Package 'correctedWS'

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Type Package

Title Corrected Welch-Satterthwaite Degrees of Freedom

Version 0.1.0

Description Calculates corrected Welch-Satterthwaite effective degrees of freedom for weighted sums of independent variance components. Provides corrected-default one-sample, paired, and two-sample t-tests, together with the classical Welch-Satterthwaite calculation for explicit comparison.

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URL https://github.com/cycologist/Corrected-Welch-Satterthwaite

BugReports https://github.com/cycologist/Corrected-Welch-Satterthwaite/issues

Encoding UTF-8

RoxygenNote 7.3.3

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VignetteBuilder knitr

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correctedWS-package *Corrected Welch-Satterthwaite Degrees of Freedom*

Description

Corrected Welch-Satterthwaite effective degrees of freedom for weighted sums of independent variance components, with corrected-default t-test utilities.

Details

The package implements the corrected estimator described in von Davier (2026): the denominator uses `nu + 2` and the result subtracts 2. The classical calculation remains available through `ws_classical()` and `method = "classical"`.

See Also

`cws`, `corrected_t_test`

corrected_t_test *One- and Two-Sample t-Tests with Corrected Default Degrees of Freedom*

Description

Performs one-sample, paired, pooled two-sample, or unequal-variance two-sample t-tests. The corrected Welch-Satterthwaite calculation is the default for the unequal-variance two-sample case.

Usage

```
corrected_t_test(x, y = NULL, alternative = c("two.sided", "less", "greater"),
  mu = 0, paired = FALSE, var.equal = FALSE, conf.level = 0.95,
  method = c("corrected", "classical"))
```

Arguments

`x`	Numeric vector of observations.
`y`	Optional numeric vector for a two-sample or paired test.
`alternative`	Alternative hypothesis: `"two.sided"`, `"less"`, or `"greater"`.
`mu`	Null mean or null difference in means.
`paired`	Logical; perform a paired test when `TRUE`.
`var.equal`	Logical; use the pooled-variance test for an independent two-sample test.
`conf.level`	Confidence level for the interval.
`method`	`"corrected"` by default, or `"classical"` for the usual Welch-Satterthwaite calculation.

Value

An object of class "htest".

Examples

```
corrected_t_test(1:10, y = 2:11)
corrected_t_test(1:10, y = 2:11, method = "classical")
```

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cws *Corrected Welch-Satterthwaite Effective Degrees of Freedom*

Description

Calculates corrected effective degrees of freedom for a weighted sum of independent variance components.

Usage

```
cws(s2, nu, w = rep(1, length(s2)))
```

Arguments

s2	Numeric vector of estimated variance components.
nu	Numeric vector of component degrees of freedom.
w	Numeric vector of positive weights.

Value

A single numeric corrected effective degrees of freedom, or NA_real_ when the denominator is zero.

Examples

```
cws(c(2, 3), c(10, 20))
cws(c(2, 3), c(10, 20), c(1, 2))
```

cws2 *Corrected Welch-Satterthwaite Calculation for Two Components*

Description

Convenience wrapper for the corrected Welch-Satterthwaite calculation with two variance components.

Usage

```
cws2(s2_1, s2_2, nu_1, nu_2, w1 = 1, w2 = 1)
```

Arguments

s2_1	First estimated variance component.
s2_2	Second estimated variance component.
nu_1	Degrees of freedom for the first component.
nu_2	Degrees of freedom for the second component.
w1	Positive first-component weight.
w2	Positive second-component weight.

Value

A single numeric corrected effective degrees of freedom.

Examples

```
cws2(2, 3, 10, 20)
cws2(4, 9, 5, 8, w1 = 2, w2 = 3)
```

ws_classical *Classical Welch-Satterthwaite Effective Degrees of Freedom*

Description

Calculates the classical Welch-Satterthwaite effective degrees of freedom for explicit comparison with the corrected estimator.

Usage

```
ws_classical(s2, nu, w = rep(1, length(s2)))
```

Arguments

s2	Numeric vector of estimated variance components.
nu	Numeric vector of component degrees of freedom.
w	Numeric vector of positive weights.

Value

A single numeric classical Welch-Satterthwaite effective degrees of freedom.

Examples

```
ws_classical(c(1, 1), c(1, 2))
```

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