COGNITIVE TRAJECTORIES AMONG PEOPLE WITH HIV MODELED BEFORE AND AFTER SUSTAINED ART

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BACKGROUND

- Prior studies indicate that people with HIV (PWH) who initiated ART during acute infection achieve normal cognitive performance. By contrast, a subgroup of PWH who initiated ART during chronic infection exhibit progressive cognitive decline.
- The present study leveraged the unique study design of the *Sabes* cohort to examine cognitive trajectory phenotypes among PWH who initiated ART at different time points during primary infection.

METHODS

- Participants included 51 sexual minority men and 6 transgender women in Lima, Peru enrolled within 100 days from the estimated date of detectable infection (EDDI) and randomized to start ART at diagnosis or at 6 months (or earlier if CD4+ T-cell count and/or WHO clinical stage met criteria for treatment in Peru). Cognitive testing utilized culturally validated measures of attention, speed of processing, executive function, word fluency, learning and memory, and fine motor speed. Performances were converted to z-scores using normative data from demographically similar Peruvian adults without HIV.
- Hierarchical longitudinal clustering was employed to identify cognitive trajectory subgroups modeled from week 0 to week 192. Inferential statistics adjusted for multiple corrections compared the trajectory groups on demographic, HIV disease biomarkers (viral load, T-cell counts, cytokine levels), and psychosocial features.

ACKNOWLEDGEMENTS

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DISCLAIMER

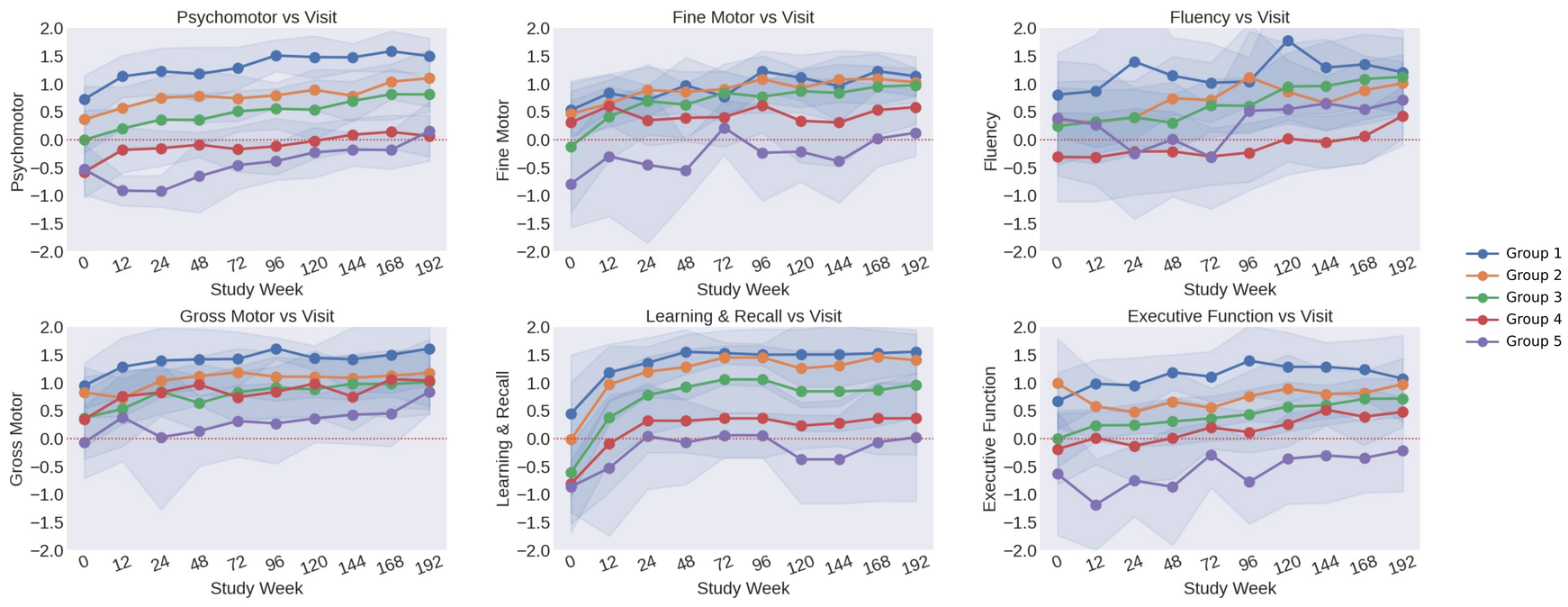
The views expressed are those of the authors. The investigators adhered to the policies for protection of human subjects as prescribed in AR 70–25.

Participants enrolled in the *Sabes* cohort achieved normal cognitive performance independent of the timing of ART initiation during early infection.

RESULTS

- Participants were tested monthly (HIV RNA & Ab) & enrolled within 6 days (median) of HIV dx
- Average age: 27.8 (SD 7.6) and education: 13.1 (SD 2.7). Median baseline CD4 count was 446 (SD 206) and VL was Log_{10} 5.9 (SD 1.07). Mean time from EDDI to ART onset was 125.0 (SD 89.4) days: (<=30 days: 22.0; SD 4.4); 31-90 days: 51.3; SD 14.3); >90 days: 211.9; SD 28.8).
- Across all participants, cognitive performance at week 0 ranged from a total Z of -0.89 to 0.98. Cognitive performance at week 0 (p>.05) did not differ by ART initiation group
- Five cognitive trajectory groups were identified. Group 1 (16% of participants) exhibited above average performances. Groups 2 (19%) and 3 (35%) performed within the average range. Group 4 (18%) exhibited mild difficulty in memory at week 0, with normal performance on all tests by week 12. Group 5 (12%) was the lowest performing group (except for fluency), with scores that were normal by week 24.

Figure 1. Cognitive trajectory subgroups.



RESULTS cont.

- Education differed among subgroups ($p < .05$), driven by higher years of education in individuals in group 1. HIV viral load at the time of ART onset also differed between groups ($p < .05$), driven by greater viral load in group 5 and lower viral load in group 4 relative to other groups.
- The time from EDDI to ART initiation did not differ significantly between the trajectory subgroups. Similarly, no differences were observed between groups on T-cell counts or cytokine levels.

CONCLUSION

- We identified 5 distinct cognitive trajectory subgroups among PWH enrolled in the Sabes study.
- Each subgroup achieved normal cognitive performance levels independent of the timing of ART initiation in early HIV infection.

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