

# Weekly assignment

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## Week 7 assignment

You will continue with the results you obtained in the assignment of Week 6 using a modified version of the alexithymia-dataset from the PCovR-package. The data contains the scores of 122 psychology students on the 20-item Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994), which measures the inability to recognize and verbalize emotions and the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). These data can be used to examine the extent to which the degree of depressive symptomology (measured with the total CES-D score) can be predicted by the separate items of the TAS-20. The dataset also contains basic demographic information (age and sex) and an ID variable.

Last week you ran a principal component analysis on the TAS-20 items and decided how many components to extract. Use the obtained component scores to perform k-means and hierarchical clustering. *(Note that since the number of variables included in the cluster analyses will depend on the decisions you made last week, you will all have different results.)*

- a) For k-means clustering: Run k-means clustering with up to 10 clusters and plot the results on a scree plot. Select the two best k's and run k-means clustering again with both. Plot the results for each pair of variables for both solutions and also create a contingency table. Note the differences/similarities and decide which solution to keep.
- b) Select 20 cases randomly and perform hierarchical clustering with different linkage methods. Compare the obtained results. Are there clusters that appear in all solutions?

## What you should hand in:

A one (!) A4-page summary of your results. You may add your code and detailed results in Appendix, but I am more interested in reading your interpretation of the obtained results.

## Deadline

The deadline for this assignment is **Tuesday, 2 April 2023, 23:59**.

## References

- Bagby, R. M., Parker, J. D., & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia Scale: Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research* , 38 (1), 23-32.
- Radloff, R. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied psychological measurement* , 1 (3), 385-401.

## Explanation of the variables in the dataset

ID	Identification number of participant
Sex	0 = male, 1 = female
Age	Age in years
confused	I am often confused about what emotion I am feeling
right words	It is difficult for me to find the right words for my feelings
sensations	I have physical sensations that even doctors don't understand
describe	I am able to describe my feelings easily
analyze problems	I prefer to analyze problems rather than just describe them
upset	When I am upset, I don't know if I am sad, frightened, or angry
puzzled	I am often puzzled by sensations in my body
let happen	I prefer to just let things happen rather than to understand why they turned out that way
identify	I have feelings that I can't quite identify
essential	Being in touch with emotions is essential
feel about people	I find it hard to describe how I feel about people
describe more	People tell me to describe my feelings more
going on	I don't know what's going on inside me
why angry	I often don't know why I am angry
daily activities	I prefer talking to people about their daily activities rather than their feelings
entertainment	I prefer to watch "light" entertainment shows rather than psychological dramas
reveal feelings	It is difficult for me to reveal my innermost feelings, even to close friends
close	I can feel close to someone, even in moments of silence
useful	I find examination of my feelings useful in solving personal problems
hidden meanings	Looking for hidden meanings in movies or plays distracts from their enjoyment
CESD	Depression score measured with CESD