

Summary of Clustering Analysis

We aimed to compare k-means clustering and hierarchical methods applied to the TAS-20 component scores obtained from principal component analysis (PCA). The dataset consists of scores of 122 psychology students on the TAS-20 and CES-D scales, along with demographic information.

Methodology:

K-means Clustering: The scree plot shows a decline in inertia as the number of clusters increased, suggesting the optimal number of clusters. K-means clustering was performed with $k=4$ and $k=6$ clusters, representing potential solutions.

Hierarchical Clustering: Twenty cases were selected randomly were used for hierarchical clustering with four different linkage methods (ward, complete, average, single) to evaluate clustering stability and variation across methods.

Results:

K-means Clustering: The k-means solutions showed distinct cluster patterns, with clusters exhibiting varying degrees of compactness and separation. The contingency table revealed differences in cluster assignments between the $k=4$ and $k=6$ solutions, indicating sensitivity to the number of clusters.

Hierarchical Clustering: Dendrograms generated for each linkage method displayed differing cluster structures and hierarchical relationships. Some clusters appeared consistently across all methods.