

Input Data

Key Question:
What is the concept your are interested in?

Key Steps:

- define multivariate concept
- data preparation
- data cleaning

Example Options:

- field- and concept specific

Our Choice:
12 variables capturing affect, behavior, cognition, and desire of migrant acculturation

Data Structure:

participants	157
* variables	12
* time points	65

total data points ≈ 122,000

Feature Extraction

Key Question:
What types of psychological processes are you interested in capturing?

Key Steps:

- choose dynamic features
- extract features
- impute missingness
- standardize features

Example Options:

- central tendency
- instability
- trend
- ..., see Table 3

Our Choice:
central tendency, variability, instability, temporal dependence, linear trend, nonlinearity

Data Structure:

participants	157
* feature set	72
↳ variables * features	12*6

total data points 11,304

Feature Reduction

Key Question:
How can you best simplify the feature space?

Key Steps:

- choose approach
- choose method
- run analysis
- inspect results

Example Options:

- feature selection (filter, wrapper)
- feature projection (linear, nonlinear)

Our Choice:
linear feature projection, principal component analysis

Data Structure:

participants	157
* reduced feature set	27

total data points 4,239

Clustering

Key Question:
What patterns or groupings are you seeking to identify within your data?

Key Steps:

- choose approach
- choose algorithm
- run analysis
- evaluate performance
- interpret results

Example Options:

- centroid-based
- distribution-based
- density-based
- hierarchical based

Our Choice:
centroid-based, k-means

Data Structure:

clusters	2
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