Measuring Anxiety and Depression in Adolescents and Adults with Down Syndrome

Ruth Brown, PhD[1], George Capone, MD[2], Colleen Jackson-Cook, PhD[3], Ananda Amstadter, PhD[1]

[1] Department of Psychiatry, Virginia Commonwealth University
[2] Kennedy Krieger Institute, Johns Hopkins University
[3] Department of Pathology, Virginia Commonwealth University

INTRODUCTION

Depression and anxiety are more prevalent in individuals with Down syndrome (DS) than in the general population, but few validated *self-report* screening tools exist. The Glasgow Depression Scale (GDS) and the Glasgow Anxiety Scale (GAS) have been identified as promising self-report scales for adults with intellectual disability (ID) and have been used in several treatment outcome studies with adults with ID. The Glasgow Scales have not been evaluated in adolescents or adults with DS.

Specific Aims

1. Evaluate the internal consistency of the GDS and GAS.
2. Evaluate the sensitivity and specificity of the GDS and GAS to predict current depression or anxiety diagnoses.
3. Identify optimal cut-off scores for predicting anxiety or depression.

METHODS

101 participants with Trisomy 21 (n = 46) or Mosaic Down syndrome (n = 54), 90% White, 5 % Hispanic; 55% female completed assessments.

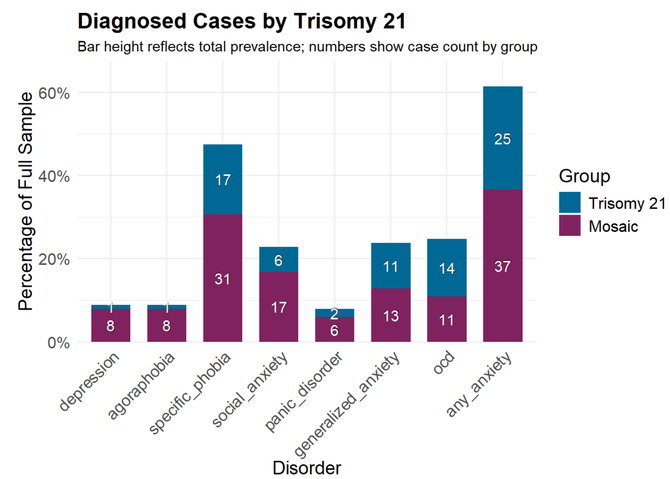
Measures

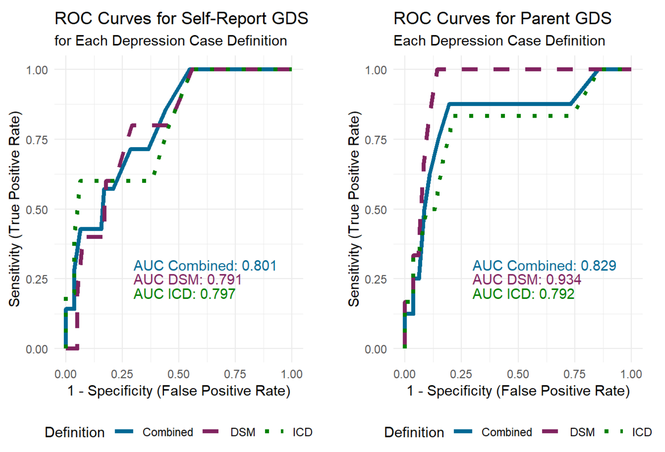
- ***Glasgow Depression Scale*** (**GDS**; Cuthill et al., 2003) self-report and Carer supplement,
- ***Glasgow Anxiety Scale*** (**GAS**; Mindham & Espie, 2003)) self-report and parent-report versions,
- ***Psychiatric Assessment Schedule for Adults with Developmental Disabilities*** (**PAS-ADD**), diagnostic interview yielding DSM-5 and ICD-10 criteria diagnoses. Case status was based on meeting criteria for either DSM-5 or ICD-10.

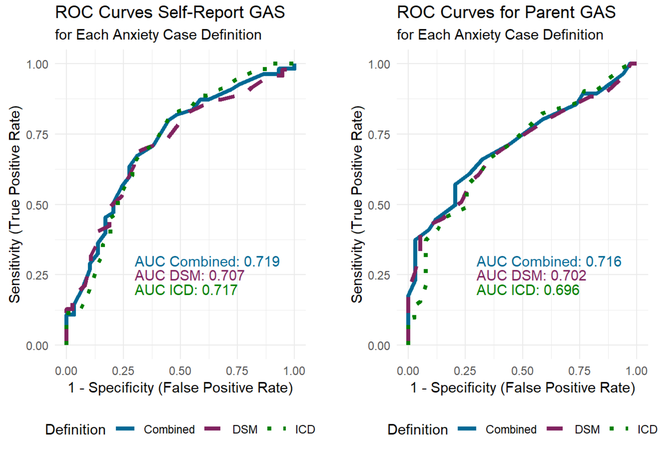
RESULTS

Reliability & Prevalence

- All self- and parent-report scales showed good to excellent internal consistency (α = 0.80 to 0.87).
- Prevalence of diagnoses from the PAS-ADD interview were **9.9% for Depression** and **62% for Anxiety**.
- Individuals with Mosaic DS had significantly higher rates of depression than those with Trisomy 21 (15% vs. 2.2%).







RESULTS Continued

Scale Performance for Diagnosis

•**Depression (GDS):** Both self-report (AUC = 0.80) and parent-report (AUC = 0.83) were good at discriminating depression.
- **Self-Report Cutoff ≥ 12:** 100% Sensitivity, 44% Specificity
- **Parent-Report Cutoff ≥ 10:** 88% Sensitivity, 81% Specificity

•**Anxiety (GAS):** Both self-report (AUC = 0.72) and parent-report (AUC = 0.72) showed acceptable discrimination.
- **Self-Report Cutoff ≥ 12:** 84% Sensitivity, 45% Specificity
- **Parent-Report Cutoff ≥ 13:** 57% Sensitivity, 79% Specificity

Key Takeaways

- **Self-report scales** are highly sensitive, making them effective as a first-line screening tool.
- **Parent-report scales** provide a better balance of sensitivity and specificity, which is critical for improving diagnostic accuracy.

Measure	Threshold	Sensitivity	Specificity	Accuracy	Balanced Accuracy	PPV	NPV
Proband GDS	11.5	1.00	0.45	0.50	0.73	0.14	1.00
Proband GAS	15.5	0.67	0.69	0.68	0.68	0.80	0.53
Parent GDS	9.5	0.88	0.80	0.81	0.84	0.30	0.99
Parent GAS	12.5	0.57	0.79	0.66	0.68	0.82	0.53

Note. Balanced Accuracy = average of sensitivity and specificity; PPV = Positive Predictive Value; NPV = Negative Predictive Value.

CONCLUSION

Key Findings

- Adolescents and adults with Down syndrome are reliable reporters of their own anxiety and depression symptoms.
- The GDS and GAS are psychometrically sound for use in this population.
- Higher rates of depression were found in individuals with Mosaic DS compared to Trisomy 21.

Clinical Implications: A **multi-informant** approach is recommended for best practice:

- **Screening (Self-Report)** Use the highly sensitive self-report scales as a first-line tool to ensure at-risk individuals are identified.
- **Diagnosis (Parent-Report)** Follow up with the parent-report to balance sensitivity and specificity, confirming diagnostic status and reducing false positives.

Limitations & Future Directions

- **Sample:** The study included a small sample that was not diverse in terms of race or socioeconomic status.
- **Medical Confounds:** Potential confounding medical conditions (e.g., thyroid issues, sleep apnea) were not ruled out.
- **Next Steps:** Future studies should use larger, more diverse samples and control for co-occurring medical conditions.