

conjacp R function for paired conjoint analyses

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1 Description

conjacp is a function designed to analyze data from paired conjoint experiments. Specifically, it estimates average component preferences, differences in average component preferences between subgroups, and direct pairwise preferences (Ganter 2020).

2 Usage

```
conjacp(formula, data, tasks, type = "acp", by = NULL, adjust = FALSE,  
id = NULL, level_weights = NULL)
```

3 Arguments

formula A formula specifying an ACP model to be estimated. Two-way restrictions in the experimental design can be specified as interactions; higher order constraints are not allowed. The outcome variable should be a numeric or integer dummy variable that takes values 1 and 0. Covariates can be numeric or integer (continuous attributes) or factor (categorical attributes); variables involved in two-way constraints can only be of class factor.

data A data frame containing variables specified in **formula** as well as additional variables used to cluster the analysis, or to compare subgroups. The data has to be “long” (one observation per profile, that is, two observations per task).

tasks A named vector that identifies pairs of profiles that were simultaneously presented to respondents.

- type** A character string specifying the quantity of interest to be estimated. Options are average component preferences ("**acp**", default), differences in average component preferences ("**dacp**"), and direct pairwise preferences ("**p**").
- by** An (optional) named vector identifying subgroups of respondents. The vector should be a factor with exactly two levels.
- adjust** A logical value indicating whether values taken by other attributes should be included in models estimated to calculate the quantities of interest for the focal attribute. When **adjust** = **FALSE**, the vector $\Gamma_{i[-\ell]}$ is omitted (Ganter 2020: 26).
- id** An (optional) named vector identifying respondents, to be used for clustering standard errors.
- level_weights** An (optional) list specifying the relative weight associated with each level. The list should contain one sublist per attribute; the first element of the sublist has to be the attribute name (same as the one used in the formula and in the data), and the second element is a vector of weights. By default, all levels are identically weighted. Level weights are automatically normalized by the function so that they always sum to 1.

4 Value

conjacp returns an list of class "conjacp" that can be accessed through the command **summary** and that contains:

estimate The vector of coefficients; ACPs, DCSPs, and direct pairwise preferences. For attributes that are restricted (conditionally independent randomization), two versions of the (conditional) quantities of interest are returned: the first one ("c1") is conditional on the unrestricted level of the second attribute involved in the restriction; the second one ("c2") is conditional on "comparable pairs." In "comparable pairs," the levels of the focal attribute for both profiles are both either restricted or unrestricted; or, they are mixed and the levels of the complementary attribute are unrestricted for both profiles. For restricted levels, the conditional quantities of both types are the same. The first type is suited for comparisons among restricted levels, or between restricted and unrestricted levels; the second type should be reserved for comparisons among unrestricted levels.

vcov The variance-covariance matrix that can be used to obtain standard errors for coefficients or for transformations of the coefficients.

The **summary** command returns unconditional quantities of interest (for unrestricted attributes) and conditional quantities of interest of both “c1” and “c2” type (for restricted attributes). Except for DACPs, the command only returns coefficients and standard errors, not z - and p -values, for testing the nullity of the ACPs and direct pairwise preferences has no interest.

However, the **conjacp** function comes with an additional command **diff_conjacp**, designed to performed pairwise comparisons between any pair of quantities estimated, and that provides z - and p -values for the differences. It takes three arguments:

object A **conjacp** object.

acp1,acp2 Two named arguments that specify the quantities to be compared. The names should exactly match the names displayed in the coefficient table provided by the command **summary**.

References

- Ganter, Flavien. 2020. “Revisiting Causal Inference in Forced-Choice Conjoint Experiments: Identifying Preferences Net of Compositional Effects.” SocArXiv. December 5. doi:10.31235/osf.io/e638u.