Package 'IMTest'

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Title Information Matrix Test for Generalized Partial Credit Models

Version 1.0.0

Description Implementation of the information matrix test for generalized partial credit models.

Depends R (>= 3.3.0), ltm

Imports MASS, lme4, reshape2

License GPL (>= 2)

LazyData true

RoxygenNote 6.0.1

Suggests knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

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Contents

collapse_data *Collapses data for a given collapsing function*

Description

Collapses data for a given collapsing function

Usage

```
collapse_data(data, collapse, constraint)
```

Arguments

data	A dataset with J columns and n rows.
collapse	A list of length J indicating the scoring function to collapse from.
constraint	Constraint is either "rasch" or "gpcm" depending on which parameter constraints should be run.

Value

A list containing the collapsed data and a indicator vector for which parameters to test with the IMT. If no collapsing has occurred, the default indicator vector tests all parameters of the last item.

Examples

```
data(dataset)
collapse = split(rep(c(1:4), 10), rep(1:10, each = 4))
my_data = collapse_data(dataset, collapse, "rasch")
# See vignette("IMT-vignette") for more examples.
```

dataset *Synthetic dataset of 1000 responses to 10 items, each with four categories, generated from a Partial Credit Model.*

Description

Synthetic dataset of 1000 responses to 10 items, each with four categories, generated from a Partial Credit Model.

Usage

```
dataset
```

Format

An object of class `data.frame` with 1000 rows and 10 columns.

gh *Table with GH points*

Description

Table with GH points

Usage

```
gh
```

Format

An object of class `list` of length 101.

Source

ltm package

gpcm_IMT *Runs the GPCM model for use in the Information Matrix Test.*

Description

Runs the GPCM model for use in the Information Matrix Test.

Usage

```
gpcm_IMT(data, constraint = c("gpcm", "1PL", "rasch"), IRT.param = TRUE,
  start.val = NULL, na.action = NULL, control = list())
```

Arguments

`data`	A dataset with J columns and n rows.
`constraint`	Constraint is either "1PL", "rasch" or "gpcm" depending on which parameter constraints should be run.
`IRT.param`	logical; if TRUE then the usual IRT parametrization is used.
`start.val`	If not Null, a list of starting values for the parameter estimates
`na.action`	the na.action to be used on the data
`control`	See gpcm function in ltm package for details.

Value

A GPCM object.

Examples

```
data(dataset)
model = gpcm_IMT(dataset, constraint = "rasch")
# See vignette("IMT-vignette") for more examples
```

IMT *Runs information matrix test for an information matrix test GPCM model.*

Description

Runs information matrix test for an information matrix test GPCM model.

Usage

```
IMT(mod, constraint, R, ind_vec)
```

Arguments

mod	An IMT GPCM model.
constraint	Constraint is either "rasch" or "gpcm".
R	number of iterations for simulation of the variance-covariance matrix.
ind_vec	Vector of 0's and 1's for item-level parameters to be tested in the information matrix test.

Value

A list containing the information matrix test statistic and the associated degrees of freedom.

Examples

```
data(dataset)
collapse = split(rep(c(1:4), 10), rep(1:10, each = 4))
my_data = collapse_data(dataset, collapse, "rasch")
model = gpcm_IMT(my_data$data, constraint = "rasch")

test_fit = IMT(model, "rasch", R = 5000, my_data$ind)
#This line of code takes longer than 10 seconds to run
pvalue = pchisq(test_fit$Tstat, test_fit$df, lower.tail = FALSE)

# See vignette("IMT-vignette") for more examples
```

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