Package: effectcheck (via r-universe)

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Type Package

Title Statistical Consistency Checker for Published Research Results

Version 0.6.2

Description A conservative, assumption-aware statistical consistency checker for already-extracted research-results text. Parses test statistics, effect sizes, and confidence intervals across multiple citation styles including American Psychological Association (APA), Harvard, Frontiers, PLOS ONE, Scientific Reports, Nature Human Behaviour, PeerJ, eLife, PNAS, and others. Recomputes effect sizes using all plausible variants when design is ambiguous, and validates internal consistency. Supports t-tests, F-tests/ANOVA, correlations, chi-square, z-tests, regression, and nonparametric tests. Explicitly tracks all assumptions and uncertainty in output. Detects decision errors (significance reversals) similar to 'statcheck'. From v0.4.0 file extraction is no longer part of the package — pair with an external extractor (e.g., docpluck at <https://docpluck.app>) and pass the resulting text to check_text(). Note: this package is under active development and results should be independently verified. Use is at the sole responsibility of the user. Contributions and verification reports are welcome.

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Contents

`.effectcheck_version` *EffectCheck S3 Class Definition and Methods*

Description

This file defines the effectcheck S3 class and its associated methods for printing, summarizing, and plotting results.

Usage

```
.effectcheck_version()
```

`[.effectcheck` *Subset method for effectcheck objects*

Description

Preserves effectcheck class when subsetting.

Usage

```
## S3 method for class 'effectcheck'
x[...]
```

Arguments

`x`	An effectcheck object
`...`	Subsetting arguments

Value

An effectcheck object

Examples

```
res <- check_text("t(28) = 2.21, p = .035. F(1, 50) = 4.03, p = .049")
res[1, ]
```

check_text *Check raw text for statistical consistency*

Description

Parses APA-style statistical results from text and checks for consistency between reported and computed values. Uses type-matched comparison to ensure reported effect sizes are compared against the same type of computed values.

Usage

```
check_text(
  text,
  stats = c("t", "F", "r", "chisq", "z", "U", "W", "H", "regression", "spearman",
   "kendall", "kendall_w", "dscf", "cochran_q", "RR", "rdpct", "md_hl", "binomial"),
  ci_level = 0.95,
  alpha = 0.05,
  one_tailed = FALSE,
  paired_r_grid = c(seq(0.1, 0.9, by = 0.1), 0.95),
  assume_equal_ns_when_missing = TRUE,
  ci_method_phi = "bonett_price",
  ci_method_V = "bonett_price",
  tol_effect = list(d = 0.02, r = 0.005, phi = 0.02, V = 0.02),
  tol_ci = 0.02,
  tol_p = 0.001,
  messages = FALSE,
  max_text_length = 10^7,
  max_stats_per_text = 10000,
  cross_type_action = "NOTE",
  ci_affects_status = TRUE,
  plausibility_filter = TRUE,
  sign_sensitive = FALSE,
  method_context_action = "NOTE",
  design_ambiguous_action = "WARN",
  unknown_groups_action = "WARN",
  min_confidence = 0L
)
```

Arguments

text	Character vector of text to check
stats	Character vector of test types to check (default: all supported types)
ci_level	Default confidence interval level (default 0.95)
alpha	Significance threshold for decision error detection (default 0.05)
one_tailed	Logical, assume one-tailed tests (default FALSE)

`paired_r_grid` Numeric vector of correlation values for paired t-test grid search

`assume_equal_ns_when_missing`
Logical, assume equal group sizes when missing (default TRUE)

`ci_method_phi` CI method for phi coefficient (default "bonett_price")

`ci_method_V` CI method for Cramer's V (default "bonett_price")

`tol_effect` List of tolerances for effect sizes by type

`tol_ci` Tolerance for CI bounds (default 0.02)

`tol_p` Tolerance for p-values (default 0.001)

`messages` Logical, show progress messages (default FALSE)

`max_text_length`
Maximum total text length in characters (default 10^7)

`max_stats_per_text`
Maximum number of stats to process per text (default 10000)

`cross_type_action`
Action when cross-type match found ("NOTE", "WARN", or "ERROR"; default "NOTE")

`ci_affects_status`
Whether CI mismatches affect status (default TRUE)

`plausibility_filter`
Whether to apply plausibility bounds filter (default TRUE)

`sign_sensitive` Whether sign differences affect status (default FALSE)

`method_context_action`
Action when method context detected in chunk ("NOTE", "WARN", or "SKIP"; default "NOTE")

`design_ambiguous_action`
Action when design-ambiguous t-test (or F(1,df)) effect size ERROR occurs ("WARN", "NOTE", or "ERROR"; default "WARN")

`unknown_groups_action`
Action when d/g ERROR occurs with unknown group sizes n1/n2 ("WARN", "NOTE", or "ERROR"; default "WARN")

`min_confidence` Minimum confidence score (0-10) for results to be included in output (default 0)

Value

An effectcheck S3 object whose `results` tibble carries the parsed and recomputed statistics. Notable output columns:

`design_ambiguous` Logical. TRUE when the row's matching is design-uncertain. INTENTIONALLY BROAD – see `ambiguity_reason` for the specific category (one of two: *structural-design* for a t / F(1,df) / z that reports d or g and produced BOTH paired and independent variant families; *cross-family* for a reported ES type that has no same-type variants in the computed-variants set, e.g. a Cohen's d reported on an F(2,df) omnibus). Equal to `ambiguity_level != "clear"`; the flag never under-reports the row's uncertainty.

`ambiguity_level` Character. `"clear"`, `"ambiguous"`, or `"highly_ambiguous"`. The category-A cases tend to land on `"ambiguous"`; the category-B cases land on `"highly_ambiguous"`.

`ambiguity_reason` Character. Human-readable explanation of the ambiguity. Since v0.5.11, a stable bracket-tagged category suffix is appended when applicable: `"[category: structural-design]"` or `"[category: cross-family]"`. Consumers can grep for the tag to programmatically split the two semantics without parsing English.

`matched_variant` The computed variant matched against the reported ES. A cross-family fallback row will name a variant from a different family than the reported ES type (e.g. `matched_variant="eta"` when `effect_reported_name="d"`).

Plus all other columns: `location`, `raw_text`, test identification (`test_type`, `chisq_subtype`, `df1`, `df2`, `stat_value`, `N`), p-values (`p_reported`, `p_computed`, `decision_error`), effect-size family columns (`d_ind`, `dz`, `g_ind`, `eta2`, `partial_eta2`, `omega2`, ...), CI metadata (`ci_reported`, `ci_expected`, `ci_width_ratio`, `ci_level_source`, ...), and status (`status`, `check_type`, `check_scope`, `extraction_suspect`, `design_inferred`, `uncertainty_level`, `uncertainty_reasons`, ...).

Examples

```
result <- check_text("t(28) = 2.21, p = .035, d = 0.80")
print(result)
summary(result)
```

---

compare_to_variants *Compare reported value to all variants*

Description

Creates a comparison table showing the reported value against all computed variants.

Usage

```
compare_to_variants(x, row_index = 1)
```

Arguments

`x`	An effectcheck object
`row_index`	The row index

Value

A data frame with variant comparisons

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
compare_to_variants(res, 1)
```

compare_with_statcheck *Compare effectcheck results with statcheck*

Description

Runs both effectcheck and statcheck on the same text and returns a merged comparison tibble.

Usage

```
compare_with_statcheck(text, ...)
```

Arguments

text	Character string containing APA-formatted statistics
...	Additional arguments passed to check_text()

Value

A tibble with source column ("both", "effectcheck_only", "statcheck_only")

Examples

```
comp <- compare_with_statcheck("t(28) = 2.21, p = .035, d = 0.80")
print(comp)
```

count_by *Count statistics by category*

Description

Provides counts of statistics grouped by various categories.

Usage

```
count_by(x, by = c("status", "test_type", "uncertainty", "design", "source"))
```

Arguments

x	An effectcheck object
by	Character, grouping variable: "status", "test_type", "uncertainty", "design", or "source"

Value

A data frame with counts

Examples

```
results <- check_text("t(28) = 2.21, p = .035. F(1, 50) = 4.03, p = .049")
count_by(results, "status")
count_by(results, "test_type")
```

`ec_identify` *Identify and Filter EffectCheck Results*

Description

Functions for filtering and identifying problematic results in effectcheck output. Identify problematic results

Usage

```
ec_identify(
  x,
 what = c("errors", "warnings", "decision_errors", "high_uncertainty", "insufficient",
    "all_problems"),
  ...
)
```

Arguments

`x`	An effectcheck object
`what`	Character vector specifying what to identify: • "errors": Results with ERROR status • "warnings": Results with WARN status • "decision_errors": Results with significance reversal • "high_uncertainty": Results with high uncertainty level • "insufficient": Results with insufficient data • "all_problems": All of the above
`...`	Additional arguments (ignored)

Details

Filters effectcheck results to show only problematic cases based on specified criteria.

Value

An effectcheck object containing only the identified results

Examples

```
results <- check_text("t(28) = 2.21, p = .035, d = 0.80")
errors <- ec_identify(results, "errors")
```

`effectcheck-defunct-api` *EffectCheck API Functions (DEFUNCT in v0.4.0)*

Description

All file-input functions in this file became `.Defunct()` in effectcheck 0.4.0. ESCImate delegates document extraction to docpluck; pass the resulting text to `check_text()` for analysis.

Details

Migration:

```
## Before (errors in 0.4.0):
results <- effectcheck::checkPDFdir("path/to/pdfs/")

## After:
library(httr2)
pdfs <- list.files("path/to/pdfs/", pattern = "\\.pdf$", full.names = TRUE)
results <- purrr::map_dfr(pdfs, function(p) {
  resp <- request("https://docpluck.app/api/extract") |>
  req_headers(Authorization = paste("Bearer", Sys.getenv("DOCPLUCK_API_KEY"))) |>
    req_url_query(normalize = "academic", quality = "true") |>
    req_body_multipart(file = curl::form_file(p)) |>
    req_perform()
  dplyr::mutate(check_text(resp_body_json(resp)$text), source = basename(p))
})
```

`export_csv` *Export results to CSV*

Description

Exports check results to CSV format with proper handling of special characters and NA values.

Usage

```
export_csv(res, out, na = "", row.names = FALSE)
```

Arguments

res	tibble returned by check_text() / check_files()
out	output file path (csv)
na	string to use for NA values (default: "")
row.names	logical, include row names (default: FALSE)

Value

Invisible path to the generated CSV file.

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
export_csv(res, out = tempfile(fileext = ".csv"))
```

---

export_json *Export results to JSON*

Description

Exports check results to JSON format with structured metadata.

Usage

```
export_json(res, out, pretty = TRUE)
```

Arguments

res	tibble returned by check_text() / check_files()
out	output file path (json)
pretty	logical, pretty-print JSON (default: TRUE)

Value

Invisible path to the generated JSON file.

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
export_json(res, out = tempfile(fileext = ".json"))
```

filter_by_delta *Filter results by effect size delta*

Description

Filters effectcheck results by the magnitude of effect size discrepancy.

Usage

```
filter_by_delta(x, min_delta = 0, max_delta = Inf)
```

Arguments

x	An effectcheck object
min_delta	Minimum absolute delta to include (default 0)
max_delta	Maximum absolute delta to include (default Inf)

Value

An effectcheck object containing only results within the delta range

Examples

```
results <- check_text("t(28) = 2.21, p = .035, d = 0.80")
filter_by_delta(results, min_delta = 0.1)
```

filter_by_source *Filter results by source file*

Description

Filters effectcheck results to show only results from specific files.

Usage

```
filter_by_source(x, files, pattern = FALSE)
```

Arguments

x	An effectcheck object
files	Character vector of file names or patterns to include
pattern	Logical, if TRUE treat files as regex patterns (default FALSE)

Value

An effectcheck object containing only results from specified files

Examples

```
results <- check_text("t(28) = 2.21, p = .035, d = 0.80")
filter_by_source(results, "text_input")
```

---

filter_by_test_type *Filter results by test type*

Description

Filters effectcheck results to show only specific test types.

Usage

```
filter_by_test_type(x, types)
```

Arguments

x	An effectcheck object
types	Character vector of test types to include (e.g., "t", "F", "r", "chisq", "z")

Value

An effectcheck object containing only the specified test types

Examples

```
results <- check_text("t(28) = 2.21, p = .035. F(1, 50) = 4.03, p = .049")
filter_by_test_type(results, "t")
```

---

filter_by_uncertainty *Filter results by uncertainty level*

Description

Filters effectcheck results by uncertainty level.

Usage

```
filter_by_uncertainty(x, levels)
```

Arguments

x	An effectcheck object
levels	Character vector of uncertainty levels to include ("low", "medium", "high")

Value

An effectcheck object containing only the specified uncertainty levels

Examples

```
results <- check_text("t(28) = 2.21, p = .035, d = 0.80")
filter_by_uncertainty(results, "high")
```

`format_variants` *Format variants for display*

Description

Creates a formatted string representation of variants for a row.

Usage

```
format_variants(x, row_index = 1, include_alternatives = TRUE)
```

Arguments

`x`	An effectcheck object
`row_index`	The row index
`include_alternatives`	Whether to include alternative suggestions

Value

A character string with formatted variant information

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
cat(format_variants(res, 1))
```

generate_report *Generate a submission-ready EffectCheck report*

Description

Creates a self-contained HTML report with executive summary, color-coded results table, expandable details, reproducible R code, and footer stamp.

Usage

```
generate_report(
  res,
  out,
  format = "html",
  title = "EffectCheck Report",
  author = NULL,
  source_name = NULL,
  include_repro_code = TRUE,
  style = "beginner"
)
```

Arguments

res	tibble returned by check_text() / check_files()
out	output file path (html)
format	Output format: "html" (default) or "pdf" (requires rmarkdown)
title	Report title (default: "EffectCheck Report")
author	Author name (optional)
source_name	Source file name (optional)
include_repro_code	Logical, include reproducible R code section (default TRUE)
style	Report style: "beginner" for plain English narrative (default), "expert" for the traditional technical table format

Value

Invisible path to the generated report file

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
generate_report(res, out = tempfile(fileext = ".html"))
```

get_alternatives *Get alternative suggestions for a row*

Description

Get alternative suggestions for a row

Usage

```
get_alternatives(x, row_index = 1)
```

Arguments

x	An effectcheck object
row_index	The row index

Value

A list of alternative effect size suggestions

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
get_alternatives(res, 1)
```

get_decision_errors *Get decision errors from effectcheck results*

Description

Extracts results where the significance decision would be reversed (i.e., reported as significant when computed is not, or vice versa).

Usage

```
get_decision_errors(x)
```

Arguments

x	An effectcheck object

Value

An effectcheck object containing only decision errors

Examples

```
results <- check_text("t(28) = 2.21, p = .035, d = 0.80")
get_decision_errors(results)
```

`get_effect_family` *Get effect size family information*

Description

Returns information about an effect size family and its variants.

Usage

```
get_effect_family(effect_type)
```

Arguments

`effect_type`	The effect size type (e.g., "d", "eta2", "r")

Value

A list with family, variants, alternatives, and description

Examples

```
get_effect_family("d")
```

`get_errors` *Get errors from effectcheck results*

Description

Convenience function to extract only ERROR status results.

Usage

```
get_errors(x)
```

Arguments

`x`	An effectcheck object

Value

An effectcheck object containing only errors

Examples

```
results <- check_text("t(28) = 2.21, p = .035, d = 0.80")
get_errors(results)
```

---

get_same_type_variants *Get same-type variants for a row*

Description

Get same-type variants for a row

Usage

```
get_same_type_variants(x, row_index = 1)
```

Arguments

x	An effectcheck object
row_index	The row index

Value

A list of same-type variants with their values and metadata

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
get_same_type_variants(res, 1)
```

---

get_variant_metadata *Get variant metadata*

Description

Returns metadata for a specific effect size variant type.

Usage

```
get_variant_metadata(variant_name)
```

Arguments

variant_name	The name of the variant (e.g., "d_ind", "dz", "eta2")

Value

A list with name, assumptions, when_to_use, and formula

Examples

```
get_variant_metadata("d_ind")
```

---

get_variants *Get all variants for a specific row*

Description

Extracts and parses the all_variants JSON structure for a given row.

Usage

```
get_variants(x, row_index = 1)
```

Arguments

x	An effectcheck object
row_index	The row index to extract variants from

Value

A list with same_type and alternatives sublists

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
get_variants(res, 1)
```

---

get_warnings *Get warnings from effectcheck results*

Description

Convenience function to extract only WARN status results.

Usage

```
get_warnings(x)
```

Arguments

x	An effectcheck object

Value

An effectcheck object containing only warnings

Examples

```
results <- check_text("t(28) = 2.21, p = .035, d = 0.80")
get_warnings(results)
```

---

is.effectcheck *Test if object is an effectcheck object*

Description

Test if object is an effectcheck object

Usage

```
is.effectcheck(x)
```

Arguments

x	Object to test

Value

Logical

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
is.effectcheck(res)
```

---

parse_text *Parse APA-style stats and effects from text*

Description

Extracts test statistics, effect sizes, confidence intervals, and sample sizes from APA-style text. Includes context window extraction for design inference.

Usage

```
parse_text(text, context_window_size = 2)
```

Arguments

text	Character vector of text to parse
context_window_size	Number of sentences before/after to capture (default 2)

Value

Tibble with parsed elements including context windows

Examples

```
parsed <- parse_text("t(28) = 2.21, p = .035, d = 0.80")
parsed$test_type
parsed$stat_value
```

---

plot.effectcheck *Plot method for effectcheck objects*

Description

Creates visualizations of effectcheck results.

Usage

```
## S3 method for class 'effectcheck'
plot(x, type = c("status", "uncertainty", "test_type", "delta", "all"), ...)
```

Arguments

x	An effectcheck object
type	Type of plot: "status", "uncertainty", "test_type", "delta", or "all"
...	Additional arguments passed to plotting functions

Value

Invisibly returns x.

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
plot(res, type = "status")
```

print.effectcheck *Print method for effectcheck objects*

Description

Displays a formatted summary of effectcheck results.

Usage

```
## S3 method for class 'effectcheck'
print(x, short = TRUE, n = 10, ...)
```

Arguments

x	An effectcheck object
short	Logical, if TRUE show abbreviated output (default TRUE)
n	Maximum number of rows to display (default 10)
...	Additional arguments (ignored)

Value

Invisibly returns x.

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
print(res)
```

print.effectcheck_comparison *Print method for effectcheck comparison*

Description

Print method for effectcheck comparison

Usage

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

Arguments

x	An effectcheck_comparison object
...	Additional arguments (ignored)

Value

Invisibly returns `x`.

Examples

```
comp <- compare_with_statcheck("t(28) = 2.21, p = .035, d = 0.80")
print(comp)
```

`print.summary.effectcheck` *Print method for summary.effectcheck objects*

Description

Print method for summary.effectcheck objects

Usage

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

Arguments

`x`	A summary.effectcheck object
`...`	Additional arguments (ignored)

Value

Invisibly returns `x`.

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
s <- summary(res)
print(s)
```

rbind.effectcheck *Combine effectcheck objects*

Description

Combine effectcheck objects

Usage

```
## S3 method for class 'effectcheck'
rbind(...)
```

Arguments

`...`	effectcheck objects to combine

Value

Combined effectcheck object

Examples

```
res1 <- check_text("t(28) = 2.21, p = .035")
res2 <- check_text("F(1, 50) = 4.03, p = .049")
combined <- rbind(res1, res2)
```

render_report *Render an enhanced HTML report*

Description

Creates an HTML report with summary statistics, expandable sections, and uncertainty visualization.

Usage

```
render_report(res, out)
```

Arguments

`res`	tibble returned by check_text() / check_files()
`out`	output file path (html)

Value

Invisible path to the generated HTML report file.

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
render_report(res, out = tempfile(fileext = ".html"))
```

`summary.effectcheck` *Summary method for effectcheck objects*

Description

Provides comprehensive summary statistics for effectcheck results.

Usage

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

Arguments

`object`	An effectcheck object
`...`	Additional arguments (ignored)

Value

A list of class "summary.effectcheck" containing summary statistics

Examples

```
res <- check_text("t(28) = 2.21, p = .035, d = 0.80")
summary(res)
```

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