Package 'diffcor'

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Type Package

Title Fisher's z-Tests Concerning Difference of Correlations

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Description Computations of Fisher's z-tests concerning differences between correlations. diffcor.one() can be used to test whether an expected value differs from an observed value, for example, in construct validation. diffcor.two() can be used to test if the correlation between two constructs differed between two studies. diffcor.dep() can be applied to check if the correlation between two constructs (r12) is significantly different from the correlation of the first construct with a third one (r13), given the intercorrelation of the compared constructs (r23). All outputs provide the compared correlations, test statistic in z-units, and p-values. For diffcor.one() and diffcor.two(), the output further provides confidence intervals of the empirical correlations and the effect size Cohens q. According to Cohen (1988), q = |.10|, |.30| and |.50| are considered small, moderate, and large differences, respectively.

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diffcor *Fisher's z-Tests Concerning Difference of Correlations*

Description

Computations of Fisher's z-tests concerning differences between correlations.

diffcor.one() can be used to test if an observed correlation differs from an expected one, for example, in construct validation. diffcor.two() can be used to test if the correlation between two variables differs across two independent studies. diffcor.dep() can be applied to check if the correlation between two variables (r12) differs from the correlation between the first and a third one (r13), given the intercorrelation of the compared constructs (r23). All outputs provide the compared correlations, test statistic as z-score, and p-values. For diffcor.one() and diffcor.two(), the output further provides confidence intervals of the empirical correlations and the effect size Cohens q. According to Cohen (1988), q = |.10|, |.30| and |.50| are considered small, moderate, and large differences, respectively.

Usage

```
diffcor.one(emp.r, hypo.r, n, alpha = .05, cor.names = NULL,
alternative = c("one.sided", "two.sided"), digit = 3)

diffcor.two(r1, r2, n1, n2, alpha = .05, cor.names = NULL,
alternative = c("one.sided", "two.sided"), digit = 3)

diffcor.dep(r12, r13, r23, n, cor.names = NULL,
alternative = c("one.sided", "two.sided"), digit = 3)
```

Arguments

emp.r	Empirically observed correlation
hypo.r	Hypothesized correlation which shall be tested
n	Sample size in which the observed effect was found
alpha	Likelihood of Type I error, DEFAULT = .05
cor.names	Optional, label for the correlation (e.g., "IQ-performance"). Per default, cor.names is NULL
digit	Number of digits in the output for all parameters, DEFAULT = 3
alternative	A character string specifying if you wish to test one-sided or two-sided differences
r1	First correlation coefficient
r2	Second correlation coefficient
n1	Sample size in which the first correlation coeffient was observed
n2	Sample size in which the second correlation coeffient was observed
r12	Correlation between the first and the second construct
r13	Correlation between the first and the third construct
r23	Correlation between the second and the third construct

Value

r_exp	Vector of the expected correlations in diffcor.one
r_obs	Vector of the empirically observed correlations in diffcor.one
r1	Vector of the empirically observed correlations in the first sample
r2	Vector of the empirically observed correlations in the second sample
r12	Vector of the empirically observed correlations between the first and the second construct in diffcor.dep
r13	Vector of the empirically observed correlations between the first and the third construct in diffcor.dep
r23	Vector of the empirically observed correlations between the second and the third construct in diffcor.dep
LL	Lower limit of the confidence interval of the empirical correlation in diffcor.one, given the specified alpha level, DEFAULT = 95 percent
UL	Upper limit of the confidence interval of the empirical correlation in diffcor.one, given the specified alpha level, DEFAULT = 95 percent
LL1	Lower limit of the confidence interval of the first empirical correlation in diffcor.two, given the specified alpha level, DEFAULT = 95 percent
UL1	Upper limit of the confidence interval of the first empirical correlation in diffcor.two, given the specified alpha level, DEFAULT = 95 percent
LL2	Lower limit of the confidence interval of the second empirical correlation in diffcor.two, given the specified alpha level, DEFAULT = 95 percent
UL2	Upper limit of the confidence interval of the second empirical correlation in diffcor.two, given the specified alpha level, DEFAULT = 95 percent
z	Test statistic for correlation difference in units of z distribution
p	p value for one- or two-sided testing, depending on alternative = c("one.sided", "two.sided)
Cohen_q	Effect size measure for differences of independent correlations

Author(s)

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References

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Lawrence Erlbaum.

Eid, M., Gollwitzer, M., & Schmitt, M. (2015). Statistik und Forschungsmethoden (4.Auflage) [Statistics and research methods (4th ed.)]. Beltz.

Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. Psychological Bulletin, 87, 245-251.

Examples

```
diffcor.one(c(.76, .53, -.32), c(.70, .35, -.40),
  c(225, 250, 210),
  cor.names = c("a-b", "c-d", "e-f"), digit = 2, alternative = "one.sided")

diffcor.two(r1 = c(.39, .52, .22),
  r2 = c(.29, .44, .12),
  n1 = c(66, 66, 66), n2 = c(96, 96, 96), alpha = .01,
  cor.names = c("a-b", "c-d", "e-f"), alternative = "one.sided")

diffcor.dep(r12 = .76, r13 = .70, r23 = .50, n = 271, digit = 4,
cor.names = NULL, alternative = "two.sided")
```

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