Package 'conquestr'

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Type Package

Title An R Front End for 'ACER ConQuest'

Version 0.8.5

URL https://www.acer.org/au/conquest,
https://conquest-forums.acer.edu.au,
https://shop.acer.edu.au/acer-conquest-5.html

Description Extends 'ACER ConQuest' through a family of functions designed to improve graphical outputs and help with advanced analysis (e.g., differential item functioning).
Allows R users to call 'ACER ConQuest' from within R and read 'ACER ConQuest' System Files (generated by the command 'put').
Requires 'ACER ConQuest' version 5.12.3 or later. A demonstration version can be downloaded from <https://shop.acer.edu.au/acer-conquest-5.html>.

License GPL-3

Encoding UTF-8

LazyData true

SystemRequirements ACER ConQuest (>=5.12.3)

Suggests dplyr, knitr, rmarkdown

Collate 'RcppExports.R' 'ReadConQuestLibrary.R'
'ReadConQuestRout_createDF.R' 'ReadConQuestState.R'
'ReadConQuestState_createDF.R' 'conquestrFunc.R' 'conquestr.R'
'plotGeneral.R' 'plotRout.R'

VignetteBuilder knitr

RoxygenNote 7.1.1

LinkingTo Rcpp

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ggrepel, methods

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`ConQuestCall` *ConQuestCall*

Description

Call 'ACER ConQuest' and run a control file.

Usage

```
ConQuestCall(cqInstallLocation, cqc, stdout = "")
```

Arguments

`cqInstallLocation`	The location of the 'ACER ConQuest' executable.
`cqc`	The locaiton of the control file to be run.
`stdout`	On Mac only, can be toggled to NULL (or a connection) to supress output to R console.

Value

prints 'ACER ConQuest' output to stdout.

Examples

```
## Not run:
ConQuestCall(cqInstallLocation = file.path("/Applications", "ConQuest BETA", "ConQuest"))

## End(Not run)
```

ConQuestRout *ConQuestRout*

Description

Read an "ACER ConQuest" rout file created by a 'plot' command in 'ACER ConQuest'.

Usage

```
ConQuestRout(myRout)
```

Arguments

myRout	The location of an 'ACER ConQuest' rout file created by 'ACER ConQuest' > 5.1.4.

Value

A list containing the data objects created by 'ACER ConQuest' plot command.

Examples

```
myPlot<- ConQuestRout()
## Not run:
# if you run the above example you will have the points from a plot ICC command.
str(myPlot)

## End(Not run)
```

ConQuestSys *ConQuestSys*

Description

Read an "ACER ConQuest" system file created by a 'put' command in 'ACER ConQuest'. The system file must not be compressed. Use the option 'compressed=no" in the put command within 'ACER ConQuest'.

Usage

```
ConQuestSys(myCqs)
```

Arguments

myCqs	The location of an uncompresed 'ACER ConQuest' system file created by 'ACER ConQuest' > 4.30.2.

Value

A list containing the data objects created by 'ACER ConQuest'.

Examples

```
mySysData<- ConQuestSys()
myEx1SysData<- ConQuestSys(myCqs = system.file("extdata", "Ex1.cqs", package = "conquestr"))
## Not run:
# if you run the above example this will return your original 'ACER ConQuest' syntax.
cat(unlist(myEx1SysData$gCommandHistory))

## End(Not run)
```

createConQuestProject *createConQuestProject*

Description

creates a standard folder structure to work with 'ACER ConQuest' Projects.

Usage

```
createConQuestProject(prefix = getwd(), ...)
```

Arguments

prefix	a valid file path where to create project folders.
...	optional params, including "setDebug"

Value

Boolean TRUE.

Examples

```
## Not run:
createConQuestProject()

## End(Not run)
```

`createDfFromSys` *createDfFromSys*

Description

Read an R object of class ConQuestSys and create neat R data frame object.

Usage

```
createDfFromSys(mySys)
```

Arguments

`mySys`	An R object of class ConQuestSys, returned by the function conquestr::ConQuestSys

Value

A data frame containing R data frames based on the list objects in the ConQuest system file that has been read in.

See Also

conquestr::ConQuestSys()

`getCqFit` *getCqFit*

Description

creates a data frame representation of the fit of parameters in the item reponse model

Usage

```
getCqFit(myCqs)
```

Arguments

myCqs	A system file.

Value

A data frame.

Examples

```
## Not run:
getCqFit(ConQuestSys())

## End(Not run)
```

---

getCqHist *getCqHist*

Description

creates a data frame representation of the iteration history for all parameters.

Usage

```
getCqHist(myCqs)
```

Arguments

myCqs	A system file.

Value

A data frame.

Examples

```
## Not run:
getCqHist(ConQuestSys())

## End(Not run)
```

getCqParams *getCqParams*

Description

creates a data frame representation of the parameters of the model, including both estimated and constrained parameters. Parameters are either freely estimated ('ParamType' == 0) or constrained ('ParamType' == 0). Parameters are indexed (0 offset) by the column 'ParamNumber'. There is a seperate index for free and constrained parameters.

Usage

```
getCqParams(myCqs)
```

Arguments

myCqs	A system file.

Value

A data frame.

Examples

```
## Not run:
getCqParams(ConQuestSys())

## End(Not run)
```

getCqParams2 *getCqParams2*

Description

returns a list of data frames, one for each term in the model. The data frames include the the estimate, location constraint, or anchored value for each parameter. The standard error of estimated parameters is also included if it has been estimated. The fit (un/weighted MNSQ, sometimes called outfit and infit) of all parameters is alre included if has been estimated.

Usage

```
getCqParams2(myCqs)
```

Arguments

myCqs	A system file.

Value

A list of data frames of length ‘gTerms‘.

Examples

```
## Not run:
getCqParams2(ConQuestSys())

## End(Not run)
```

`getCqTerms` *getCqTerms*

Description

creates a data frame representation of the terms of the model statement, including interactions.

Usage

```
getCqTerms(myCqs)
```

Arguments

`myCqs`	A system file.

Value

A data frame.

Examples

```
## Not run:
getCqTerms(ConQuestSys())

## End(Not run)
```

getCqVars *getCqVars*

Description

creates a data frame representation of the variables in the model statement. Note that steps are not variables.

Usage

```
getCqVars(myCqs)
```

Arguments

myCqs	A system file.

Value

A data frame.

Examples

```
## Not run:
getCqVars(ConQuestSys())

## End(Not run)
```

plotDif *plotDif*

Description

Creates a plot (ggplot2 object) of item parameter estimates common to two system files (e.g., a DIF analysis).

Usage

```
plotDif(mySysToItemDifDf, myScale = "centred", mySuffixes)
```

Arguments

mySysToItemDifDf	An R object of class data frame returned from conquestr::sysToItemDifDf
myScale	A string specifying if the item parameter estimates displayed should be "centred" (default), "scaled" (z scores), or "none" (raw).
mySuffixes	a vector of strings specifying the names for the two groups being analysed, e.g., if the two system files are an analysis of boys and girls, the vector may be ‘c(_male", "_female")‘.

Value

A ggplot2 object.

See Also

conquestr::sysToItemDifDf()

Examples

```
mySys1<- ConQuestSys()
mySys2<- ConQuestSys()
mySysList<- list(mySys1, mySys2)
myDifDf<- sysToItemDifDf(mySysList, mySuffixes = c("_male", "_female"), myDims = "all")
myDifPlot<- plotDif(myDifDf,myScale = "centred", mySuffixes = c("_male", "_female"))
## Not run:
# if you run the above example you will have the plot in the object `myDifPlot`.
plot(myDifPlot)

## End(Not run)
```

`plotItemMap` *plotItemMap*

Description

Creates a plot (ggplot2 object) of item parameter estimates and abilities on latent trait. Note this is not for use with ‘rout‘ files. See the method method plotRout.itemMap to the generic function ‘plotRout‘

Usage

```
plotItemMap(mySys, myDims = "D1", ...)
```

Arguments

`mySys`	An ’ACER ConQuest’ system file object created using the conquestr::ConQuestSys function.
`myDims`	A string specifying which specific dimensions should be included. The default is "D1", Specific dimensions are specified by the label "D1" for dimensions 1 etc. Alternatively, you can specify myDims = "all", though what this produces is not currenlty supported.
`...`	Optional arguments, mostly for debugging, e.g., ‘setDebug = TRUE‘ will print temporary data frames.

Value

A ggplot2 object.

Examples

```
mySys1<- ConQuestSys()
myItemMap<- plotItemMap(mySys1, myDims = "all")
## Not run:
# if you run the above example you will have the plot in the object `myItemMap`.
plot(myItemMap)

## End(Not run)
```

---

plotRout *plotRout*

Description

generates a plot from an 'ACER ConQuest' Rout file. use 'ConQuestRout' to read in an Rout file created by a 'plot' command in 'ACER ConQuest'.

Usage

```
plotRout(myRout)

## S3 method for class 'InformationWithLatentDist'
plotRout(myRout)

## S3 method for class 'ICC'
plotRout(myRout)

## Default S3 method:
plotRout(myRout)
```

Arguments

myRout	an R object created by the 'ConQuestRout' function.

Value

A ggplot2 object.

Examples

```
myPlot<- plotRout(ConQuestRout())
## Not run:
# if you run the above example you will have a ggplot2 object, using the default Rout file (an ICC).
str(myPlot)

## End(Not run)
## to see why we import this, see https://ggplot2.tidyverse.org/articles/ggplot2-in-packages.html
```

ReadSys *ReadSys*

Description

Internal function to read an 'ACER ConQuest' system file. Called by conquestr::ConQuestSys.

Usage

```
ReadSys(myFile)
```

Arguments

myFile	An 'ACER ConQuest' system file created by the 'put' command in 'ACER ConQuest'. The put command must use the option 'compressed = no'.

Value

A list containing the data objects created by 'ACER ConQuest'.

See Also

conquestr::ConQuestSys()

replaceInDataFrame *iterate through a data frame and use replaceInVector*

Description

iterate through a data frame and use replaceInVector

Usage

```
replaceInDataFrame(d, r, x)
```

Arguments

d	A DataFrame.
r	A double - the value to be replaced if it is < -1e300.
x	A double - the value to repalce r with.

replaceInVector *replace a very large neagtive number with something - usually NA_REAL*

Description

replace a very large neagtive number with something - usually NA_REAL

Usage

```
replaceInVector(v, r, x)
```

Arguments

v	A NumericVector.
r	A double - the value to be replaced if it is < -1e300.
x	A double - the value to repalce r with.

searchConQuestSys *searchConQuestSys*

Description

Search for object names within a ConQuest System file object.

Usage

```
searchConQuestSys(searchString, mySys, value = TRUE, ignore.case = TRUE)
```

Arguments

searchString	A string to search within the names of mySys.
mySys	An 'ACER ConQuest' system file object created using the conquestr::ConQuestSys function.
value	Should searchConQuestSys return the name of the object or its index.
ignore.case	Should searchConQuestSys ignore the case of the search term.

Value

a string including object names mathching the search term

sysToBMatrixDf *sysToBMatrixDf*

Description

Read an R object of class ConQuestSys and create a labelled representation of the B matrix (scoring matrix). This maps item response catagories to items and dimensions. Returns long data frame, where items are duplicated if they are in many dimnsions.

Usage

```
sysToBMatrixDf(mySys, applyLabels = TRUE)
```

Arguments

mySys	An R object of class ConQuestSys, returned by the function conquestr::ConQuestSys
applyLabels	A bool indicating whether labels (e.g., dimension labels) should be appended.

Value

A data frame containing R the labelled B matrix.

Examples

```
myBMatrix<- sysToBMatrixDf(ConQuestSys())
## Not run:
# if you run the above example you will have the B Matrix from the example system file.
str(myBMatrix)

## End(Not run)
```

sysToItemDifDf *sysToItemDifDf*

Description

Creates a data frame that includes the common item parameter estimates from two (or more) system files (e.g., a DIF analysis).

Usage

```
sysToItemDifDf(listOfSysFiles, mySuffixes, myDims = "all")
```

Arguments

listOfSysFiles	A list of system files returned from conquestr::ConQuestSys
mySuffixes	a vector of strings specifying the names for the two groups being analysed, e.g., if the two system files are an analysis of boys and girls, the vector may be ‘c(_male", "_female")‘.
myDims	A string specifying if all or specific dimensions should be included. The default is "all", Specific dimensions are specified by the label "D1" for dimensions 1 etc.

Value

A data frame object.

See Also

conquestr::plotDif()

---

timesTwo *Multiply a number by two*

Description

Multiply a number by two

Usage

```
timesTwo(x)
```

Arguments

x	A single integer.

---

transformPvs *transformPvs*

Description

Helper function to Transform PVs onto a new metric (e.g., PISA Mean = 500, SD = 100). Uses the method described in the PISA 2012 technical manual.

Usage

```
transformPvs(x, mT = 0, sdT = 1, weights, data, addToDf = FALSE, debug = TRUE)
```

Arguments

x	A concatenated vector of varnames in data, PV1, PV2, ..., PVm.
mT	The desired mean of the PVs
sdT	The desired sd of the PVs
weights	The name of the weight variable in 'data' used to cauclate the mean and SD accross the PVs
data	The data frame that contains the PVs and weights.
addToDf	A Boolean, if TRUE, the transformed PVs are coerced into the DF, data, with name data$x_T (not yet implmented).
debug	A temporary flag to spit-out objects to global env for chekcing. Will be removed when pushed to CRAN

Value

a List of transofrmed PVs with as many elements as PVs were listed in 'x'.

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