

# Package ‘dynamic’

October 13, 2022

**Type** Package

**Title** DFI Cutoffs for Latent Variable Models

**Version** 1.1.0

**Description** Returns dynamic fit index (DFI) cutoffs for latent variable models that are tailored to the user's model statement, model type, and sample size. This is the counterpart of the Shiny Application, <<https://dynamicfit.app>>.

**License** AGPL-3

**Language** en-US

**Encoding** UTF-8

**RoxygenNote** 7.1.2

**Depends** R (>= 4.0.0)

**URL** <https://github.com/melissagwolf/dynamic>

**BugReports** <https://github.com/melissagwolf/dynamic/issues>

**Imports** dplyr (>= 1.0.0), simstandard (>= 0.6.2), tidyr (>= 1.1.0),  
lavaan (>= 0.6-7), ggplot2 (>= 3.3.0), magrittr (>= 1.5),  
tibble (>= 3.0.0), patchwork (>= 1.1.1), stringr (>= 1.4.0),  
purrr (>= 0.3.3)

**Suggests** knitr, rmarkdown

**VignetteBuilder** knitr

**NeedsCompilation** no

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**Repository** CRAN

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cfaHB	<i>Dynamic fit index (DFI) cutoffs adapted from Hu &amp; Bentler (1999) for multi-factor CFA models</i>
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### Description

This function generates DFI cutoffs adapted from Hu & Bentler (1999) for multi-factor CFA models using ML estimation. The default argument is a singular argument: a [lavaan](#) object from the [cfa](#) function. The function can also accommodate manual entry of the model statement and sample size.

The app-based version of this function can be found at [dynamicfit.app](#).

### Usage

```
cfaHB(model, n = NULL, plot = FALSE, manual = FALSE, reps = 500)
```

```
## S3 method for class 'cfaHB'
print(x, ...)
```

### Arguments

model	This can either be a <a href="#">lavaan</a> object from the <a href="#">cfa</a> function, OR a model statement written in <a href="#">lavaan model.syntax</a> with standardized loadings.
n	If you entered a <a href="#">lavaan</a> object for model, leave this blank. Otherwise, enter your sample size (numeric).
plot	Displays distributions of fit indices for each level of misspecification.
manual	If you entered a <a href="#">lavaan</a> object, keep this set to FALSE. If you manually entered standardized loadings and sample size, set this to TRUE.
reps	(**Do not modify this**): The number of replications used in your simulation. This is set to 500 by default in both the R package and the corresponding Shiny App.
x	cfaHB object
...	other print parameters

### Value

Dynamic fit index (DFI) cutoffs for SRMR, RMSEA, and CFI.

**Author(s)**

Melissa G Wolf & Daniel McNeish

Maintainer: Melissa G Wolf <misssgord@gmail.com>

**Examples**

```
#Lavaan object example (manual=FALSE)
dat <- lavaan::HolzingerSwineford1939
lavmod <- "F1 =~ x1 + x2 + x3
          F2 =~ x4 + x5 + x6
          F3 =~ x7 + x8 + x9"
fit <- lavaan::cfa(lavmod,dat)
cfaHB(fit)

#Manual entry example for a sample size of 400 (manual=TRUE)
manmod <- "F1 =~ .602*Y1 + .805*Y2 + .516*Y3 + .415*Y4
          F2 =~ .413*Y5 + -.631*Y6
          F1 =~ .443*F2
          Y4 =~ .301*Y5"
exactFit(model=manmod,n=400,manual=TRUE)
```

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cfaOne

*Dynamic fit index (DFI) cutoffs for one-factor CFA models*


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**Description**

This function generates DFI cutoffs for one-factor CFA models using ML estimation. The default argument is a singular argument: a [lavaan](#) object from the [cfa](#) function. The function can also accommodate manual entry of the model statement and sample size.

The app-based version of this function can be found at [dynamicfit.app](#).

**Usage**

```
cfaOne(model, n = NULL, plot = FALSE, manual = FALSE, reps = 500)
```

```
## S3 method for class 'cfaOne'
print(x, ...)
```

**Arguments**

model	This can either be a <a href="#">lavaan</a> object from the <a href="#">cfa</a> function, OR a model statement written in <a href="#">lavaan model.syntax</a> with standardized loadings.
n	If you entered a <a href="#">lavaan</a> object for model, leave this blank. Otherwise, enter your sample size (numeric).
plot	Displays distributions of fit indices for each level of misspecification.

manual	If you entered a <a href="#">lavaan</a> object, keep this set to FALSE. If you manually entered standardized loadings and sample size, set this to TRUE.
reps	(**Do not modify this**): The number of replications used in your simulation. This is set to 500 by default in both the R package and the corresponding Shiny App.
x	cfaOne object
...	other print parameters

**Value**

Dynamic fit index (DFI) cutoffs for SRMR, RMSEA, and CFI.

**Author(s)**

Melissa G Wolf & Daniel McNeish

Maintainer: Melissa G Wolf <melissagordon@ucsb.edu>

**Examples**

```
#Lavaan object example (manual=FALSE)
dat <- lavaan::HolzingerSwineford1939
lavmod <- "F1 =~ x1 + x2 + x3 + x4 + x5 + x6 + x7 + x8 + x9"
fit <- lavaan::cfa(lavmod,dat)
cfaOne(fit)

#Manual entry example for a sample size of 300 (manual=TRUE)
manmod <- "F1 =~ .602*Y1 + .805*Y2 + .857*Y3 + .631*Y4 + .345*Y5 + .646*Y6"
cfaOne(model=manmod,n=300,manual=TRUE)
```

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equivTest

*Equivalence testing with adjusted fit indexes for structural equation modeling*

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**Description**

This function generates adjusted fit index cutoffs using equivalence testing, introduced by Yuan, Chan, Marcoulides, & Bentler (2016). The default argument is a singular argument: a [lavaan](#) object. The function can also accommodate manual entry of the sample size (n), model chi-square (T\_ml), degrees of freedom (df), baseline chi-square (T\_mli), and number of observed variables (p).

The app-based version of this function can be found at [dynamicfit.app](#).

**Usage**

```
equivTest(
  n,
  T_ml = NULL,
  df = NULL,
  T_mli = NULL,
  p = NULL,
  manual = FALSE,
  plot = FALSE
)

## S3 method for class 'equivTest'
print(x, ...)
```

**Arguments**

n	This can either be a <a href="#">lavaan</a> object, OR your sample size.
T_ml	If you entered a <a href="#">lavaan</a> object for n, leave this blank. Otherwise, enter your model chi-square.
df	If you entered a <a href="#">lavaan</a> object for n, leave this blank. Otherwise, enter your model degrees of freedom.
T_mli	If you entered a <a href="#">lavaan</a> object for n, leave this blank. Otherwise, enter your baseline chi-square.
p	If you entered a <a href="#">lavaan</a> object for n, leave this blank. Otherwise, enter the number of observed variables in your model.
manual	If you entered a <a href="#">lavaan</a> object, keep this set to FALSE. If you manually entered each argument, set this to TRUE.
plot	Displays a simple plot that compares your T-size RMSEA and T-Size CFI to the adjusted bins.
x	equivTest object
...	other print parameters

**Value**

T-size RMSEA and T-Size CFI, along with adjusted bins for each index

**Author(s)**

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**Examples**

```
#Lavaan object example (manual=FALSE)
dat <- lavaan::HolzingerSwineford1939
lavmod <- "F1 =~ x1 + x2 + x3"
```

```

          F2 =~ x4 + x5 + x6
          F3 =~ x7 + x8 + x9"
fit <- lavaan::cfa(lavmod,dat)
equivTest(fit)

#' #Manual entry example (manual=TRUE)
n <- 301
T_ml <- 85.306
df <- 24
T_mli <- 918.852
p <- 9
equivTest(n,T_ml,df,T_mli,p>manual=TRUE)

```

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exactFit

*DFI cutoffs for a Test of Exact Fit*


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### Description

This function generates DFI cutoffs by treating the data generating model as the true model (using ML estimation). The default argument is a singular argument: a [lavaan](#) object from the [cfa](#) function. The function can also accommodate manual entry of the model statement and sample size.

### Usage

```
exactFit(model, n, plot = FALSE, manual = FALSE, reps = 500)
```

```
## S3 method for class 'exactFit'
print(x, ...)
```

### Arguments

model	This can either be a <a href="#">lavaan</a> object from the <a href="#">cfa</a> function, OR a model statement written in <a href="#">lavaan model syntax</a> with standardized loadings.
n	If you entered a <a href="#">lavaan</a> object for model, leave this blank. Otherwise, enter your sample size (numeric).
plot	Displays distributions of fit indices for each fit index.
manual	If you entered a <a href="#">lavaan</a> object, keep this set to FALSE. If you manually entered standardized loadings and sample size, set this to TRUE.
reps	(**Do not modify this**): The number of replications used in your simulation. This is set to 500 by default in both the R package and the corresponding Shiny App (not yet available).
x	exactFit object
...	other print parameters

**Value**

Dynamic fit index (DFI) cutoffs for Chi-Square, SRMR, RMSEA, and CFI.

**Author(s)**

Melissa G Wolf & Daniel McNeish

Maintainer: Melissa G Wolf <missgord@gmail.com>

**Examples**

```
#Lavaan object example (manual=FALSE)
dat <- lavaan::HolzingerSwineford1939
lavmod <- "F1 =~ x1 + x2 + x3
          F2 =~ x4 + x5 + x6
          F3 =~ x7 + x8 + x9"
fit <- lavaan::cfa(lavmod,dat)
exactFit(fit)

#Manual entry example for a sample size of 400 (manual=TRUE)
manmod <- "F1 =~ .602*Y1 + .805*Y2 + .516*Y3 + .415*Y4
          F2 =~ .413*Y5 + -.631*Y6
          F1 =~ .443*F2
          Y4 =~ .301*Y5"
exactFit(model=manmod,n=400,manual=TRUE)
```

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