**The Robust Statistical Toolbox:**

**A Matlab(R) library for the robust statistics**

**and robust analysis of behavioural data.**

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**Abstract**

We present a new Matlab(R) toolbox dedicated to robust statistical analyses. The RST combines two set of functions, all integrated via a general user interface with easy import tools from text or excel files. A first set of functions consists in robust statistical tests. These are equivalent of tests that can be found in standard commercial packages (t-tests, ANOVA, regression, PCA, Factorial analysis). There are also several tests dedicated to the analysis of response curves (like e.g. shift function analyses) which are often encounter in psychology experiments. The second set of functions is dedicated to behavioural data pre-processing. Robust techniques can be deployed for data clean up (removing of outlying data points), as well as computation of transformed data such as vincentization or signal detection theory metrics (d prime, beta, etc). After reviewing the principles behind the robust measures deployed in the toolbox, some examples are presented to illustrate the advantage of using this tool other traditional (understand mean based and/or ordinary least squares based) statistical methods.

**Introduction**

Psychological literature – lots of data transformations → few tools

Robust stats – OLS many assumptions often violated = lack of power → implement here some of the R function library from Wilcox

**The RSTtoolbox environment**

import / GUI / figure

**plugins**

**Principles of 'robust' statistics**

**issues with OLS**

**breakdown points**

**assumptions**

**Examples**

**References**