

Maenner MJ*, Smith LE, Hong J, Makuch R, Greenberg J, Mailick MR.

An Evaluation of an Activities of Daily Living Scale for Adolescents and Adults with Developmental Disabilities. *Disability and Health Journal* (in press)

Waisman Center, University of Wisconsin-Madison
*Contact: mjmaenner@wisc.edu

Background

There is a paucity of free and high-quality tools for measuring activities of daily living among adults with developmental disabilities.

Objective

To describe the development of the Waisman Activities of Daily Living (W-ADL) Scale, and to thoroughly evaluate its measurement properties for adolescents and adults with developmental disabilities.

Participants

Four longitudinally-studied groups of adolescents and adults with developmental disabilities:

- 406 with autism spectrum disorder [ASD]
- 169 with Down syndrome [DS]
- 147 with fragile X [FXS]
- 292 with intellectual disability [ID]
- of unknown origin

Waisman Activities of Daily Living Scale (W-ADL)

- 17 items via parent/caregiver report
- Items rated: 0 (does not do); 1 (does w/ help); 2 (does on own / independently)
- For adults with substantial impairments
- Free to use

W-ADL Items

1. Makes bed	7. Grooming	13. Set/clear table
2. Household tasks	8. Dressing	14. Drink from cup
3. Errands	9. Toileting	15. Eat from plate
4. Home repairs	10. Simple food prep	16. Wash dishes
5. Laundry	11. Mixing/cooking	17. Banking/finance
6. Bathing	12. Complete meals	

W-ADL evaluated according to eight criteria (Terwee et al)¹

1. Content Validity

- Researchers and clinicians identified appropriate activities, adapted items from other ADL measures, and sought feedback from respondents.
- >99% of individual items and 97.5% of W-ADL’s sufficiently completed at first time point in all studies (989 out of 1,014)

Items are appropriate & feasible

2. Internal Consistency

- In the four groups, Cronbach’s alphas at Time 1 ranged from 0.88 – 0.94
- Inter-item correlations largely between 0.2 – 0.6
- Similar structure in all four groups

High alphas and a single factor structure found in each group

3. Criterion Validity

255 Participants in ASD study (Time 4)

Strongly correlated with the Vineland Screener Composite (r=0.78) & Daily Living Skills Domain (r=0.82)

4. Construct Validity

Associated with other measures in the hypothesized direction

W-ADL scores were positively associated with IQ [DS/ID] and employment or education [ASD]. W-ADL scores were inversely associated with caregiving burden [FXS] and need or receipt of respite services [DS/ID].

5. Reproducibility

- Using consecutive time points, the standard error of the measure was 1.9 [DS] and 2.0 [ASD]
- Therefore, a study of 30 or more participants could detect a change of 1 W-ADL point
- Mother-Father inter-rater reliability [DS/ID]: weighted κ=0.88
- Consecutive time points [DS/ID & ASD]: weighted κ’s 0.92-0.93

Can detect 1-point group change with N>=30. Reliable over time and between respondents

6. Responsiveness

Participants in ASD Study (Times 1,4,7 & 8)

Mixed model: W-ADL~age+1/age

Shows change over time, and different rates of change by group

(Forthcoming: autism W-ADL trajectory paper by Smith et al)

7. Floor & Ceiling Effects

989 participants w/ complete W-ADL at initial time point

NO floor or ceiling effects

8. Interpretability

455 Participants in DS & ID study

Significant differences between all 4 parent-report “levels” of ID

Summary

The W-ADL exceeded each quality criterion we tested. This free tool has practical applications as an efficient measure of activities of daily living for research concerning adults with developmental disabilities

Reference: 1. Terwee CB, Bot SDM, de Boer MR, et al. Quality criteria were proposed for measurement properties of health status questionnaires. *J Clin Epi.* 2007;60:34-42.