

International Comparisons between Cognition and Aging

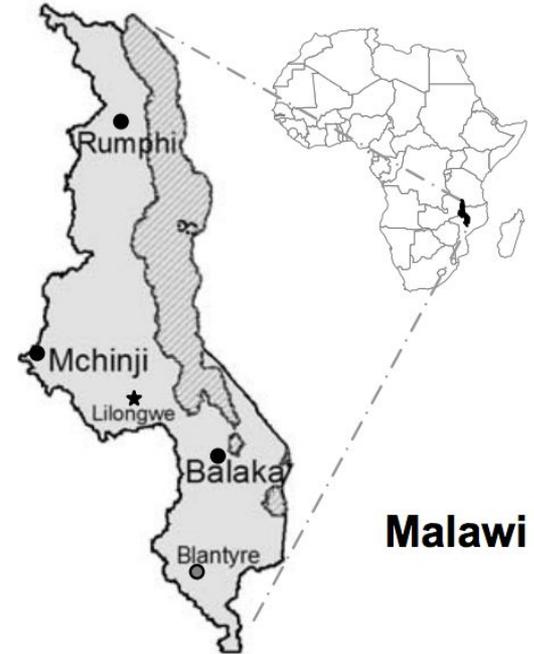
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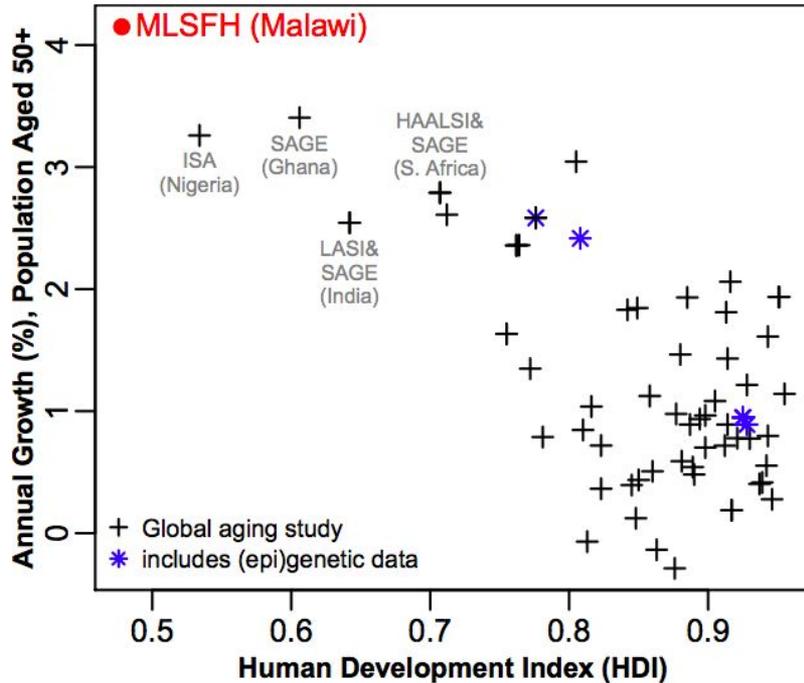
Malawi Longitudinal Study of Families and Health (MLSFH)

What is MLSFH?

- MLSFH is a longitudinal study of 4,000+ participants aged 45+ in 3 rural regions of Malawi
- It collects household survey data covering demographics, economic conditions, wellbeing, sexual, social & health networks, intergenerational transfers, and cognition
- The survey occurs every few years, starting in 1998 where the study primarily focused on HIV prevalence in low-income rural African regions
- Since then, **cognition** has become a key area of interest but remains understudied in low-income countries despite being prevalent in high-income countries



Aging studies, especially those related to cognition, are not prevalent in low-income countries



MLSFH is measuring cognition in a context where:

1. Most participants come from high rates of poverty with significantly different life-course adversities than the individuals that are studied in the majority of aging research
2. The size of the elderly population is exceedingly growing compared to elsewhere in the world

Significance

- Cognition plays a critical role in shaping late-life well-being in low-income populations
- Understanding how cognition differs between low, middle, and high-income countries can help inform adequate policy recommendations



Research Question

How does cognition among individuals aged 60+ differ between low-income countries, middle-income countries, and high-income countries?

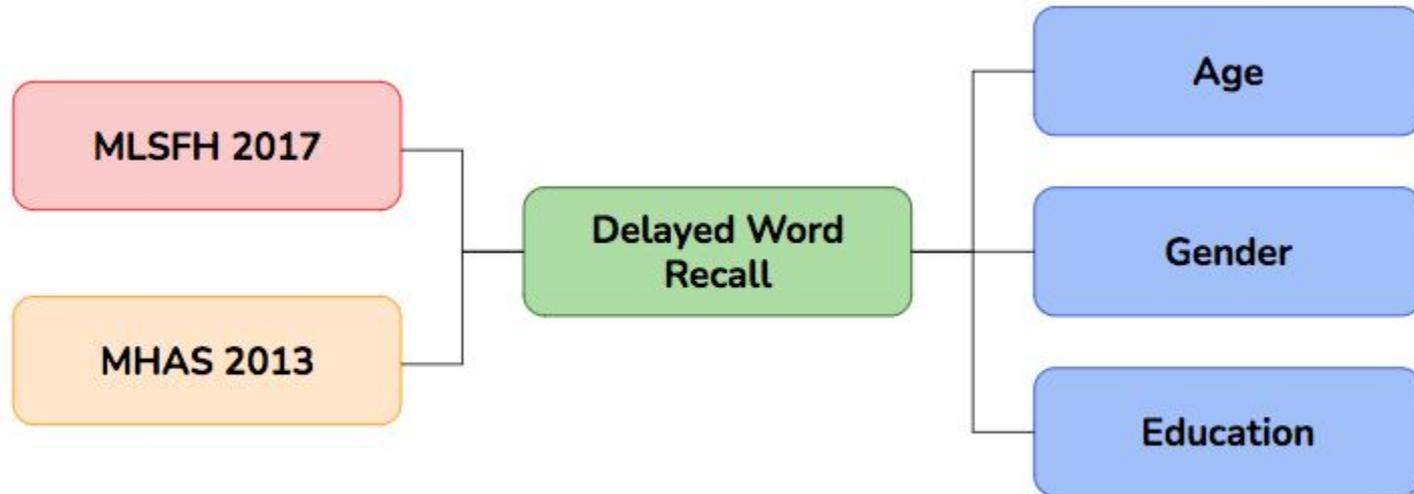
Between Malawi and Mexico?

MLSFH Cognitive Assessment (MCA)

- Modeled after existing tests MMSE and MoCA
- Focuses on **cognitive domains**:
 - Spatial/temporal orientation and language;
 - Visual/constructional tests;
 - Executive functioning
 - Attention/working memory,
 - Immediate and delayed recall
- Criteria for cognitive measures:
 - Must capture the entire span of cognition ranging from competent cognitive functioning to cognitive impairment
 - Must be able to be administered by a lay interviewer (non-clinician) and taken by a respondent with low levels of education

Methods

- Using household survey data from MLSFH 2017 and MHAS 2013 to draw cognitive comparisons in aging between Malawi and Mexico based on factors like age, gender, and education
- Based cognitive comparisons on the Delayed Word Recall test, which is a cognitive measure in which participants are given a series of 10 words to remember, followed by a delay, and then asked to freely recall as many of the words as they can



Delayed Word Recall in Malawi

	Sex		Total
	Male	Female	
60-69			
Frequency	167.0	199.0	366.0
Percent	45.6%	54.4%	100.0%
Mean			
Age	64.1	64.4	64.2
10 Word Delayed Recall	5.1	5.0	5.0
Years of Education	4.3	3.9	4.1
70-79			
Frequency	84.0	103.0	187.0
Percent	44.9%	55.1%	100.0%
Mean			
Age	74.4	73.9	74.2
10 Word Delayed Recall	4.1	4.1	4.1
Years of Education	3.8	2.1	3.0
80-89			
Frequency	36.0	63.0	99.0
Percent	36.4%	63.6%	100.0%
Mean			
Age	83.2	83.5	83.4
10 Word Delayed Recall	3.6	3.2	3.3
Years of Education	3.1	5.1	4.2

Delayed Word Recall in Mexico

	Sex		Total
	Male	Female	
60-69			
Frequency	328.0	478.0	806.0
Percent	40.7%	59.3%	100.0%
Mean			
Age	64.9	64.4	64.6
10 Word Delayed Recall Score	3.2	3.9	3.6
Years of Education	6.7	5.2	5.8
70-79			
Frequency	262.0	311.0	573.0
Percent	45.7%	54.3%	100.0%
Mean			
Age	73.7	74.0	73.9
10 Word Delayed Recall Score	2.2	2.7	2.5
Years of Education	4.8	4.1	4.4
80-89			
Frequency	89.0	123.0	212.0
Percent	42.0%	58.0%	100.0%
Mean			
Age	83.0	83.1	83.0
10 Word Delayed Recall Score	1.4	1.5	1.4
Years of Education	3.1	3.3	3.2

Findings

Malawi-Mexico Comparisons:

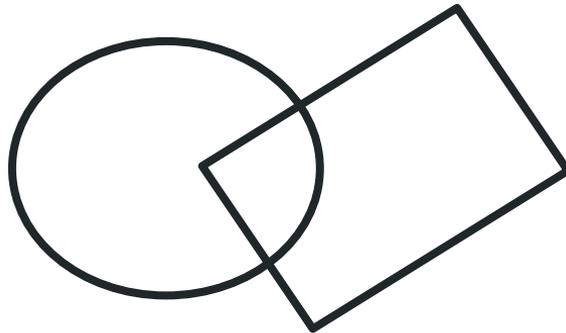
- Cognitive comparisons are ongoing
- Preliminary findings suggest that participants in Malawi had higher scores in the 10 Word Delayed Recall test than those in Mexico for age groups 60-69, 70-79, 80-89 despite having similar levels of education

Cognition findings in Malawi:

- Variation in cognition is related to socio-economic status and level of education
- In low-income countries like Malawi, women have lower levels of cognition in contrast to high-income countries
- Day-to-day well-being is strongly related to cognitive health
- Individuals who reported depressive and anxious symptoms had worse physical health outcomes, while those who lower financial security had higher rates of cognitive impairment

Challenges in Making Comparisons of Cognition

- Language barriers and differences in educational background across low, middle, and high-income countries make it difficult to standardize measures of cognition
- Cognitive tests had to be designed/adjusted for Malawi participants to account for life-course experiences
 - E.g. In a visual reconstruction test, some participants in Malawi are unfamiliar with holding a pencil so they draw the figure below with their finger/stick in the sand or dirt



Lessons Learned

- Leveraged my previous experiences in neuroscience and cognitive science to understand how cognition is measured in aging studies around the world
- Learned about the significance of aging studies and how aging differs across the world
- Gained exposure to Stata

Thank you!