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

Claudia Lage1, Timothy R. Sandhu1,2, Duncan E. Astle2, Rebecca P. Lawson1

1Department of Psychology, University of Cambridge, 2MRC Cognition and Brain Sciences Unit, University of Cambridge

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 being predominantly autistic (PAC) and Cluster 2 being predominantly neurotypical (PNC)

Before Covid

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

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.

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.

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.

Funding: CL is supported by the Portuguese Foundation for Science and Technology (FCT) (SFRH/BD/144811/2019)