

Linking the Clinical Dementia Rating Scale-Sum of Boxes and the 13-Item Version of the Alzheimer's Disease Assessment Scale-Cognitive Subscale

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BACKGROUND

- Associations between the 13-item ADAS-Cog (score range 0–85) and the CDR-Sum of Boxes (CDR SoB, 0–18) have been described in prior research, yet a crosswalk linking these instruments has not been published
- This study aims to fill this gap by applying equipercetile linking to systematically compare the CDR-SoB and the 13-item ADAS-Cog, providing a framework for reconciling discrepancies between these cognitive scales

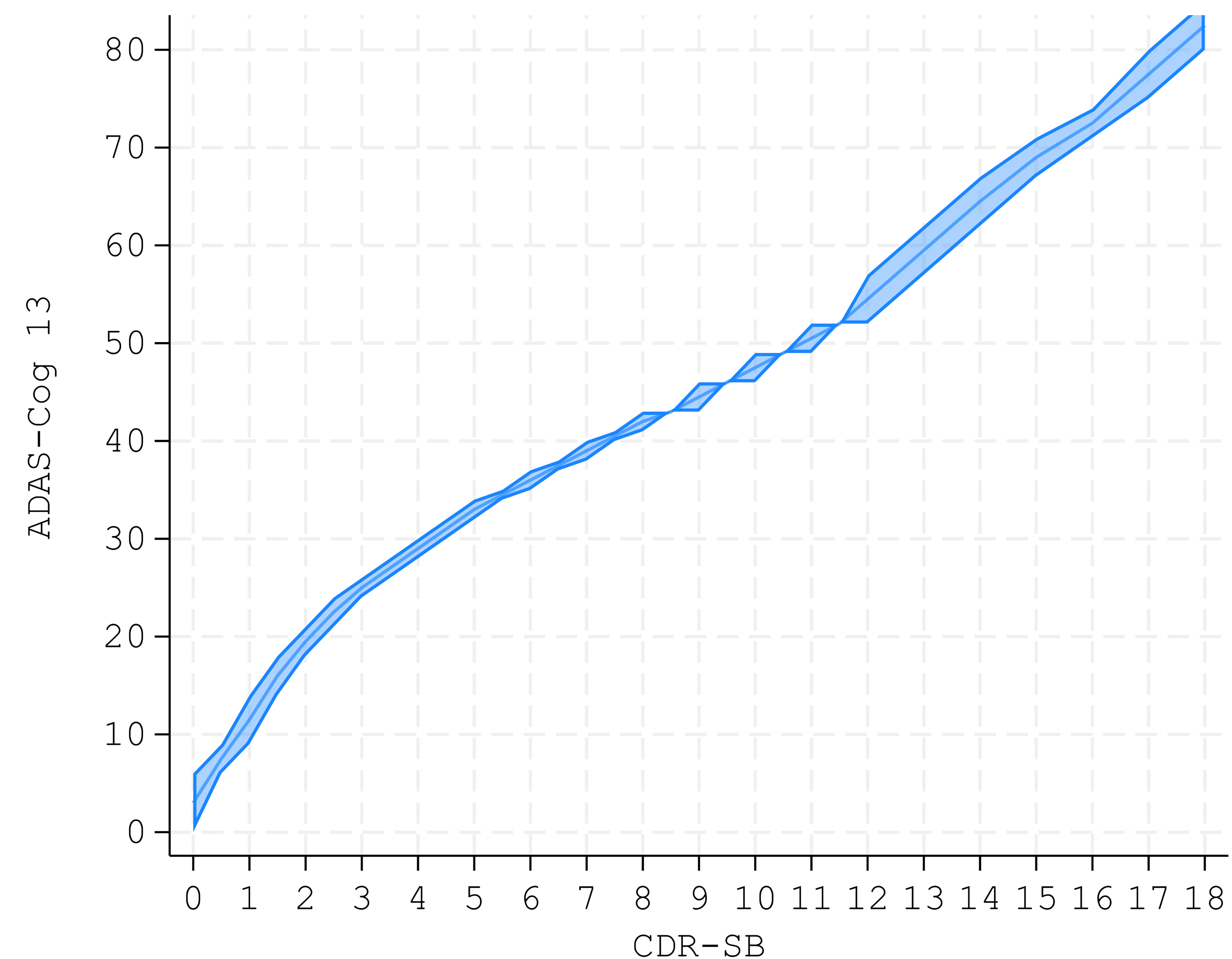
METHODS

- This post hoc analysis pooled data from 12 clinical trials containing repeated measures of both the CDR-SoB and the 13-item ADAS-Cog
- To address within-participant correlations, we applied a bootstrap resampling procedure (1,000 iterations), randomly selecting one observation per participant per iteration
- For each iteration, percentile ranks were computed and matched between the instruments
- Score equivalents were derived as the minimum and maximum ADAS-Cog values corresponding to each CDR-SoB score, aggregated across iterations using median estimates
- Crosswalk validation was performed by correlating observed CDR SoB scores with their percentile linked ADAS Cog equivalents

RESULTS

- The analysis included 26,782 paired CDR-SoB–ADAS-Cog assessments from 7,437 participants collected across 12 clinical trials
- Equipercetile linking (Fig. 1) showed that a given CDR-SoB score corresponded to ADAS-Cog ranges of up to 6 points
- For CDR-SoB scores between 2 and 11, the corresponding ADAS-Cog range was typically within 3 points
- Greater variability was observed at the extremes of disease severity:
 - CDR-SoB score of 0 mapped to an ADAS-Cog range of 0–6
 - CDR- SoB scores of 17 and 18 corresponded to approximately 75–80 and 80–85 respectively on the ADAS-Cog

FIGURE 1. EQUIPERCENTILE CROSSWALK BETWEEN THE CDR-SOB AND THE 13-ITEM ADAS-COG



CONCLUSIONS

- Building on our previous equipercetile crosswalk between the MMSE and the 13-item ADAS-Cog, this study extended mapping to the CDR-SoB
- Our results also expand on earlier work using the 11-item ADAS-Cog version (Balsis et al.) by utilizing a larger dataset, producing tighter ADAS-Cog ranges for most CDR-SoB scores—particularly between 1.5 and 9 points, where data density was highest
- The use of resampling accounted for trial heterogeneity and within-subject correlations, enhancing crosswalk precision and robustness
- These mappings can improve the comparability, interpretability, and synthesis of evidence across studies using either scale and support data analytics for clinical trial quality monitoring

REFERENCES

- Balsis S, Bengel JF, Lowe DA, Geraci L, Doody RS. How Do Scores on the ADAS-Cog, MMSE, and CDR-SOB Correspond? Clin Neuropsychol. 2015;29(7):1002-1009. doi:10.1080/13854046.2015.1119312.
- Kott, Alan; Wang, Xingmei; Miller, David S. (2025): Linking the Mini-Mental State Examination and the 13-Item Version of the Alzheimer's Disease Assessment Scale-Cognitive Subscale. CTAD. San Diego, USA, 2025.