

# Package ‘cofad’

March 2, 2020

**Type** Package

**Title** Contrast Analyses for Factorial Designs

**Version** 0.1.1

**Maintainer** Markus Burkhardt <markus.burkhardt@psychologie.tu-chemnitz.de>

**Description** Contrast analysis for factorial designs is an alternative to the classical ANOVA approach with the advantage of testing focused hypothesis. The method is mainly based on Rosenthal, Rosnow and Rubin (2000, ISBN:978-0521659802) and Sedlmeier and Renkewitz (2018, ISBN:978-3868943214).

**Depends** R (>= 3.1.0)

**License** GPL-2

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 7.0.2

**Suggests** testthat, knitr, rmarkdown

**VignetteBuilder** knitr

**URL** <https://gitlab.hrz.tu-chemnitz.de/burma--tu-chemnitz.de/cofad.git>

**NeedsCompilation** no

**Author** Markus Burkhardt [aut, cre],  
Johannes Titz [aut]

**Repository** CRAN

**Date/Publication** 2020-03-02 16:00:02 UTC

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calc_contrast	<i>Calculate contrast analysis for factorial designs</i>
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**Description**

Calculate contrast analysis for factorial designs

**Usage**

```
calc_contrast(
  dv,
  between = NULL,
  lambda_between = NULL,
  within = NULL,
  lambda_within = NULL,
  ID = NULL,
  data = NULL
)
```

**Arguments**

dv	dependent variable. Values must be numeric.
between	independent variable that divides the data into independent groups. Vector must be a factor.
lambda_between	contrast weights must be a named numeric. Names must match the levels of between. If lambda_between does not sum up to zero, this will be done automatically.
within	independent variable which divides the data into dependent groups. This must be a factor.
lambda_within	contrast must be a named numeric. Names must match the levels of between. If lambda_within does not sum up to zero, this will be done automatically.
ID	identifier for cases or subjects is needed for within- and mixed contrast analysis.
data	optional argument for the data.frame containing dv and groups.

**Details**

For multi-factorial designs, the lambda weights of the factors must be connected.

**Value**

Calculates the significance of the contrast analysis. given.

**References**

Rosenthal, R., Rosnow, R.L., & Rubin, D.B. (2000). *Contrasts and effect sizes in behavioral research: A correlational approach*. New York: Cambridge University Press.

**Examples**

```

# Example for between-subjects design Table 3.1 from
# Rosenthal, Rosnow and Rubin (2001)

tab31 <- data.frame(
  Val = c(2, 6, 8, 4, 10, 6, 8, 10, 4, 12, 8,
    16, 10, 14, 12, 12, 18, 14, 20, 16),
  Let = as.factor(rep(c("A", "B", "C", "D"), c(5, 5, 5, 5)))
)
contr_bw <- calc_contrast(
  dv = Val,
  between = Let,
  lambda_between = c("A" = -3, "B" = -1, "C" = 1, "D" = 3),
  data = tab31)
contr_bw
summary(contr_bw)

# Example for within-subjects design Calculation 16.6 from
# Sedlmeier and Renkewitz (2018, p. 537)

sedlmeier537 <- data.frame(
  Var = c(27, 25, 30, 29, 30, 33, 31, 35,
    25, 26, 32, 29, 28, 30, 32, 34,
    21, 25, 23, 26, 27, 26, 29, 31,
    23, 24, 24, 28, 24, 26, 27, 32),
  within = as.factor(rep(1:4, c(8, 8, 8, 8))),
  ID = as.factor(rep(1:8, 4)))
contr_wi <- calc_contrast(
  dv = Var,
  within = within,
  ID = ID,
  lambda_within = c("1" = 0.25, "2" = -.75, "3" = 1.25, "4" = -.75),
  data = sedlmeier537
)
contr_wi
summary(contr_wi, ci = .90)

# Example for mixed-designs Table 5.3 from
# Rosenthal, Rosnow and Rubin (2001)
tab53 <- data.frame(
  Var = c(3, 1, 4, 4, 5, 5, 6, 5, 7, 2, 2, 5,
    5, 6, 7, 6, 6, 8, 3, 1, 5, 4, 5, 6,
    7, 6, 8, 3, 2, 5, 6, 6, 7, 8, 8, 9),
  bw = as.factor(rep(rep(LETTERS[1:3], c(3, 3, 3)), 4)),
  wi = as.factor(rep(1:4, c(9, 9, 9, 9))),
  ID = as.factor(rep(1:9, 4))
)
lambda_within <- c("1" = -3, "2" = -1, "3" = 1, "4" = 3)
lambda_between <- c("A" = -1, "B" = 0, "C" = 1)

contr_mx <- calc_contrast(dv = Var, between = bw,
  lambda_between = lambda_between,

```

```

        within = wi,
        lambda_within = lambda_within,
        ID = ID, data = tab53
    )
contr_mx
summary(contr_mx)

```

---

print.cofad\_bw      *Output of between-subject design contrast analysis*

---

### Description

Output of between-subject design contrast analysis

### Usage

```
## S3 method for class 'cofad_bw'
print(x, ...)
```

### Arguments

x                    output of calc\_contrast  
 ...                  further arguments

### Value

Displays the significance of the contrast analysis. The contrastweights, the corresponding group and an effectsize are given.

---

print.cofad\_mx      *Output of a mixed design contrast analysis*

---

### Description

Output of a mixed design contrast analysis

### Usage

```
## S3 method for class 'cofad_mx'
print(x, ...)
```

### Arguments

x                    output of calc\_contrast  
 ...                  further arguments

**Value**

Displays the significance of the contrast analysis. The contrastweights, the corresponding group and an effectsizes are given.

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print.cofad_wi	<i>Output of a within subject design contrast analysis</i>
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**Description**

Output of a within subject design contrast analysis

**Usage**

```
## S3 method for class 'cofad_wi'
print(x, ...)
```

**Arguments**

x	output of calc_contrast
...	further arguments

**Value**

Displays the significance of the contrast analysis. The contrastweights, the corresponding group and an effectsizes are given.

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summary.cofad_bw	<i>Summary of between subject design contrast analysis</i>
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**Description**

Summary of between subject design contrast analysis

**Usage**

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

**Arguments**

object	output of calc_contrast
...	further arguments

**Value**

Displays ANOVA table of the contrastanalysis and the typical effectsizes.

---

summary.cofad\_mx      *Summary of a mixed design contrast analysis*

---

### Description

Summary of a mixed design contrast analysis

### Usage

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

### Arguments

object            output of calc\_contrast  
 ...              further arguments

### Value

Displays ANOVA table of the contrastanalysis and the typical effectsizes.

---

summary.cofad\_wi      *Summary of within subject design contrast analysis*

---

### Description

Summary of within subject design contrast analysis

### Usage

```
## S3 method for class 'cofad_wi'
summary(object, ci = 0.95, ...)
```

### Arguments

object            output of calc\_contrast  
 ci                confidence intervall for composite Score (L-Values)  
 ...              further arguments

### Value

Displays ANOVA table of the contrastanalysis and the typical effectsizes.

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