

Measuring daily functioning in Subjective Cognitive Decline

Item selection for remote assessment and exploration of day-to-day variability

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BACKGROUND

Problems in Instrumental Activities of Daily Living (IADL) can arise before cognitive impairment, but not all activities are affected to the same degree.¹

Earliest IADL problems are likely episodic and context-dependent, requiring a measurement method that can detect these features.

Ecological Momentary Assessment (EMA) can capture temporal variability in IADL functioning and the potential impact of contextual factors, e.g., fatigue.²

EMA content should be carefully selected and tailored to the outcome of interest and population.

AIMS

To provide a set of items suitable for EMA of IADL in individuals with SCD, based on clinical relevance and best psychometric features.

To perform a **preliminary exploration** of day-to-day variability in self- and study partner reported IADL functioning and experienced cognition.

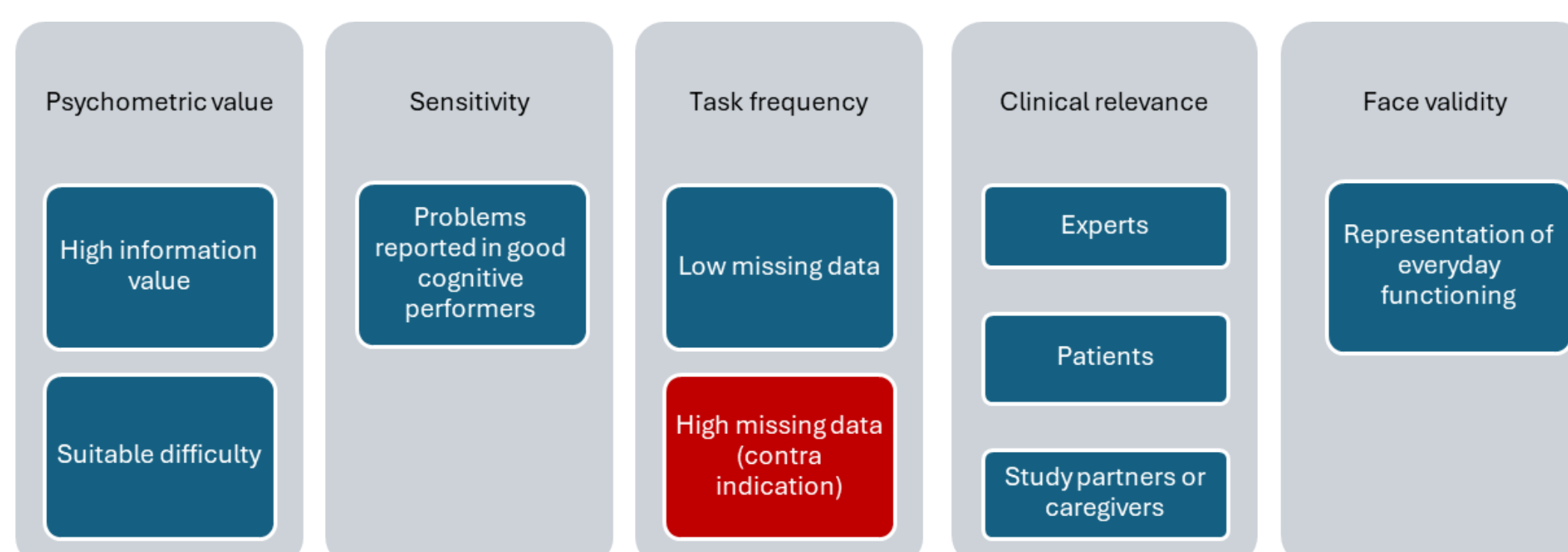


Figure 1. Overview of suitability criteria and their indicators that were used to evaluate A-IADL-Q-30 and MS-IADL-Q items. Items' performances on the criteria were derived from published studies. Also see Methods.^{1,3-4}

References

1. Van der Putten A, Butterbrod E, Schalet B, et al. Alz Dem DADM. 2026; 18(1) e70233.
2. Eisele G, Hiekkaranta A, Kunkels YK, et al. Behavior Research Methods. 2025;57(4):124.
3. Jutten RJ, Peeters CF, Leijdesdorff SMJ, et al. Alzheimers Dement DADM. 2017;8:26-35.
4. van Dam M, Sikkes SA, Rammeloo E, et al. Mult Scler J Exp Transl Clin. 2021;7(3):20552173211038027.

METHODS

Item selection: Items from 2 validated questionnaires were considered: the Amsterdam-IADL and Multiple Sclerosis-IADL. A top 8 of items was established for 5 criteria, based on validation studies^{1,3-4}: Psychometrics, Sensitivity, Suitable task frequency for EMA, Clinical relevance, Face validity (Fig. 1, left lower corner). Items most relevant across criteria were selected for EMA.

Participants: n=13 SCD (67±7 yr, 53% M, 53% A-positive) and n=13 study partners (cohabiting partners; 66±6 yr, 40% M), recruited in a memory clinic. Recruitment is ongoing.

Design: Daily measurement of 11 IADL items (Fig. 2) and 4 contextual factors for 14 days.

Preliminary analysis: Within-person variability for the degree of problems on two IADL items and the degree of experienced cognitive complaints was explored using ICCs (mixed effects model/mixed effects logistic regression).

ITEM SELECTION RESULTS

Most often a top item: Using a computer, shopping, managing the household budget, cooking (for 4/5 criteria), working and household duties (for 3/5 criteria).

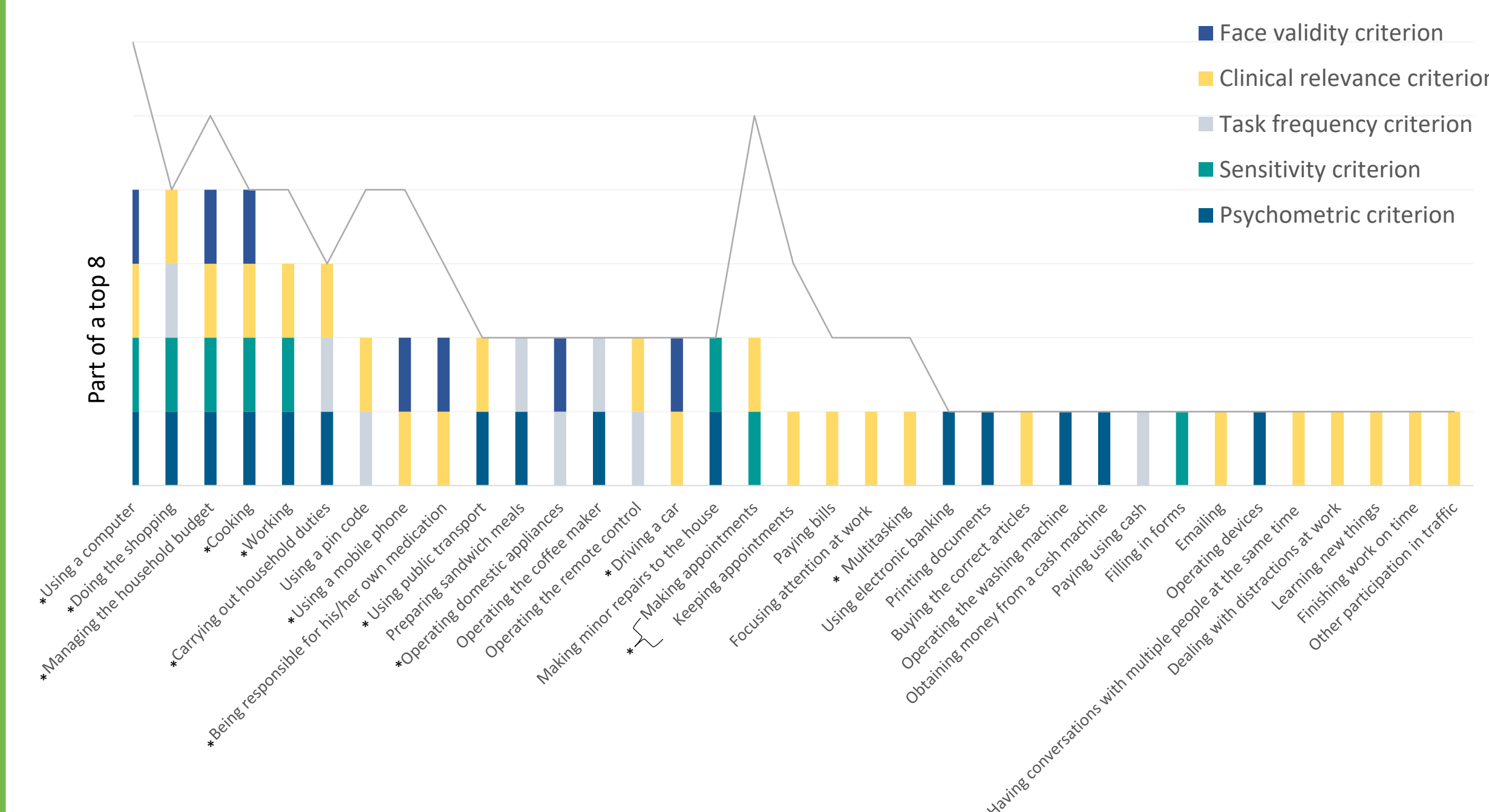


Figure 2. Overview of the number of suitability indicators (grey line) and corresponding criteria (stacks) for which each item (x-axis) belonged to a top 8. The total number of times an item was part of a top 8 is indicated on the y-axis, e.g., the "using a computer" item was part of the top 8 for 6 different indicators, covering 4 criteria in total. Items that were selected for the EMA study are indicated with *. Note: some items were integrated.

EMA - PRELIMINARY RESULTS

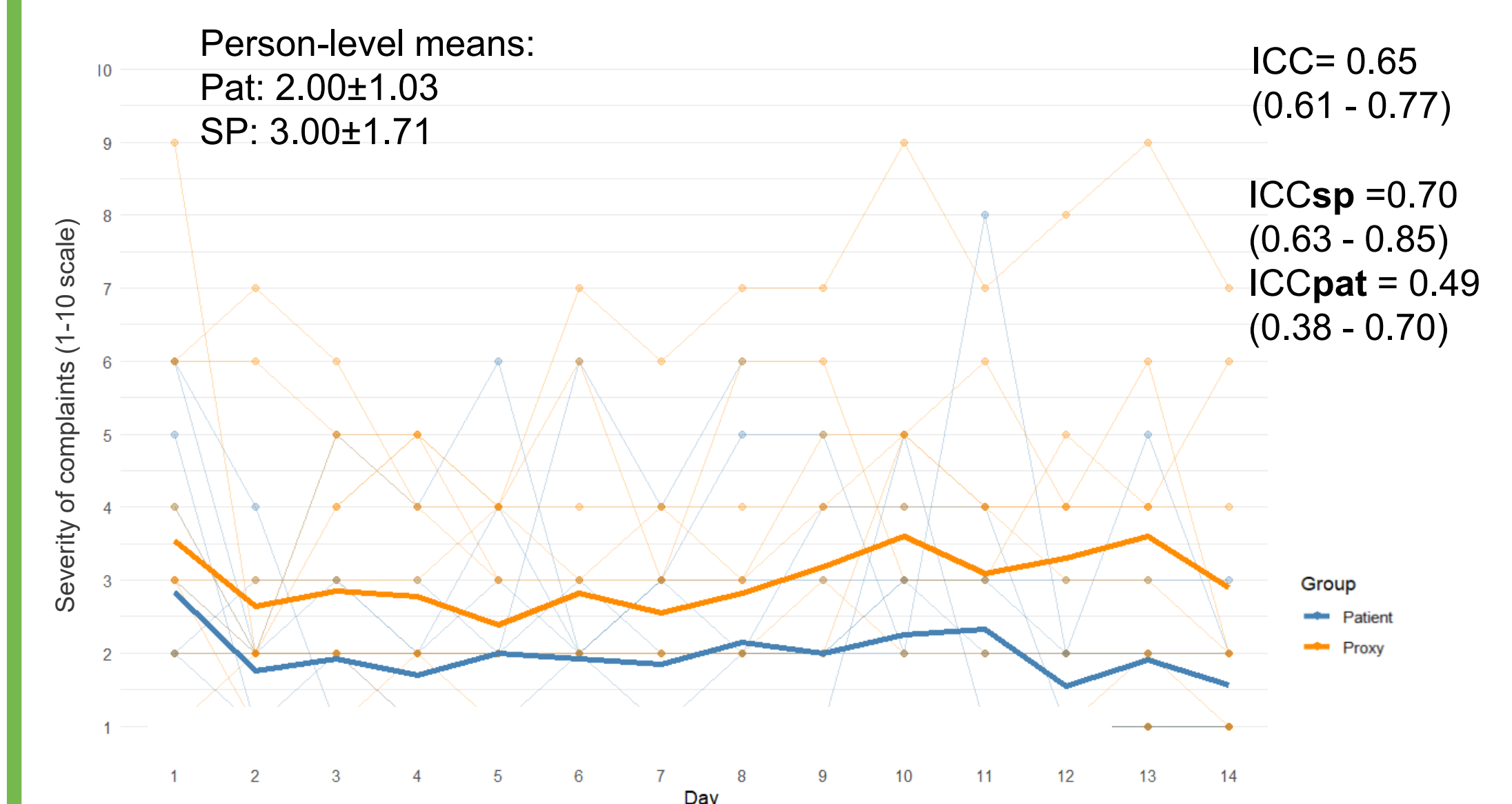


Figure 3. Cognitive complaints severity (y-axis) from day-to-day (x-axis), on individual and group-level.

For the degree of cognitive complaints, 35% of variability was within-person; i.e., day-to-day. ICCs barely overlapped between reporters.

IADL items (participation in traffic and smartphone use):
2/13 of patients and 4/13 of study partners report difficulty on ≥1 day.

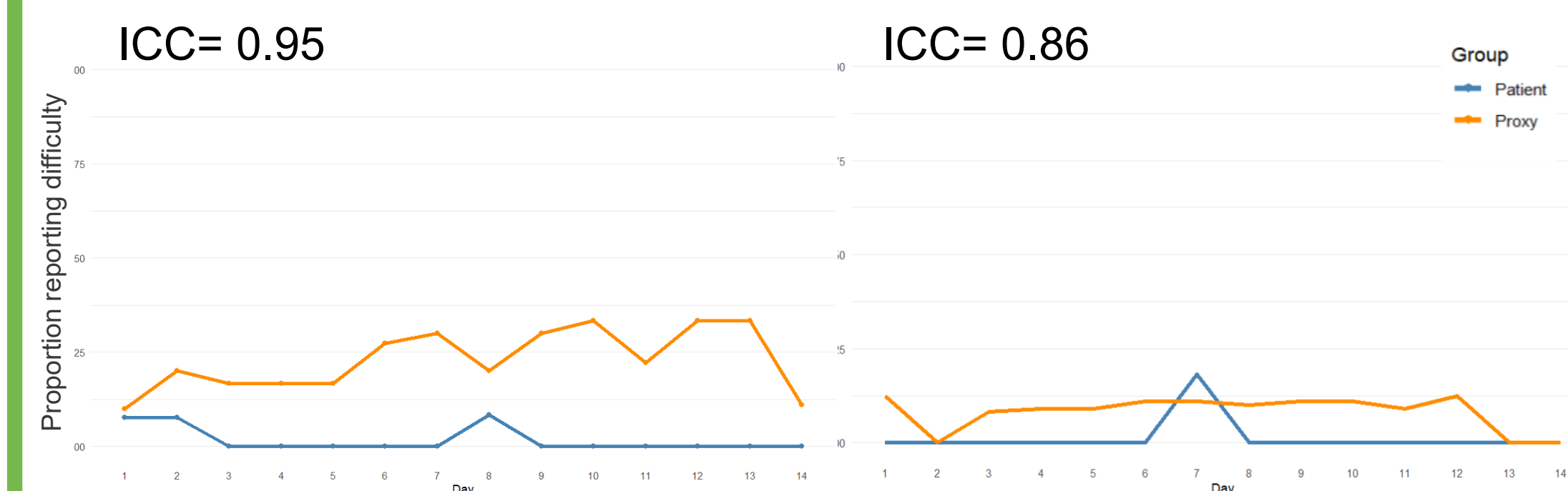


Figure 4. Proportion reporting difficulty (y-axis) from day-to-day (x-axis) for smartphone use (left) and participation in traffic (right).

CONCLUSION

Relevant items for frequent (EMA) measurement of IADL in SCD reflect **complex activities across a variety of IADL domains**.

Preliminary results suggest substantial self- and proxy-reported **day-to-day variability for the degree of cognitive complaints**, suggesting retrospective questionnaires may miss relevant signal, **but less for IADL functioning** (traffic, smartphone use).

Potential **differences in day-to-day fluctuations** between reporters in SCD and associations with contextual factors need to be further investigated.