

Unsupervised data-driven classification of autistic and neurotypical adults before and during the Covid-19 pandemic

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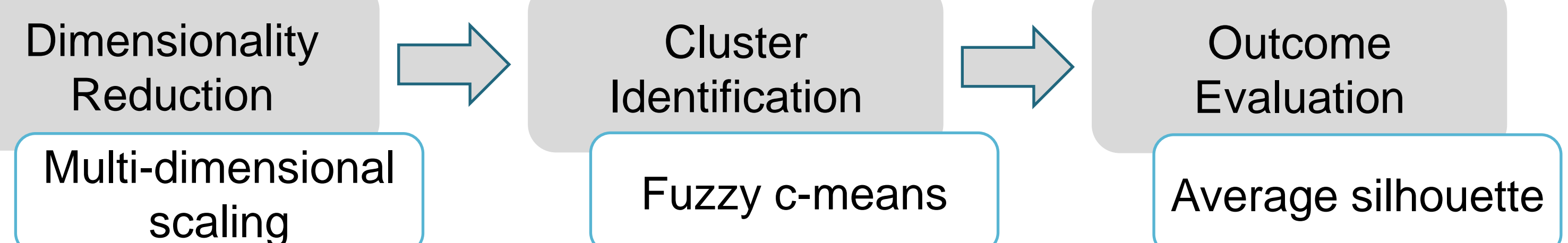
Introduction

- Due to the Covid-19 pandemic - estimated additional 53.2 million cases of depression and 76.2 million cases of anxiety disorders globally (Santomauro et al., 2021)
- Autistic adults have higher rates of mental health difficulties, with anxiety disorders estimated to affect around 40 percent (Hollocks et al., 2019)
- Unclear how the pandemic may have affected autistic and neurotypical adults differently

➤ We investigated the existence of distinct subgroups of difficulty in terms of restricted and repetitive behaviours (RRBs) and intolerance of uncertainty (IU), and explored how these subgroups differed in mental health before and during lockdown

Methods

- 🌐 Online data collection with Redcap during the first UK lockdown
Each questionnaire included a before and during lockdown measure
- ⚙️ Transdiagnostic approach
RRBs and IU questionnaires in clustering algorithm
- 👥 314 autistic adults: mean age 40.4 ± 12.8
284 neurotypical adults: mean age 41.1 ± 14.3



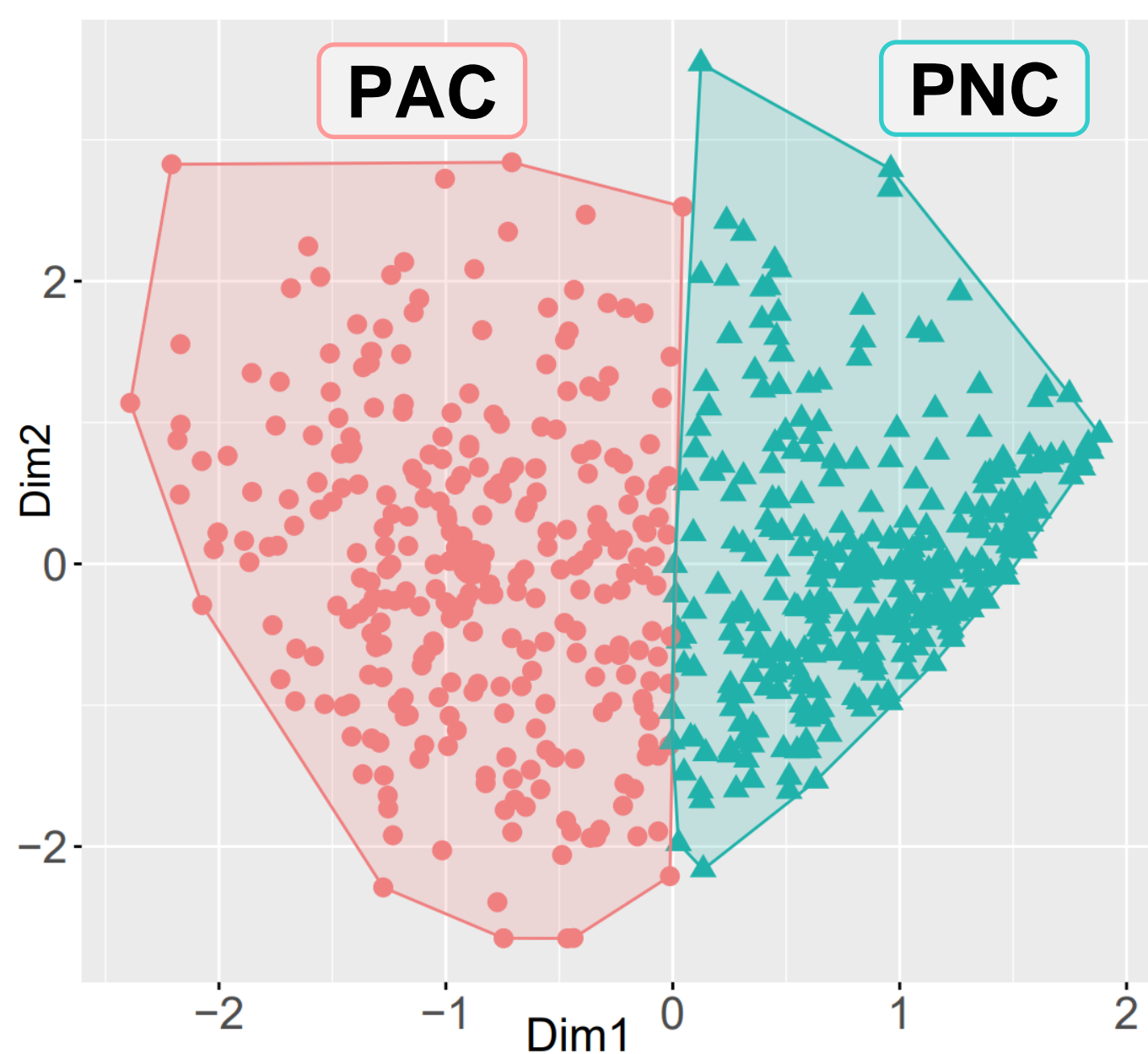
Results

➤ Two-cluster solution was obtained: with **Cluster 1 being predominantly autistic (PAC)** and **Cluster 2 being predominantly neurotypical (PNC)**, however some autistic adults were assigned to PNC, and some neurotypical adults were assigned to PAC.

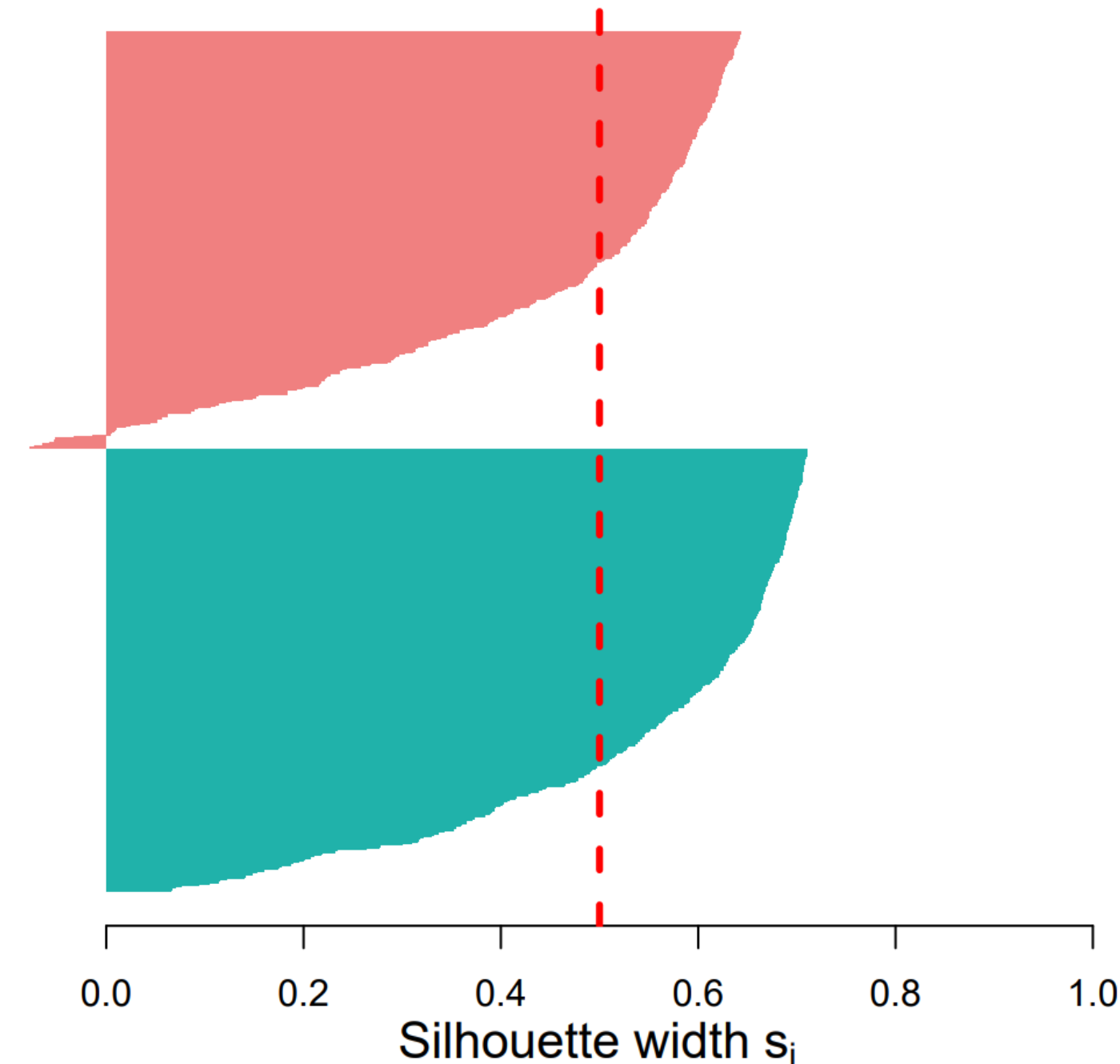
Cluster 1 had significantly higher RRBs, IU, anxiety, and depression - before covid: $p < 0.001$, during lockdown: $p < 0.001$. Cluster membership remained fairly stable during lockdown, with 4.8% (ASD 16, NT 13) moving from Cluster 1 to 2, and 3.5% (ASD 11, NT 10) moving from Cluster 2 to 1.

Before Covid

Cluster 1 - ASD 255, NT 35
Cluster 2 - NT 249, ASD 59

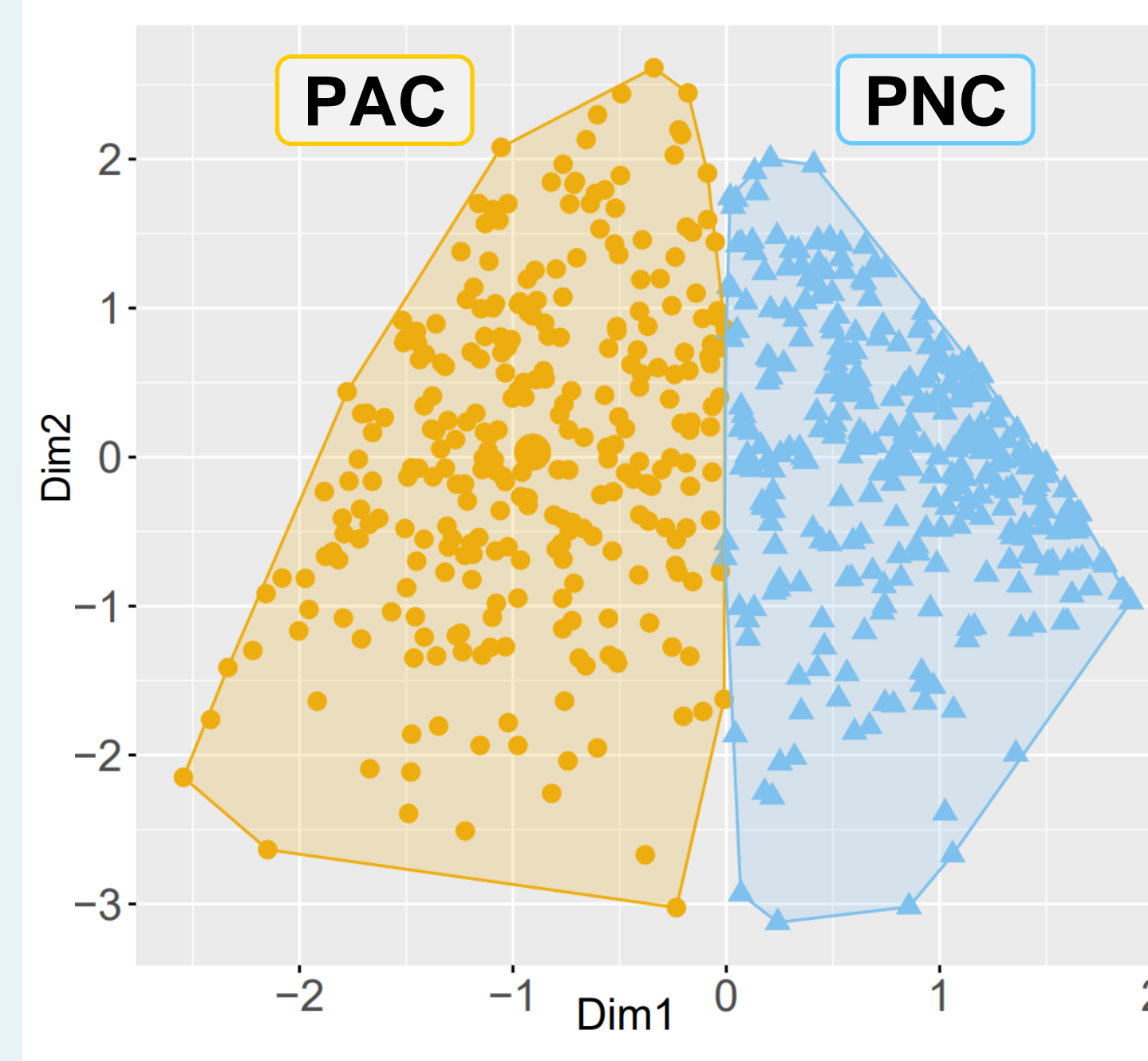


Cluster validation
Silhouette score = 0.5

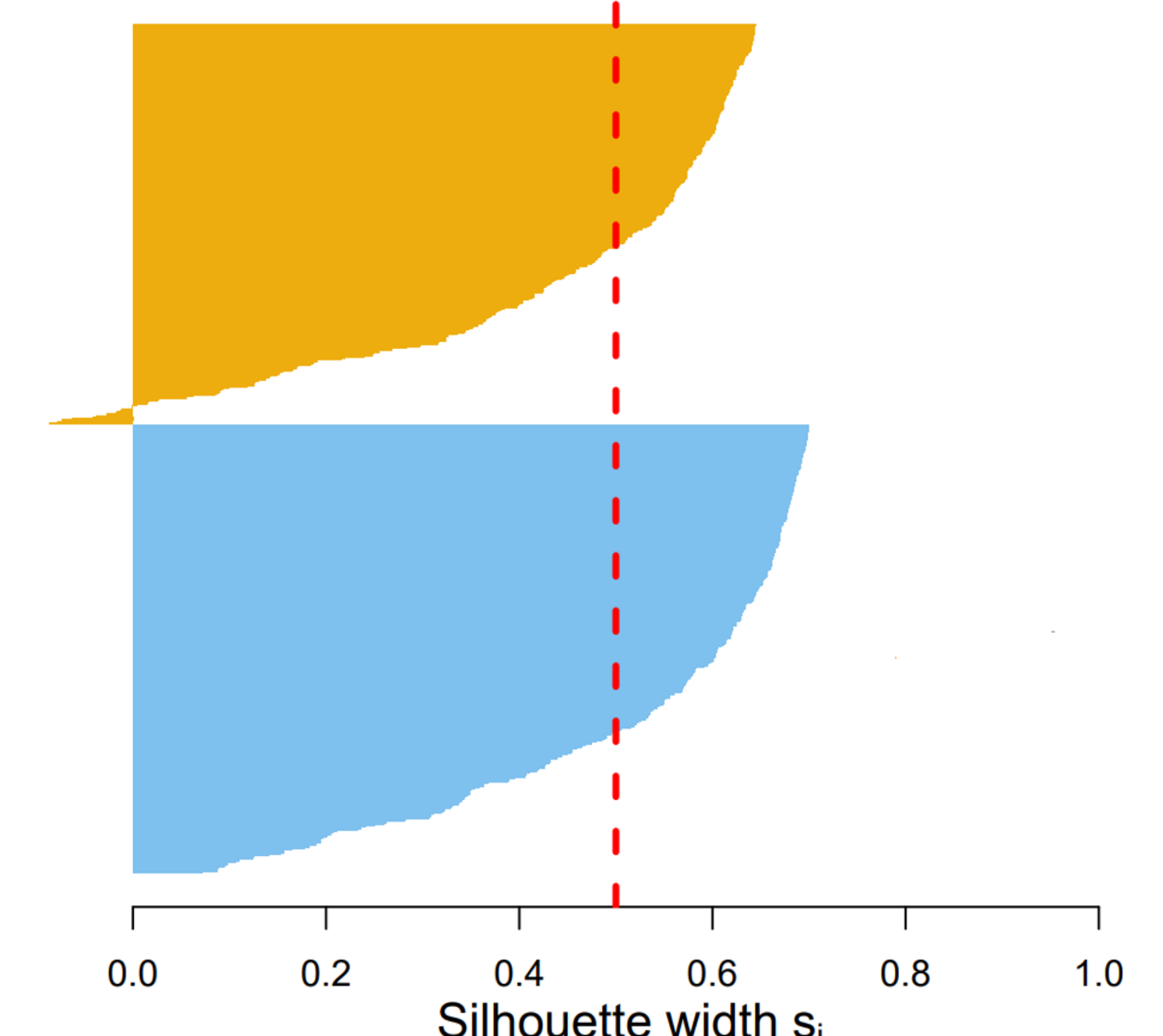


During Lockdown

Cluster 1 - ASD 250, NT 32
Cluster 2 - NT 252, ASD 64

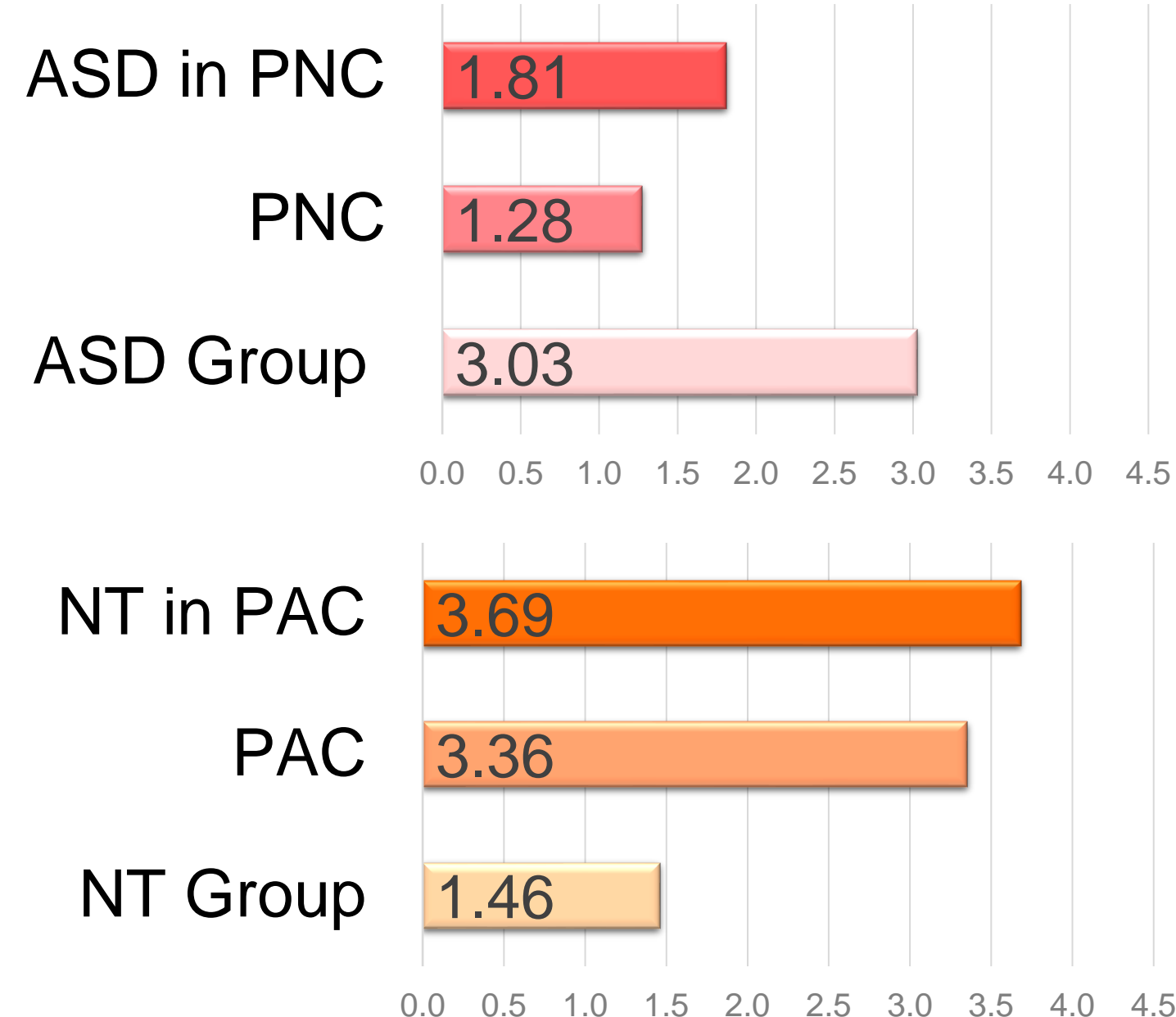


Cluster validation
Silhouette score = 0.5

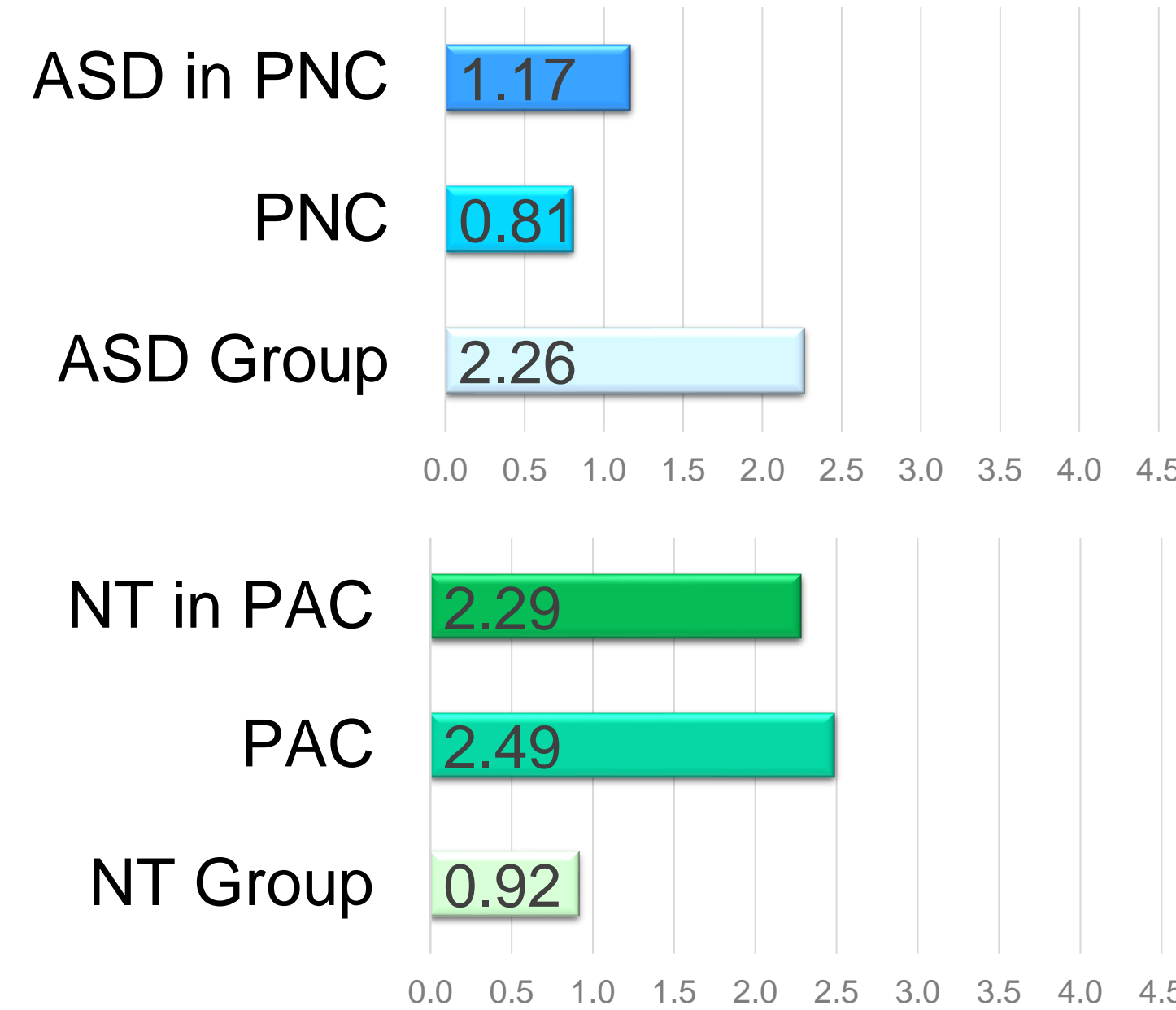


➤ For **ASD in PNC** and **NT in PAC** – mental health was more closely aligned with data-driven classification rather than diagnostic status.

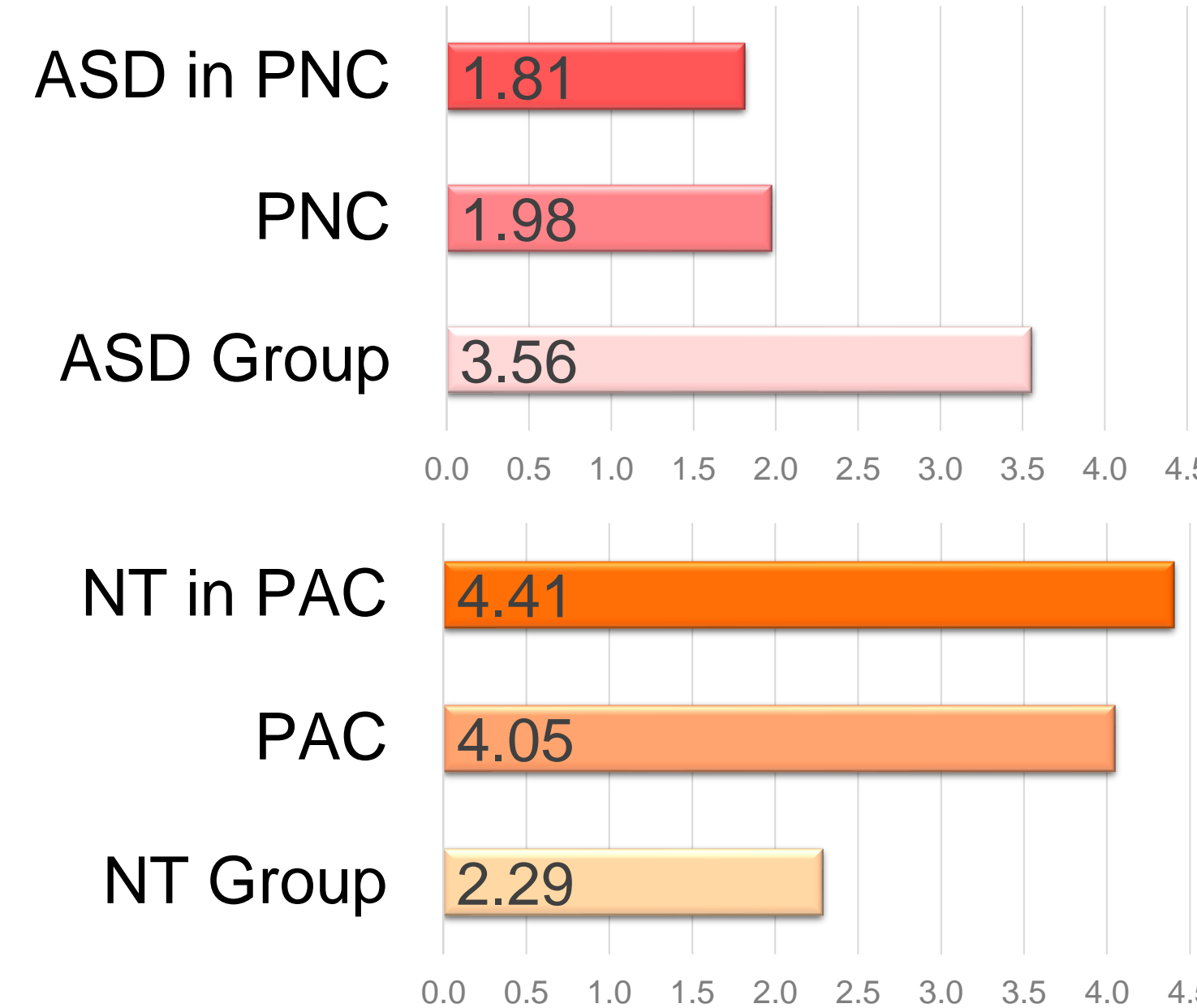
Anxiety (mean)



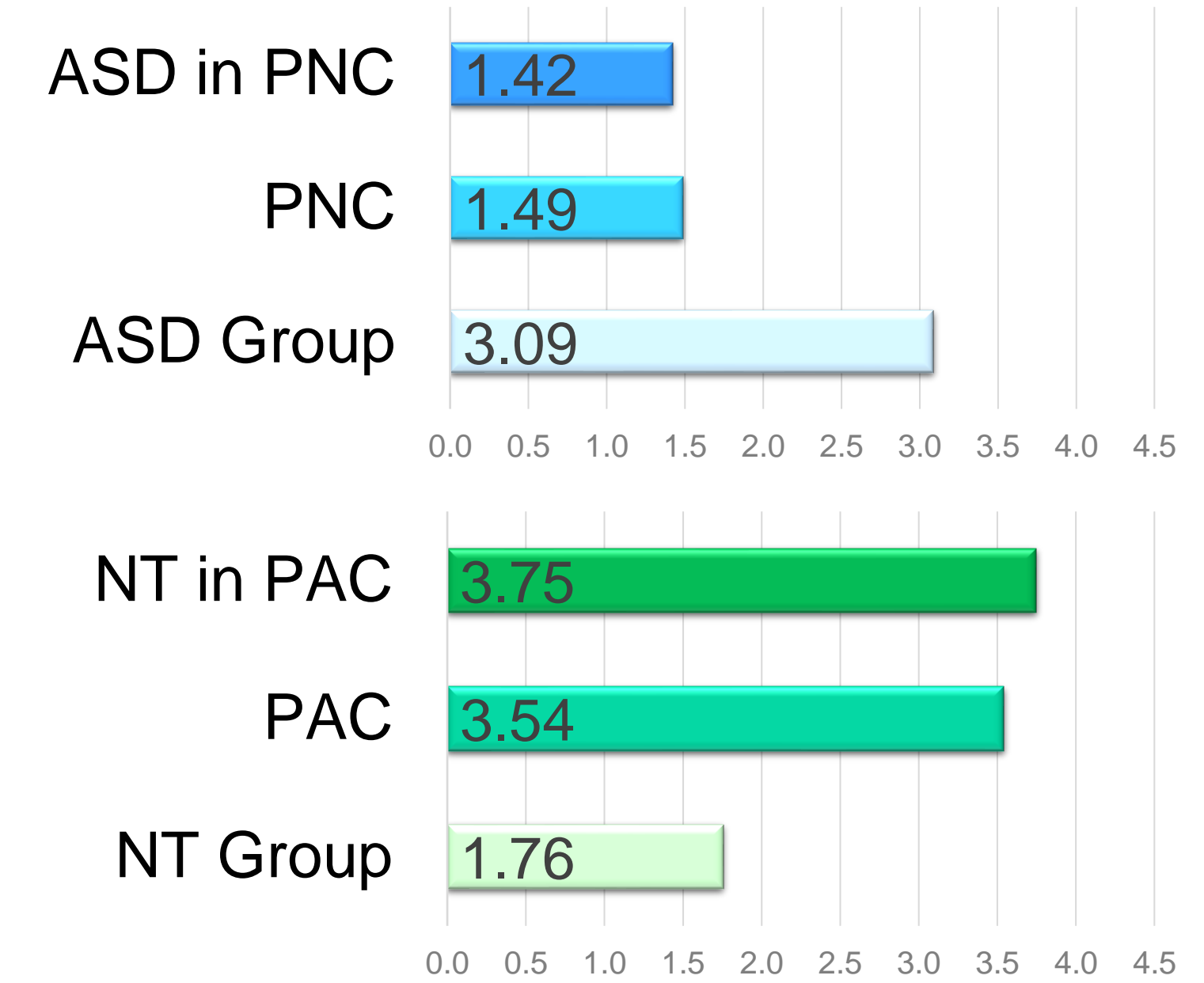
Depression (mean)



Anxiety (mean)



Depression (mean)



Summary

Our unsupervised data-driven approach was able to capture two distinct transdiagnostic subgroups of RRBs and IU and the variability in depression and anxiety, i.e. for some autistic and neurotypical adults their mental health was more closely aligned with the data-driven classification rather than diagnostic status.

Identifying interindividual variability subsumed under a shared diagnostic label has important clinical ramifications, as it enables the progression towards more individualised support that considers specific profiles of strengths and difficulties.