

# Package ‘psychReport’

October 29, 2018

**Type** Package

**Title** Reproducible Reports in Psychology

**Version** 0.4

**Author** Ian G Mackenzie

**Maintainer** Ian G Mackenzie <ian.mackenzie@uni-tuebingen.de>

**Description** Helper functions for producing reports in Psychology (Reproducible Research). Provides required formatted strings (APA style) for use in 'Sweave'/'Knitr' 'Latex' integration within \*.Rnw files.

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**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 6.1.0

**Imports** cli, crayon, dplyr, ez, testthat, xtable

**Depends** R(>= 2.10)

**NeedsCompilation** no

**Repository** CRAN

**Date/Publication** 2018-10-29 05:20:03 UTC

## R topics documented:

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psychReport-package    *psychReport*

---

### Description

Helper functions for producing reports in Psychology (Reproducible Research). Provides required formatted strings (APA style) for use in 'Sweave'/'Knitr' 'Latex' integration within \*.Rnw files.

---

addDataDF                    *addDataDF*

---

### Description

Add simulated ex-gaussian reaction-time (RT) data and binary error (Error = 1, Correct = 0) data to dataframe. This function can be used to create simulated dataframes.

### Usage

```
addDataDF(dat, RT = NULL, Error = NULL)
```

### Arguments

|       |   |
|-------|---|
| dat   | DataFrame created from createDF             |
| RT    | Parameters for the call to rtDist function  |
| Error | Parameters for the call to errDist function |

**Value**

DataFrame with RT and Error columns

**Examples**

```

library(psychReport)
# Example 1: default dataframe
dat <- createDF()
dat <- addDataDF(dat)
hist(dat$RT, 100)
table(dat$Error)

# Example 2: defined overall RT parameters
dat <- createDF(nVP = 50, nTr1 = 50,
               design = list("Comp" = c("comp", "incomp")))
dat <- addDataDF(dat, RT = c(500, 150, 100))
boxplot(dat$RT ~ dat$Comp)
table(dat$Comp, dat$Error)

# Example 3: defined RT + Error parameters across conditions
dat <- createDF(nVP = 50, nTr1 = 50,
               design = list("Comp" = c("comp", "incomp")))
dat <- addDataDF(dat,
               RT = list(list(c("Comp:comp"), vals = c(500, 80, 100)),
                        list(c("Comp:incomp"), vals = c(550, 80, 140))),
               Error = list(list(c("Comp:comp"), vals = c(5)),
                            list(c("Comp:incomp"), vals = c(10))))
boxplot(dat$RT ~ dat$Comp)
table(dat$Comp, dat$Error)

# Example 4:
# create dataframe with defined RT + Error parameters across different conditions
dat <- createDF(nVP = 50, nTr1 = 50,
               design = list("Comp" = c("comp", "incomp")))
dat <- addDataDF(dat,
               RT = list(list(c("Comp:comp"), vals = c(500, 150, 150)),
                        list(c("Comp:incomp"), vals = c(550, 150, 100))),
               Error = list(list(c("Comp:comp"), vals = c(5, 4, 2, 2, 1)),
                            list(c("Comp:incomp"), vals = c(25, 8, 5, 2, 2))))
boxplot(dat$RT ~ dat$Comp)
table(dat$Comp, dat$Error)

```

---

aovDispMeans

*aovDispMeans*


---

**Description**

Displays marginal means from model.tables in the command window.

**Usage**

```
aovDispMeans(ezObj, value = "value", name = sys.call())
```

**Arguments**

|       |  |
|-------|--|
| ezObj | Output from ezANOVA (NB. ezANOVA must be called with <code>\\"return_aov = TRUE\\""</code> ) |
| value | String for column name   |
| name  | Required for heading   |

**Examples**

```
library(psychReport)
requiredPackages(c("ez"))
# Example 1:
# create dataframe
dat <- createDF(nVP = 50,
               nTrl = 1,
               design = list("Comp" = c("comp", "incomp")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp"), vals = c(500, 100, 100)),
                               list(c("Comp:incomp"), vals = c(520, 100, 100))))

aovRT <- ezANOVA(dat, dv=. (RT), wid = . (VP), within = . (Comp),
                return_aov = TRUE, detailed = TRUE)
aovRT <- aovTable(aovRT)
aovDispMeans(aovRT)
```

---

aovDispTable

*aovDispTable*


---

**Description**

Display formatted ANOVA table in command window.

**Usage**

```
aovDispTable(ezObj, name = sys.call())
```

**Arguments**

|       |                      |
|-------|----------------------|
| ezObj | Output from ezANOVA  |
| name  | Required for heading |

**Examples**

```

library(psychReport)
requiredPackages(c("ez"))
# Example 1:
# create dataframe
dat <- createDF(nVP = 6,
               nTrl = 1,
               design = list("Comp" = c("comp", "incomp")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp"), vals = c(500, 150, 100)),
                               list(c("Comp:incomp"), vals = c(520, 150, 100))))

aovRT <- ezANOVA(dat, dv=. (RT), wid = . (VP), within = . (Comp), return_aov = TRUE, detailed = TRUE)
aovDispTable(aovRT)

```

---

aovEffectSize

*aovEffectSize*


---

**Description**

Add partial eta squared (pes) or eta-squared (es) effect size measures to ezANOVA table.

**Usage**

```
aovEffectSize(ezObj, effectSize)
```

**Arguments**

|            |                         |
|------------|-------------------------|
| ezObj      | Output from ezANOVA     |
| effectSize | "ges" vs. "pes" vs "es" |

**Value**

list

**Examples**

```

library(psychReport)
requiredPackages(c("ez", "dplyr"))
# Example 1:
# create dataframe with 2(Comp: comp vs. incomp) and 2(Side: left vs. right) factors/levels
dat <- createDF(nVP = 20,
               nTrl = 50,
               design = list("Comp" = c("comp", "incomp"),
                             "Side" = c("left", "right")))

dat <- addDataDF(dat,
               RT = list(list(c("Comp:comp", "Side:left"), vals = c(500, 150, 150)),

```

```

      list(c("Comp:comp", "Side:right"), vals = c(500, 150, 150)),
      list(c("Comp:incomp", "Side:left"), vals = c(500, 150, 150)),
      list(c("Comp:incomp", "Side:right"), vals = c(500, 150, 150)))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp, Side) %>%
  summarize(N = n(),
            rt = mean(RT))

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt), wid = .(VP), within = .(Comp, Side),
              return_aov = TRUE, detailed = TRUE)
aovRT <- aovEffectSize(aovRT, "ges")
aovRT <- aovEffectSize(aovRT, "pes")
aovRT <- aovEffectSize(aovRT, "es")
aovDispTable(aovRT)

```

---

aovJackknifeAdjustment

*adjustJackknifeAdjustment*

---

## Description

Adjust ezANOVA table with corrected F ( $F_c = F/(n-1)^2$ ) and p values for jackknifed data (see Ulrich and Miller, 2001. Using the jackknife-based scoring method for measuring LRP onset effects in factorial designs. *Psychophysiology*, 38, 816-827.)

## Usage

```
aovJackknifeAdjustment(ezObj, numVPs)
```

## Arguments

|        |                            |
|--------|----------------------------|
| ezObj  | Output from ezANOVA        |
| numVPs | The number of participants |

## Value

list

## Examples

```

library(psychReport)
requiredPackages(c("dplyr", "ez"))
# Example 1:
# create dataframe with 2(Comp: comp vs. incomp) and 2(Side: left vs. right) factors/levels
dat <- createDF(nVP = 20,

```

```

nTr1 = 50,
design = list("Comp" = c("comp", "incomp"),
             "Side" = c("left", "right"))

dat <- addDataDF(dat,
                RT = list(list(c("Comp:comp", "Side:left"), vals = c(500, 150, 150)),
                          list(c("Comp:comp", "Side:right"), vals = c(500, 150, 150)),
                          list(c("Comp:incomp", "Side:left"), vals = c(500, 150, 150)),
                          list(c("Comp:incomp", "Side:right"), vals = c(500, 150, 150))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp, Side) %>%
  summarize(N = n(),
            rt = mean(RT))

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt, wid = .(VP), within = .(Comp, Side),
                 return_aov = TRUE, detailed = TRUE)
aovDispTable(aovRT)
aovRT <- aovJackknifeAdjustment(aovRT, length(unique(datAggVP$VP)))
aovDispTable(aovRT)

```

---

aovRoundDigits

*aovRoundDigits*


---

## Description

Round digits to n decimal places in ezANOVA table

## Usage

```
aovRoundDigits(ezObj, nsmall = 2)
```

## Arguments

|        |   |
|--------|---|
| ezObj  | Output from ezANOVA                                   |
| nsmall | Number of small digits to round to within ANOVA table |

## Value

dataframe

**Examples**

```

library(psychReport)
requiredPackages(c("dplyr", "ez"))
# Example 1:
# create dataframe with 2(Comp: comp vs. incomp) and 2(Side: left vs. right) factors/levels
dat <- createDF(nVP = 20,
               nTrl = 50,
               design = list("Comp" = c("comp", "incomp"),
                             "Side" = c("left", "right")))

dat <- addDataDF(dat,
                RT = list(list(c("Comp:comp", "Side:left"), vals = c(500, 150, 150)),
                          list(c("Comp:comp", "Side:right"), vals = c(500, 150, 150)),
                          list(c("Comp:incomp", "Side:left"), vals = c(500, 150, 150)),
                          list(c("Comp:incomp", "Side:right"), vals = c(500, 150, 150))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp, Side) %>%
  summarize(N = n(),
            rt = mean(RT))

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt), wid = .(VP), within = .(Comp, Side),
                return_aov = TRUE, detailed = TRUE)
aovDispTable(aovRT)
aovRT <- aovRoundDigits(aovRT, 2)
aovDispTable(aovRT)

```

---

aovSphericityAdjustment

*aovSphericityAdjustment*


---

**Description**

Adjust ezANOVA table with corrections for sphericity (Greenhouse-Geisser or Huynh-Feldt). Called by default within aovTable

**Usage**

```
aovSphericityAdjustment(ezObj, type = "GG")
```

**Arguments**

|       |   |
|-------|---|
| ezObj | The returned object from a call to ezANOVA      |
| type  | "GG" (Greenhouse-Geisser) or "HF" (Huynh-Feldt) |



**Value**

list

**Examples**

```

requiredPackages(c("dplyr", "ez"))
# Example 1:
# create dataframe with 3(Comp: neutral vs. comp vs. incomp) factors/levels
dat <- createDF(nVP = 20,
               nTrl = 50,
               design = list("Comp" = c("neutral", "comp", "incomp")))

dat <- addDataDF(dat,
                RT = list(list(c("Comp:neutral"), vals = c(510, 150, 100)),
                        list(c("Comp:comp"), vals = c(500, 150, 100)),
                        list(c("Comp:incomp"), vals = c(520, 150, 100))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp) %>%
  summarize(N = n(),
            rt = mean(RT))

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt), wid = .(VP), within = .(Comp),
               return_aov = TRUE, detailed = TRUE)
aovDispTable(aovRT)
aovRT <- aovSphericityAdjustment(aovRT)
aovDispTable(aovRT)

```

aovTable

*aovTable***Description**

Adjust ezANOVA table output. Options include calculation of alternative effect sizes (eta squared, partial eta squared), the calculation of marginal means and formatting options for the ANOVA table (e.g., detailed, rounding).

**Usage**

```

aovTable(ezObj, effectSize = "pes", sphericityCorrections = TRUE,
         sphericityCorrectionType = "GG", marginalMeans = TRUE,
         removeSumSquares = TRUE, removeIntercept = TRUE,
         roundDigits = TRUE, numDigits = 2, dispAovTable = TRUE,
         dispAovMeans = FALSE)

```

**Arguments**

ezObj            Output from ezANOVA (NB. ezANOVA must be called with detailed = TRUE)  
 effectSize       "ges" (generalized eta-squared), "es" (eta-squared), or "pes" (partial eta-squared)  
 sphericityCorrections       TRUE/FALSE  
 sphericityCorrectionType     "GG" (default) vs. "HF"  
 marginalMeans    Return marginal means via model.tables (NB. ezANOVA must be called with return\_aov = TRUE)  
 removeSumSquares       TRUE/FALSE Remove SSn/SSd columns from the ANOVA table  
 removeIntercept       TRUE/FALSE Remove intercept row from the ANOVA table  
 roundDigits       TRUE/FALSE Round numerical values to numDigits  
 numDigits         The number of digits to round to if roundDigits = TRUE  
 dispAovTable       Display the ANOVA table in the command window  
 dispAovMeans       Display the marginal means in the command window

**Value**

list

**Examples**

```

library(psychReport)
requiredPackages(c("dplyr", "ez"))
# Example 1:
# create dataframe with 2(Comp: comp vs. incomp) and 2(Side: left vs. right) factors/levels
dat <- createDF(nVP = 20,
               nTrl = 50,
               design = list("Comp" = c("comp", "incomp"),
                             "Side" = c("left", "right")))

dat <- addDataDF(dat,
                RT = list(list(c("Comp:comp", "Side:left"), vals = c(500, 150, 150)),
                          list(c("Comp:comp", "Side:right"), vals = c(500, 150, 150)),
                          list(c("Comp:incomp", "Side:left"), vals = c(500, 150, 150)),
                          list(c("Comp:incomp", "Side:right"), vals = c(500, 150, 150))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp, Side) %>%
  summarize(N = n(),
            rt = mean(RT))

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt), wid = .(VP), within = .(Comp, Side),
                return_aov = TRUE, detailed = TRUE)

```

```
aovRT <- aovTable(aovRT)
```

---

```
ciStrT          ciStrT
```

---

## Description

Returns a string with the 95% CI from a t.test in Latex format.

## Usage

```
ciStrT(tObj, numDigits = 0, unit = "")
```

## Arguments

|           |   |
|-----------|---|
| tObj      | The returned object from a call to t.test |
| numDigits | The number of digits to round to          |
| unit      | "" vs. "ms" vs. "mv" vs. "%"              |

## Value

character

## Examples

```
requiredPackages(c("dplyr"))
# Example 1:
# create dataframe and add data with 2(Comp: comp vs. incomp) levels
dat <- createDF(nVP = 20,
               nTr1 = 50,
               design = list("Comp" = c("comp", "incomp")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp"), vals = c(500, 150, 100)),
                              list(c("Comp:incomp"), vals = c(520, 150, 100))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp) %>%
  summarize(N = n(),
            rt = mean(RT))

tObj <- t.test(datAggVP$rt[datAggVP$Comp == "comp"],
              datAggVP$rt[datAggVP$Comp == "incomp"],
              paired = TRUE)

ciString <- ciStrT(tObj, unit = "ms")

## Not run:
```

```
# Example use in *.Rnw Sweave file
# \Sexpr{ciString}
## End(Not run)
```

---

createDF

*createDF*

---

## Description

Create dataframe in which to subsequently add simulated data.

## Usage

```
createDF(nVP = 20, nTr1 = 50, design = list(A = c("A1", "A2"), B =
  c("B1", "B2")))
```

## Arguments

|        |  |
|--------|--|
| nVP    | Number of participants                                 |
| nTr1   | Number of trials per factor/level for each participant |
| design | Factors and levels                                     |

## Value

dataframe

## Examples

```
library(psychReport)
# Example 1:
dat <- createDF()

# Example 2:
dat <- createDF(nVP = 50, nTr1 = 50,
  design = list("Comp" = c("comp", "incomp")))

# Example 3:
dat <- createDF(nVP = 50, nTr1 = 50,
  design = list("Comp" = c("comp", "incomp"),
    "Side" = c("left", "right")))
```

---

|     |            |
|-----|------------|
| dat | <i>dat</i> |
|-----|------------|

---

**Description**

Behavioural data (reaction time and error rate) from standard Eriksen Flanker Task with compatible (e.g., <<) and incompatible (e.g., <>) trial types.

**Usage**

```
data(dat)
```

**Format**

A data frame with 128 rows with 6 columns:

**VP** Participant

**cc** Trial N compatibility

**pc** Trial N-1 compatibility

**ra** Response repetition vs. response alternation

**RT** Dependent Variable: Reaction Time

**errorPer** Dependent Variable: Error Percentage

---

```
effectsizeValueString effectsizeValueString
```

---

**Description**

Returns required Latex formatted string for effect size (eta squared, partial eta square, generalized eta squared) = XXX for R/Sweave integration.

**Usage**

```
effectsizeValueString(ezObj, effect, effectSize = "pes")
```

**Arguments**

ezObj            The returned object from a call to ezANOVA

effect           The effect within the ANOVA table to return

effectSize       The effect size to report ("ges" default within ezANOVA, "es" eta squared, "pes" partial eta squared)

**Value**

character

## Examples

```

requiredPackages(c("dplyr", "ez"))
# Example 1:
# create dataframe and add data with 2(Comp: comp vs. incomp) and 2(Side: left vs. right)
dat <- createDF(nVP = 20,
               nTrl = 50,
               design = list("Comp" = c("comp", "incomp"),
                             "Side" = c("left", "right")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp", "Side:left"), vals = c(500, 150, 100)),
                               list(c("Comp:comp", "Side:right"), vals = c(500, 150, 100)),
                               list(c("Comp:incomp", "Side:left"), vals = c(520, 150, 100)),
                               list(c("Comp:incomp", "Side:right"), vals = c(520, 150, 100))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp, Side) %>%
  summarize(N = n(),
            rt = mean(RT))

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt, wid = .VP, within = .(Comp, Side),
                 return_aov = TRUE, detailed = TRUE)
aovRT <- aovTable(aovRT)

pesString <- effectsizeValueString(aovRT, "Comp") # partial eta squared
pesString <- effectsizeValueString(aovRT, "Comp:Side")

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{pesString}
## End(Not run)

```

---

errDist

*errDist*


---

## Description

Returns a random vector of 0's (correct) and 1's (incorrect) with defined proportions (default = 10% errors).

## Usage

```
errDist(n = 10000, proportion = 10)
```

## Arguments

|            |  |
|------------|--|
| n          | Number   |
| proportion | Approximate proportion of errors in percentage |

**Value**

double

**Examples**

```
# Example 1: approx 10% errors
x <- errDist(1000)
table(x)

# Example 2: approx 20% errors
x <- errDist(1000, 20)
table(x)
```

---

|                 |                                |
|-----------------|--------------------------------|
| exampleRnwFiles | <i>exampleRnwFiles(number)</i> |
|-----------------|--------------------------------|

---

**Description**

Open example \*.Rnw files.

**Usage**

```
exampleRnwFiles(exampleNumber = 1)
```

**Arguments**

exampleNumber    Example file to open

**Value**

Creates a copy of an example \*.Rnw file and opens it in the current working directory. The report be generated via either: 1) Compile PDF option within RStudio 2) Command line: Step 1) R CMD Sweave filename.Rnw (creates the \*.tex file) Step 2) pdflatex filename.tex (creates the \*.pdf file)

**Examples**

```
library(psychReport)
# Example 1:
exampleRnwFiles(1)
```

---

|              |                     |
|--------------|---------------------|
| fValueString | <i>fValueString</i> |
|--------------|---------------------|

---

### Description

Returns required Latex formatted string for  $F(df1, df2) = XXX$  for R/Sweave integration. For example,  $F(1, 23) = 3.45$ .

### Usage

```
fValueString(ezObj, effect)
```

### Arguments

|        |   |
|--------|---|
| ezObj  | The returned object from a call to ezANOVA  |
| effect | The effect within the ANOVA table to return |

### Value

character

### Examples

```
library(psychReport)
requiredPackages(c("dplyr", "ez"))
# Example 1:
# create dataframe and add data with 2(Comp: comp vs. incomp) and 2(Side: left vs. right)
dat <- createDF(nVP = 20,
               nTrl = 50,
               design = list("Comp" = c("comp", "incomp"),
                             "Side" = c("left", "right")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp", "Side:left"), vals = c(500, 150, 100)),
                               list(c("Comp:comp", "Side:right"), vals = c(500, 150, 100)),
                               list(c("Comp:incomp", "Side:left"), vals = c(520, 150, 100)),
                               list(c("Comp:incomp", "Side:right"), vals = c(520, 150, 100))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp, Side) %>%
  summarize(N = n(),
            rt = mean(RT))

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt), wid = .(VP), within = .(Comp, Side),
                 return_aov = TRUE, detailed = TRUE)
aovRT <- aovTable(aovRT)

fString <- fValueString(aovRT, "Comp")
```



```
fString <- fValueString(aovRT, "Comp:Side")

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{fString}
## End(Not run)
```

---

mathString

*mathString*


---

### Description

Returns formatted string following addition/subtraction.

### Usage

```
mathString(str1, str2, operation = "-", numDigits = 0, unit = "ms")
```

### Arguments

|           |                          |
|-----------|--------------------------|
| str1      | string                   |
| str2      | string                   |
| operation | "+", "-", "*", "/"       |
| numDigits | number 0 (default)       |
| unit      | "ms", "mV", "mv", or "%" |

### Examples

```
# Example 1:
string <- mathString("550 ms", "480 ms", "-")

# Example 2:
string <- mathString("2.34", "1.65", "+", numDigits = 2, unit = "mV")

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{string}
## End(Not run)
```

---

 meanStrAov

*meanStrAov*


---

### Description

Returns marginal means from ezANOVA object for requested effect in Latex format. Assumes means added to aovObj (e.g., `aovObj$means <- model.tables(aovObj$aov, type = "mean")`).

### Usage

```
meanStrAov(ezObj, effect, level, unit = "ms", numDigits = 0)
```

### Arguments

|           |   |
|-----------|---|
| ezObj     | Output from ezANOVA called with "return_aov = TRUE" |
| effect    | Effect to return                                    |
| level     | Level of effect                                     |
| unit      | "ms" vs. "mv" vs. "%"                               |
| numDigits | "ms" vs. "mv" vs. "%"                               |

### Value

character

### Examples

```
requiredPackages(c("dplyr", "ez"))
# Example 1:
# create dataframe and add data with 2(Comp: comp vs. incomp) and 2(Side: left vs. right)
dat <- createDF(nVP = 20,
               nTrl = 50,
               design = list("Comp" = c("comp", "incomp"),
                             "Side" = c("left", "right")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp", "Side:left"), vals = c(500, 150, 100)),
                               list(c("Comp:comp", "Side:right"), vals = c(500, 150, 100)),
                               list(c("Comp:incomp", "Side:left"), vals = c(520, 150, 100)),
                               list(c("Comp:incomp", "Side:right"), vals = c(520, 150, 100))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp, Side) %>%
  summarize(N = n(),
            rt = mean(RT))

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt, wid = .(VP), within = .(Comp, Side),
                 return_aov = TRUE, detailed = TRUE)
```

```

aovRT <- aovTable(aovRT)

meanString <- meanStrAov(aovRT, "Comp", "comp")
meanString <- meanStrAov(aovRT, "Comp:Side", "incomp:left")

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{meanString}
## End(Not run)

```

---

meanStrT

*meanStrT*


---

## Description

Returns a string with the mean value from a t.test in Latex format.

## Usage

```
meanStrT(tObj, numDigits = 0, unit = "")
```

## Arguments

|           |   |
|-----------|---|
| tObj      | The returned object from a call to t.test |
| numDigits | The number of digits to round to          |
| unit      | "" vs. "ms" vs. "mv" vs. "%"              |

## Value

character

## Examples

```

library(psychReport)
requiredPackages(c("dplyr"))
# Example 1:
# create dataframe and add data
dat <- createDF(nVP = 10,
               nTrl = 50,
               design = list("Comp" = c("comp", "incomp")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp"), vals = c(500, 150, 100)),
                              list(c("Comp:incomp"), vals = c(520, 150, 100))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp) %>%
  summarize(N = n(),

```

```

rt = mean(RT)

tObj <- t.test(datAggVP$rt[dat$Comp == "comp"],
              datAggVP$rt[dat$Comp == "incomp"],
              paired = TRUE)

tString <- meanStrT(tObj, numDigits = 0, unit = "ms")

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{tString}
## End(Not run)

```

---

|                |                       |
|----------------|-----------------------|
| numValueString | <i>numValueString</i> |
|----------------|-----------------------|

---

### Description

Returns numerical value with requested unit in Latex format with numDigits number of decimal places and unit symbol.

### Usage

```
numValueString(value, numDigits = 2, unit = "")
```

### Arguments

|           |  |
|-----------|--|
| value     | number                                   |
| numDigits | number 2 (default)                       |
| unit      | "ms", "mv", "mV", or "%" or "" (default) |

### Value

character

### Examples

```

# Example 1:
string <- numValueString(100.341, 0, "ms")

# Example 2:
string <- numValueString(2.3412, 2, "mv")

# Example 3:
string <- numValueString(63.9812, 2, "")

```

---

|               |                      |
|---------------|----------------------|
| printAovMeans | <i>printAovMeans</i> |
|---------------|----------------------|

---

### Description

Returns Latex formatted table of marginal means from model.tables. Uses printTable (xtable) latex package with some basic defaults. For more examples, see R package xtable

### Usage

```
printAovMeans(..., caption = "Mean", digits = 3, dv = "ms")
```

### Arguments

|         |  |
|---------|--|
| ...     | Output from ezANOVA (NB. ezANOVA must be called with <code>\return_aov = TRUE</code> ) |
| caption | Title for the table  |
| digits  | Number of digits to round to   |
| dv      | Name of the dependent variable (e.g., "ms", "%")                                       |

### Value

character

### Examples

```
library(psychReport)
requiredPackages(c("ez"))
# Example 1:
# create dataframe
dat <- createDF(nVP = 6,
               nTrl = 1,
               design = list("Comp" = c("comp", "incomp")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp"), vals = c(500, 150, 100)),
                              list(c("Comp:incomp"), vals = c(520, 150, 100))))

aovRT <- ezANOVA(dat, dv=. (RT), wid = . (VP), within = . (Comp), return_aov = TRUE, detailed = TRUE)
aovRT <- aovTable(aovRT)
printAovMeans(aovRT, digits = 0, dv = "ms") # latex formatted

## Not run:
# Example use in *.Rnw Sweave file inside R chunk
# << printTable, echo = FALSE, results = tex >>=
# printAovMeans(aovRT, caption = "ANOVA Table")
# @
## End(Not run)
```

---

|            |                   |
|------------|-------------------|
| printTable | <i>printTable</i> |
|------------|-------------------|

---

### Description

Returns Latex formatted table from dataframe or ezANOVA ANOVA table. Uses xtable latex package with some basic defaults. For more examples, see R package xtable

### Usage

```
printTable(obj, caption = "DF", digits = 3, onlyContents = FALSE,
           formatStatsSymbols = TRUE)
```

### Arguments

|                    |                                   |
|--------------------|-----------------------------------|
| obj                | Dataframe/ezANOVA object to print |
| caption            | Title of the dataframe            |
| digits             | Number of digits to round to      |
| onlyContents       | TRUE/FALSE                        |
| formatStatsSymbols | TRUE/FALSE                        |

### Value

character

### Examples

```
requiredPackages(c("dplyr", "ez"))
# Example 1:
# create dataframe
dat <- createDF(nVP = 6, nTr1 = 1,
               design = list("Comp" = c("comp", "incomp")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp"), vals = c(500, 150, 100)),
                              list(c("Comp:incomp"), vals = c(520, 150, 100))))
printTable(dat) # latex formatted

aovRT <- ezANOVA(dat, dv=. (RT), wid = . (VP), within = . (Comp),
                 return_aov = TRUE, detailed = TRUE)
aovRT <- aovTable(aovRT)
printTable(aovRT$ANOVA) # latex formatted

## Not run:
# Example use in *.Rnw Sweave file inside R chunk
# << printTable, echo = FALSE, results = tex >>=
# printTable(aovRT$ANOVA, caption = "ANOVA Table")
# @
```

```
## End(Not run)
```

---

|              |                     |
|--------------|---------------------|
| pValueString | <i>pValueString</i> |
|--------------|---------------------|

---

### Description

Returns Latex formatted string from a p-value required for R/Sweave integration. For example,  $p = 0.11$  or  $p < 0.01$  Returns values to 2 sig decimal places if p-value  $\geq 0.05$ .

### Usage

```
pValueString(pVal, nsmall = 2)
```

### Arguments

|        |                                    |
|--------|------------------------------------|
| pVal   | p-value between 0 and 1            |
| nsmall | Number of small digits to round to |

### Value

character

### Examples

```
# Example 1:
pString <- pValueString(0.67)

# Example 2:
pString <- pValueString(0.1234, 3)

# Example 3:
pString <- pValueString("0.03")

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{pString}
## End(Not run)
```

pValueSummary

*pValueSummary*

---

**Description**

Returns p-values summarized using \*\*\*, \*\*, \*, or exact value when  $p > .05$  (default 2 significant decimal places).

**Usage**

```
pValueSummary(pVal, nsmall = 2)
```

**Arguments**

|        |                                     |
|--------|-------------------------------------|
| pVal   | vector with p-value between 0 and 1 |
| nsmall | Number of small digits to round to  |

**Value**

character

**Examples**

```
# Example 1:  
psum <- pValueSummary(0.0067)  
  
# Example 2:  
psum <- pValueSummary(c(0.6712, 0.1, 0.0001), nsmall = 3)
```

---

requiredPackages*requiredPackages*

---

**Description**

Installs (if required) and loads specified packages.

**Usage**

```
requiredPackages(packages, lib = .libPaths()[1],  
  repos = "http://cran.us.r-project.org")
```



**Arguments**

|          |  |
|----------|--|
| packages | A list of packages   |
| lib      | character vector giving the library directories where to install the packages. Recycled as needed. If missing, defaults to the first element of <code>.libPaths()</code>   |
| repos    | character vector, the base URL(s) of the repositories to use, e.g., the URL of a CRAN mirror such as "https://cloud.r-project.org". For more details on supported URL schemes see <code>url</code> . Can be NULL to install from local files, directories or URLs: this will be inferred by extension from <code>pkgs</code> if of length one. |

**Examples**

```
# Example 1:
library(psychReport)
## Not run:
requiredPackages(c("tidyverse", "ez"))

## End(Not run)
```

---

rtDist

*rtDist*


---

**Description**

Returns a distribution appropriate to simulate reaction times. The distribution is a combined exponential and gaussian distribution called an exponentially modified Gaussian (EMG) distribution or ex-gaussian distribution.

**Usage**

```
rtDist(n = 10000, gaussMean = 600, gaussSD = 50, expRate = 200)
```

**Arguments**

|           |                                   |
|-----------|-----------------------------------|
| n         | Number                            |
| gaussMean | Mean of the gaussian distribution |
| gaussSD   | SD of the gaussian distribution   |
| expRate   | Rate of the exponential function  |

**Value**

double

**Examples**

```
# Example 1:
x <- rtDist()
hist(x, 100)

# Example 2:
x <- rtDist(n=20000, gaussMean=800, gaussSD=50, expRate=100)
hist(x, 100)
```

---

sphericityValueString *sphericityValueString*

---

**Description**

Returns required Latex formatted string for sphericity epsilon values (HF, GG) = XXX for R/Sweave integration. Returns values to 2 sig decimal places.

**Usage**

```
sphericityValueString(ezObj, effect)
```

**Arguments**

|        |   |
|--------|---|
| ezObj  | The returned object from a call to ezANOVA  |
| effect | The effect within the ANOVA table to return |

**Value**

character

**Examples**

```
requiredPackages(c("dplyr", "ez"))
# Example 1
# create dataframe and add data with 3(Comp: neutral vs. comp vs. incomp) levels
dat <- createDF(nVP = 20,
               nTrl = 50,
               design = list("Comp" = c("neutral", "comp", "incomp")))

dat <- addDataDF(dat, RT = list(list(c("Comp:neutral"), vals = c(510, 150, 100)),
                              list(c("Comp:comp"), vals = c(500, 150, 100)),
                              list(c("Comp:incomp"), vals = c(520, 150, 100))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp) %>%
  summarize(N = n(),
            rt = mean(RT))
```

```

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt), wid = .(VP), within = .(Comp),
               return_aov = TRUE, detailed = TRUE)
# adjustAovTableSphericity called by default within adjusutAovTableOptions
aovRT <- aovTable(aovRT)

sphericityValue <- sphericityValueString(aovRT, "Comp")

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{sphericityValue}
## End(Not run)

```

---

statStrAov

*statStrAov*


---

### Description

Returns Latex formatted string from ANOVA required for R/Sweave integration. For example,

$$F(1, 20) = 8.45, p < 0.01, p_{es} = 0.45$$

Returns values to 2 sig decimal places and  $< 0.01$ ,  $< 0.001$  for p values.

### Usage

```
statStrAov(ezObj, effect)
```

### Arguments

|        |   |
|--------|---|
| ezObj  | Output from ezANOVA (NB. ezANOVA must be called with detailed = TRUE) |
| effect | The effect required from the anova table                              |

### Examples

```

library(psychReport)
requiredPackages(c("dplyr", "ez"))
# Example 1:
# create dataframe and add data with 2(Comp: comp vs. incomp) and 2(Side: left vs. right)
dat <- createDF(nVP = 20,
               nTrl = 50,
               design = list("Comp" = c("comp", "incomp"),
                             "Side" = c("left", "right")))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp", "Side:left"), vals = c(500, 150, 100)),
                              list(c("Comp:comp", "Side:right"), vals = c(500, 150, 100)),
                              list(c("Comp:incomp", "Side:left"), vals = c(520, 150, 100)),
                              list(c("Comp:incomp", "Side:right"), vals = c(520, 150, 100))))

```

```

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp, Side) %>%
  summarize(N = n(),
            rt = mean(RT))

# repeated measures ANOVA using ezANOVA
aovRT <- ezANOVA(datAggVP, dv=.rt, wid = .(VP), within = .(Comp, Side),
                return_aov = TRUE, detailed = TRUE)
aovRT <- aovTable(aovRT)

aovString <- statStrAov(aovRT, "Comp")
aovString <- statStrAov(aovRT, "Comp:Side")

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{aovString}
## End(Not run)

```

---

statStrT

*statStrT*


---

### Description

Returns required Latex formatted string T-test required for R/Sweave integration. For example,  $t(11) = 3.45, p < 0.05$ .

### Usage

```
statStrT(tObj)
```

### Arguments

tObj                    The returned object from a call to t.test

### Value

character

### Examples

```

library(psychReport)
requiredPackages(c("dplyr"))
# Example 1:
# create dataframe and add data with 2(Comp: comp vs. incomp) levels
dat <- createDF(nVP = 20,
               nTr1 = 50,
               design = list("Comp" = c("comp", "incomp")))

```

```

dat <- addDataDF(dat, RT = list(list(c("Comp:comp"), vals = c(500, 150, 100)),
                               list(c("Comp:incomp"), vals = c(520, 150, 100))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp) %>%
  summarize(N = n(),
            rt = mean(RT))

tObj <- t.test(datAggVP$rt[datAggVP$Comp == "comp"],
              datAggVP$rt[datAggVP$Comp == "incomp"],
              paired = TRUE)

statStrT <- statStrT(tObj)

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{statStrT}
## End(Not run)

```

---

tValueString

*tValueString*


---

## Description

Returns required Latex formatted string for  $t(df) = XXX$  for R/Sweave integration. Returns values to 2 sig decimal places.

## Usage

```
tValueString(tObj)
```

## Arguments

tObj                    The returned object from a call to t.test

## Value

character

## Examples

```

library(psychReport)
requiredPackages(c("dplyr"))
# Example 1:
# create dataframe and add data with 2(Comp: comp vs. incomp) levels
dat <- createDF(nVP = 20,
               nTr1 = 50,

```

```
design = list("Comp" = c("comp", "incomp"))

dat <- addDataDF(dat, RT = list(list(c("Comp:comp"), vals = c(500, 150, 100)),
                               list(c("Comp:incomp"), vals = c(520, 150, 100))))

# aggregate dat across trials
datAggVP <- dat %>%
  group_by(VP, Comp) %>%
  summarize(N = n(),
            rt = mean(RT))

tObj <- t.test(datAggVP$rt[datAggVP$Comp == "comp"],
              datAggVP$rt[datAggVP$Comp == "incomp"],
              paired = TRUE)

tString <- tValueString(tObj)

## Not run:
# Example use in *.Rnw Sweave file
# \Sexpr{tString}
## End(Not run)
```

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