**Bakk, Z. and Kuha, J. (2017).**

**Two-step estimation of models between latent classes and external variables.**

***Psychometrika***

**Supplementary materials: Explanation**

The files which are provided in the supplementary materials are for replication of the main results for the two applied examples of the article (Tables 7 and 10 in Section 4).

The logic of the files is as follows:

* Files with names which include the phrase `mccutcheon’ are for the example in Section 4.1 (Tolerance toward nonconformity) and files with names which include `psycon’ for the example in Section 4.2 (Psychological contract types). The R script file (*2step\_LCA\_examples.R*) includes code for both examples.
* The data files are included in an SPSS format, which is read by Latent Gold.
* For one-step, and three-step estimates, estimation code in Latent Gold (LG) is given. LG version 5.0 was used for the results in the paper.
* For the two-step estimates, the main estimation is also done in LG. However, because the estimation involves several distinct steps, the estimation is run from R, for which the commands are given in the R script file *2step\_LCA\_examples.R*. The commands in this script call LG three times, and automatically pass parameter estimates from one step to the next. At the end, the final corrected standard errors for the parameters are also calculated in R.
  + You will need to change a line in the R script to refer to the location of the LG executable file (which for version 5.0 is *lg50.exe*) on your system.
  + The R script requires the add-on package *brew* by Jeffrey Horner (<https://cran.r-project.org/web/packages/brew/index.html>)