Package 'quickpsy'

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Type Package

Title Fits Psychometric Functions for Multiple Groups

Version 0.1.5.1

URL http://dlinares.org/quickpsy.html

Description Quickly fits and plots psychometric functions (normal, logistic, Weibull or any or any function defined by the user) for multiple groups.

Depends R (>= 3.1.2), DEoptim, dplyr, ggplot2

Imports MPDiR

Encoding UTF-8

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R topics documented:

`aic` *Calculates the AICs*

Description

`aic` calculates the AICs.

Usage

```
aic(qp)
```

Arguments

`qp`	output from quickpsy

avbootstrap *Creates bootstrap samples*

Description

avbootstrap creates bootstrap samples

Usage

```
avbootstrap(qp, bootstrap = "parametric", B = 100)
```

Arguments

qp	output from quickpsy
bootstrap	'parametric' performs parametric bootstrap; 'nonparametric' performs non-parametric bootstrap; 'none' does not perform bootstrap (default is 'parametric').
B	number of bootstrap samples (default is 100 ONLY).

cum_normal_fun *Cumulative normal function*

Description

Cumulative normal function.

Usage

```
cum_normal_fun(x, p)
```

Arguments

x	Vector of values of the explanatory variable.
p	Vector of parameters p = c(mean, standard_deviation).

Value

Probability at each x.

See Also

inv_cum_normal_fun

Examples

```
xseq <- seq(0,4,.01)
yseq <- cum_normal_fun(xseq, c(2, .5))
curve <- data.frame(x = xseq, y = yseq)
ggplot(curve, aes(x = x, y = y)) + geom_line()
```

deviance *Calculates the deviances*

Description

deviance calculates the deviances.

Usage

```
deviance(qp)
```

Arguments

qp	output from quickpsy

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 20)
deviance(fit)
```

devianceboot *Calculates the bootsrap deviances*

Description

deviance calculates the bootstrap deviances.

Usage

```
devianceboot(qp)
```

Arguments

qp	output from quickpsy

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 20)
devianceboot(fit)
```

get_functions *Predefined functions*

Description

getfunctions lists the predefined functions in quickpsy.

Usage

```
get_functions()
```

See Also

cum_normal_fun, logistic_fun, weibull_fun

inv_cum_normal_fun *Inverse cumulative normal function*

Description

Inverse cumulative normal function

Usage

```
inv_cum_normal_fun(prob, p)
```

Arguments

prob	Vector of probabilities.
p	Vector of parameters p = c(mean, standard_deviation).

Value

x at each probability. #' @seealso cum_normal_fun

Examples

```
yseq <- seq(0, 1, .01)
xseq <- inv_cum_normal_fun(yseq, c(2, .5))
curve <- data.frame(x = xseq, y = yseq)
ggplot(curve, aes(x = x, y = y)) + geom_line()
```

inv_logistic_fun *Inverse logistic function*

Description

Inverse logistic function

Usage

```
inv_logistic_fun(q, p)
```

Arguments

q	Vector of probabilities.
p	Vector of parameters $p = c(\alpha, \beta)$.

Value

x at each probability.

See Also

logistic_fun

Examples

```
yseq <- seq(0, 1, .01)
xseq <- inv_logistic_fun(yseq, c(2, 4))
curve <- data.frame(x = xseq, y = yseq)
ggplot(curve, aes(x = x, y = y)) + geom_line()
```

inv_weibull_fun *Inverse Weibull function*

Description

Inverse Weibull function

Usage

```
inv_weibull_fun(q, p)
```

Arguments

q	Vector of probabilities.
p	Vector of parameters p = c(alpha, beta).

Value

x at each probability.

See Also

weibull_fun

Examples

```
yseq <- seq(0, 1, .01)
xseq <- inv_weibull_fun(yseq, c(2, 4))
curve <- data.frame(x = xseq, y = yseq)
ggplot(curve, aes(x = x, y = y)) + geom_line()
```

---

logistic_fun *Logistic function*

Description

Logistic function of the form $(1 + exp(-\beta * (x - \alpha)))^(- 1)$

Usage

```
logistic_fun(x, p)
```

Arguments

x	Vector of values of the explanatory variable.
p	Vector of parameters $p = c(\alpha, \beta)$.

Value

Probability at each x.

See Also

inv_logistic_fun

Examples

```
xseq <- seq(0, 4, .01)
yseq <- logistic_fun(xseq, c(2, 4))
curve <- data.frame(x = xseq, y = yseq)
ggplot(curve, aes(x = x, y = y)) + geom_line()
```

logliks *Calculates the loglikelihoods* logliks *calculates the loglikelihoods.*

Description

Calculates the loglikelihoods `logliks` calculates the loglikelihoods.

Usage

```
logliks(qp)
```

Arguments

qp	output from quickpsy

logliksboot *Calculates the bootstrap loglikelihoods*

Description

`logliksboot` calculates the bootstraploglikelihoods.

Usage

```
logliksboot(qp)
```

Arguments

qp	output from quickpsy

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 20)
logliksboot(fit)
```

logliksbootsaturated *Calculates the bootstrap loglikelihoods for the saturated model*

Description

logliks calculates the bootstrap loglikelihoods for the saturated model.

Usage

```
logliksbootsaturated(qp)
```

Arguments

qp	output from quickpsy

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 20)
logliksbootsaturated(fit)
```

loglikssaturated *Calculates the loglikelihoods of the saturated model*

Description

loglikssaturated calculates the loglikelihoods of the saturated model.

Usage

```
loglikssaturated(qp)
```

Arguments

qp	output from quickpsy

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 20)
loglikssaturated(fit)
```

parbootstrap *Creates bootstrap samples of the parameters*

Description

parbootstrap creates bootstrap samples of the parameters.

Usage

```
parbootstrap(qp)
```

Arguments

qp	output from quickpsy

plotcurves *Plot the curves*

Description

plotcurves plot the curves.

Usage

```
plotcurves(qp, panel = NULL, xpanel = NULL, ypanel = NULL, color = NULL,
  averages = T, curves = T, thresholds = T, ci = T)
```

Arguments

qp	output from quickpsy
panel	Name of the variable to be split in panels.
xpanel	Name of the variable to be split in horizontal panels.
ypanel	Name of the variable to be split in vertical panels.
color	Name of the variable codded by color.
averages	If FALSE averaged probabilities are not plotted (default is TRUE).
curves	If FALSE curves are not plotted (default is TRUE)
thresholds	If FALSE thresholds are not plotted (default is TRUE)
ci	If FALSE confidence intervals are not plotted (default is TRUE)

See Also

plotcurves_

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 5)
plotcurves(fit)
plotcurves(fit, xpanel = Direction)
plotcurves(fit, xpanel = Direction, color = WaveForm, ci = FALSE)
```

---

plotcurves_ *Plot the curves*

Description

plotcurves_ is the standard evaluation SE function associated to the non-standard evaluation NSE function plotcurves. SE functions can be more easily called from other functions. In SE functions, you need to quote the names of the variables.

Usage

```
plotcurves_(qp, panel = NULL, xpanel = NULL, ypanel = NULL,
  color = NULL, averages = TRUE, curves = TRUE, thresholds = TRUE,
  ci = TRUE)
```

Arguments

qp	output from quickpsy
panel	Name of the variable to be split in panels.
xpanel	Name of the variable to be split in horizontal panels.
ypanel	Name of the variable to be split in vertical panels.
color	Name of the variable codded by color.
averages	If FALSE averaged probabilities are not plotted (default is TRUE).
curves	If FALSE curves are not plotted (default is TRUE)
thresholds	If FALSE thresholds are not plotted (default is TRUE)
ci	If FALSE confidence intervals are not plotted (default is TRUE)

See Also

plotcurves

Examples

```
library(MPDiR) # contains the Vernier data
data(Vernier) # ?Venier for the reference
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 5)

plotcurves_(fit, xpanel = 'Direction')
plotcurves_(fit, color = 'Direction')
plotcurves_(fit, xpanel = 'Direction', color = 'WaveForm', ci = FALSE)
```

`plotpar` *Plot the values of the parameters*

Description

`plotpar` plot the values of the parameters.

Usage

```
plotpar(qp, x = NULL, panel = NULL, xpanel = NULL, ypanel = NULL,
  color = NULL, geom = "bar", ci = T)
```

Arguments

`qp`	output from quickpsy.
`x`	Name of the variable to displayed in the x-axis.
`panel`	Name of the variable to be split in panels.
`xpanel`	Name of the variable to be split in horizontal panels.
`ypanel`	Name of the variable to be split in vertical panels.
`color`	Name of the variable codded by color.
`geom`	If `'bar'` displays bars. If `'point'` displays points (default is `'bar'`).
`ci`	If `FALSE` confidence intervals are not plotted (default is `TRUE`).

See Also

`plotpar_`

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 10)
plotpar(fit)
plotpar(fit, x = WaveForm)
plotpar(fit, xpanel = Direction)
plotpar(fit, color = Direction)
plotpar(fit, color = Direction, ypanel = WaveForm, geom = 'point')
```

plotpar_ *Plot the values of the parameters*

Description

plotpar_ is the standard evaluation SE function associated to the non-standard evaluation NSE function plotpar. SE functions can be more easily called from other functions. In SE functions, you need to quote the names of the variables.

Usage

```
plotpar_(qp, x = NULL, panel = NULL, xpanel = NULL, ypanel = NULL,
  color = NULL, geom = "bar", ci = T)
```

Arguments

qp	output from quickpsy.
x	Name of the variable to displayed in the x-axis.
panel	Name of the variable to be split in panels.
xpanel	Name of the variable to be split in horizontal panels.
ypanel	Name of the variable to be split in vertical panels.
color	Name of the variable codded by color.
geom	If 'bar' displays bars. If 'point' displays points (default is 'bar').
ci	If FALSE confidence intervals are not plotted (default is TRUE).

See Also

plotpar

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), bootstrap = 'none')

plotpar_(fit, x = 'WaveForm')
plotpar_(fit, xpanel = 'Direction')
plotpar_(fit, color = 'Direction')
plotpar_(fit, color = 'Direction', ypanel = 'WaveForm', geom = 'point')
```

plotthresholds *Plot the thresholds*

Description

plotthresholds plot the thresholds.

Usage

```
plotthresholds(qp, x = NULL, panel = NULL, xpanel = NULL, ypanel = NULL,
  color = NULL, geom = "bar", ci = T, sizeerrorbar = 0.5)
```

Arguments

qp	output from quickpsy.
x	Name of the variable to displayed in the x-axis.
panel	Name of the variable to be split in panels.
xpanel	Name of the variable to be split in horizontal panels.
ypanel	Name of the variable to be split in vertical panels.
color	Name of the variable codded by color.
geom	If 'bar' displays bars.
ci	If FALSE confidence intervals are not plotted (default is TRUE).
sizeerrorbar	Line width of the error bars. If 'point' displays points (default is 'bar').

See Also

plotthresholds_

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 10)
plotthresholds(fit)
plotthresholds(fit, x = WaveForm)
plotthresholds(fit, xpanel = Direction)
plotthresholds(fit, color = Direction, ypanel = WaveForm, geom = 'point')
```

plotthresholds_ *Plot the thresholds*

Description

plotthresholds_ is the standard evaluation SE function associated to the non-standard evaluation NSE function plotthresholds. SE functions can be more easily called from other functions. In SE functions, you need to quote the names of the variables.

Usage

```
plotthresholds_(qp, x = NULL, panel = NULL, xpanel = NULL,
  ypanel = NULL, color = NULL, geom = "bar", ci = T,
  sizeerrorbar = 0.5)
```

Arguments

qp	output from quickpsy.
x	Name of the variable to displayed in the x-axis.
panel	Name of the variable to be split in panels.
xpanel	Name of the variable to be split in horizontal panels.
ypanel	Name of the variable to be split in vertical panels.
color	Name of the variable codded by color.
geom	If 'bar' displays bars.
ci	If FALSE confidence intervals are not plotted (default is TRUE).
sizeerrorbar	Line width of the error bars. If 'point' displays points (default is 'bar').

See Also

plotthresholds

Examples

```
library(MPDiR) # contains the Vernier data
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 10)

plotthresholds_(fit, x = 'WaveForm')
plotthresholds_(fit, xpanel = 'Direction')
plotthresholds_(fit, color = 'Direction')
plotthresholds_(fit, color = 'Direction', ypanel = 'WaveForm', geom = 'point')
```

qpdat *Data set for demonstration*

Description

It is part of the data associated with the paper 'Motion signal and the perceived positions of moving objects'.

Usage

```
qpdat
```

Format

An object of class `grouped_df` (inherits from `tbl_df`, `tbl`, `data.frame`) with 6240 rows and 8 columns.

References

Linares, D., López-Moliner, J., & Johnston, A. (2007). Motion signal and the perceived positions of moving objects. Journal of Vision, 7(7), 1.

quickpsy *Fits psychometric functions*

Description

`quickpsy` fits, by direct maximization of the likelihood (Prins and Kingdom, 2010; Knoblauch and Maloney, 2012), psychometric functions of the form

$$\psi(x) = \gamma + (1 - \gamma - \lambda) * fun(x)$$

where γ is the guess rate, λ is the lapse rate and fun is a sigmoidal-shape function with asymptotes at 0 and 1.

Usage

```
quickpsy(d, x = x, k = k, n = n, grouping, random, within, between,
  xmin = NULL, xmax = NULL, log = FALSE, fun = cum_normal_fun,
  parini = NULL, guess = 0, lapses = 0, prob = NULL, thresholds = T,
  bootstrap = "parametric", B = 100, ci = 0.95, optimization = "optim")
```

Arguments

d	Data frame with the results of a Yes-No experiment to fit. It should have a tidy form in which each column corresponds to a variable and each row is an observation.
x	Name of the explanatory variable.
k	Name of the response variable. The response variable could be the number of trials in which a yes-type response was given or a vector of 0s (or -1s; no-type response) and 1s (yes-type response) indicating the response on each trial.
n	Only necessary if k refers to the number of trials in which a yes-type response was given. It corresponds to the name of the variable indicating the total number of trials.
grouping	Name of the grouping variables. It should be specified as `grouping = .(variable_name1, variable_name2)`.
random	Name of the random variable. It should be specified as `random = .(variable_name1, variable_name2)`. In the current version of quickpsy, the random variable has not special treatment. It does the same as `grouping`.
within	Name of the within variable. It should be specified as `within = .(variable_name1, variable_name2)`. In the current version of quickpsy, the within variable has not special treatment. It does the same as `grouping`.
between	Name of the between variable. It should be specified as `between = .(variable_name1, variable_name2)`. In the current version of quickpsy, the between variable has not special treatment. It does the same as `grouping`.
xmin	Minimum value of the explanatory variable for which the curves should be calculated (the default is the minimum value of the explanatory variable).
xmax	Maximum value of the explanatory variable for which the curves should be calculated (the default is the maximum value of the explanatory variable).
log	If `TRUE`, the logarithm of the explanatory variable is used to fit the curves (default is `FALSE`).
fun	Name of the shape of the curve to fit. It could be a predefined shape (`cum_normal_fun`, `logistic_fun`, `weibull_fun`) or the name of a function introduced by the user (default is `cum_normal_fun`).
parini	Initial parameters. quickpsy calculates default initial parameters using probit analysis, but it is also possible to specify a vector of initial parameters or a list of the form `list(c(par1min, par1max), c(par2min, par2max))` to constraint the lower and upper bounds of the parameters (when `optimization = 'DE'`, parini should be also a list).
guess	Value indicating the guess rate γ (default is 0). If `TRUE`, the guess rate is estimated as the i + 1 paramEter where i corresponds to the number of parameters of `fun`. If, for example, `fun` is a predefined shape with parameters p1 and p2, then the guess rate corresponds to parameter p3.
lapses	Value indicating the lapse rate λ (default is 0). If `TRUE`, the lapse rate is estimated as the i + 1 parameter where i corresponds to the number of parameters of `fun` plus one if the guess rate is estimated. If, for example, `fun` is a predefined shape with parameters p1 and p2, then the lapse rate corresponds to parameter p3. If the guess rate is also estimated, p3 will be the guess rate and p4 the lapse rate.

prob	Probability to calculate the threshold (default is guess + .5 * (1 - guess)).
thresholds	If FALSE, thresholds are not calculated (default is TRUE).
bootstrap	'parametric' performs parametric bootstrap; 'nonparametric' performs non-parametric bootstrap; 'none' does not perform bootstrap (default is 'parametric').
B	number of bootstrap samples (default is 100 ONLY).
ci	Confidence intervals level based on percentiles (default is .95).
optimization	Method used for optimization. The default is 'optim' which uses the optim function. It can also be 'DE' which uses de function DEoptim from the package DEoptim, which performs differential evolution optimization. By using DEoptim, it is less likely that the optimization finishes in a local minimum, but the optimization is slow. When 'DE' is used, parini should be specified as a list with lower and upper bounds.

Value

A list containing the following components:

- x, k, n
- groups The grouping variables.
- funname String with the name of the shape of the curve.
- psyfunguesslapses Curve including guess and lapses.
- limits Limits of the curves.
- parini Initial parameters.
- optimization Method to optimize.
- pariniset FALSE if initial parameters are not given.
- ypred Predicted probabilities at the values of the explanatory variable.
- curves Curves.
- par Fitted parameters and its confidence intervals.
- curvesbootstrap Bootstrap curves.
- thresholds Thresholds.
- thresholdsci Confidence intervals for the thresholds.
- logliks Log-likelihoods of the model.
- loglikssaturated Log-likelihoods of the saturated model.
- deviance Deviance of the model and the p-value calculated by bootstraping.
- aic AIC of the model defined as

$$-2 * loglik + 2 * k$$

where k is the number of parameters of the model.

References

Burnham, K. P., & Anderson, D. R. (2003). Model selection and multimodel inference: a practical information-theoretic approach. Springer Science & Business Media.

Knoblauch, K., & Maloney, L. T. (2012). Modeling Psychophysical Data in R. New York: Springer.

Prins, N., & Kingdom, F. A. A. (2016). Psychophysics: a practical introduction. London: Academic Press.

See Also

quickpsy_

Examples

```
# make sure that all the requires packages are installed
# and loaded; instructions at https://github.com/danilinares/quickpsy
library(MPDiR) # contains the Vernier data; use ?Vernier for the reference
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 10)
plotcurves(fit)
plotpar(fit)
plotthresholds(fit, geom = 'point')
```

---

quickpsy_ *Fits psychometric functions*

Description

quickpsy_ is the standard evaluation SE function associated to the non-standard evaluation NSE function quickpsy. SE functions can be more easily called from other functions. In SE functions, you need to quote the names of the variables.

Usage

```
quickpsy_(d, x = "x", k = "k", n = "n", grouping, random, within, between,
  xmin = NULL, xmax = NULL, log = FALSE, fun = "cum_normal_fun",
  parini = NULL, guess = 0, lapses = 0, prob = NULL, thresholds = T,
  bootstrap = "parametric", B = 100, ci = 0.95, optimization = "optim")
```

Arguments

d	Data frame with the results of a Yes-No experiment to fit. It should have a tidy form in which each column corresponds to a variable and each row is an observation.
x	Name of the explanatory variable.
k	Name of the response variable. The response variable could be the number of trials in which a yes-type response was given or a vector of 0s (or -1s; no-type response) and 1s (yes-type response) indicating the response on each trial.

n	Only necessary if k refers to the number of trials in which a yes-type response was given. It corresponds to the name of the variable indicating the total number of trials.
grouping	Name of the grouping variables. It should be specified as grouping = .(variable_name1, variable_name2).
random	Name of the random variable. It should be specified as random = .(variable_name1, variable_name2). In the current version of quickpsy, the random variable has not special treatment. It does the same as grouping.
within	Name of the within variable. It should be specified as within = .(variable_name1, variable_name2). In the current version of quickpsy, the within variable has not special treatment. It does the same as grouping.
between	Name of the between variable. It should be specified as between = .(variable_name1, variable_name2). In the current version of quickpsy, the between variable has not special treatment. It does the same as grouping.
xmin	Minimum value of the explanatory variable for which the curves should be calculated (the default is the minimum value of the explanatory variable).
xmax	Maximum value of the explanatory variable for which the curves should be calculated (the default is the maximum value of the explanatory variable).
log	If TRUE, the logarithm of the explanatory variable is used to fit the curves (default is FALSE).
fun	Name of the shape of the curve to fit. It could be a predefined shape (cum_normal_fun, logistic_fun, weibull_fun) or the name of a function introduced by the user (default is cum_normal_fun).
parini	Initial parameters. quickpsy calculates default initial parameters using probit analysis, but it is also possible to specify a vector of initial parameters or a list of the form list(c(par1min, par1max), c(par2min, par2max)) to constraint the lower and upper bounds of the parameters (when optimization = 'DE', parini should be also a list).
guess	Value indicating the guess rate γ (default is 0). If TRUE, the guess rate is estimated as the i + 1 parameter where i corresponds to the number of parameters of fun. If, for example, fun is a predefined shape with parameters p1 and p2, then the guess rate corresponds to parameter p3.
lapses	Value indicating the lapse rate λ (default is 0). If TRUE, the lapse rate is estimated as the i + 1 parameter where i corresponds to the number of parameters of fun plus one if the guess rate is estimated. If, for example, fun is a predefined shape with parameters p1 and p2, then the lapse rate corresponds to parameter p3. If the guess rate is also estimated, p3 will be the guess rate and p4 the lapse rate.
prob	Probability to calculate the threshold (default is guess + .5 * (1 - guess)).
thresholds	If FALSE, thresholds are not calculated (default is TRUE).
bootstrap	'parametric' performs parametric bootstrap; 'nonparametric' performs non-parametric bootstrap; 'none' does not perform bootstrap (default is 'parametric').
B	number of bootstrap samples (default is 100 ONLY).
ci	Confidence intervals level based on percentiles (default is .95).

optimization — Method used for optimizication. The default is 'optim' which uses the optim function. It can also be 'DE' which uses de function DEoptim from the package DEoptim, which performs differential evolution optimization. By using DEoptim, it is less likely that the optimization finishes in a local minimum, but the optimization is slow. When 'DE' is used, parini should be specified as a list with lower and upper bounds.

See Also

quickpsy

---

quickreadfiles *Reads several files*

Description

quickreadfiles builts a data frame from several txt files. It assumes that in each file, the first row has the names of the variables.

Usage

```
quickreadfiles(path = getwd(), extension = "txt", ...)
```

Arguments

path	Path of the file (default is the working directory).
extension	Specify whether the file extension is 'txt' or 'csv'.
...	arguments of the form name_var = c('value1', 'value2',..). A new column with variable name name_var is addes to the data frame.

Examples

```
# download the 3 files in
# https://github.com/danilinares/quickpsy/tree/master/inst/extdata/example1
# and add them to your working directory
# dat <- quickreadfiles(subject = c('aa', 'bb', 'cc'), session = c('1', '2'))
# fit <- quickpsy(dat, phase, resp, grouping=.(subject), lapses = T, guess = T)
# plotcurves(fit)
```

sse *Sum of squared errors of prediction*

Description

ypred calculates the sum of squared errors of prediction

Usage

```
sse(qp)
```

Arguments

qp	output from quickpsy

summary.quickpsy *Plot the parameters and its confidence intervals* summary *Plot the parameters and its confidence intervals*

Description

Plot the parameters and its confidence intervals summary Plot the parameters and its confidence intervals

Usage

```
## S3 method for class 'quickpsy'
summary(object, ...)
```

Arguments

object	An object for which a summary is desired.
...	Additional arguments affecting the summary produced.

weibull_fun *Weibull function*

Description

Weibull function of the form $(1 - exp(-(x/\alpha)^{\beta})$

Usage

```
weibull_fun(x, p)
```

Arguments

x	Vector of values of the explanatory variable.
p	Vector of parameters $p = c(\alpha, \beta)$.

Value

Probability at each x.

Examples

```
xseq <- seq(0, 4, .01)
yseq <- weibull_fun(xseq, c(2, 4))
curve <- data.frame(x = xseq, y = yseq)
ggplot(curve, aes(x = x, y = y)) + geom_line()
```

ypred *Predicted probabilities*

Description

ypred calculates the predicted probabilities at the values of the explanatory variable.

Usage

```
ypred(qp)
```

Arguments

qp	output from quickpsy

Examples

```
library(MPDiR) # contains the Vernier data
data(Vernier) # ?Venier for the reference
fit <- quickpsy(Vernier, Phaseshift, NumUpward, N,
                grouping = .(Direction, WaveForm, TempFreq), B = 20)
ypred(fit)
```

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