participants for a

27   total combined analysis sample of 1177.

28   **Material**

29   **Procedure**

30   A previous instrument administration reduced 36 candidate items to 20. Primarily

31   for reason of equal balance, we wanted to ultimately land on 18 items (6 per

32   attitudinal/substantive scale dimension, 2 per bifactor subscale). Two primary

33   considerations were given to the decision to retain or delete the 6 deletion candidates: 1) is

34   the content of the item necessary for the definitional content domain, and 2) does the

35   empirical functioning of the item implicate possible revision/deletion. The items considered

36   deletion candidates were from the Absorption-Cognition subscale (Item 1: *I am able to*

37   *concentrate on my work without getting distracted*, Item 3: *Time passes quickly while I'm*

38   *working*, and Item 4: *I find it difficult to mentally disconnect from work*) and the

39   Dedication-Cognition subscale (Item 25: *I plan to stay with this company as my career*

40   *advances*, Item 26: *I believe this company cares about my career goals*, and Item 28: *This*

41   *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

References

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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 feek 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

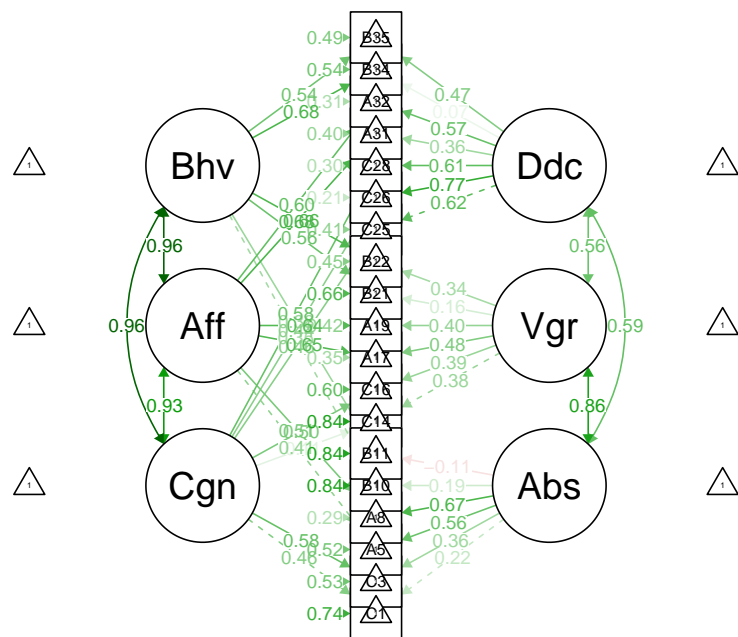| Substantive	Attitudinal	Item.Number	Item.Stem
Dedication	Affective	32	My job makes me feel like I'm part of something meaningful
Dedication	Behavioral	34	I embrace challenging situations at work
Dedication	Behavioral	35	I speak positively about this organization to others

Figure 1. Bifactor analysis minus Item 4.