Supplemental File – R Code for CFA analyses

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This supplemental file is associated with the following article:

Maeghan Hennessey, "Piloting an Assessment of Foundational Workplace Competencies for Students with Disabilities and Competitive Employment Aspirations," *Career Development and Transition for Exceptional Individuals* (Forthcoming).

Below are the R programs the authors used to determine the structure of the three versions of the revised EITA.

1. F-EITA CFA program, without item 6
2. S-EITA CFA program, without item 6
3. Original P-EITA CFA program mirroring F-EITA and S-EITA, without item 6
4. CFA model for P-EITA deleting items suggested to load on all factors (items 2, 7, 10, and 21)
5. CFA model for P-EITA including three correlated errors (between item pairs: 8,9; 15,17; and, 31,32)

1. F-EITA CFA program, without item 6

```
# The code below gives the 5-factor CFA model tested on the F-EITA data.
# Item 6 is not included due to missing data.
# Listwise deletion methods are employed.

library(lavaan)

FEITA <- read.csv("insert .csv data file address here", header=TRUE, sep=",")
as.data.frame(FEITA)

str(FEITA)

# Below is the tested CFA model.

model <- '
BS =~ feita1+feita2+feita3+feita4
HOTS =~ feita5+feita7+feita8+feita9+feita10+feita11+feita12+feita13+feita14
BWS =~ feita15+feita16+feita17+feita18+feita19+feita20+feita21
SS =~ feita22+feita23+feita24+feita25+feita26+feita27
PT =~ feita28+feita29+feita30+feita31+feita32
'
```

Downloaded from SHAREOK. Persistent Handle URL: https://hdl.handle.net/11244/336617

```
# Names of factors are given below for reference.
# factor1 Basic Skills
# factor2 Higher Order Thinking Skills
# factor3 Basic Work Skills
# factor4 Social Skills
# factor5 Personal Traits

# The code below treats indicators as ordered categorical.

fit <- cfa(model, data=FEITA, ordered=c("feita1", "feita2", "feita3", "feita4", "feita5", "feita7",
"feita8", "feita9", "feita10", "feita11", "feita12", "feita13", "feita14", "feita15", "feita16",
"feita17", "feita18", "feita19", "feita20", "feita21", "feita22", "feita23", "feita24", "feita25",
"feita26", "feita27", "feita28", "feita29", "feita30", "feita31", "feita32"))
summary (fit, fit.measures=TRUE, standardized=TRUE)

# Modification indices are requested.

MIFEITA <- modificationIndices(fit)
subset(MIFEITA, mi>100)
```

2. S-EITA CFA program, without item 6

```
# The code below gives the 5-factor CFA model tested on the S-EITA data.
# Item 6 is not included due to missing data.
# Listwise deletion methods are employed.

library(lavaan)

SEITA <- read.csv("insert .csv data file address here", header=TRUE, sep=",")
as.data.frame(SEITA)

str(SEITA)

# Below is the tested CFA model.

model <- '
BS =~ seita1+seita2+seita3+seita4
HOTS =~ seita5+seita7+seita8+seita9+seita10+seita11+seita12+seita13+seita14
BWS =~ seita15+seita16+seita17+seita18+seita19+seita20+seita21
SS =~ seita22+seita23+seita24+seita25+seita26+seita27
PT =~ seita28+seita29+seita30+seita31+seita32
'

# Names of factors are given below for reference.
```

```
# factor1 Basic Skills
# factor2 Higher Order Thinking Skills
# factor3 Basic Work Skills
# factor4 Social Skills
# factor5 Personal Traits

# The code below treats indicators as ordered categorical.

fit <- cfa(model, data=SEITA, ordered=c("seita1", "seita2", "seita3", "seita4", "seita5", "seita7",
"seita8", "seita9", "seita10", "seita11", "seita12", "seita13", "seita14", "seita15", "seita16",
"seita17", "seita18", "seita19", "seita20", "seita21", "seita22", "seita23", "seita24", "seita25",
"seita26", "seita27", "seita28", "seita29", "seita30", "seita31", "seita32"))
summary (fit, fit.measures=TRUE, standardized=TRUE)

# Modification indices are requested.

MISEITA <- modificationIndices(fit)
subset(MISEITA, mi>100)
```

3. Original P-EITA CFA program mirroring F-EITA and S-EITA, without item 6

```
# The code below gives the 5-factor CFA model tested on the F-EITA data.
# Item 6 is not included due to missing data.
# Listwise deletion methods are employed.

library(lavaan)

PEITA <- read.csv("insert .csv data file address here", header=TRUE, sep=",")
as.data.frame(PEITA)

str(PEITA)

# Below is the tested CFA model.

model <- '
BS =~ peita1+peita2+peita3+peita4
HOTS =~ peita5+peita7+peita8+peita9+peita10+peita11+peita12+peita13+peita14
BWS =~ peita15+peita16+peita17+peita18+peita19+peita20+peita21
SS =~ peita22+peita23+peita24+peita25+peita26+peita27
PT =~ peita28+peita29+peita30+peita31+peita32
'

# Names of factors are given below for reference.
# factor1 Basic Skills
```

```
# factor2 Higher Order Thinking Skills
# factor3 Basic Work Skills
# factor4 Social Skills
# factor5 Personal Traits

# The code below treats indicators as ordered categorical.

fit <- cfa(model, data=PEITA, ordered=c("peita1", "peita2", "peita3", "peita4", "peita5",
"peita7", "peita8", "peita9", "peita10", "peita11", "peita12", "peita13", "peita14", "peita15",
"peita16", "peita17", "peita18", "peita19", "peita20", "peita21", "peita22", "peita23", "peita24",
"peita25", "peita26", "peita27", "peita28", "peita29", "peita30", "peita31", "peita32"))
summary (fit, fit.measures=TRUE, standardized=TRUE)

# Modification indices are requested.

MIPEITA <- modificationIndices(fit)
subset(MIPEITA, mi>100)
```

4. **CFA model for P-EITA deleting items suggested to load on all factors (items 2, 7, 10, and 21)**

```
# The code below gives the 5-factor CFA model tested on the F-EITA data.
# Item 6 is not included due to missing data.
# Items 2, 7, 10, and 21 are not included because modification indices in the previous step
suggested they load on all factors.
# Listwise deletion methods are employed.

library(lavaan)

PEITA <- read.csv("insert .csv data file address here", header=TRUE, sep=",")
as.data.frame(PEITA)

str(PEITA)

# Below is the tested CFA model. Items 2, 7, 10, and 21 are removed.

model <- '
BS =~ peita1+peita3+peita4
HOTS =~ peita5+peita8+peita9+peita11+peita12+peita13+peita14
BWS =~ peita15+peita16+peita17+peita18+peita19+peita20
SS =~ peita22+peita23+peita24+peita25+peita26+peita27
PT =~ peita28+peita29+peita30+peita31+peita32
'
```

```
# Names of factors are given below for reference.
# factor1 Basic Skills
# factor2 Higher Order Thinking Skills
# factor3 Basic Work Skills
# factor4 Social Skills
# factor5 Personal Traits

# The code below treats indicators as ordered categorial.

fit <- cfa(model, data=PEITA, ordered=c("peita1", "peita3", "peita4", "peita5", "peita8",
"peita9", "peita11", "peita12", "peita13", "peita14", "peita15", "peita16", "peita17", "peita18",
"peita19", "peita20", "peita22", "peita23", "peita24", "peita25", "peita26", "peita27", "peita28",
"peita29", "peita30", "peita31", "peita32"))
summary (fit, fit.measures=TRUE, standardized=TRUE)

# Modification indices are requested.

MIPEITA <- modificationIndices(fit)
subset(MIPEITA, mi>100)
```

5. **CFA model for P-EITA including three correlated errors (between item pairs: 8,9; 15,17; and 31,32)**

```
# The code below gives the 5-factor CFA model tested on the F-EITA data.
# Item 6 is not included due to missing data.
# Items 2, 7, 10, and 21 are not included because they were suggested to load on all factors.
# Modification indices suggest correlated errors between these item pairs: 8,9; 15,17; and 31,32
and are added.
# Listwise deletion methods are employed.

library(lavaan)

PEITA <- read.csv("insert .csv data file address here", header=TRUE, sep=",")
as.data.frame(PEITA)

str(PEITA)

# Below is the tested CFA model.
# Correlated errors between 8,9; 15,17; and 31,32 are added to the model.

model <- '
BS =~ peita1+peita3+peita4
HOTS =~ peita5+peita8+peita9+peita11+peita12+peita13+peita14
BWS =~ peita15+peita16+peita17+peita18+peita19+peita20
```

```
SS =~ peita22+peita23+peita24+peita25+peita26+peita27
PT =~ peita28+peita29+peita30+peita31+peita32
peita8~~peita9
peita15~~peita17
peita31~~peita32
'

# Names of factors are given below for reference.
# factor1 Basic Skills
# factor2 Higher Order Thinking Skills
# factor3 Basic Work Skills
# factor4 Social Skills
# factor5 Personal Traits

# The code below treats indicators as ordered categorical.

fit <- cfa(model, data=PEITA, ordered=c("peita1", "peita3", "peita4", "peita5", "peita8",
"peita9", "peita11", "peita12", "peita13", "peita14", "peita15", "peita16", "peita17", "peita18",
"peita19", "peita20", "peita22", "peita23", "peita24", "peita25", "peita26", "peita27", "peita28",
"peita29", "peita30", "peita31", "peita32"))
summary (fit, fit.measures=TRUE, standardized=TRUE)

# Modification indices are requested.

MIPEITA <- modificationIndices(fit)
subset(MIPEITA, mi>50)
```