Package 'calmr'

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Title Canonical Associative Learning Models and their Representations

Version 0.8.1

Description Implementations of canonical associative learning models, with tools to run experiment simulations, estimate model parameters, and compare model representations. Experiments and results are represented using S4 classes and methods.

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BugReports https://github.com/victor-navarro/calmr/issues

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'class_rsa.R' 'class_model.R' 'class_model_ANCCR.R'
'class_model_HDI2020.R' 'class_model_HD2022.R'
'class_model_MAC1975.R' 'class_model_PKH1982.R'
'class_model_RAND.R' 'class_model_RW1972.R'
'class_model_SM2007.R' 'class_model_TD.R' 'calmr-package.R'

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CalmrDesign-class *S4 class for calmr designs*

Description

S4 class for calmr designs

Slots

`design`: A list containing design information.

`mapping`: A list containing the object mapping.

`raw_design`: The original data.frame.

CalmrDesign-methods *CalmrDesign methods*

Description

S4 methods for `CalmrDesign` class.

Usage

```
## S4 method for signature 'CalmrDesign'
show(object)

## S4 method for signature 'CalmrDesign'
mapping(object)

## S4 method for signature 'CalmrDesign'
trials(object)
```

Arguments

`object`	A `CalmrDesign` object

Value

`show()` returns NULL (invisibly).

`mapping()` returns a list with trial mappings.

`trials()` returns NULL (invisibly).

`CalmrExperiment-class` *S4 class for calmr experiments.*

Description

S4 class for calmr experiments.

Slots

`design`: A CalmrDesign object.

`groups`: A string specifying the groups in the design.

`model`: A string specifying the model used.

`parameters`: A list with the parameters used, per group.

`timings`: A list with the timings used in the design.

`experiences`: A list with the experiences for the model.

`results`: A list with aggregated results.

`models`: The models associated with the iteration.

`.groups`: Internal. The groups associated with the iteration.

`.iter`: Internal. The iteration number.

`.seed`: The seed used to generate the experiment.

See Also

CalmrExperiment-methods

`CalmrExperiment-methods`
CalmrExperiment methods

Description

S4 methods for `CalmrExperiment` class.

Usage

```
## S4 method for signature 'CalmrExperiment'
show(object)

## S4 method for signature 'CalmrExperiment'
design(x)

## S4 method for signature 'CalmrExperiment'
```

```
trials(object)

## S4 method for signature 'CalmrExperiment'
parameters(x)

## S4 replacement method for signature 'CalmrExperiment'
parameters(x) <- value

## S4 method for signature 'CalmrExperiment'
experiences(x)

## S4 replacement method for signature 'CalmrExperiment'
experiences(x) <- value

## S4 method for signature 'CalmrExperiment'
results(object)

## S4 method for signature 'CalmrExperiment'
raw_results(object)

## S4 method for signature 'CalmrExperiment'
parsed_results(object)

## S4 method for signature 'CalmrExperiment'
length(x)

## S4 method for signature 'CalmrExperiment'
parse(object, outputs = NULL)

## S4 method for signature 'CalmrExperiment'
aggregate(x, outputs = NULL)

## S4 method for signature 'CalmrExperiment'
plot(x, type = NULL, ...)

## S4 method for signature 'CalmrExperiment'
graph(x, ...)

## S4 method for signature 'CalmrExperiment'
timings(x)

## S4 replacement method for signature 'CalmrExperiment'
timings(x) <- value

## S4 method for signature 'CalmrExperiment'
filter(x, trial_types = NULL, phases = NULL, stimuli = NULL)
```

Arguments

object, x	A CalmrExperiment object.
value	A list of parameters (or list of parameter lists).
outputs	A character vector specifying the model outputs to parse.
type	A character vector specifying the type(s) of plots to create. Defaults to NULL. See supported_plots.
...	Extra arguments passed to calmr_model_graph().
trial_types	A character vector with trial types to filter.
phases	A character vector with phase names to filter.
stimuli	A character vector with stimulus names to filter.

Value

show() returns NULL (invisibly).

design() returns the CalmrDesign contained in the object.

trials() returns NULL (invisibly).

parameters() returns the list of parameters contained in the object.
parameters()<- returns the object after updating parameters.

experiences() returns a list of data.frame objects containing model training routines.
experiences()<- returns the object after updating experiences.

results() returns a data.table objects with aggregated results.

raw_results() returns a list with raw model results.

parsed_results() returns a list of data.table objects with parsed results.

length() returns an integer specifying the total length of the experiment (groups by iterations).

parse() returns the object after parsing raw results.

aggregate() returns the object after aggregating parsed results.

plot() returns a list of 'ggplot' plot objects.

graph() returns a list of 'ggplot' plot objects.

timings() returns the list of timings contained in the object.
timings()<- returns the object after updating timings.

filter() returns the object after filtering parsed aggregated results

CalmrFit-class *S4 class for calmr Fit*

Description

S4 class for calmr Fit

Slots

`nloglik`: Numeric. Negative log likelihood of the fit

`best_pars`: Numeric. Best fitting parameters

`model_pars`: Numeric. Parameters used in the model function

`link_pars`: Numeric. Parameters used in the link function

`data`: Numeric. Data used for fit

`model_function`: Function. Model function

`link_function`: Function. Link function

`ll_function`: Function. Objective function (usually nloglikelihood)

`optimizer_options`: List. Options used for the optimizer

`extra_pars`: List. Extra parameters passed to the fit call (...)

See Also

CalmrFit-methods

CalmrFit-methods *CalmrFit methods*

Description

S4 methods for `CalmrFit` class.

Usage

```
## S4 method for signature 'CalmrFit'
show(object)

## S4 method for signature 'CalmrFit'
predict(object, type = "response", ...)

## S4 method for signature 'CalmrFit'
NLL(object)

## S4 method for signature 'CalmrFit'
```

```
AIC(object, k = 2)

## S4 method for signature 'CalmrFit'
BIC(object)
```

Arguments

object	A CalmrFit object.
type	A string specifying the type of prediction to generate.
...	Extra named arguments.
k	Penalty term for AIC method.

Details

With type = "response", the predict() function passed model responses to the link function used to fit the model.

The AIC is defined as 2*k - 2*-NLL, where k is a penalty term and NLL is the negative log likelihood of the model.

The BIC is defined as p*log(n) - 2*-NLL, where p is the number of parameters in the model and n is the number of observations

Value

- show() returns NULL (invisibly).
- predict() returns a numeric vector.
- NLL() returns the negative log likelihood of the model.
- AIC() returns the Akaike Information Criterion (AIC) of the model.
- BIC() returns the Bayesian Information Criterion (BIC) of the model.

CalmrModel-class *S4 class for calmr Models*

Description

S4 class for calmr Models

Slots

model_name A model name string

outputs A character vector with model outputs

parameters A list with the model with model parameters

default_parameters A list with the default model parameters

.internal_states A character vector with internal states

.is_timed A logical indicating if the model is timed

.associations A character vector with associations output name

.dnames_map A list with data names mapping for outputs

.parse_map A list with parse functions for outputs

.formula_map A list with formula mapping for outputs

.plots_map A list with plot functions for outputs

.last_experience A data.frame with the last experience run

.last_raw_results A list with the last raw results

.last_parsed_results A list with the last parsed results

`CalmrModel-methods` *CalmrModel methods*

Description

S4 methods for CalmrModel

Usage

```
## S4 method for signature 'CalmrModel'
run(object, experience, mapping, timings, ...)

## S4 method for signature 'CalmrModel'
parameters(x)

## S4 replacement method for signature 'CalmrModel'
parameters(x) <- value

## S4 method for signature 'CalmrModel'
raw_results(object)

## S4 method for signature 'CalmrModel'
parsed_results(object)

## S4 method for signature 'CalmrModel'
show(object)

## S4 method for signature 'CalmrModel'
parse(object, outputs = object@outputs)

## S4 method for signature 'CalmrModel'
plot(x, type = NULL, ...)

## S4 method for signature 'CalmrModel'
graph(x, ...)
```

```
## S4 method for signature 'ANCCR'
run(object, experience, mapping, timings, ..., debug = FALSE, debug_t = -1)

## S4 method for signature 'HDI2020'
run(object, experience, mapping, ...)

## S4 method for signature 'HD2022'
run(object, experience, mapping, ...)

## S4 method for signature 'MAC1975'
run(object, experience, mapping, ...)

## S4 method for signature 'PKH1982'
run(object, experience, mapping, ...)

## S4 method for signature 'RAND'
run(object, experience, mapping, ...)

## S4 method for signature 'RW1972'
run(object, experience, mapping, ...)

## S4 method for signature 'SM2007'
run(
  object,
  experience,
  mapping,
  debug = FALSE,
  comparator_func = .witnauer_comparator_proc,
  ...
)

## S4 method for signature 'TD'
run(object, experience, mapping, timings, ...)
```

Arguments

object	A CalmrModel object.
experience	A data.frame specifying trials as rows, as returned by make_experiment().
mapping	A named list specifying trial and stimulus mapping, as returned by make_experiment().
timings	A named list specifying timings for the model. Only used for timed models.
...	Additional named arguments.
x	A CalmrModel object.
value	A list of parameters to set.
outputs	A character vector specifying the outputs to parse. If not specified, all outputs of the model will be parsed.

type	A character vector specifying the types of plots to generate (should be model outputs).
debug	A logical to print debugging messages.
debug_t	A trial to debug at.
comparator_func	The function for the comparator process.

Value

run() returns the CalmrModel after running the phases in the design.

parameters() returns the parameters of the CalmrModel object.
parameters()<- sets the parameters of a CalmrModel object.

raw_results() returns the last raw results of the CalmrModel object.

parsed_results() returns the last parsed results of the CalmrModel object.

show() returns NULL (invisibly).

parse() returns CalmrModel with parsed results.

plot() returns a list of 'ggplot' plot objects.

graph() returns a 'ggplot' object.

Note

The run method changes some internal states of the model (if appropriate) and populates the .last_raw_results slot with the results of the run.

CalmrRSA-class *S4 class for calmr representational similarity analysis*

Description

S4 class for calmr representational similarity analysis

Slots

corr_mat: An array containing the correlation matrix

distances: A list of pairwise distance matrices

args: A list of the arguments used to create the object.

test_data: A list with permutation data, only populated after testing the object.

CalmrRSA-methods *CalmrRSA methods*

Description

S4 methods for CalmrRSA class.

Usage

```
## S4 method for signature 'CalmrRSA'
show(object)

## S4 method for signature 'CalmrRSA'
test(object, n_samples = 1000, p = 0.95)

## S4 method for signature 'CalmrRSA'
plot(x)
```

Arguments

object, x	A CalmrRSA object.
n_samples	The number of samples for the permutation test (default = 1e3)
p	The critical threshold level for the permutation test (default = 0.95)

Value

- show() returns NULL (invisibly).
- test() returns the CalmrRSA object with permutation test data.
- plot() returns a list of 'ggplot' plot objects.

calmr_model_graph *Create a graph with calmr data*

Description

patch_graphs() patches graphs with 'patchwork'

Usage

```
calmr_model_graph(
  x,
  loops = TRUE,
  limits = max(abs(x$value)) * c(-1, 1),
  colour_key = FALSE,
  t = max(x$trial),
  options = get_graph_opts()
)

patch_graphs(graphs, selection = names(graphs))

get_graph_opts(graph_size = "small")
```

Arguments

x	A data.frame-like with data to use in the plot. Contains a column named value.
loops	Logical. Whether to draw arrows back and forth
limits	Numerical. Limits for color scale. Defaults to max(abs(x$value))*c(-1,1).
colour_key	Logical. Whether to show the color key
t	The trial from which weights are obtained (defaults to the maximum trial in the data).
options	A list with graph options, as returned by get_graph_opts().
graphs	A list of (named) graphs, as returned by graph() or calmr_model_graph()
selection	A character or numeric vector determining the plots to patch.
graph_size	A string (either "small" or "large"). to return default values for small or large graphs
trial	Numerical. The trial to graph.

Value

A 'ggplot' object

patch_graphs() returns a 'patchwork' object

A list with graph options, to be passed to ggnetwork::geom_nodes().

Note

You should probably be getting graphs via the graph method for CalmrExperiment.

calmr_verbosity *Set verbosity options for calmr*

Description

Whether to show verbosity messages and progress bars

Usage

```
calmr_verbosity(verbose)
```

Arguments

verbose	A logical

Value

The list of progressr handlers (invisibly).

Note

Progress bars are handled by the progressr package. This is just a convenience function.

See package 'progressr' for further details.

compare_models *Run models given a set of parameters*

Description

Run models given a set of parameters

Usage

```
compare_models(x, models = NULL, ...)
```

Arguments

x	A list of CalmrExperiment objects or a design data.frame.
models	A character vector of length m, specifying the models to run. Ignored if x is a list of CalmrExperiment objects.
...	Arguments passed to make_experiment.

Value

A list of CalmrExperiment objects

Examples

```
# By making experiment beforehand (recommended)
df <- get_design("blocking")
models <- c("HD2022", "RW1972", "PKH1982")
exps <- lapply(models, function(m) {
  make_experiment(df,
    parameters = get_parameters(df, model = m),
    model = m
  )
})
comp <- compare_models(exps)

# By passing minimal arguments (not recommended; default parameters)
comp <- compare_models(df, models = models)
```

`fit_model` *Fit model to data*

Description

Obtain MLE estimates for model, given data.

Usage

```
fit_model(data, model_function, optimizer_options, file = NULL, ...)
```

Arguments

`data`	A numeric vector containing data to fit model against.
`model_function`	A function that runs the model and returns data.frame of value, organized as in `data`.
`optimizer_options`	A list with options for the optimizer, as returned by get_optimizer_opts.
`file`	A path to save the model fit. If the arguments to the fit call are found to be identical to those in the file, the model just gets loaded.
`...`	Extra parameters passed to the optimizer call.

Value

A CalmrFit object

Note

See the calmr_fits vignette for examples

See Also

`get_optimizer_opts()`

Examples

```
# Make some fake data
df <- data.frame(g = "g", p1 = "!3A>(US)")
pars <- get_parameters(df, model = "RW1972")
pars$alphas["US"] <- 0.9
exper <- make_experiment(df, parameters = pars, model = "RW1972")
res <- run_experiment(exper, outputs = "responses")
responses <- results(res)$responses$value

# define model function
model_fun <- function(p, ex) {
  np <- parameters(ex)
  np[[1]]$alphas[] <- p
  parameters(ex) <- np
  results(run_experiment(ex))$responses$value
}

# Get optimizer options
optim_opts <- get_optimizer_opts(
  model_pars = names(pars$alphas),
  ll = rep(.05, 2), ul = rep(.95, 2),
  optimizer = "optim", family = "identity"
)
optim_opts$initial_pars[] <- rep(.6, 2)

fit_model(responses, model_fun, optim_opts,
  ex = exper, method = "L-BFGS-B",
  control = list(maxit = 1)
)
```

---

get_design *Get basic designs*

Description

Get basic designs

Usage

```
get_design(design_name = NULL)
```

Arguments

design_name	A string specifying a design name (default = NULL)

Value

If design_name is not NULL, a data.frame containing the design. Otherwise, a list containing all available designs.

See Also

parse_design()

Examples

```
names(get_design())
get_design("blocking")
```

`get_optimizer_opts` *Get optimizer options*

Description

Get optimizer options

Usage

```
get_optimizer_opts(
  model_pars,
  initial_pars = rep(NA, length(model_pars)),
  ll = rep(NA, length(model_pars)),
  ul = rep(NA, length(model_pars)),
  optimizer = NULL,
  family = NULL
)
```

Arguments

`model_pars`	A character vector specifying the name of the parameters to fit.
`initial_pars`	A numeric vector specifying the initial parameter values to #' evaluate the model at (required by `optim`). Defaults to 0 for each parameter.
`ll`, `ul`	A numeric vector specifying the lower and upper limits of the parameters to fit, respectively
`optimizer`	A string specifying the optimizer to use. One from `c("optim", "ga")`
`family`	A string specifying the family function to generate responses (and calculate the likelihood function with). One from `c("identity", "normal", "poisson")`.

Value

A list with optimizer options.

Note

Whenever a family function other than the identity is used, the family-specific parameters will always be appended to the end of the relevant lists.

See Also

fit_model()

---

get_parameters *Get model parameters*

Description

Get model parameters

Usage

```
get_parameters(design, model)
```

Arguments

design	A data.frame containing the experimental design.
model	A string specifying a model. One in supported_models().

Value

A list with model parameters depending on model

Examples

```
block <- get_design("blocking")
get_parameters(block, model = "SM2007")
```

---

get_timings *Get timing design parameters*

Description

Get timing design parameters

Usage

```
get_timings(design, model)
```

Arguments

design	A data.frame containing the experimental design.
model	One of supported_timed_models().

Value

A list of timing design parameters.

Examples

```
block <- get_design("blocking")
get_timings(block, model = "TD")
```

`make_experiment` *Make CalmrExperiment*

Description

Makes a `CalmrExperiment` object containing the arguments necessary to run an experiment.

Usage

```
make_experiment(
  design,
  model,
  parameters = NULL,
  timings = NULL,
  iterations = 1,
  miniblocks = TRUE,
  seed = NULL,
  .callback_fn = NULL,
  ...
)
```

Arguments

`design`	A design `data.frame`.
`model`	A string specifying the model name. One of `supported_models()`.
`parameters`	Optional. Parameters for a model as returned by `get_parameters()`.
`timings`	Optional. Timings for a time-based design as returned by `get_timings()`
`iterations`	An integer specifying the number of iterations per group. Default = 1.
`miniblocks`	Whether to organize trials in miniblocks. Default = TRUE.
`seed`	A valid seed for the RNG to make the experiment. Default = NULL, in which case the current RNG is used.
`.callback_fn`	A function for keeping track of progress. Internal use.
`...`	Extra parameters passed to other functions.

Value

A CalmrExperiment object.

Note

The miniblocks option will direct the sampling function to create equally-sized miniblocks with random trials within a phase. For example, the phase string "2A/2B" will create two miniblocks with one of each trial. The phase string "2A/4B" will create two miniblocks with one A trial, and 2 B trials. However, the phase string "2A/1B" will not result in miniblocks, even if miniblocks here is set to TRUE.

See Also

parse_design(),

Examples

```
des <- data.frame(Group = "G1", P1 = "10A>(US)")
ps <- get_parameters(des, model = "HD2022")
make_experiment(
  design = des, parameters = ps,
  model = "HD2022", iterations = 2
)
```

---

model_information *Model information functions*

Description

An assortment of functions to return model information.

Usage

```
supported_models()

supported_timed_models()

supported_optimizers()

supported_families()

supported_plots(model = NULL)

get_model(model)

model_parameters(model = NULL)

model_outputs(model = NULL)
```

Arguments

model	A string specifying a model. One from supported_models().

Value

`supported_models()` returns a character vector.

`supported_timed_models()` returns a character vector.

`supported_optimizers()` returns a character vector.

`supported_families()` returns a character vector.

`supported_plots()` returns a character vector or list (if model is NULL).

`get_model()` returns a CalmrModel model instance.

`model_parameters()` returns a list or a list of lists (if model is NULL).

`model_outputs()` returns a character vector or list (if model is NULL).

Examples

```
# Outputs and plots supported by the RW1972 model
model_outputs("RW1972")

# Getting a model instance of the PKH1982 model
pkh_inst <- get_model("PKH1982")

# Getting the `run` method for the MAC1975
head(methods::getMethod("run", "MAC1975"), 10)

# Getting the parameters required by SM2007
model_parameters("SM2007")
model_parameters("RW1972")
```

---

parse_design *Parse design data.frame*

Description

Parse design data.frame

Usage

```
parse_design(df)
```

Arguments

`df`	A `data.frame` of dimensions (groups) by (phases+1).

Value

A CalmrDesign object.

Note

Each entry in even-numbered columns of df is a string formatted as per `phase_parser()`.

See Also

phase_parser()

Examples

```
df <- data.frame(
  Group = c("Group 1", "Group 2"),
  P1 = c("10AB(US)", "10A(US)")
)
parse_design(df)
```

---

pati *Rat responses from Patittucci et al. 2016*

Description

A dataset containing rat nose pokes and lever presses when levers were associated with different appetitive stimuli.

Usage

```
pati
```

Format

A data.frame with the following variables:

subject subject identifier

block the 2-session block of training (1 to 8)

lever lever presented on the trial: L = left; R = right

us the stimulus that followed the lever: P = pellet; S = sucrose

response the response: lp = lever press; np = nose poke

rpert responses per trial ...

Source

Patittucci et al. (2016). JEP:ALC

phase_parser *Parses a phase string*

Description

Parses a phase string

Usage

```
phase_parser(phase_string)
```

Arguments

phase_string	A string specifying trials within a phase.

Value

A named list with:

trial_info: A trial-named list of lists.

general_info: General phase information.

Note

This function is meant for internal use only, but we expose it so you can test your strings.

See Also

parse_design()

Examples

```
# A silly (but valid) string
phase_parser("10#Rescorla>Wagner")

# An invalid string that needs trial repetitions for one of trials.
try(phase_parser("10#Rescorla/Wagner"))
```

plotting_functions *General plotting functions*

Description

plot_targeted_tbins() plots targeted time data on a trial.

plot_tbins() plots non-targeted time data on a trial.

plot_targeted_trials() plots targeted trial data.

plot_trials() plots non-targeted trial data.

plot_targeted_typed_trials() plots targeted trial data with a type.

plot_targeted_complex_trials() plots targeted data with a third variable.

Usage

```
plot_targeted_tbins(data, t = max(data$trial))

plot_tbins(data, t = max(data$trial))

plot_targeted_trials(data)

plot_trials(data)

plot_targeted_typed_trials(data)

plot_targeted_complex_trials(data, col)
```

Arguments

data	A data.frame-like with data to plot.
t	A numeric vector specifying the trial(s) to plot. Defaults to the last trial in data.
col	A string specifying the column of the third variable.

Value

plot_targeted_tbins() returns 'ggplot' object.

plot_tbins() returns 'ggplot' object.

plot_targeted_trials() returns 'ggplot' object.

plot_trials() returns 'ggplot' object.

plot_targeted_typed_trials() returns 'ggplot' object.

plot_targeted_complex_trials() returns 'ggplot' object.

Note

These functions are not meant to be used by non-developers. If you want to plot data from a model or an experiment, see the `plot()` method. All data must be parsed or aggregated, as returned by `results()` or `parsed_results()`.

`plotting_options` *General plotting options*

Description

`plot_common_scale()` rescales a list of plots to have a common scale.

`get_plot_opts()` returns generic plotting options.

`patch_plots()` patches plots using `patchwork` package.

Usage

```
plot_common_scale(plots)

get_plot_opts(common_scale = TRUE)

patch_plots(plots, selection = names(plots), plot_options = get_plot_opts())
```

Arguments

`plots`	A list of (named) plots, as returned by `plot()`.
`common_scale`	Logical specifying whether to have plots in a common scale.
`selection`	A character or numeric vector determining the plots to patch
`plot_options`	A list of plot options as returned by `get_plot_opts()`

Value

`plot_common_scale()` returns a list of plots.

`get_plot_opts()` returns a list.

`patch_plots()` returns a `patchwork` object.

`rsa` *Perform representational similarity analysis*

Description

Perform representational similarity analysis

Usage

```
rsa(x, comparisons, test = FALSE, ...)
```

Arguments

`x`	A list of CalmrExperiment objects
`comparisons`	A model-named list containing the model outputs to compare.
`test`	Whether to test the RSA via permutation test. Default = FALSE.
`...`	Additional parameters passed to `stats::dist()` and `stats::cor()`

Value

A CalmrRSA object

Note

The object returned by this function can be later tested via its own `test()` method.

Examples

```
# Comparing the associations in three models
exp <- data.frame(
  Group = c("A", "B"),
  P1 = c("!2(A)>(US)/1B>(US)", "!1(A)>(US)/2B>(US)")
)
models <- c("HD2022", "RW1972", "PKH1982")
parameters <- sapply(models, get_parameters, design = exp)
exp_res <- compare_models(exp,
  models = models
)
comparisons <- list(
  "HD2022" = c("associations"),
  "RW1972" = c("associations"),
  "PKH1982" = c("associations")
)
res <- rsa(exp_res, comparisons = comparisons)
test(res, n_samples = 20)
```

`run_experiment` *Run experiment*

Description

Runs an experiment with minimal parameters.

Usage

```
run_experiment(x, outputs = NULL, parse = TRUE, aggregate = TRUE, ...)
```

Arguments

`x`	A CalmrExperiment or design `data.frame`
`outputs`	A character vector specifying which outputs to parse and aggregate. Defaults to NULL, in which case all model outputs are parsed/aggregated.
`parse`	A logical specifying whether the raw results should be parsed. Default = TRUE.
`aggregate`	A logical specifying whether the parsed results should be aggregated. Default = TRUE.
`...`	Arguments passed to other functions

Value

A CalmrExperiment with results.

Examples

```
# Using a data.frame only (throws warning)
df <- get_design("relative_validity")
run_experiment(df, model = "RW1972")

# Using custom parameters
df <- get_design("relative_validity")
pars <- get_parameters(df, model = "HD2022")
pars$alphas["US"] <- 0.6
run_experiment(df, parameters = pars, model = "HD2022")

# Using make_experiment, for more iterations
df <- get_design("blocking")
pars <- get_parameters(df, model = "SM2007")
exper <- make_experiment(df,
  parameters = pars, model = "SM2007",
  iterations = 4
)
run_experiment(exper)

# Only parsing the associations in the model, without aggregation
run_experiment(exper, outputs = "associations", aggregate = FALSE)
```

set_calmr_palette *Get/set the colour/fill palette for plots*

Description

Get/set the colour/fill palette for plots

Usage

```
set_calmr_palette(palette = NULL)
```

Arguments

palette	A string specifying the available palettes. If NULL, returns available palettes.

Value

The old palette (invisibly) if palette is not NULL. Otherwise, a character vector of available palettes.

Note

Changes here do not affect the palette used in graphs.

set_reward_parameters *Set reward parameters for ANCCR model*

Description

Set reward parameters for ANCCR model

Usage

```
set_reward_parameters(parameters, rewards = c("US"))
```

Arguments

parameters	A list of parameters, as returned by get_parameters()
rewards	A character vector specifying the reward stimuli. Default = c("US")

Value

A list of parameters

Note

The default behaviour of get_parameters for the ANCCR model is to set every reward-related parameter to its non-zero default value. This function will set those parameters to zero for non-reward stimuli

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