

Package ‘neuropsychology’

November 10, 2016

Type Package

Title An R Toolbox for Psychologists, Neuropsychologists and
Neuroscientists

Version 0.3.0

URL <https://github.com/neuropsychology/neuropsychology.R>

Date 2016-11-10

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BugReports <https://github.com/neuropsychology/neuropsychology.R/issues>

Description Contains free datasets and statistical functions useful in psychology, neuropsychology and neuroscience.

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Depends R (>= 3.3.0), ggplot2 (>= 2.0.0), dplyr (>= 0.5.0), lme4 (>= 1.1.0)

Imports prettyR (>= 2.2.0), ggcorrplot (>= 0.1.0), Hmisc (>= 3.15), MuMIn (>= 1.15.6), png (>= 0.1), tm (>= 0.6), wordcloud2 (>= 0.2.0), BayesFactor (>= 0.9.0), htmlTable

Suggests lmerTest

LazyData TRUE

LazyLoad yes

Encoding UTF-8

RoxygenNote 5.0.1

NeedsCompilation no

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Repository CRAN

Date/Publication 2016-11-10 17:09:35

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APAze	<i>APA6-ready output for (g)lm , (g)lmer objects and Bayes Factors.</i>
-------	---

Description

APA6-ready output for mixed effects and non-mixed effects linear models.

Usage

```
APAze(fit,
      method="boot",
      nsim=1000,
      add.stars=TRUE,
      ddf=NULL)
```

Arguments

<code>fit</code>	A (g)lm or lme4::(g)lmer fit.
<code>method</code>	"boot" for bootstrapped CI, "Wald" for estimated. Only in the case of a mixed-effect model. See confint.merMod .
<code>nsim</code>	how many times should it bootstrap the confidence intervals (only if <code>method = "boot"</code>).
<code>add.stars</code>	Add significance stars.
<code>ddf</code>	Denominator degrees of freedom approximation (only if <code>fit</code> is an instance of <code>lmerTest::merModLmerTest</code> , ignored otherwise). If 'NULL', then the normal approximation (treat t-values as z-values) is used for lmer objects fit with lme4 and the default Satterthwaite is used for models fit with lmerTest.

Author(s)

Dominique Makowski, Phillip Alday

Examples

```
require(neuropsychology)

df <- personality

fit <- lmer(Age ~ BMI + (1|Salary), data=df)
APAze(fit, method="Wald")
```

assess	<i>Compare a given score to a parent population</i>
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Description

Compare a given score to a parent population and draws a plot.

Usage

```
assess(score,
mean=0,
sd=1,
distribution=NA,
language="en",
colour.line="#E91E63",
colour.fill="#2196F3")
```

Arguments

- score The participant's score.
- mean The general population's mean.
- sd The general population's standart deviation.
- distribution Your own vector of parent distribution (if you feed in a vector, it will of course compute new values for the mean and sd).
- language "en" or "fr".
- colour.line The colour of the vertical line.
- colour.fill "The colour of the density plot.

Value

A ggplot2 plot.

Author(s)

Dominique Makowski

Examples

```
require(neuropsychology)

assess(3.4, mean=2.5, sd=1.2)

df <- personality
assess(24, distribution=df$Age)
```

braincloud

Draw a brain shaped wordcloud

Description

Draw a brain shaped wordcloud.

Usage

```
braincloud(pdf.file=".",
           words=NULL,
           frequency=NULL,
           word.length.min=4,
           word.length.max=Inf,
           freq.min=10,
           freq.max=Inf,
           image="brain1",
           text.size=0.5,
           colours="neuropsychology",
           colours.replicate=TRUE)
```

Arguments

pdf.file	Either the name of a file (ending with ".pdf"), a directory or nothing to scrap all the PDFs from the directory.
words	A vector of words.
frequency	A length-equal frequency vector.
word.length.min	Keep only words with minimum length x.
word.length.max	Keep only words with maximum length x.
freq.min	Keep only words that appear more than x times.
freq.max	Keep only words that appear less than x times.

`image` NULL or "brain1", "brain2", "head1", "head2".
`text.size` Adjust the text size.
`colours` colour of the words. A vector of HEX colours or the following: "random-dark", "random-light" or "neuropsychology" for a material design palette (default).
`colours.replicate` Should it replicate the length of the colours vector to match the length of the data? If FALSE and length of the colours vector shorter than the length of the data, the words left will appear black.

Value

`cloud` A wordcloud. Better to click on "show in new window" in RStudio.

Author(s)

Dominique Makowski

Examples

```
require(neuropsychology)

braincloud(words=c("here", "is", "some", "random", "words"))
```

`cortable` *Correlation plot and table with significance stars*

Description

Get a correlation plot and table with significance stars.

Usage

```
cortable(df,
         correction="holm",
         type="pearson",
         returns="table",
         print.result=TRUE,
         plot.result=TRUE,
         iamaboringperson=FALSE)
```

Arguments

`df` A dataframe.
`correction` "none", "holm" for holm-bonferroni (default), "fdr" for False Discovery Rate.
`type` "spearman" for Spearman's correlation and "pearson" for Pearson's.
`returns` Should the function return the table or the plot.

```
print.result    Should it print the table in the console.
plot.result     Should it plot the result in the plotting tab.
iamaboringperson
                Are you?
```

Details

'cortable' displays a correlation matrix or table, and a plot. Note that you can save the table under a .csv format to easily integrate it in your documents. Moreover, you can customize the plot's theme and features as it is in ggplot2's format.

Value

result Either The table in the format of a dataframe or the plot in the format of a ggplot's plot. Depending on the "returns" argument.

Author(s)

Dominique Makowski and Bertolt

Examples

```
require(neuropsychology)

df <- personality

cortable(df)

# Extract the table
table <- cortable(df, returns="table")

# Extract the plot
plot <- cortable(df, returns="plot")

# Save table
write.csv(table, "correlation_table.csv")

# Save plot
ggplot2::ggsave("mycorrplot.png", plot)
```

describe

Description of dataframes

Description

Describes a vector or the columns in a matrix or data frame.

Usage

```
describe(df, group=NA)
```

Arguments

df	A dataframe, matrix or vector.
group	A string indicating the factor by which you want to separate the descriptions.

Details

'describe' displays a table of descriptive statistics for numeric, factor and logical variables in the object 'df'. This function relies massively on the PrettyR package. All credits go to its authors.

Value

A list with three components:

Numeric	A list of the values returned for each column described.
Factor	A list of the tables for each column described.
Logical	A list of the tables for each column described.

Author(s)

Jim Lemon and Dominique Makowski

Examples

```
require(neuropsychology)

df <- personality

describe(df)

describe(df, group="Sex")
```

dprime

Calculates Signal Detection Theory indices.

Description

Calculates the d' , the beta, the a' and the $b''d$ based on the signal detection theory (SRT).

Usage

```
dprime(n_hit, n_miss, n_fa, n_cr)
```

Arguments

n_hit	Number of hits.
n_miss	Number of misses.
n_fa	Number of false alarms.
n_cr	Number of correct rejections.

Details

Adjustment made for extreme values following (Hautus, 1995).

Examples

```
n_hit <- 9
n_fa <- 1
n_fa <- 2
n_cr <- 7

indices <- dprime(n_hit, n_fa, n_fa, n_cr)
```

extract_text

Extract text from PDFs

Description

Scrap text from PDFs.

Usage

```
extract_text(files=".",
             word.length.min=4,
             word.length.max=Inf,
             freq.min=10,
             freq.max=Inf)
```

Arguments

files	Either the name of a file (ending with ".pdf"), a directory or nothing to scrap all the PDFs from the directory.
word.length.min	Keep only words with minimum length x.
word.length.max	Keep only words with maximum length x.
freq.min	Keep only words that appear more than x times.
freq.max	Keep only words that appear less than x times.

Value

data A dataframe containing two columns for words and their frequency.

Author(s)

Dominique Makowski

Examples

```
require(neuropsychology)

# text <- extract_text() # In a folder containg some PDFs.
```

format_p	<i>Format the p value</i>
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Description

Format the p value using APA6 standards.

Usage

```
format_p(p,
         add.stars=TRUE)
```

Arguments

p The p value.
add.stars Should it add significance stars at the end.

Value

p The formatted value.

Author(s)

Dominique Makowski

Examples

```
require(neuropsychology)

format_p(0.07)
```

get_factors *Select numeric variables*

Description

Subset a dataframe by keeping the factors.

Usage

```
get_factors(df)
```

Arguments

df A Data frame.

Author(s)

Dominique Makowski

Examples

```
require(neuropsychology)
df <- personality
df_only_factors <- get_factors(df)
```

get_numeric *Select numeric variables*

Description

Subset a dataframe by keeping the numeric variables.

Usage

```
get_numeric(df)
```

Arguments

df A Data frame.

Author(s)

Dominique Makowski

Examples

```
require(neuropsychology)

df <- personality

df_only_numeric <- get_numeric(df)
```

masks	<i>The masks used in textcloud</i>
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Description

A list of masks used in textcloud.

Author(s)

Dominique Makowski

n_colours	<i>Returns a vector of colours</i>
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Description

Returns a vector of colours based on the material design palette.

Usage

```
n_colours(colours="all")
```

Arguments

colours c("all", "blues", "reds", "yellows", "greys"). The colours list to return.

Value

n_colours A vector of colours in HEX format.

Author(s)

Dominique Makowski

Examples

```
require(neuropsychology)

mypalette <- n_colours("blues")
```

personality

A dataframe with personality data

Description

A dataset containing normal and pathological personality traits data from an online questionnaire.

If you use this dataset for a publication, please refer to it as: "personality-1.0".

Demographic variables:

– Study_Level

The level of education. Should be treated as a factor. 0: Absence of Degree, 1: Secondary Education Degree, 2: Youth Training, 3: High-school Degree, 4: Higher National Diploma (2 years of higher education), 5: Bachelor Degree (3 years of higher education), 6: Master Degree (5 years of higher education), 7: Doctorate Degree (8 years of higher education)

Format

1327 observations (rows) and 20 variables (columns)

Author(s)

Dominique Makowski

Examples

```
require(neuropsychology)
```

```
df <- personality
```

```
describe(df)
```

theme_neuropsychology *A minimal theme for ggplot2*

Description

A minimal theme for ggplot2.

Usage

```
theme_neuropsychology(legend.position="right",  
                      legend.text.size=20,  
                      axis.title.size=20,  
                      axis.text.size=15)
```

Arguments

`legend.position` One of the following: "right", "left", "top" or "bottom".
`legend.text.size` The size of the legend text (usually the numbers).
`axis.title.size` The size of the legend title.
`axis.text.size` The size of the axis titles.

Details

For an even better result, don't forget to change the colour palette and to add a space between the axis title and the axis (see the example below).

Author(s)

Dominique Makowski

Examples

```
require(ggplot2)
require(neuropsychology)

df <- personality

ggplot(df, aes(x=Age, y=Negative_Affect, colour=Sex, fill=Sex)) +
  geom_point() +
  geom_smooth(method="lm", fullrange=TRUE) +

  theme_neuropsychology() +

  xlab("\nAge") +
  ylab("Negative Affect\n") +
  scale_fill_brewer(palette="Set1", direction=-1) +
  scale_colour_brewer(palette="Set1", direction=-1)
```

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