Diagnostic instruments for autism spectrum disorder

Summary

April 2011

New Zealand
GUIDELINES GROUP
Te Rōpū Rarangi Tohutohu
Promoting Effective Health and Disability Services

Introduction

The New Zealand Guidelines Group (NZGG) has conducted a review of several available instruments for the screening, diagnosis and assessment of autism, and Asperger's disorder.

The table below summarises the basic characteristics of these instruments in terms of appropriate use and setting, statistical properties, requirements in terms of user qualifications and training, licensing arrangements, and other details. This table is drawn from a full report (NZGG 2011), available at
http://asdguideline.com/content/documents/0000/0013/ASD_Instruments_Report.pdf

Table 1:   Summary of the instruments reviewed

Tool	Type	Disorder	Age range	User level	Training required	Admin-istration time	Diagnosis or screen	Sens	Specif	I.C.	I.R	T.S	Validity
ADI-R	Interview	Autism	2–Adult	Specialist	Yes	90 minutes	Diagnosis	.86–1.0	.75–.96	.69–.95		91%	Demonstrated
ADOS	Obsev	Autism	18 month +	Specialist	Yes	30–45 minutes	AIDS diagnosis	.90	.80	.47–.94	.65–.82	.59–.82	Demonstrated
CARS	Rating	Autism	2–?	Specialist	No	10–15 minutes	Screening	1.0		.94	.71	.81	Demonstrated
GAR-2	Rating and interview	Autism	3–22 years	Specialist	No	15 minutes	Screening			.94		.84	More research required
SCQ	Rating	Autism	4+	Specialist	No	15 minutes	Screening	>.75	>.60	.81–.93			Demonstrated
SRS	Rating	Autism	4–18 years	Open	No	15–20 minutes	Screening	.85	.75	.93–.97	.75–.91	.77–.85	Demonstrated
3di	Interview	Autism	Children	Trained	Yes	90 minutes	Diagnosis	1	.97		.9	.9	Demonstrated
DISCO	Interview	Autism	3 years +	Unknown	Yes	120–180 minutes	Diagnosis				>.75		More research required
GADS	Interview	Asp D	3–22 years	Specialist	No	5–10 minutes	AIDS diagnosis	.75–.96	.60–.80	.81–.93			More research required
ASDS	Rating	Asp D	5–18 years	Psych	No	10–15 minutes	AIDS diagnosis			.83	.93		Demonstrated
KADI	Rating	Asp D	6–21 years	Unknown	No	15–20 minutes	Screening	.78	.94	.93	90%	.98	Demonstrated
ASSQ	Rating	Asp D	6–17 years	Unknown	No	10 minutes	Screening	.62–.91	>.9		.77	.94	Demonstrated

Type – type of instrument; Age – age range applicable; User level – qualification required to administer and score instrument; Administration time – length of time required to administer; Diagnosis or screen – whether the instrument is intended to diagnose or screen for ASD; Specif – specificity; Sens – sensitivity; I.C – internal consistency; I.R – inter-rater reliability; T.S – temporal stability.

ADI-R Autism Diagnostic Interview-Revised; ADOS – Autism diagnostic Observation Schedule; CARS – Childhood Autism Rating Scale; GARS – Gilliam Autism Rating Scale – Second Edition; GADS – Gilliam Asperger's Disorder Scale (2003 update); ASDS – Asperger's Syndrome Diagnostic Scale; 3di – Developmental, Dimensional and Diagnostic Interview (3di); ASSQ – Autism Spectrum Screening Questionnaire; DISCO – Diagnostic Interview for Social and Communicative Disorders; SCQ – Social Communication Questionnaire; SRQ – Social Responsiveness Questionnaire; KADI – Krug Asperger's Disorder Index.

Spec – specialist – health, educational, medical; Psych – psychologist.

Some potentially preferable combinations of instruments for clinical use are presented below.

These are selected on the basis of:

- Strength of research base and peer review
- Usefulness for a step-wise approach where screening can be undertaken by a range of professionals, and diagnosis can be undertaken by experienced practitioners
- Suitability for use by the widest range of practitioner groups/disciplines
- Allow for both interview and observation-based assessment.

Table 2: Potentially preferable instruments: Asperger's disorder

Combination No.	Screening instrument	Diagnosis instruments		Notes
		Interview	Observation	
	KADI	No instruments in the review were found to be validated for making a definitive diagnosis of Asperger's disorder		KADIis brief and relatively easy to administer, and its publishers do not specify requirements as regards user qualifications. In common with all reviewed measures for screening for Asperger's disorder, further research is warranted.

.

Table 3: Potentially preferable instruments: autism

Combination No.	Screening instrument	Diagnosis instruments		Notes
		Interview	Observation	
Combination 1	SCQ	ADI-R	ADOS	SCQ, ADI-R - strong research base. ADOS - strong research, clinician-observation based
Combination 2	CARS	ADI-R	ADOS	Same as Comb. 1, save use of CARS for screening – potentially slightly lower long term cost
Combination 3	SCQ	3di	ADOS	Same as Comb. 1, save use of 3di – potentially lower long term cost
Combination 4	CARS	3di	ADOS	Same as Comb. 3, save use of CARS for screening – potentially slightly lower long term cost
Combination 5	SCQ	ADI-R	CARS	Same as Comb. 2, save use of CARS for diagnosis (see qualifiers above)
Combination 6	SCQ	3di	CARS	Likely lowest cost option

Conclusion

A good body of research surrounds several of the instruments, and internationally there are well developed professional and academic fora and peer review processes which serve to test instruments and challenge designers to improve instrument accuracy and utility.

The full review document recommends that:

- professional bodies whose members screen for, or diagnose, autism and Asperger's disorder should direct their membership to the review

- the Ministries of Health and Education should monitor developments in this field, and periodically update the review so that information available to practitioners about diagnostic instruments remains up to date.

References

New Zealand Guidelines Group (NZGG), Diagnostic instruments for
autism spectrum disorder: A brief review. 2011, NZGG, Wellington. Accessed 8 June
2011
http://asdguideline.com/content/documents/0000/0013/ASD_Instruments_Report.pdf