

Differences by Geographic Region in Associations of Education and Late-life Cognition in the Brazilian Longitudinal Study of Aging (ELSI-Brazil)



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Background

Dementia prevalence is projected to **increase, especially in low- and middle-income countries**. About 5% of global dementia cases could be eliminated with increased educational attainment. The effect of education on dementia risk reduction may differ within LMICs due to differences in educational systems, and economic opportunities.

Aim: Explore if associations between education and late-life cognition vary across Brazil's five macro-regions.

Hypothesis: Education's association with late-life cognition will vary by region, given Brazil's decentralized education system and regional

Methods

- Study Sample: ELSI - Brazil participants ≥ 60 years old.
 - Wave 2 (2019 - 2021)

Exposure

Education Attainment

- Categorized as
 - ≥ 12 years
 - 9–11 years
 - 5–8 years
 - 1–4 years
 - Never studied

Outcomes

Orientation

Assessed using questions adapted from the MMSE and modeled as a raw score (0–4).

Memory

Assessed by immediate and delayed recall of 10 words, with scores ranging from 0 to 20.

Verbal Fluency

Assessed by naming as many animals as possible in one minute.

- Participant characteristics were summarized overall and by region.
- Analysis:
 - Linear regression models, stratified by region, assessed associations between education and memory and verbal fluency. Ordered logistic regression was used in models of education and orientation.
- All models were adjusted for age, sex, race, and household income.
- Separate models included interactions between education and region, and Wald p-values were calculated.

Results

Figure 1 - Characteristics of the sample participants. Brazilian Longitudinal Study of Aging (ELSI-Brazil), 2019-2021.

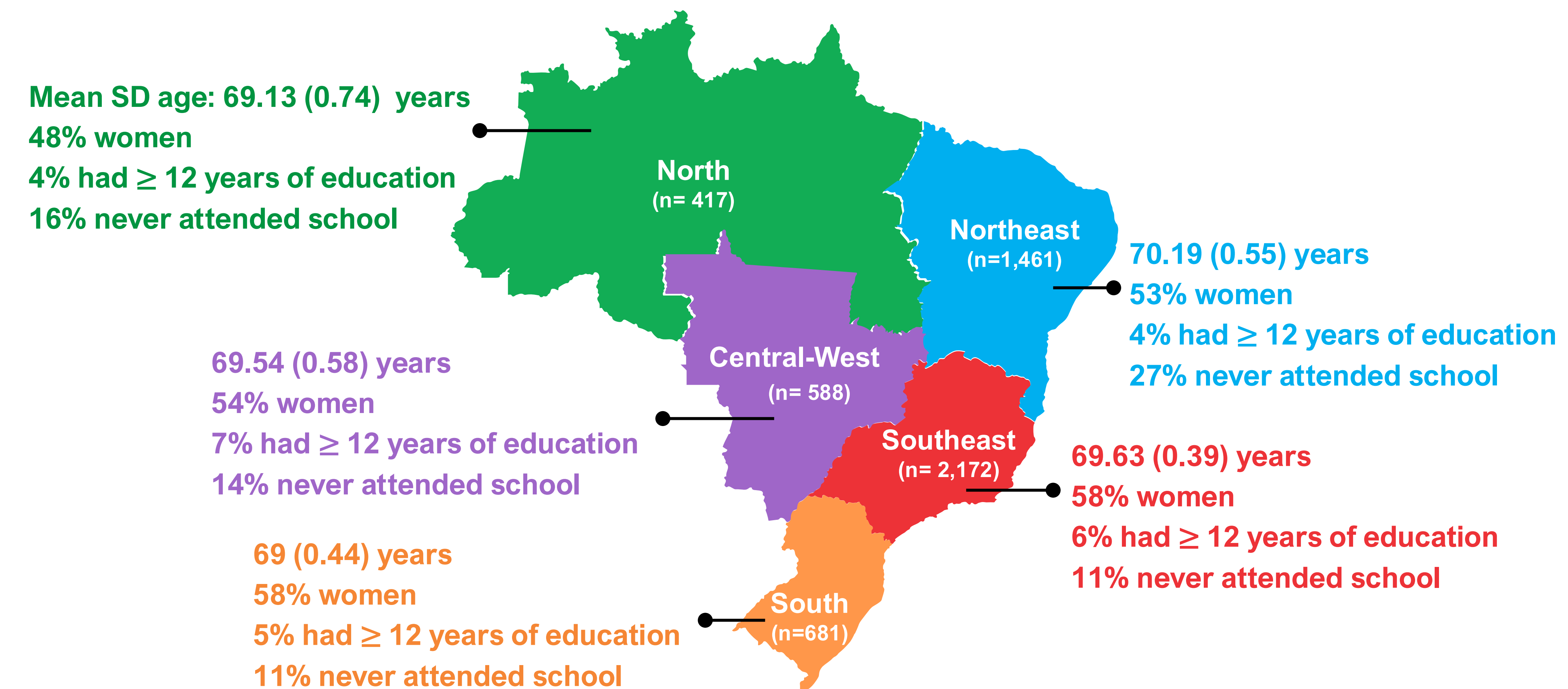
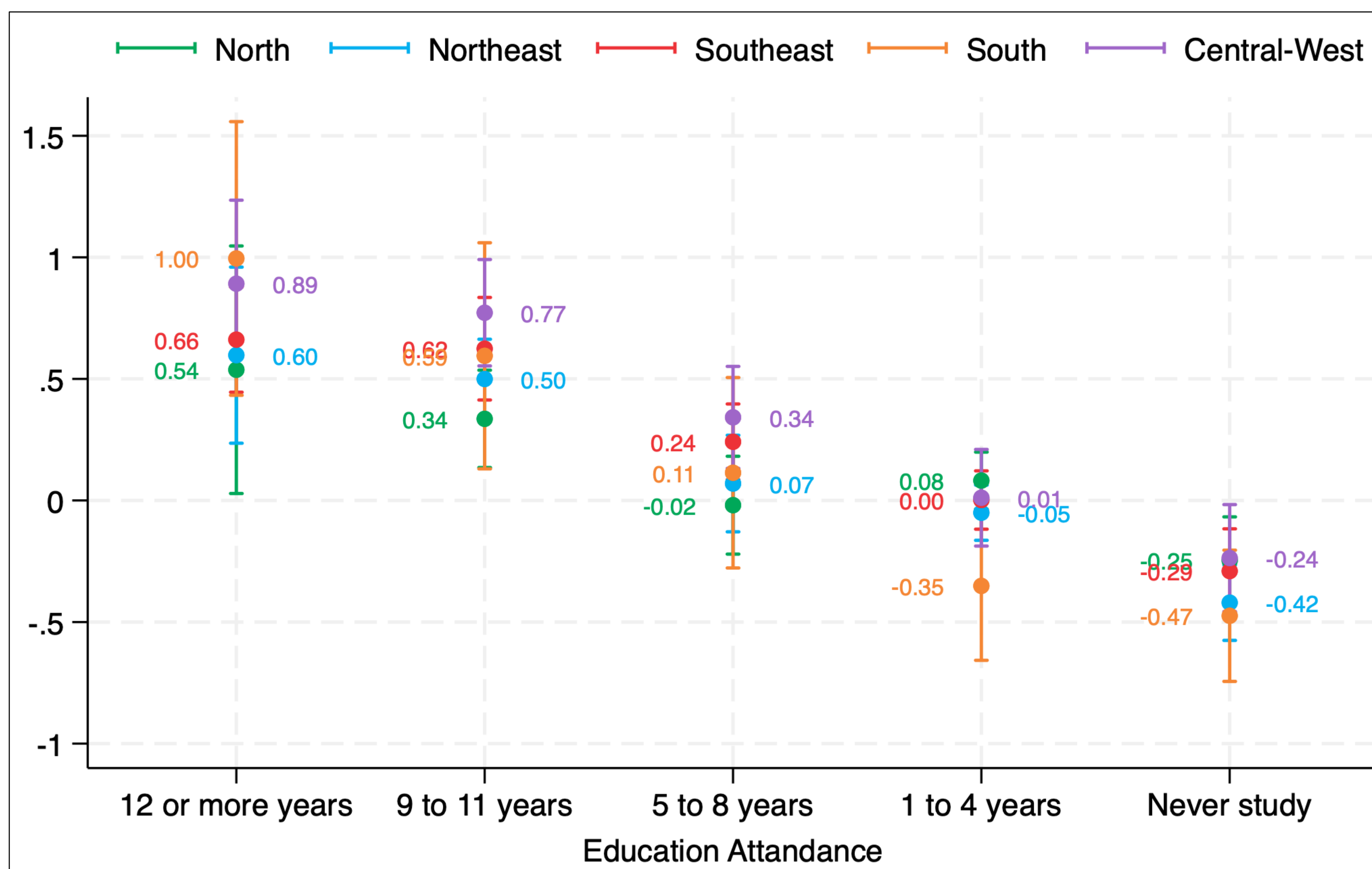


Figure 2 - Predicted Values of Memory by Educational Attainment and Region



Lower education was associated with poorer cognitive performance, but the strength of these associations varied by region.

(Adjusted Wald test
 $p = 0.0003$)

Supplementary
Materials



Conclusion

Associations between education and late-life cognition in Brazil vary across regions, suggesting the importance of considering local socioeconomic contexts when identifying effective targets for dementia risk reduction.

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