

# Engagement Survey Technical Report

Eagle I.O

Most recently updated 2021-05-11



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# Chapter 1

## Home



This is a report that documents the technical details regarding the development of the Eagle I.O Engagement survey.



# Chapter 2

# Introduction



## 2.1 Definitions of Engagement

The roots of employee (aka work) engagement research started with theoretical expansions of forms of employee participation [see, for example, Ferris and Hellier, 1984] and job involvement [e.g., Elloy et al., 1991]. This exploration extended into broader considerations of attitudes and emotions [Staw et al., 1994] and were informed by further exploration of the dimensionality of constructs such as organizational commitment [Meyer and Allen, 1991]. The 1990's saw

further development and refinement [for example, a dissertation; Leone, 1995]. Staw et al. [1994] presented a basic mediation model to demonstrate a relationship between *positive emotions* and favourable work outcomes. Although they do not use the word, “engagement”, their distinction between felt and expressed emotion was perhaps a contributor to the subsequent wider pursuit of engagement. Gallup was an early adopter of measurement of the construct [see, for example, Coffman and Harter, 1999].

- Personal engagement: Personal engagement is described as the employing or expressing of oneself physically, cognitively, and emotionally during work role performances. When engaged, an employee is understood to be physically involved, cognitively vigilant, and emotionally connected [Kahn].
- Engagement/Burnout: Burnout is defined as a psychological syndrome characterized by exhaustion, cynicism, and inefficacy, which is experienced in response to chronic job stressors. Engagement is understood to be the direct opposite of burnout and exist on a continuum—with engagement on one end and burnout on the other. Exhaustion (low energy), cynicism (low involvement), and inefficacy (low efficacy) are characteristic of burnout; whereas, high energy, high involvement, and high efficacy are characteristic of engagement (Maslach and Leiter, 1997) [Leiter and Maslach, a].
- Work engagement: Work engagement refers to a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption. Vigor is characterized by 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 [Schaufeli et al.] - The Utrecht Work Engagement Scale (UWES), a self-report questionnaire first developed by Schaufeli and Bakker (2003) [Schaufeli and Bakker, a] includes the three aspects of work engagement: vigor, dedication, and absorption. - we have to make note of how we are different from this!
- Employee engagement: Employee engagement refers to the “individual’s involvement and satisfaction as well as enthusiasm for work” [Harter et al., b] Work engagement is the mental state where employees...
  - ...feel full with physical energy (**Vigor**)
  - ...are enthusiastic about the content of their work and the things they do (**Dedication**)
  - ...are so immersed in their work activities that time seems to fly (**Absorption**)

The tripartite substantive model of employee engagement is also partially informed by the definitions provided with the Utrecht Work Engagement Scale [Schaufeli and Bakker, c].

We lost the document where we had saved the citations for the creation of our engagement dimensions. we found it today (02/04/2020). Three out of the four dimensions (Dedication, Vigor, and Absorbtion) came from Schaufeli et al., and we are trying to find where Fulfillment came from. We are also trying to improve the definition of each domain by looking at the current items and conducting a Modified Q sort (not correct name) to create piles of items that have commonalities within each domain.



# Chapter 3

## Instrument creation



### 3.1 Intended Structure

At some point we decided to attempt an *a priori* bi-factor structure, whereby each of the substantive dimensions (Dedication, Vigor, and Absorption)<sup>1</sup> could

---

<sup>1</sup>We also discovered at this point that some contagious agent has infiltrated the minds of people working on this project, such that the word, “absorption” confounds our spelling abilities, and roughly 50% of the time ends up being spelled (misspelled?), “absorbtion”...

further be deconstructed into the attitudinal elements of Cognition, Affect, and Behavior [see, for example, Eagly and Chaiken, Rosenberg, 1960].

Through item-writing and revision, it began to dawn on us that the substantive elements may already reflect the Cognition (Vigor), Affect (Absorption), and Behavioral (Dedication) dimensions. As of August, 2020, however, we could not locate a source article that made this potential confound explicit, so we persisted through crafting items that reflected cognitive, affective, and behavioral indicators of each substantive dimension.<sup>2</sup>

The most relevant acknowledgement of this potential confound was made by Schaufeli et al. (pp. 74-75):

Hence, engagement is defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption. Rather than a momentary and specific state, engagement refers to a more persistent and pervasive affective cognitive state that is not focused on any particular object, event, individual, or behavior. *Vigor* is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. *Dedication* is characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge. Instead of involvement we prefer to use the term dedication. Although, involvement – like dedication (see above) – is usually defined in terms of psychological identification with one's work or one's job (Kanungo, 1982; Lawler and Hall, 1970), whereby the latter goes one step beyond, both quantitatively as well as qualitatively. In a qualitative sense, dedication refers to a particularly strong involvement that goes one step further than the usual level of identification. In a qualitative sense, dedication has a wider scope by not only referring to a particular cognitive or belief state but including the affective dimension as well. The final dimension of engagement, *absorption*, is characterized by being fully concentrated and deeply engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work.

The survey is intentionally complex in terms of item and scale associations. There are three substantive engagement dimensions as well as three attitudinal dimensions, and item cross-loadings are intended to fully exhaust the 3 x 3 conditions (e.g., each item loads on one substantive and one attitudinal dimension):

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<sup>2</sup>We did, however, find some criticisms of the tripartite model of attitudes as originally specified by Rosenberg [1960], although there has also been a recent attempt to reintroduce and improve upon the original model [Kaiser and Wilson, 2019].

Substantive	Attitudinal
Dedication	Affective
Absorption	Behavioral
Vigor	Cognitive

The feedback report uses the terms, “feel”, “do”, and “think” instead of the Psychological literature-based affect, behavior, and cognition.

## 3.2 Item generation

After content validation but prior to settling on 4 candidate items per 3x3 condition, there was a dearth of items within some of the Affective, Cognitive, or Behavioral item groupings. We generated additional candidates at this point and have these items located here (Montclair State University e-mail needed to access). It was from this larger list of (reduced) candidate items that the 36 pilot candidates were identified (and in some cases modified, edited, or otherwise further crafted)

## 3.3 Content Validation

7 Eagle I.O consultants were twice instructed to place each of 34 items into one of three categories: Absorption, Dedication, or Vigor, and Cognitive, Affective, or Behavioral. Instructions asked each rater to:

INSTRUCTIONS: Place an “X” in the column that you feel is the best fit for each item (only one “X” per row please)

The substantive scale definitions provided for ratings were:

- *Absorption*: Being fully immersed in one’s work, where time passes quickly and one has difficulty detaching from work tasks
- *Vigor*: Experiencing persistent levels of energy, effort, and enthusiasm while working
- *Dedication*: Experiencing pride and challenge in ones work, as well as strong feelings of support from and loyalty toward the organization

The attitudinal scale definitions were:

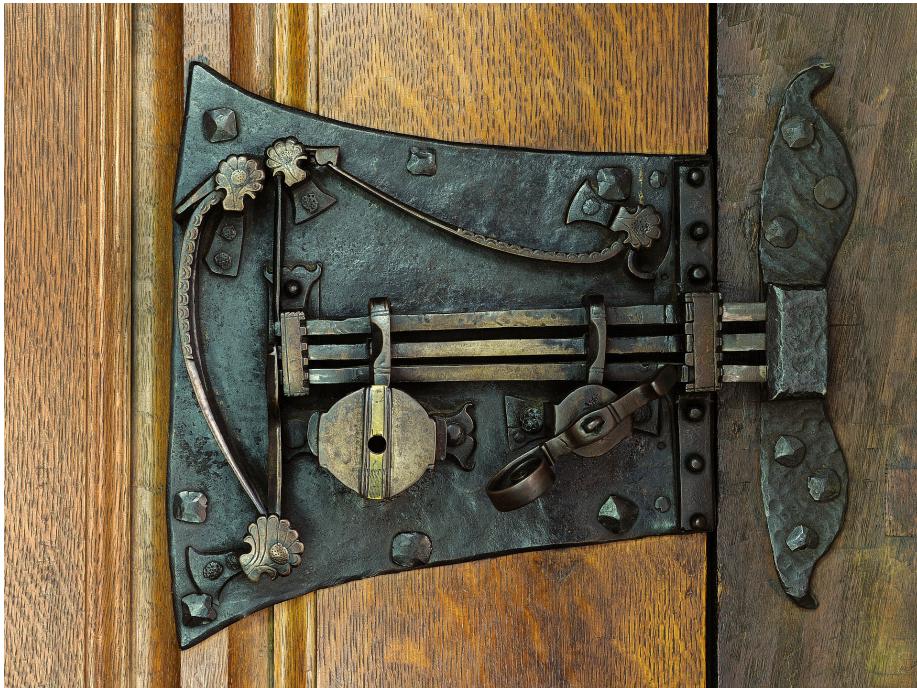
- *Cognitive*: Pertaining to thoughts or general mental processes (for example what someone thinks)

- *Affective*: Pertaining to feelings or emotions (for example, how someone feels)
- *Behavioral*: Pertaining to acts or actions (for example, what someone does)

The goal was to identify item(s) that were equally and heavily implicated with one substantive and one attitudinal scale.

# Chapter 4

## Procedure



### 4.1 Pilot

The pilot administrations consisted of 36 items that were presented in one of four administration groupings (see Appendix B): 1) within substantive dimension (attitudinally grouped [but randomized within blocks of 4]), 2) within at-

titudinal dimension (substantively grouped [but randomized within blocks of 4]), 3) within substantive dimension (randomly distributed by attitude), and 4) within attitudinal dimension (randomly presented by substance).<sup>1</sup>

The four “experimental” conditions therefore prioritized and reflected the 3x3 groupings *or* one of the organization schemes (cognitive, affective, and behavioral *or* dedication, absorption, and vigor).

We chose to control the order of item administration because of our *a priori* specification of a bi-factor structure, with the expectation that item ordering would serve as a response cue, yielding stronger factor structural support based on the organization scheme.

### 4.1.1 Sampling strategy (pilot)

The pilot sampling strategy consisted of snowball (aka referral) sampling as well as questionnaire posting within social media platforms (LinkedIn and facebook). The pilot goal was to reduce the final instrument from 36 candidate items (4 per “cell”) to 18 retained items (2 per “cell”). We hoped to obtain about 250 total responses viable for analysis.

The launch was informed by research looking at different “days of the week” and their effectiveness regarding response rate. This was both commercial as well as academic [e.g., Anseel et al.].

Eagle I.O members sent a template email asking working adults to take the survey and forward it to family and friends who also qualify as participants. Eagle I.O members were also tasked with reaching out to other students, alumni, friends, and family through the following:

- Facebook post on MSU I/O group page
- LinkedIn profiles of all Eagle I.O members
- Email first and second year students directly
- Email MSU alumni directly
- Email I/O professors
- Mentors reached out to mentees individually
- Survey was posted on the Eagle I.O webpage

#### 4.1.1.1 Pilot analyses

A Confirmatory Bi-Factor Analysis will be performed to determine the best candidate items for the final assessment.

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<sup>1</sup>Decision was made on 10/13 to have the order of presentation *randomized* within each of the broader organization blocks (for example, Condition 3: all Affective, Cognitive, and Behavioral Absorption items were randomly administered, then all ABC Dedication items, etc [although DAC was also randomized by block such that not every respondent had the same DAC ordering])

## 4.2 Demographic Information

These are to be included in future administrations in an attempt to develop marketable norms:

- Employees who work overtime vs. those who do not
- Employees who get paid for overtime vs. those who don't receive compensation for extra hours worked<sup>2</sup>

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<sup>2</sup>I was thinking about this because at my job I have been working 12+ hours some days yet I do not get overtime pay. Not sure if this would work for what we are doing and I know my work experiences are not universal (nor should they be) haha!



# Chapter 5

## Analyses



bifactor analysis are most commonly applied in the exploration of common method variance [see, for example, Reise, Rodriguez et al.]. Giordano et al. provide an overview regarding past and potential applications of *exploratory* bifactor analysis and cite Reise as an influential impetus for the resurgence of bifactor models in general.

## 5.1 Pilot analyses

282 people responded. We may want to further screen these 282 responses for short response durations. According to communications with Qualtrics in early December, this is the number of seconds to complete the entire survey. Currently, the “number of people who clicked on the assessment link (330)” versus valid  $n$  (282) may take care of our very low duration respondents. The shortest response duration in the 330 datafile is 101 whereas the lowest in the 282 datafile is 43. All analyses were performed via R version R version 4.0.3 (2020-10-10) [R Core Team, 2020].

### 5.1.1 Classical test theory

In addition to the below interactive plot [via `plotly` version 4.9.2.1; Sievert et al., 2020], a full inter-item correlation matrix is located in Appendix C.

```
## Some items ( I find it difficult to mentally disconnect from work. ) were negatively
## probably should be reversed.
## To do this, run the function again with the 'check.keys=TRUE' option
```

#### 5.1.1.1 Internal consistency estimates

Condition 1 administered items within the substantive dimensions (with successive randomized blocks of Cognitive, Affective, and Behavioral items). Condition 2 administered items within the attitudinal dimensions (with successive randomized blocks of Absorption, Vigor, and Dedication items). Condition 3 stressed the substantive dimensions (with items fully randomized regardless of attitudinal association). Condition 4 stressed the attitudinal dimensions (with items fully randomized within attitudinal dimension regardless of substantive scale association, see Chapter 4.1 and Appendix B). All internal consistency estimates were generated via `psych` version 2.0.12 [Revelle, 2020]. Alphas for the candidate 12-item scales were:

Dimension	Undifferentiated	Condition 1	Condition 2	Condition 3	Condition 4
Affective	0.87	0.88	0.84	0.88	0.87
Behavioral	0.79	0.73	0.84	0.76	0.87
Cognitive	0.81	0.79	0.85	0.8	0.87
Absorption	0.74	0.72	0.77	0.72	0.87
Vigor	0.85	0.8	0.88	0.84	0.87
Dedication	0.9	0.9	0.91	0.91	0.87

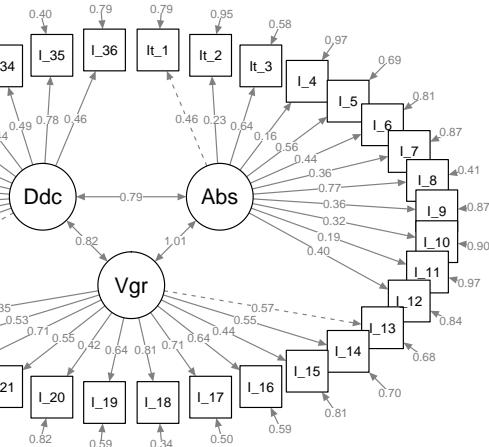
“Cell” level alphas (4 items each scale, responses collapsed across administrative conditions) were:

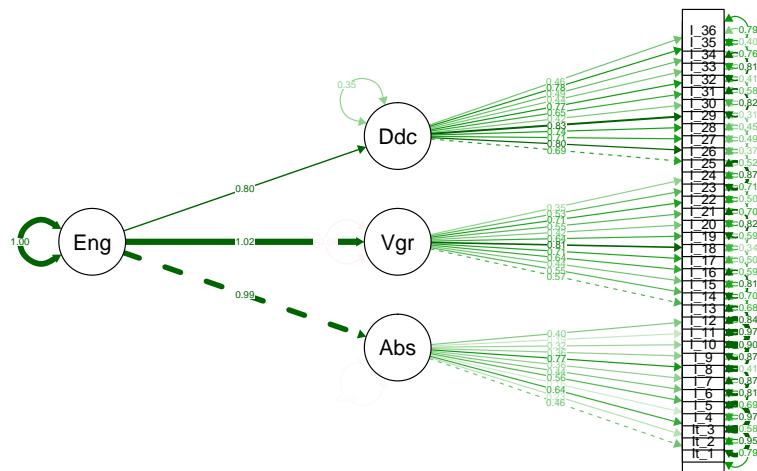
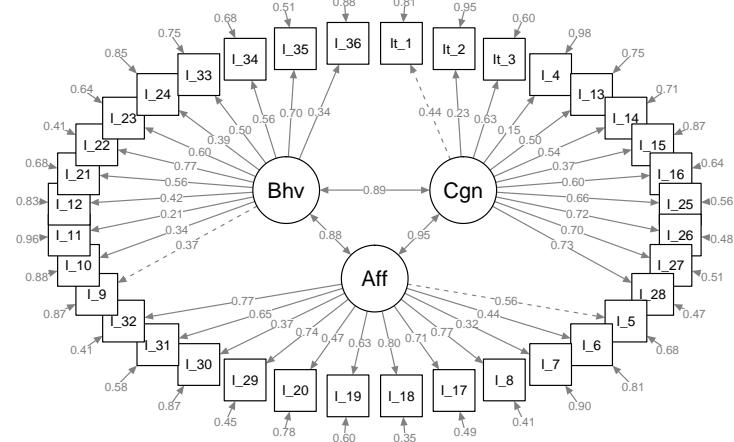
Cell	Alpha
Affective - Absorption	0.66
Affective - Vigor	0.71
Affective - Dedication	0.75
Behavioral - Absorption	0.56
Behavioral - Vigor	0.7
Behavioral - Dedication	0.64
Cognitive - Absorption	0.59
Cognitive - Vigor	0.62
Cognitive - Dedication	0.83

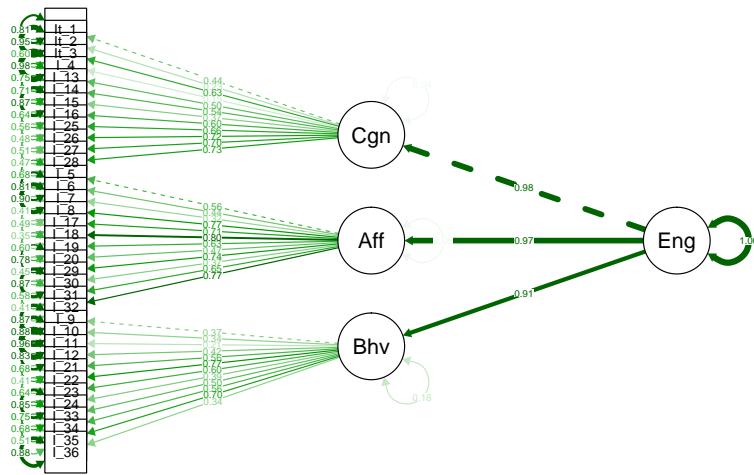
Corrected item-total correlations are presented in Appendix D

### 5.1.2 Confirmatory factor analyses

We used `lavaan` version 0.6.8 [Rosseel et al., 2021] and `semPlot` version 1.1.2 [Epskamp, 2019]







Model	$\chi^2$	df	RMSEA	SRMR	CFI	TLI	AIC
3-factor substantive	2159.21	591	0.11	0.1	0.64	0.62	25481.97
Hierarchical substantive	2159.21	591	0.11	0.1	0.64	0.62	25481.97
3-factor attitudinal	2318.92	591	0.11	0.1	0.6	0.58	25641.68
Hierarchical attitudinal	2318.92	591	0.11	0.1	0.6	0.58	25641.68

### 5.1.2.1 Multigroup analyses

- using experimental condition as “multiple groups” (measurement invariance)

### 5.1.2.2 Bifactor analyses

- looking at dual structure

Note that the semPlots package has an option to generate bifactor plots

Deese guys also do bifactor stuff: Mansolf and Reise [2017]

### **5.1.3 Summary**

Recommendation for final instrument based on consideration of all of the above pieces of evidence

## **5.2 Construct and Criterion-related Validation**

Use Gallup for construct validation [Thackray, Harter et al., a]. Also the Utrecht Work Engagement Scale [UWES; Schaufeli et al., Schaufeli and Bakker, b]

# Chapter 6

## Future plans



Development of the feedback report will occur in stages:

1. Static .pdf
2. Dynamic dashboard
3. Optimize interpretation (invite contributions of cognitive psychologists and/or graphic designers)

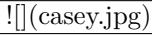
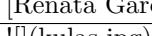
### 6.1 Things to do

- Finalize items
- Get survey into Qualtrics for pilot testing

- Work on feedback report

# Chapter 7

## Author bios

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## **Chapter 8**

## **References**

Simpson [; Kahn; Leiter and Maslach, b; Rothbard; Saks; Schaufeli et al.; Simpson]



# Appendix A

## Timeline of events

### A.1 Spring 2019

This is believed to be Eagle I.O's initial definition of engagement:

A state of personal immersion in work characterized by enthusiasm, dedication, and personal investment, expressed cognitively, affectively, and behaviorally in the proactive pursuit of advancing organizational goals.

This definition was created by Eagle IO Spring 2019, and modified by Dr. Kulas and Renata Fall 2019 to include the *four* dimensions of Fulfillment, Absorbtion, Dedication, and Vigor.

### A.2 Spring 2020

We considered removing fulfillment.

*Fulfillment:* finding meaning in one's work, while having a sense of autonomy, growth, usefulness, achievement, and feeling appreciated by org. [Satisfaction(?)]

It was decided to operationalize fullfillment as an *outcome* of engagement rather than a definitional element

#### A.2.1 February 24, 2020

Definitional amendment notes and considerations:

*Absorption:* being fully concentrated and happily immersed in ones work [time passes quickly and has difficulty detaching from ones work; Schaufeli et al.]

*Dedication/Commitment:* being strongly involved in one's work and experiencing a sense of enthusiasm, inspiration, pride, and challenge. [Schaufeli et al.] Identifying as an organizational member/ambassador

This includes conceptual elements of identification with the organization, a sense of “oneness”, seeking continuous learning and improvement. We got rid of “challenge” altogether and moved the “inspiration” and “pride” elements to other categories.

*Dedication:* seeking continuous improvement and demonstrating initiative

*Vigor:* investing consistent effort, persistence, energy, and mental resilience while working [Schaufeli et al.] maybe add enthusiasm here as well

*Vigor:* Experiencing persistent levels of energy and enthusiasm while working

### A.2.2 Structural considerations

It was considered to potentially change from a focus on affective, cognitive, and behavioral to whether their engagement stems from content/satisfaction with the organization or the people they work with. This idea was however abandoned Spring 2020.

After completing individual Q-sorts (Kulas and Renata) we decided to revisit the originally specified substantive definitions and build them up a little to make the difference between them more noticeable (and we also retained the affect, behavior, cognition focus).

## A.3 Summer 2020

Definitions as of 5/19/2020:

*Absorption:* Being fully immersed in one's work, where time passes quickly and one has difficulty detaching from work tasks

*Vigor:* Experiencing persistent levels of energy, effort, and enthusiasm while working

*Dedication:* Experiencing pride and challenge in one's work, as well as strong feelings of support from and loyalty toward the organization

The development team “content validation” as well as the broader content validation to inform the pilot administration (see Chapter 3.3) retained these definitions we ordered all the items according to the ones we individually selected for each category and created an item bank with the remaining items. Together we placed the items in the bank into the agreed upon categories.

## **Appendix B**

### **Pilot conditions**

Our four orderings of items were randomized within dimension (Affective, Behavioral, Cognitive or Dedication, Absorption, Vigor), “block” (Qualtrics designation for groupings of items), and item. The elements that were randomized are identified in the following tables by randomized element (A, B, C, or D):

Table B.1: Pilot administration ordering Condition 1

Condition1	Substantiv
I'm able to concentrate on my work without distractions	Absorption
I have a hard time detaching mentally from my work	Absorption
Time passes quickly while I'm working	Absorption
I find it difficult to mentally disconnect from work	Absorption
I enjoy thinking about work even when I'm not at work	Absorption
Most days, I feel happiest when the workday is soon to be complete (r)	Absorption
I am happiest when I am immersed in a project	Absorption
I love starting my workday.	Absorption
I devote more time than is expected of me.	Absorption
I have to be reminded to take breaks while I'm at work	Absorption
I never miss a work deadline.	Absorption
I never allow distractions to interfere with my work	Absorption
I devote my full attention to my work tasks throughout the day	Vigor
Thinking about work saps my energy (r)	Vigor
I would rather direct my focus toward a work task than a personal task	Vigor
I'm able to maintain good levels of energy throughout the workday	Vigor
I enjoy spending time completing my job tasks.	Vigor
Most days I feel enthusiastic about starting my work day.	Vigor
I feel motivated to go beyond what is asked of me	Vigor
This job drains my energy (r)	Vigor
When work is slow I find ways to be productive.	Vigor
I express enthusiasm for my job while at work	Vigor
I try my best to perform well at work	Vigor
If I notice my energy level is low, I take corrective steps to re-energize.	Vigor
I plan my future with this company.	Dedication
I believe this company cares about my career goals	Dedication
I often think about finding another job (r)	Dedication
This organization challenges me to work at my full potential	Dedication
I am proud to be a member of this organization.	Dedication
I feel supported by my supervisor when I fail at a task	Dedication
I feel proud of my accomplishments within this organization	Dedication
My job makes me feel like I'm part of something meaningful	Dedication
I make valued contributions to the organization	Dedication
I embrace challenging situations at work.	Dedication
I speak positively about this organization to others.	Dedication
This organization provides the resources necessary for me to successfully perform my job	Dedication

Table B.2: Pilot administration ordering Condition 2

Condition2	Substantive	Attitudinal
I'm able to concentrate on my work without distractions	Absorption	Cognitive
I have a hard time detaching mentally from my work	Absorption	Cognitive
Time passes quickly while I'm working	Absorption	Cognitive
I find it difficult to mentally disconnect from work	Absorption	Cognitive
I devote my full attention to my work tasks throughout the day	Vigor	Cognitive
Thinking about work saps my energy (r)	Vigor	Cognitive
I would rather direct my focus toward a work task than a personal task	Vigor	Cognitive
I'm able to maintain good levels of energy throughout the workday	Vigor	Cognitive
I plan my future with this company.	Dedication	Cognitive
I believe this company cares about my career goals	Dedication	Cognitive
I often think about finding another job (r)	Dedication	Cognitive
This organization challenges me to work at my full potential	Dedication	Cognitive
I enjoy thinking about work even when I'm not at work	Absorption	Affective
Most days, I feel happiest when the workday is soon to be complete (r)	Absorption	Affective
I am happiest when I am immersed in a project	Absorption	Affective
I love starting my workday.	Absorption	Affective
I enjoy spending time completing my job tasks.	Vigor	Affective
Most days I feel enthusiastic about starting my work day.	Vigor	Affective
I feel motivated to go beyond what is asked of me	Vigor	Affective
This job drains my energy (r)	Vigor	Affective
I am proud to be a member of this organization.	Dedication	Affective
I feel supported by my supervisor when I fail at a task	Dedication	Affective
I feel proud of my accomplishments within this organization	Dedication	Affective
My job makes me feel like I'm part of something meaningful	Dedication	Affective
I devote more time than is expected of me.	Absorption	Behavioral
I have to be reminded to take breaks while I'm at work	Absorption	Behavioral
I never miss a work deadline.	Absorption	Behavioral
I never allow distractions to interfere with my work	Absorption	Behavioral
When work is slow I find ways to be productive.	Vigor	Behavioral
I express enthusiasm for my job while at work	Vigor	Behavioral
I try my best to perform well at work	Vigor	Behavioral
If I notice my energy level is low, I take corrective steps to re-energize.	Vigor	Behavioral
I make valued contributions to the organization	Dedication	Behavioral
I embrace challenging situations at work.	Dedication	Behavioral
I speak positively about this organization to others.	Dedication	Behavioral
This organization provides the resources necessary for me to successfully perform my job	Dedication	Behavioral

Table B.3: Pilot administration ordering Condition 3

Condition3		Substantiv
I'm able to concentrate on my work without distractions		Absorption
I enjoy thinking about work even when I'm not at work		Absorption
I devote more time than is expected of me.		Absorption
I have a hard time detaching mentally from my work		Absorption
Most days, I feel happiest when the workday is soon to be complete (r)		Absorption
I have to be reminded to take breaks while I'm at work		Absorption
Time passes quickly while I'm working		Absorption
I am happiest when I am immersed in a project		Absorption
I never miss a work deadline.		Absorption
I find it difficult to mentally disconnect from work		Absorption
I love starting my workday.		Absorption
I never allow distractions to interfere with my work		Absorption
I devote my full attention to my work tasks throughout the day		Vigor
I enjoy spending time completing my job tasks.		Vigor
When work is slow I find ways to be productive.		Vigor
Thinking about work saps my energy (r)		Vigor
Most days I feel enthusiastic about starting my work day.		Vigor
I express enthusiasm for my job while at work		Vigor
I would rather direct my focus toward a work task than a personal task		Vigor
I feel motivated to go beyond what is asked of me		Vigor
I try my best to perform well at work		Vigor
I'm able to maintain good levels of energy throughout the workday		Vigor
This job drains my energy (r)		Vigor
If I notice my energy level is low, I take corrective steps to re-energize.		Vigor
I plan my future with this company.		Dedication
I am proud to be a member of this organization.		Dedication
I make valued contributions to the organization		Dedication
I believe this company cares about my career goals		Dedication
I feel supported by my supervisor when I fail at a task		Dedication
I embrace challenging situations at work.		Dedication
I often think about finding another job (r)		Dedication
I feel proud of my accomplishments within this organization		Dedication
I speak positively about this organization to others.		Dedication
This organization challenges me to work at my full potential		Dedication
My job makes me feel like I'm part of something meaningful		Dedication
This organization provides the resources necessary for me to successfully perform my job		Dedication

Table B.4: Pilot administration ordering Condition 4

Condition4	Substantive	Attitudinal
I'm able to concentrate on my work without distractions	Absorption	Cognitive
I devote my full attention to my work tasks throughout the day	Vigor	Cognitive
I plan my future with this company.	Dedication	Cognitive
I have a hard time detaching mentally from my work	Absorption	Cognitive
Thinking about work saps my energy (r)	Vigor	Cognitive
I believe this company cares about my career goals	Dedication	Cognitive
Time passes quickly while I'm working	Absorption	Cognitive
I would rather direct my focus toward a work task than a personal task	Vigor	Cognitive
I often think about finding another job (r)	Dedication	Cognitive
I find it difficult to mentally disconnect from work	Absorption	Cognitive
I'm able to maintain good levels of energy throughout the workday	Vigor	Cognitive
This organization challenges me to work at my full potential	Dedication	Cognitive
I enjoy thinking about work even when I'm not at work	Absorption	Affective
I enjoy spending time completing my job tasks.	Vigor	Affective
I am proud to be a member of this organization.	Dedication	Affective
Most days, I feel happiest when the workday is soon to be complete (r)	Absorption	Affective
Most days I feel enthusiastic about starting my work day.	Vigor	Affective
I feel supported by my supervisor when I fail at a task	Dedication	Affective
I am happiest when I am immersed in a project	Absorption	Affective
I feel motivated to go beyond what is asked of me	Vigor	Affective
I feel proud of my accomplishments within this organization	Dedication	Affective
I love starting my workday.	Absorption	Affective
This job drains my energy (r)	Vigor	Affective
My job makes me feel like I'm part of something meaningful	Dedication	Affective
I devote more time than is expected of me.	Absorption	Behavioral
When work is slow I find ways to be productive.	Vigor	Behavioral
I make valued contributions to the organization	Dedication	Behavioral
I have to be reminded to take breaks while I'm at work	Absorption	Behavioral
I express enthusiasm for my job while at work	Vigor	Behavioral
I embrace challenging situations at work.	Dedication	Behavioral
I never miss a work deadline.	Absorption	Behavioral
I try my best to perform well at work	Vigor	Behavioral
I speak positively about this organization to others.	Dedication	Behavioral
I never allow distractions to interfere with my work	Absorption	Behavioral
If I notice my energy level is low, I take corrective steps to re-energize.	Vigor	Behavioral
This organization provides the resources necessary for me to successfully perform my job	Dedication	Behavioral



## Appendix C

# Correlations

### C.1 Inter-Item correlations

I enjoy thinking about work even when I'm not at work.

Most days, I feel happiest when the workday is soon to be complete.

I am happiest when I am immersed in a project.

I love starting my workday.

I enjoy spending time completing my job tasks.

Most days I feel enthusiastic about starting my work day.

I feel motivated to go beyond what is asked of me.

This job drains my energy.

I am proud to be a member of this organization.

I feel supported by my supervisor when I fail at a task.

I feel proud of my accomplishments within this organization.

My job makes me feel like I'm part of something meaningful.

I devote more time than is expected of me.

I have to be reminded to take breaks while I'm at work.

I never miss a work deadline.

I never allow distractions to interfere with my work.

When work is slow I find ways to be productive.

I express enthusiasm for my job while at work.

- I try my best to perform well at work.  
If I notice my energy level is low, I take corrective steps to re-energize.  
I make valued contributions to the organization.  
I embrace challenging situations at work.  
I speak positively about this organization to others.  
This organization provides the resources necessary for me to successfully perform my job.  
I devote my full attention to my work tasks throughout the day.  
Thinking about work saps my energy.  
I would rather direct my focus toward a work task than a personal task.  
I'm able to maintain good levels of energy throughout the workday.  
I plan my future with this company.  
I believe this company cares about my career goals.  
I often think about finding another job.  
This organization challenges me to work at my full potential.  
I'm able to concentrate on my work without distractions.  
I have a hard time detaching mentally from my work.  
Time passes quickly while I'm working.  
I find it difficult to mentally disconnect from work.  
I enjoy thinking about work even when I'm not at work.
- 1.00  
0.42  
0.27  
0.49  
0.40  
0.51  
0.33  
0.25  
0.36  
0.21  
0.30

0.43

0.18

0.17

-0.03

0.10

0.24

0.38

0.25

0.10

0.28

0.28

0.35

0.00

0.15

0.40

0.24

0.29

0.38

0.33

0.37

0.36

0.16

0.26

0.34

0.25

Most days, I feel happiest when the workday is soon to be complete.

0.42

1.00

0.19

0.36

0.35

0.47  
0.23  
0.36  
0.25  
0.07  
0.20  
0.28  
0.10  
-0.05  
-0.13  
-0.02  
0.15  
0.24  
0.18  
0.08  
0.15  
0.13  
0.17  
-0.01  
0.10  
0.50  
0.18  
0.21  
0.37  
0.27  
0.39  
0.20  
0.06  
0.03  
0.30  
0.00

I am happiest when I am immersed in a project.

0.27

0.19

1.00

0.21

0.35

0.27

0.43

0.09

0.14

0.16

0.18

0.20

0.21

0.17

0.05

0.13

0.20

0.25

0.18

0.12

0.20

0.28

0.10

-0.02

0.22

0.12

0.30

0.10

0.19

0.13

0.13  
0.06  
0.13  
0.12  
0.22  
0.12  
I love starting my workday.  
0.49  
0.36  
0.21  
1.00  
0.59  
0.82  
0.35  
0.43  
0.50  
0.20  
0.46  
0.50  
0.19  
0.14  
0.11  
0.25  
0.34  
0.46  
0.31  
0.23  
0.33  
0.28  
0.46  
0.26

0.35
0.51
0.33
0.49
0.46
0.50
0.52
0.53
0.29
0.12
0.49
0.06
I enjoy spending time completing my job tasks.
0.40
0.35
0.35
0.59
1.00
0.59
0.52
0.28
0.47
0.19
0.47
0.58
0.21
0.24
0.06
0.23
0.36
0.52

0.35

0.20

0.32

0.39

0.42

0.24

0.36

0.40

0.39

0.35

0.40

0.46

0.41

0.39

0.30

0.09

0.44

0.04

Most days I feel enthusiastic about starting my work day.

0.51

0.47

0.27

0.82

0.59

1.00

0.43

0.43

0.53

0.24

0.48

0.54

0.20
0.19
0.11
0.24
0.34
0.55
0.35
0.23
0.36
0.31
0.49
0.20
0.37
0.54
0.38
0.51
0.47
0.50
0.55
0.50
0.25
0.17
0.47
0.12
I feel motivated to go beyond what is asked of me.
0.33
0.23
0.43
0.35
0.52
0.43

1.00

0.17

0.41

0.32

0.52

0.53

0.40

0.40

0.10

0.23

0.46

0.57

0.43

0.26

0.41

0.54

0.37

0.14

0.39

0.21

0.32

0.36

0.39

0.40

0.36

0.40

0.20

0.31

0.42

0.27

This job drains my energy.

0.25

0.36

0.09

0.43

0.28

0.43

0.17

1.00

0.36

0.27

0.21

0.34

-0.05

-0.05

-0.02

0.04

0.11

0.28

0.06

0.02

0.12

0.15

0.35

0.31

0.09

0.61

0.09

0.30

0.35

0.42

0.51

0.31

0.10

-0.14

0.22

-0.19

I am proud to be a member of this organization.

0.36

0.25

0.14

0.50

0.47

0.53

0.41

0.36

1.00

0.29

0.52

0.63

0.17

0.19

0.14

0.28

0.37

0.54

0.39

0.21

0.27

0.36

0.75

0.40

0.26

0.36	
0.24	
0.34	
0.57	
0.68	
0.59	
0.59	
0.26	
0.15	
0.44	
0.11	
I feel supported by my supervisor when I fail at a task.	
0.21	
0.07	
0.16	
0.20	
0.19	
0.24	
0.32	
0.27	
0.29	
1.00	
0.27	
0.35	
0.04	
0.02	
-0.04	
0.03	
0.05	
0.22	
0.19	

0.02

0.25

0.33

0.28

0.34

0.02

0.17

0.03

0.18

0.20

0.44

0.27

0.36

0.02

0.00

0.20

-0.01

I feel proud of my accomplishments within this organization.

0.30

0.20

0.18

0.46

0.47

0.48

0.52

0.21

0.52

0.27

1.00

0.56

0.26

0.16
0.09
0.22
0.28
0.52
0.37
0.18
0.55
0.54
0.49
0.29
0.24
0.21
0.20
0.31
0.38
0.43
0.38
0.46
0.22
0.21
0.35
0.16
My job makes me feel like I'm part of something meaningful.
0.43
0.28
0.20
0.50
0.58
0.54
0.53

0.34  
0.63  
0.35  
0.56  
1.00  
0.21  
0.22  
0.02  
0.27  
0.35  
0.56  
0.38  
0.16  
0.46  
0.43  
0.53  
0.27  
0.34  
0.40  
0.26  
0.40  
0.53  
0.58  
0.56  
0.55  
0.33  
0.15  
0.47  
0.10  
I devote more time than is expected of me.  
0.18

0.10  
0.21  
0.19  
0.21  
0.20  
0.40  
-0.05  
0.17  
0.04  
0.26  
0.21  
1.00  
0.38  
-0.01  
0.24  
0.33  
0.24  
0.32  
0.15  
0.22  
0.20  
0.13  
-0.01  
0.34  
0.03  
0.13  
0.20  
0.24  
0.13  
0.22  
0.25

0.17

0.31

0.32

0.29

I have to be reminded to take breaks while I'm at work.

0.17

-0.05

0.17

0.14

0.24

0.19

0.40

-0.05

0.19

0.02

0.16

0.22

0.38

1.00

0.12

0.21

0.20

0.33

0.29

0.14

0.16

0.14

0.14

-0.02

0.37

-0.03

0.19  
0.14  
0.17  
0.11  
0.13  
0.23  
0.11  
0.27  
0.15  
0.28  
I never miss a work deadline.  
-0.03  
-0.13  
0.05  
0.11  
0.06  
0.11  
0.10  
-0.02  
0.14  
-0.04  
0.09  
0.02  
-0.01  
0.12  
1.00  
0.35  
0.18  
0.16  
0.19  
0.08

0.11  
0.11  
0.17  
0.10  
0.32  
-0.03  
0.10  
0.26  
0.01  
0.01  
0.00  
0.06  
0.33  
-0.01  
0.08  
-0.06

I never allow distractions to interfere with my work.

0.10  
-0.02  
0.13  
0.25  
0.23  
0.24  
0.23  
0.04  
0.28  
0.03  
0.22  
0.27  
0.24  
0.21

0.35  
1.00  
0.29  
0.29  
0.21  
0.19  
0.26  
0.21  
0.30  
0.11  
0.54  
0.09  
0.21  
0.39  
0.12  
0.14  
0.20  
0.22  
0.54  
0.04  
0.31  
0.01  
When work is slow I find ways to be productive.  
0.24  
0.15  
0.20  
0.34  
0.36  
0.34  
0.46  
0.11

0.37

0.05

0.28

0.35

0.33

0.20

0.18

0.29

1.00

0.42

0.45

0.31

0.23

0.29

0.31

0.09

0.46

0.23

0.24

0.40

0.34

0.25

0.34

0.41

0.31

0.17

0.40

0.13

I express enthusiasm for my job while at work.

0.38

0.24

0.25

0.46

0.52

0.55

0.57

0.28

0.54

0.22

0.52

0.56

0.24

0.33

0.16

0.29

0.42

1.00

0.50

0.31

0.40

0.46

0.54

0.15

0.40

0.32

0.35

0.41

0.38

0.44

0.41

0.43

0.28

0.19  
0.42  
0.14  
I try my best to perform well at work.  
0.25  
0.18  
0.18  
0.31  
0.35  
0.35  
0.43  
0.06  
0.39  
0.19  
0.37  
0.38  
0.32  
0.29  
0.19  
0.21  
0.45  
0.50  
1.00  
0.30  
0.26  
0.37  
0.38  
0.16  
0.41  
0.19  
0.23

0.36

0.29

0.32

0.26

0.36

0.24

0.24

0.32

0.19

If I notice my energy level is low, I take corrective steps to re-energize.

0.10

0.08

0.12

0.23

0.20

0.23

0.26

0.02

0.21

0.02

0.18

0.16

0.15

0.14

0.08

0.19

0.31

0.31

0.30

1.00

0.25

0.22

0.24

0.11

0.32

0.18

0.08

0.37

0.17

0.21

0.14

0.31

0.27

-0.06

0.24

-0.07

I make valued contributions to the organization.

0.28

0.15

0.20

0.33

0.32

0.36

0.41

0.12

0.27

0.25

0.55

0.46

0.22

0.16

0.11

0.26
0.23
0.40
0.26
0.25
1.00
0.46
0.20
0.12
0.31
0.20
0.18
0.27
0.26
0.25
0.29
0.29
0.24
0.09
0.26
0.00
I embrace challenging situations at work.
0.28
0.13
0.28
0.28
0.39
0.31
0.54
0.15
0.36

0.33

0.54

0.43

0.20

0.14

0.11

0.21

0.29

0.46

0.37

0.22

0.46

1.00

0.34

0.22

0.27

0.16

0.14

0.28

0.24

0.33

0.22

0.36

0.19

0.19

0.30

0.14

I speak positively about this organization to others.

0.35

0.17

0.10

0.46

0.42

0.49

0.37

0.35

0.75

0.28

0.49

0.53

0.13

0.14

0.17

0.30

0.31

0.54

0.38

0.24

0.20

0.34

1.00

0.43

0.30

0.32

0.20

0.35

0.54

0.62

0.56

0.55

0.28

0.13

0.40

0.08

This organization provides the resources necessary for me to successfully perform my job.

0.00

-0.01

-0.02

0.26

0.24

0.20

0.14

0.31

0.40

0.34

0.29

0.27

-0.01

-0.02

0.10

0.11

0.09

0.15

0.16

0.11

0.12

0.22

0.43

1.00

0.06

0.26

-0.03

0.20	
0.25	
0.45	
0.36	
0.37	
0.18	
-0.13	
0.11	
-0.16	
I devote my full attention to my work tasks throughout the day.	
0.15	
0.10	
0.22	
0.35	
0.36	
0.37	
0.39	
0.09	
0.26	
0.02	
0.24	
0.34	
0.34	
0.37	
0.32	
0.54	
0.46	
0.40	
0.41	
0.32	
0.31	

0.27  
0.30  
0.06  
1.00  
0.17  
0.30  
0.53  
0.25  
0.15  
0.24  
0.32  
0.57  
0.13  
0.48  
0.06  
Thinking about work saps my energy.  
0.40  
0.50  
0.12  
0.51  
0.40  
0.54  
0.21  
0.61  
0.36  
0.17  
0.21  
0.40  
0.03  
-0.03  
-0.03

0.09
0.23
0.32
0.19
0.18
0.20
0.16
0.32
0.26
0.17
1.00
0.17
0.45
0.28
0.41
0.51
0.30
0.21
-0.12
0.32
-0.18
I would rather direct my focus toward a work task than a personal task.
0.24
0.18
0.30
0.33
0.39
0.38
0.32
0.09
0.24

0.03  
0.20  
0.26  
0.13  
0.19  
0.10  
0.21  
0.24  
0.35  
0.23  
0.08  
0.18  
0.14  
0.20  
-0.03  
0.30  
0.17  
1.00  
0.29  
0.12  
0.16  
0.18  
0.14  
0.26  
0.18  
0.26  
0.13  
I'm able to maintain good levels of energy throughout the workday.  
0.29  
0.21  
0.10

0.49

0.35

0.51

0.36

0.30

0.34

0.18

0.31

0.40

0.20

0.14

0.26

0.39

0.40

0.41

0.36

0.37

0.27

0.28

0.35

0.20

0.53

0.45

0.29

1.00

0.24

0.33

0.32

0.43

0.50

0.12

0.50  
0.08  
I plan my future with this company.  
0.38  
0.37  
0.19  
0.46  
0.40  
0.47  
0.39  
0.35  
0.57  
0.20  
0.38  
0.53  
0.24  
0.17  
0.01  
0.12  
0.34  
0.38  
0.29  
0.17  
0.26  
0.24  
0.54  
0.25  
0.25  
0.28  
0.12  
0.24

1.00	
0.60	
0.63	
0.51	
0.18	
0.16	
0.38	
0.10	
I believe this company cares about my career goals.	
0.33	
0.27	
0.13	
0.50	
0.46	
0.50	
0.40	
0.42	
0.68	
0.44	
0.43	
0.58	
0.13	
0.11	
0.01	
0.14	
0.25	
0.44	
0.32	
0.21	
0.25	
0.33	

0.62	
0.45	
0.15	
0.41	
0.16	
0.33	
0.60	
1.00	
0.57	
0.69	
0.19	
0.19	
0.33	
0.12	
I often think about finding another job.	
0.37	
0.39	
0.13	
0.52	
0.41	
0.55	
0.36	
0.51	
0.59	
0.27	
0.38	
0.56	
0.22	
0.13	
0.00	
0.20	

0.34

0.41

0.26

0.14

0.29

0.22

0.56

0.36

0.24

0.51

0.18

0.32

0.63

0.57

1.00

0.48

0.26

0.03

0.38

-0.02

This organization challenges me to work at my full potential.

0.36

0.20

0.06

0.53

0.39

0.50

0.40

0.31

0.59

0.36

0.46

0.55

0.25

0.23

0.06

0.22

0.41

0.43

0.36

0.31

0.29

0.36

0.55

0.37

0.32

0.30

0.14

0.43

0.51

0.69

0.48

1.00

0.29

0.27

0.45

0.20

I'm able to concentrate on my work without distractions.

0.16

0.06

0.13

0.29

0.30  
0.25  
0.20  
0.10  
0.26  
0.02  
0.22  
0.33  
0.17  
0.11  
0.33  
0.54  
0.31  
0.28  
0.24  
0.27  
0.24  
0.19  
0.28  
0.18  
0.57  
0.21  
0.26  
0.50  
0.18  
0.19  
0.26  
0.29  
1.00  
0.01  
0.44

-0.04

I have a hard time detaching mentally from my work.

0.26

0.03

0.12

0.12

0.09

0.17

0.31

-0.14

0.15

0.00

0.21

0.15

0.31

0.27

-0.01

0.04

0.17

0.19

0.24

-0.06

0.09

0.19

0.13

-0.13

0.13

-0.12

0.18

0.12

0.16

0.19  
0.03  
0.27  
0.01  
1.00  
0.15  
0.90  
Time passes quickly while I'm working.  
0.34  
0.30  
0.22  
0.49  
0.44  
0.47  
0.42  
0.22  
0.44  
0.20  
0.35  
0.47  
0.32  
0.15  
0.08  
0.31  
0.40  
0.42  
0.32  
0.24  
0.26  
0.30  
0.40

0.11	
0.48	
0.32	
0.26	
0.50	
0.38	
0.33	
0.38	
0.45	
0.44	
0.15	
1.00	
0.09	
I find it difficult to mentally disconnect from work.	
0.25	
0.00	
0.12	
0.06	
0.04	
0.12	
0.27	
-0.19	
0.11	
-0.01	
0.16	
0.10	
0.29	
0.28	
-0.06	
0.01	
0.13	

0.14  
0.19  
-0.07  
0.00  
0.14  
0.08  
-0.16  
0.06  
-0.18  
0.13  
0.08  
0.10  
0.12  
-0.02  
0.20  
-0.04  
0.90  
0.09  
1.00

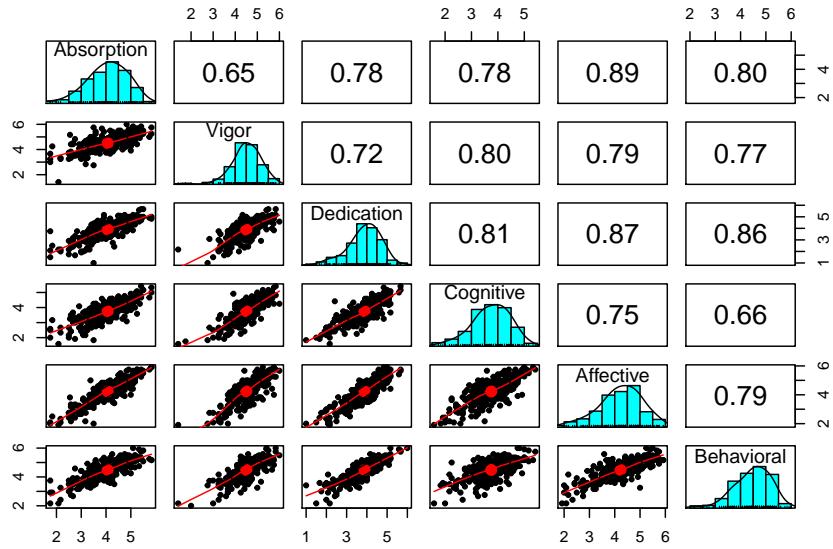
## C.2 Scale-level correlations

Because of the large inter-construct covariance estimates, we constructed standard unit-weighted scale aggregates (interactive plot of unit-weighted aggregates located below)

### C.2.1 Substantive scales

### C.2.2 Attitudinal scales

Correlation matrix of 3 unit-weighted substantive and 3 unit-weighted attitudinal scales:



## **Appendix D**

### **Corrected item-total correlations**

**D.1 Substantive scale (marginal level)**

**D.2 Substantive scale (cell level)**

Table D.1: Affective Items

	n	r.drop	mean	sd
I enjoy thinking about work even when I'm not at work.	270	0.56	3.1	1.5
Most days, I feel happiest when the workday is soon to be complete.	269	0.40	2.6	1.2
I am happiest when I am immersed in a project.	267	0.35	4.6	1.0
I love starting my workday.	270	0.70	3.6	1.3
I enjoy spending time completing my job tasks.	270	0.65	4.5	1.0
Most days I feel enthusiastic about starting my work day.	269	0.77	3.8	1.4
I feel motivated to go beyond what is asked of me.	269	0.58	4.6	1.2
This job drains my energy.	269	0.43	3.2	1.4
I am proud to be a member of this organization.	268	0.64	4.7	1.2
I feel supported by my supervisor when I fail at a task.	263	0.35	4.5	1.4
I feel proud of my accomplishments within this organization.	268	0.60	5.0	1.0
My job makes me feel like I'm part of something meaningful.	267	0.70	4.6	1.3

Table D.2: Behavioral Items

	n	r.d
I devote more time than is expected of me.	271	0
I have to be reminded to take breaks while I'm at work.	269	0
I never miss a work deadline.	269	0
I never allow distractions to interfere with my work.	271	0
When work is slow I find ways to be productive.	270	0
I express enthusiasm for my job while at work.	271	0
I try my best to perform well at work.	272	0
If I notice my energy level is low, I take corrective steps to re-energize.	271	0
I make valued contributions to the organization.	267	0
I embrace challenging situations at work.	269	0
I speak positively about this organization to others.	269	0
This organization provides the resources necessary for me to successfully perform my job.	270	0

Table D.3: Cognitive Items

	n	r.drop	mean	sd
I devote my full attention to my work tasks throughout the day.	271	0.46	4.1	1.3
Thinking about work saps my energy.	270	0.35	3.6	1.4
I would rather direct my focus toward a work task than a personal task.	269	0.35	3.4	1.4
I'm able to maintain good levels of energy throughout the workday.	271	0.56	4.1	1.2
I plan my future with this company.	265	0.55	3.9	1.6
I believe this company cares about my career goals.	268	0.58	3.9	1.5
I often think about finding another job.	267	0.56	3.5	1.6
This organization challenges me to work at my full potential.	268	0.67	4.3	1.3
I'm able to concentrate on my work without distractions.	270	0.39	3.7	1.4
I have a hard time detaching mentally from my work.	272	0.31	3.7	1.5
Time passes quickly while I'm working.	272	0.60	4.6	1.2
I find it difficult to mentally disconnect from work.	273	0.22	3.7	1.6

Table D.4: Absorption Items

	n	r.drop	mean	sd
I enjoy thinking about work even when I'm not at work.	270	0.46	3.1	1.5
Most days, I feel happiest when the workday is soon to be complete.	269	0.16	2.6	1.2
I am happiest when I am immersed in a project.	267	0.32	4.6	1.0
I love starting my workday.	270	0.50	3.6	1.3
I devote more time than is expected of me.	271	0.46	4.5	1.3
I have to be reminded to take breaks while I'm at work.	269	0.37	3.7	1.6
I never miss a work deadline.	269	0.16	4.5	1.2
I never allow distractions to interfere with my work.	271	0.39	3.2	1.4
I'm able to concentrate on my work without distractions.	270	0.36	3.7	1.4
I have a hard time detaching mentally from my work.	272	0.42	3.7	1.5
Time passes quickly while I'm working.	272	0.51	4.6	1.2
I find it difficult to mentally disconnect from work.	273	0.37	3.7	1.6

Table D.5: Vigor Items

	n	r.drop	mean	sd
I devote my full attention to my work tasks throughout the day.	271	0.50	4.1	1.28
Thinking about work saps my energy.	270	0.49	3.6	1.38
I would rather direct my focus toward a work task than a personal task.	269	0.39	3.4	1.37
I'm able to maintain good levels of energy throughout the workday.	271	0.63	4.1	1.22
I enjoy spending time completing my job tasks.	270	0.62	4.5	1.03
Most days I feel enthusiastic about starting my work day.	269	0.70	3.8	1.40
I feel motivated to go beyond what is asked of me.	269	0.59	4.6	1.20
This job drains my energy.	269	0.34	3.2	1.37
When work is slow I find ways to be productive.	270	0.53	4.5	1.18
I express enthusiasm for my job while at work.	271	0.68	4.8	1.11
I try my best to perform well at work.	272	0.50	5.4	0.70
If I notice my energy level is low, I take corrective steps to re-energize.	271	0.36	4.2	1.14

Table D.6: Dedication Items

	n	r.drop
I plan my future with this company.	265	0.0
I believe this company cares about my career goals.	268	0.0
I often think about finding another job.	267	0.0
This organization challenges me to work at my full potential.	268	0.0
I am proud to be a member of this organization.	268	0.0
I feel supported by my supervisor when I fail at a task.	263	0.0
I feel proud of my accomplishments within this organization.	268	0.0
My job makes me feel like I'm part of something meaningful.	267	0.0
I make valued contributions to the organization.	267	0.0
I embrace challenging situations at work.	269	0.0
I speak positively about this organization to others.	269	0.0
This organization provides the resources necessary for me to successfully perform my job.	270	0.0

Table D.7: Affective - Absorption Items

	n	r.drop	mean	sd
I enjoy thinking about work even when I'm not at work.	270	0.57	3.1	1.5
Most days, I feel happiest when the workday is soon to be complete.	269	0.37	2.6	1.2
I am happiest when I am immersed in a project.	267	0.31	4.6	1.0
I love starting my workday.	270	0.51	3.6	1.3

Table D.8: Affective - Vigor Items

	n	r.drop	mean	sd
I enjoy spending time completing my job tasks.	270	0.58	4.5	1.0
Most days I feel enthusiastic about starting my work day.	269	0.63	3.8	1.4
I feel motivated to go beyond what is asked of me.	269	0.47	4.6	1.2
This job drains my energy.	269	0.34	3.2	1.4

Table D.9: Affective - Dedication Items

	n	r.drop	mean	sd
I am proud to be a member of this organization.	268	0.61	4.7	1.2
I feel supported by my supervisor when I fail at a task.	263	0.38	4.5	1.4
I feel proud of my accomplishments within this organization.	268	0.59	5.0	1.0
My job makes me feel like I'm part of something meaningful.	267	0.66	4.6	1.3

Table D.10: Cognitive - Absorption Items

	n	r.drop	mean	sd
I'm able to concentrate on my work without distractions.	270	0.14	3.7	1.4
I have a hard time detaching mentally from my work.	272	0.58	3.7	1.5
Time passes quickly while I'm working.	272	0.29	4.6	1.2
I find it difficult to mentally disconnect from work.	273	0.52	3.7	1.6

Table D.11: Cognitive - Vigor Items

	n	r.drop	mean	sd
I devote my full attention to my work tasks throughout the day.	271	0.40	4.1	1.3
Thinking about work saps my energy.	270	0.32	3.6	1.4
I would rather direct my focus toward a work task than a personal task.	269	0.32	3.4	1.4
I'm able to maintain good levels of energy throughout the workday.	271	0.60	4.1	1.2

Table D.12: Cognitive - Dedication Items

	n	r.drop	mean	sd
I plan my future with this company.	265	0.67	3.9	1.6
I believe this company cares about my career goals.	268	0.70	3.9	1.5
I often think about finding another job.	267	0.65	3.5	1.6
This organization challenges me to work at my full potential.	268	0.65	4.3	1.3

Table D.13: Behavioral - Absorption Items

	n	r.drop	mean	sd
I devote more time than is expected of me.	271	0.36	4.5	1.3
I have to be reminded to take breaks while I'm at work.	269	0.37	3.7	1.6
I never miss a work deadline.	269	0.22	4.5	1.2
I never allow distractions to interfere with my work.	271	0.42	3.2	1.4

Table D.14: Behavioral - Vigor Items

	n	r.drop	mean	sd
When work is slow I find ways to be productive.	270	0.51	4.5	1.18
I express enthusiasm for my job while at work.	271	0.54	4.8	1.11
I try my best to perform well at work.	272	0.54	5.4	0.76
If I notice my energy level is low, I take corrective steps to re-energize.	271	0.40	4.2	1.14

Table D.15: Behavioral - Dedication Items

	n	r.dn
I make valued contributions to the organization.	267	0
I embrace challenging situations at work.	269	0
I speak positively about this organization to others.	269	0
This organization provides the resources necessary for me to successfully perform my job.	270	0

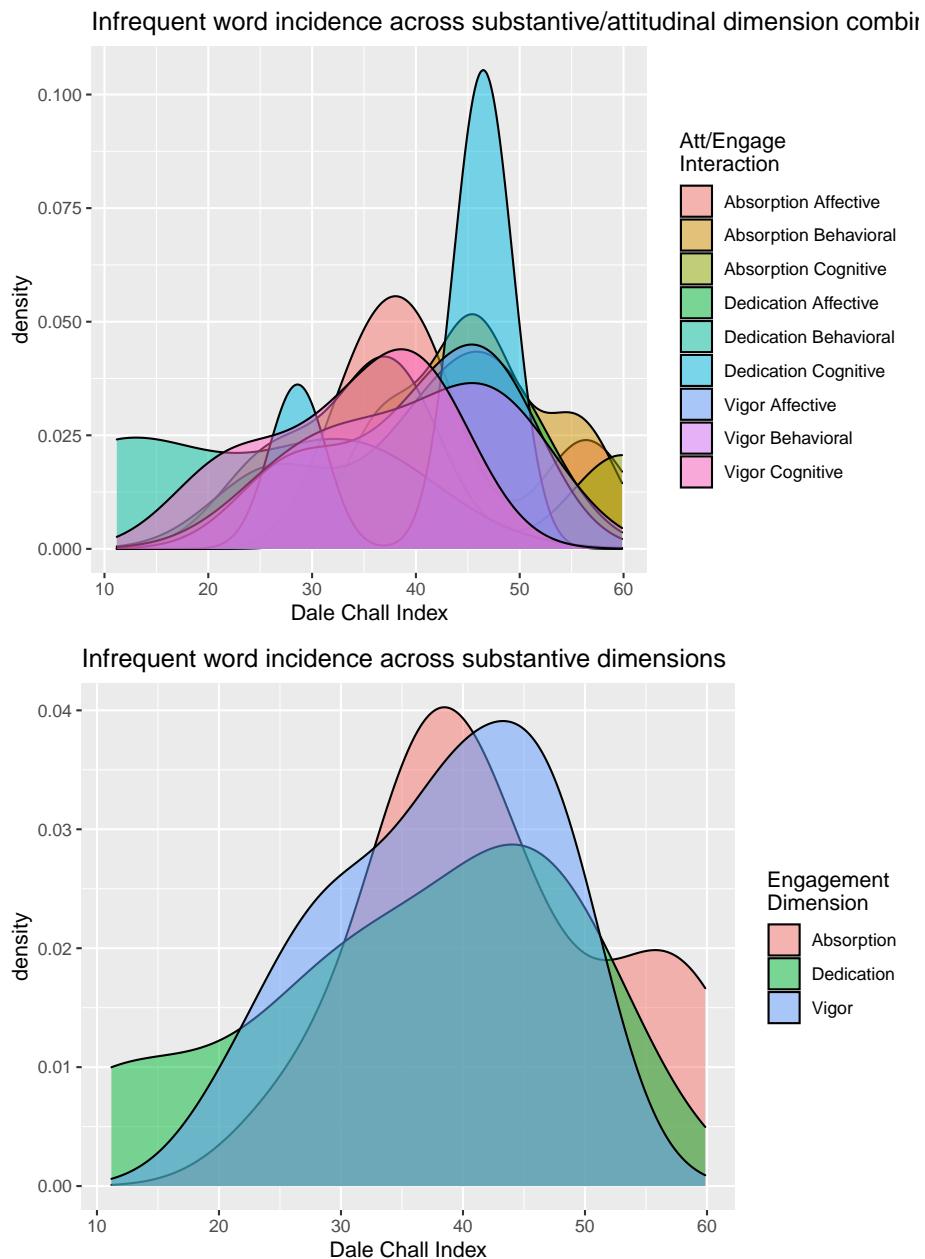
## Appendix E

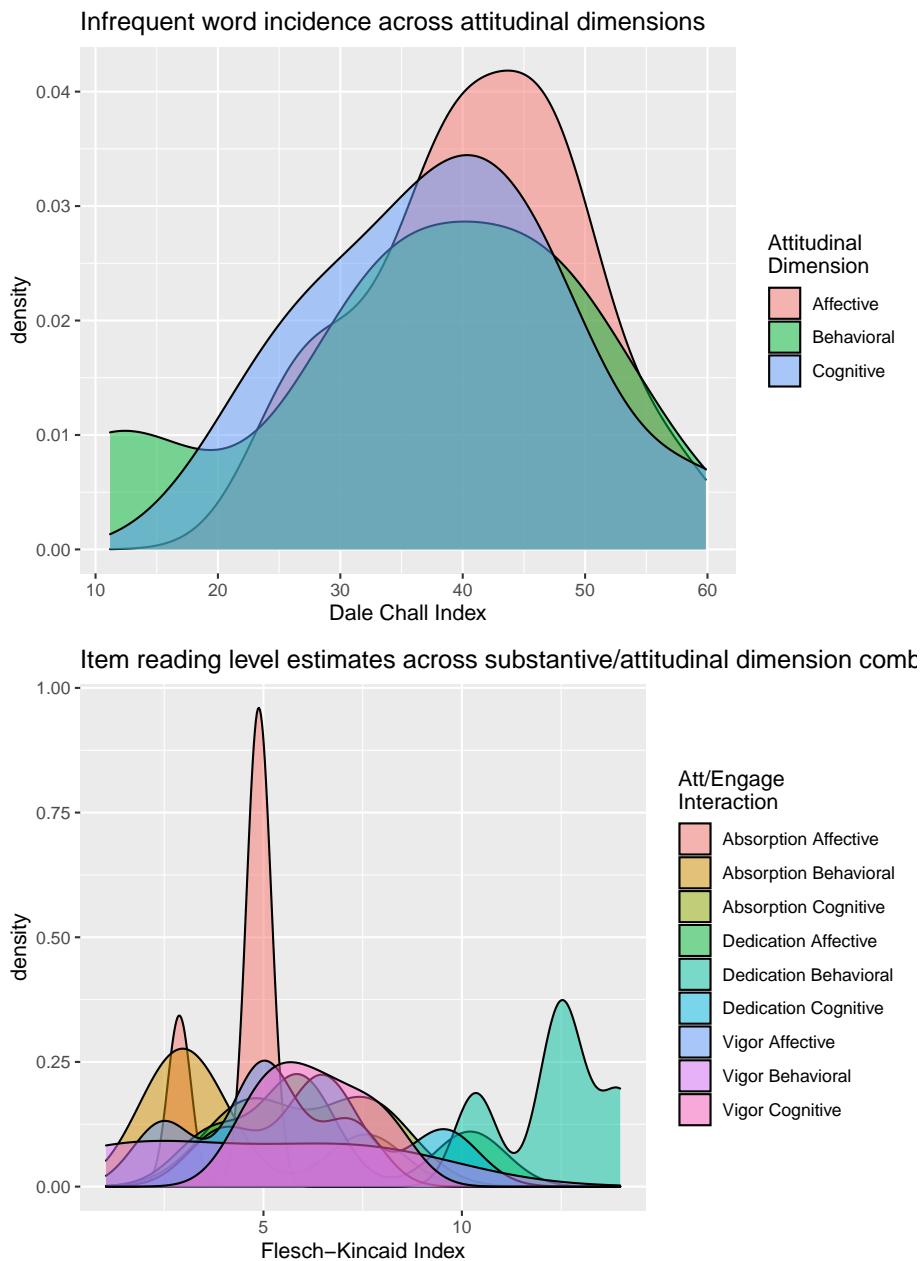
### Qualitative item characteristics

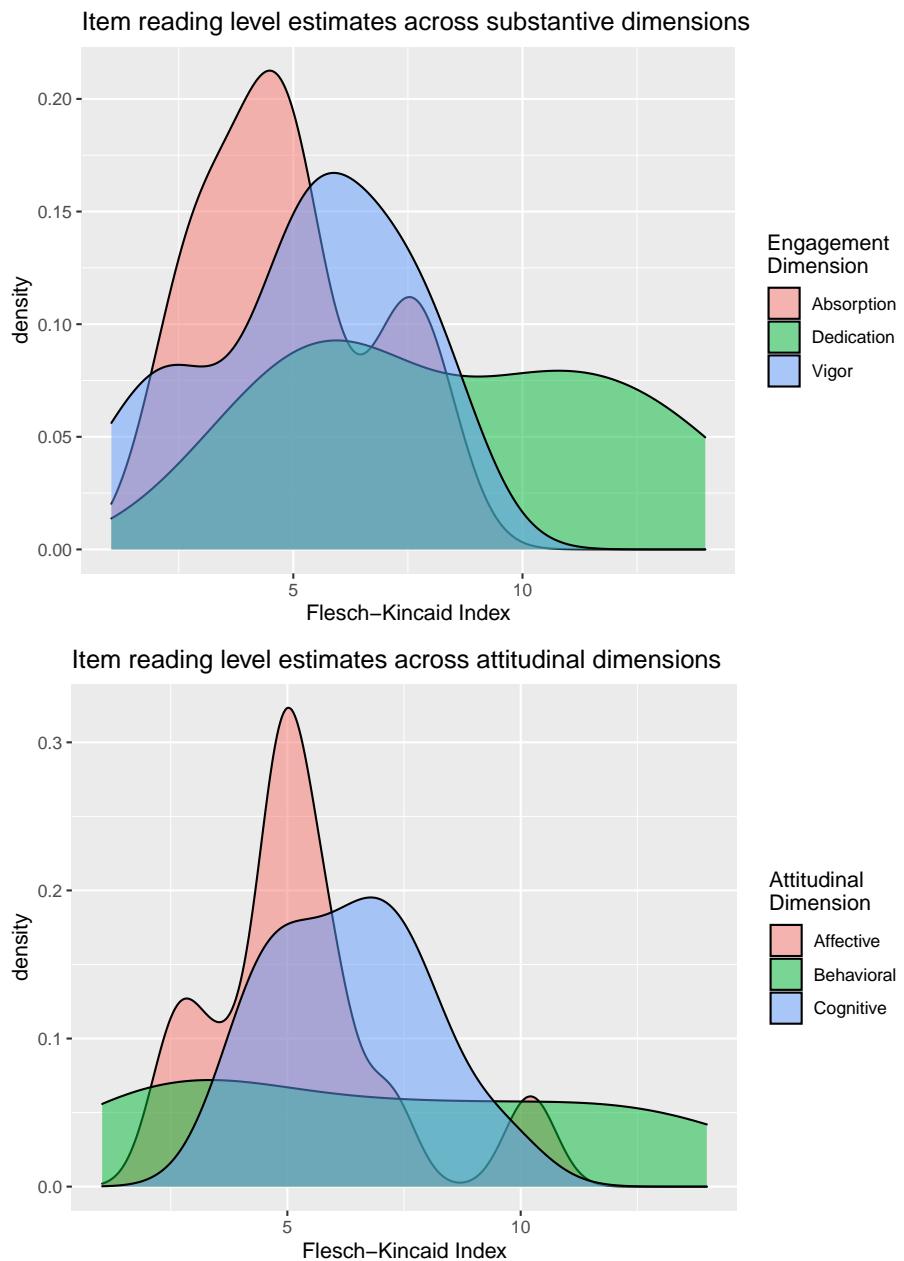
Quentada reading ability of final items as well as overlapping histograms by scale. Using package `quanteda` version 2.1.2 [Benoit et al., 2020] in R version 4.0.3 (2020-10-10). The Flesch-Kincaid is the same grade level index that's currently used by Microsoft Word [Kincaid et al.]. “Dale.Chall” reflects  $N_{wd}$  [“difficulty” of words; Chall and Dale].  $N_{wf}$  = the number of words matching the Dale-Chall List of 3000 “familiar words”.  $N_{wd}$  = number of “difficult” words not matching the Dale-Chall list of “familiar” words.

The average Flesch-Kincaid (e.g., reading grade) was 6.2 ( $sd = 3.04$ ). The average Dale-Chall index was 38.61 ( $sd = 11.11$ ).

## E.1 Frequency distributions by dimension







## E.2 Tables of qualitative indices

Table E.1: Organized by Flesch-Kincaid aka Reading Level

	document	Substantive	Attribute
36	This organization provides the resources necessary for me to successfully perform my job	Dedication	Belief
35	I speak positively about this organization to others.	Dedication	Belief
33	I make valued contributions to the organization	Dedication	Belief
34	I embrace challenging situations at work.	Dedication	Belief
31	I feel proud of my accomplishments within this organization	Dedication	Affiliation
28	This organization challenges me to work at my full potential	Dedication	Cognition
24	If I notice my energy level is low, I take corrective steps to re-energize.	Vigor	Belief
16	I'm able to maintain good levels of energy throughout the workday	Vigor	Cognition
1	I'm able to concentrate on my work without distractions	Absorption	Cognition
4	I find it difficult to mentally disconnect from work	Absorption	Cognition
12	I never allow distractions to interfere with my work	Absorption	Belief
18	Most days I feel enthusiastic about starting my work day.	Vigor	Affiliation
15	I would rather direct my focus toward a work task than a personal task	Vigor	Cognition
27	I often think about finding another job (r)	Dedication	Cognition
22	I express enthusiasm for my job while at work	Vigor	Belief
26	I believe this company cares about my career goals	Dedication	Cognition
29	I am proud to be a member of this organization.	Dedication	Affiliation
30	I feel supported by my supervisor when I fail at a task	Dedication	Affiliation
14	Thinking about work saps my energy (r)	Vigor	Cognition
17	I enjoy spending time completing my job tasks.	Vigor	Affiliation
6	Most days, I feel happiest when the workday is soon to be complete (r)	Absorption	Affiliation
2	I have a hard time detaching mentally from my work	Absorption	Cognition
7	I am happiest when I am immersed in a project	Absorption	Affiliation
13	I devote my full attention to my work tasks throughout the day	Vigor	Cognition
5	I enjoy thinking about work even when I'm not at work	Absorption	Affiliation
19	I feel motivated to go beyond what is asked of me	Vigor	Affiliation
3	Time passes quickly while I'm working	Absorption	Cognition
25	I plan my future with this company.	Dedication	Cognition
32	My job makes me feel like I'm part of something meaningful	Dedication	Affiliation
9	I devote more time than is expected of me.	Absorption	Belief
8	I love starting my workday.	Absorption	Affiliation
10	I have to be reminded to take breaks while I'm at work	Absorption	Belief
11	I never miss a work deadline.	Absorption	Belief
20	This job drains my energy (r)	Vigor	Affiliation
21	When work is slow I find ways to be productive.	Vigor	Belief
23	I try my best to perform well at work	Vigor	Belief

Table E.2: Organized by Dale Chall aka includes Difficult Words

	document	Subst
36	This organization provides the resources necessary for me to successfully perform my job	Dedic
34	I embrace challenging situations at work.	Dedic
16	I'm able to maintain good levels of energy throughout the workday	Vigor
4	I find it difficult to mentally disconnect from work	Absor
31	I feel proud of my accomplishments within this organization	Dedic
20	This job drains my energy (r)	Vigor
24	If I notice my energy level is low, I take corrective steps to re-energize.	Vigor
28	This organization challenges me to work at my full potential	Dedic
14	Thinking about work saps my energy (r)	Vigor
33	I make valued contributions to the organization	Dedic
6	Most days, I feel happiest when the workday is soon to be complete (r)	Absor
35	I speak positively about this organization to others.	Dedic
1	I'm able to concentrate on my work without distractions	Absor
12	I never allow distractions to interfere with my work	Absor
22	I express enthusiasm for my job while at work	Vigor
2	I have a hard time detaching mentally from my work	Absor
7	I am happiest when I am immersed in a project	Absor
19	I feel motivated to go beyond what is asked of me	Vigor
13	I devote my full attention to my work tasks throughout the day	Vigor
30	I feel supported by my supervisor when I fail at a task	Dedic
15	I would rather direct my focus toward a work task than a personal task	Vigor
8	I love starting my workday.	Absor
11	I never miss a work deadline.	Absor
25	I plan my future with this company.	Dedic
17	I enjoy spending time completing my job tasks.	Vigor
27	I often think about finding another job (r)	Dedic
9	I devote more time than is expected of me.	Absor
23	I try my best to perform well at work	Vigor
26	I believe this company cares about my career goals	Dedic
18	Most days I feel enthusiastic about starting my work day.	Vigor
21	When work is slow I find ways to be productive.	Vigor
29	I am proud to be a member of this organization.	Dedic
32	My job makes me feel like I'm part of something meaningful	Dedic
10	I have to be reminded to take breaks while I'm at work	Absor
5	I enjoy thinking about work even when I'm not at work	Absor
3	Time passes quickly while I'm working	Absor

# Bibliography

- Frederik Anseel, Filip Lievens, Eveline Schollaert, and Beata Choragwicka. Response rates in organizational science, 1995–2008: A meta-analytic review and guidelines for survey researchers. 25(3):335–349. ISSN 1573-353X(Electronic),0889-3268(Print). doi: 10.1007/s10869-010-9157-6. Place: Germany Publisher: Springer.
- Kenneth Benoit, Kohei Watanabe, Haiyan Wang, Paul Nulty, Adam Obeng, Stefan Müller, Akitaka Matsuo, Jiong Wei Lua, Jouni Kuha, and William Lowe. *quanteda: Quantitative Analysis of Textual Data*, 2020. URL <https://quanteda.io>. R package version 2.1.2.
- Jeanne Sternlicht Chall and Edgar Dale. *Readability revisited: The new Dale-Chall readability formula*. Brookline Books.
- Curt Coffman and Jim Harter. A hard look at soft numbers. *Position paper, Gallup Organization*, 1999.
- Alice H. Eagly and Shelly Chaiken. *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers.
- David F. Elloy, James E. Everett, and W. Randolph Flynn. An examination of the correlates of job involvement. *Group & Organization Studies*, 16(2):160–177, June 1991. doi: 10.1177/105960119101600204. URL <http://ezproxy.montclair.edu:2048/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=1991-29008-001&site=eds-live&scope=site>. Publisher: Sage Publications.
- Sacha Epskamp. *semPlot: Path Diagrams and Visual Analysis of Various SEM Packages' Output*, 2019. URL <https://github.com/SachaEpskamp/semPlot>. R package version 1.1.2.
- Robert Ferris and Phillip Hellier. Added value productivity schemes and employee participation. *Asia Pacific Journal of Human Resources*, 22(4):35–44, November 1984. ISSN 1038-4111. doi: 10.1177/103841118402200406. URL <http://ezproxy.montclair.edu:2048/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2013-23190-006&site=eds-live&scope=site>. Publisher: Wiley-Blackwell Publishing Ltd.

- Casey Giordano, Deniz S. Ones, Niels G. Waller, and Kevin C. Stanek. Exploratory bifactor measurement models in vocational behavior research. 120: 103430. ISSN 0001-8791. doi: 10.1016/j.jvb.2020.103430. URL <http://www.sciencedirect.com/science/article/pii/S0001879120300555>.
- J. K. Harter, F. L. Schmidt, S. Agrawal, and S. K. Plowman. The relationship between engagement at work and organizational outcomes 2012 q12 meta-analysis lincoln. a.
- James K. Harter, F. Schmidt, and T. Hayes. Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: a meta-analysis. b. doi: 10.1037/0021-9010.87.2.268.
- William A. Kahn. Psychological conditions of personal engagement and disengagement at work. 33(4):692–724. Publisher: Academy of Management Briarcliff Manor, NY 10510.
- Florian G. Kaiser and Mark Wilson. The Campbell Paradigm as a Behavior-Predictive Reinterpretation of the Classical Tripartite Model of Attitudes. *European Psychologist*, 24(4):359–374, 2019. ISSN 1016-9040. doi: 10.1027/1016-9040/a000364. URL <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7039345/>.
- J. Peter Kincaid, Robert P. Fishburne Jr, Richard L. Rogers, and Brad S. Chissom. Derivation of new readability formulas (automated readability index, fog count and flesch reading ease formula) for navy enlisted personnel.
- Michael Leiter and Christina Maslach. Areas of worklife: A structured approach to organizational predictors of job burnout. In *Research in Occupational Stress and Well-being*, volume 3, pages 91–134. a. ISBN 978-0-7623-1057-9. doi: 10.1016/S1479-3555(03)03003-8. Journal Abbreviation: Research in Occupational Stress and Well-being.
- Michael P. Leiter and Christina Maslach. Areas of worklife: A structured approach to organizational predictors of job burnout. 3(1):91–134, b.
- Dean Roger Leone. *The relation of work climate, higher order need satisfaction, need salience, and causality orientations to work engagement, psychological adjustment, and job satisfaction*. PhD thesis, ProQuest Information & Learning, November 1995. URL <http://ezproxy.montclair.edu:2048/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=1995-95021-242&site=eds-live&scope=site>. Issue: 5-B Journal Abbreviation: Dissertation Abstracts International: Section B: The Sciences and Engineering Pages: 2917 Publication Title: Dissertation Abstracts International: Section B: The Sciences and Engineering Volume: 56.
- Maxwell Mansolf and Steven P. Reise. When and why the second-order and bifactor models are distinguishable. *Intelligence*, 61:120–129, 2017. Publisher: Elsevier.

- John P. Meyer and Natalie J. Allen. A three-component conceptualization of organizational commitment. *Human resource management review*, 1(1):61–89, 1991. Publisher: Elsevier.
- R Core Team. *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria, 2020. URL <https://www.R-project.org/>.
- Steven P. Reise. The rediscovery of bifactor measurement models. 47(5):667–696. ISSN 0027-3171, 1532-7906. doi: 10.1080/00273171.2012.715555. URL <http://www.tandfonline.com/doi/abs/10.1080/00273171.2012.715555>.
- William Revelle. *psych: Procedures for Psychological, Psychometric, and Personality Research*, 2020. URL <https://personality-project.org/r/psych/> <https://personality-project.org/r/psych-manual.pdf>. R package version 2.0.12.
- Anthony Rodriguez, Steven P. Reise, and Mark G. Haviland. Evaluating bifactor models: Calculating and interpreting statistical indices. 21(2):137–150. ISSN 1939-1463, 1082-989X. doi: 10.1037/met0000045. URL <http://doi.apa.org/getdoi.cfm?doi=10.1037/met0000045>.
- Milton J. Rosenberg. *Cognitive, affective, and behavioral components of attitudes*. 1960. Publisher: Yale University Press.
- Yves Rosseel, Terrence D. Jorgensen, and Nicholas Rockwood. *lavaan: Latent Variable Analysis*, 2021. URL <https://lavaan.ugent.be>. R package version 0.6-8.
- Nancy P. Rothbard. Enriching or depleting? the dynamics of engagement in work and family roles. 46(4):655–684.
- Alan M. Saks. Antecedents and consequences of employee engagement.
- W. B. Schaufeli and A. B. Bakker. UWES–utrecht work engagement scale: test manual. 8, a.
- Wilmar B. Schaufeli and Arnold B. Bakker. Defining and measuring work engagement: Bringing clarity to the concept. 12:10–24, b.
- Wilmar B. Schaufeli and Arnold B. Bakker. Utrecht work engagement scale. 1, c.
- Wilmar B. Schaufeli, Marisa Salanova, Vicente González-Romá, and Arnold B. Bakker. The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. 3(1):71–92.
- Carson Sievert, Chris Parmer, Toby Hocking, Scott Chamberlain, Karthik Ram, Marianne Corvellec, and Pedro Despouy. *plotly: Create Interactive Web Graphics via plotly.js*, 2020. URL <https://CRAN.R-project.org/package=plotly>. R package version 4.9.2.1.

Michelle R. Simpson. Engagement at work: A review of the literature. 46(7): 1012–1024.

Barry M. Staw, Robert I. Sutton, and Lisa H. Pelled. Employee positive emotion and favorable outcomes at the workplace. *Organization Science*, 5(1):51–71, 1994. Publisher: INFORMS.

John Thackray. *The Gallup Q12*. Gallup Management Journal.