



# Bilingualism and Cognitive Aging: Why Does It Matter?

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MIGUEL ARCE RENTERÍA, PH.D.

ASSISTANT PROFESSOR OF NEUROPSYCHOLOGY

COLUMBIA UNIVERSITY MEDICAL CENTER

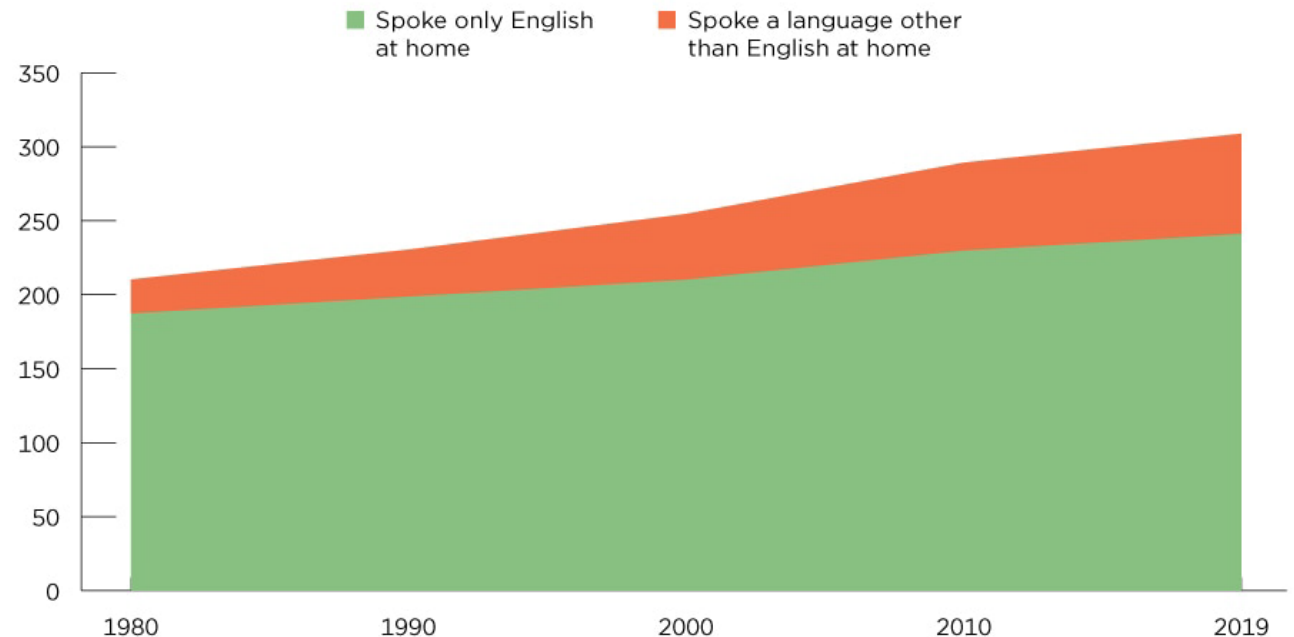
# Bilingualism is increasing

Nearly 68 million people spoke a language other than English at home in 2019

Nearly tripled from 23.1 million (about 1 in 10) in 1980 to 67.8 million (almost 1 in 5) in 2019.

When it comes to non-English languages spoken at home, **Spanish** takes the top spot, with **13% of the population** (around 41 million people) communicating *en español*.

Figure 1.  
**Languages Spoken at Home for the Population 5 Years and Older: 1980–2019**  
(In millions)

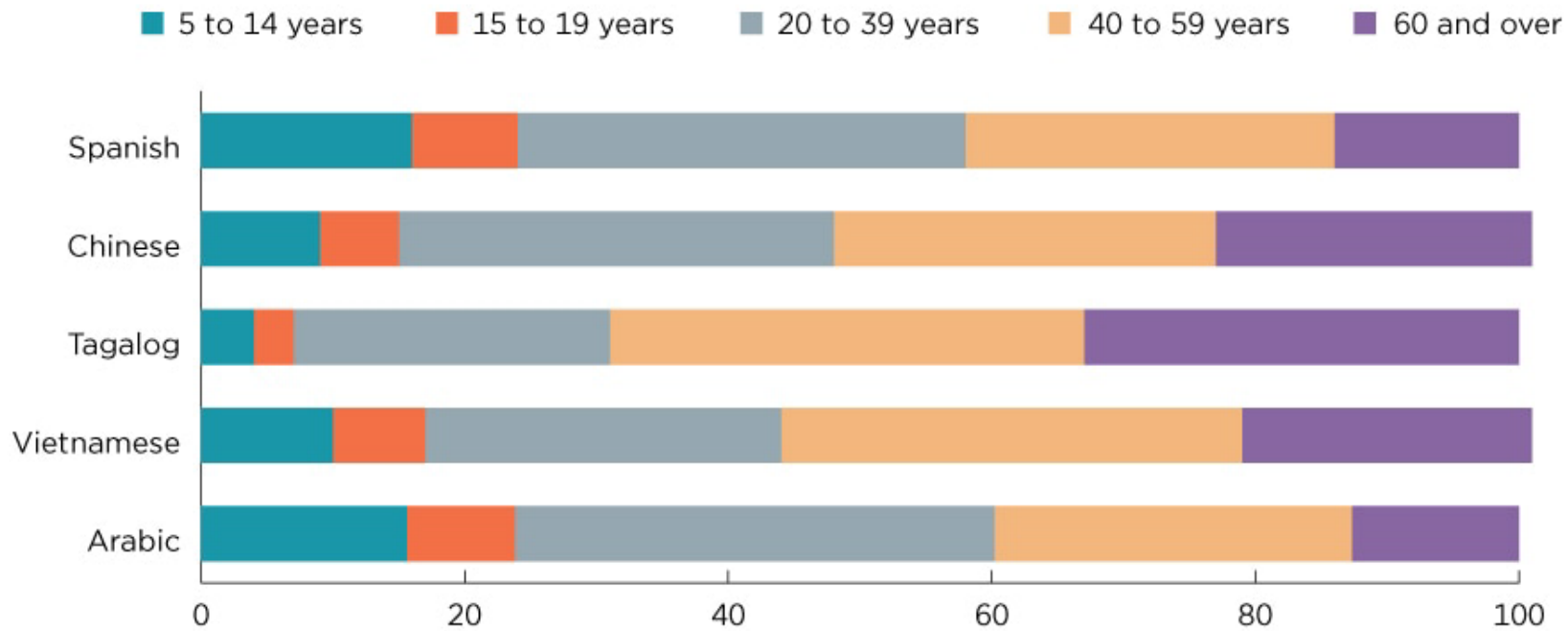


Source: U.S. Census Bureau, 1980, 1990, and 2000 Censuses; 2010 and 2019 American Community Survey, 1-year estimates.

Figure 2.

## Most Frequently Spoken Languages at Home by Age, Nativity and Citizenship: 2019

(In percent)

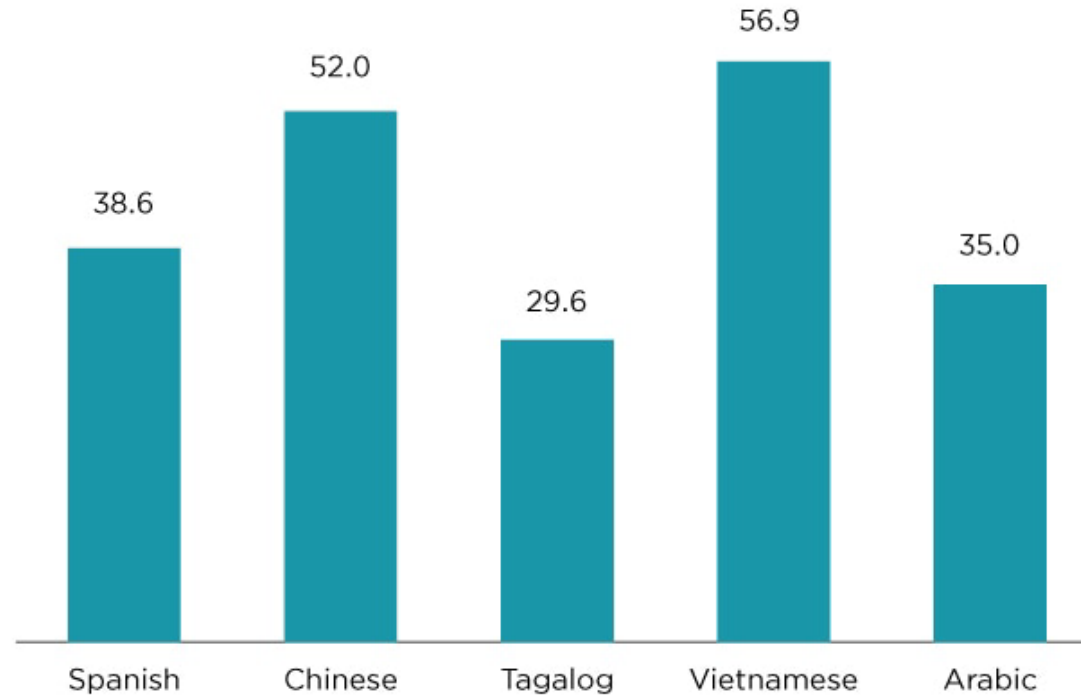


Source: U.S. Census Bureau, 2019 American Community Survey, 1-year estimates.

Figure 4.

**Most Frequently Spoken Languages at Home by English-Speaking Ability: 2019**

(In percent)



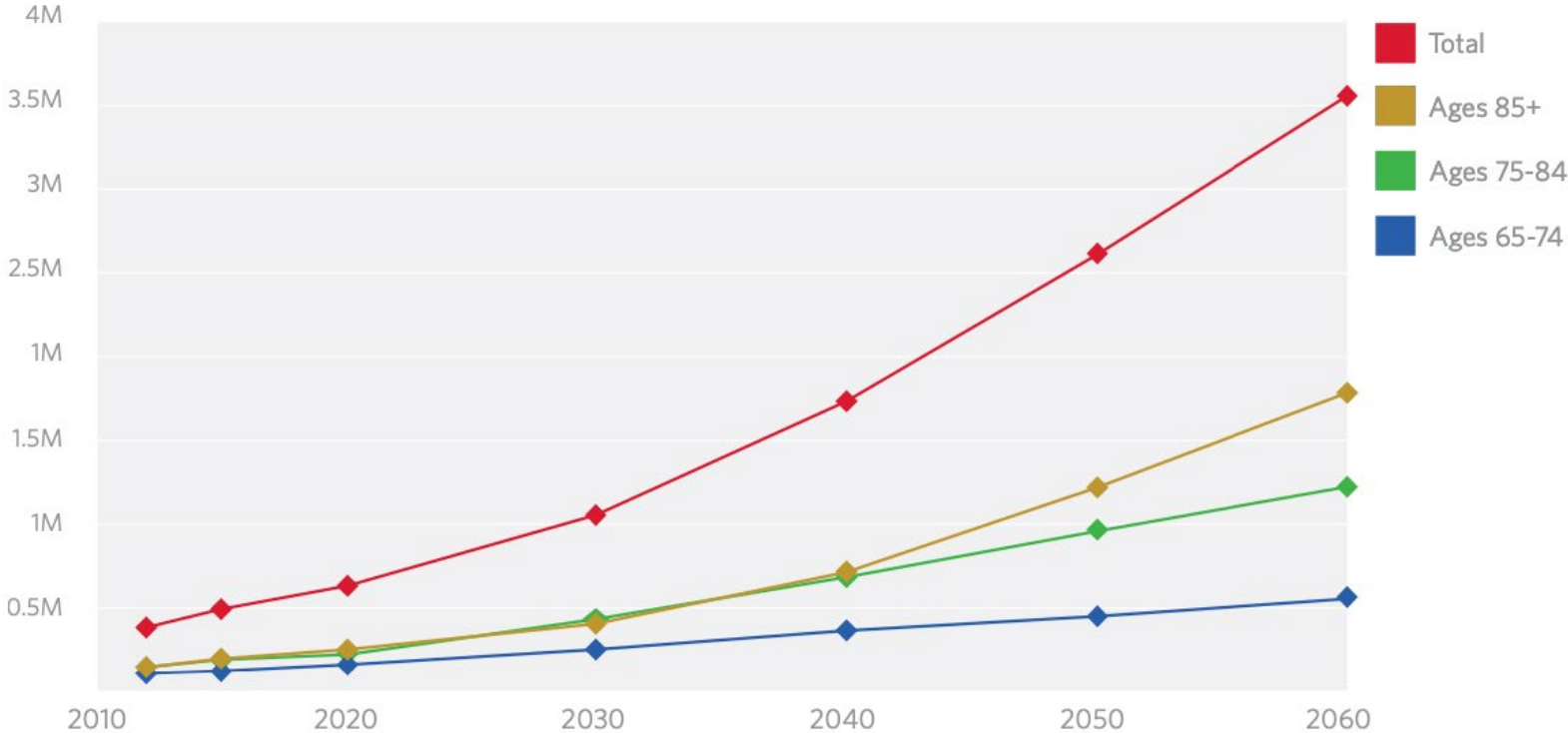
Source: U.S. Census Bureau, 2019 American Community Survey, 1-year estimates.

# Population Estimates

Latino population in the U.S. is projected to increase to 119 million by 2060

Number of Latinos age 65 or older will increase to 21.5 million in 2060

**FIGURE 2. PROJECTION OF LATINOS WITH AD THROUGH 2060, BY AGE (IN MILLIONS)**



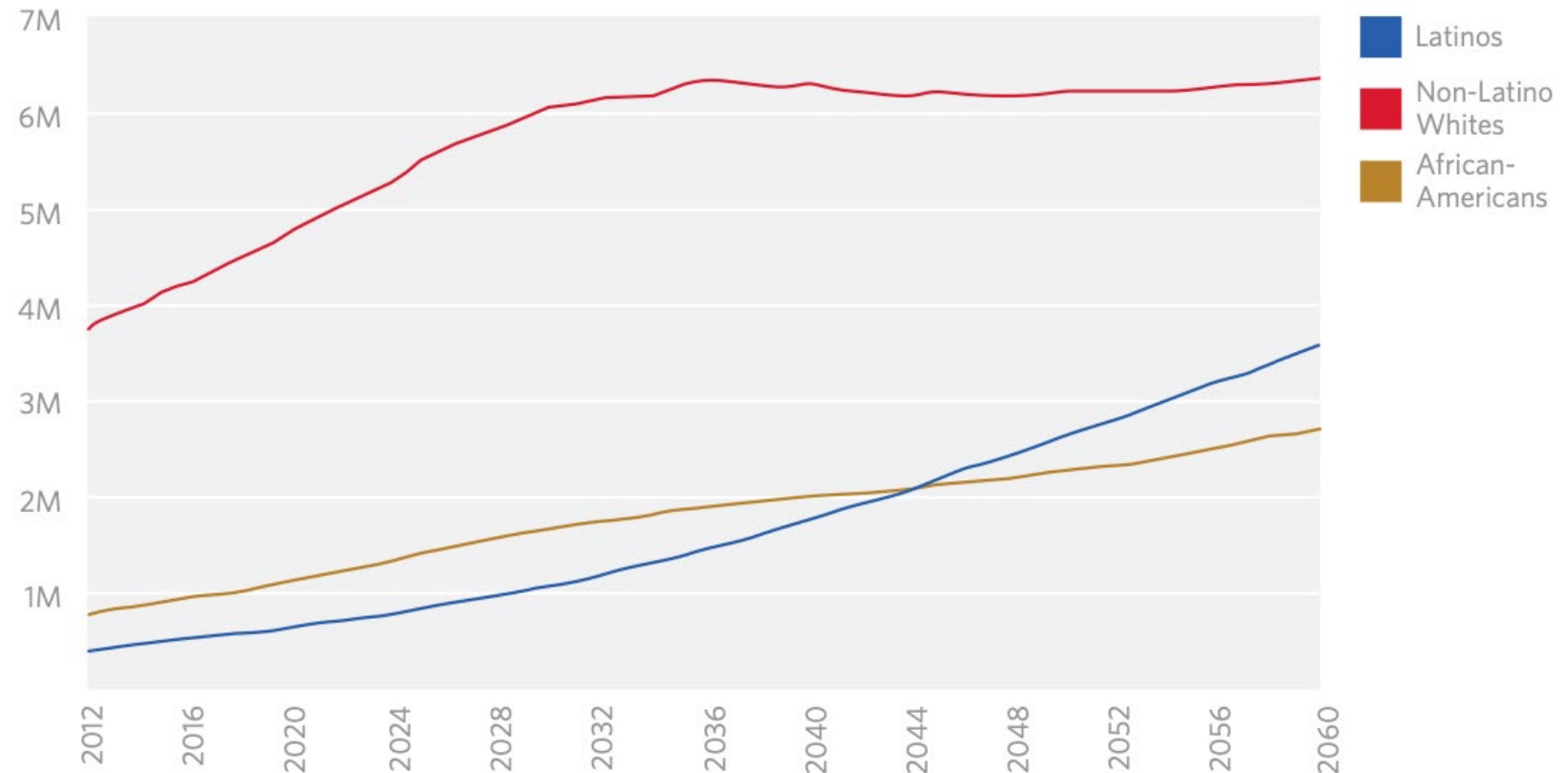
# Population Estimates

3.5 million Latinos are projected to be living with Alzheimer's by 2060

AD is the eighth-leading cause of death among Latinos

1.5 times more likely to get Alzheimer's than a non-Latino White

**FIGURE 6. PROJECTION OF AD CASES IN THE UNITED STATES THROUGH 2060, BY RACE/ETHNICITY (IN MILLIONS)**





# Why Bilingualism?

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Engagement in cognitive enriching activities associated with reduced risk of dementia

“Bilingual advantage” on cognition

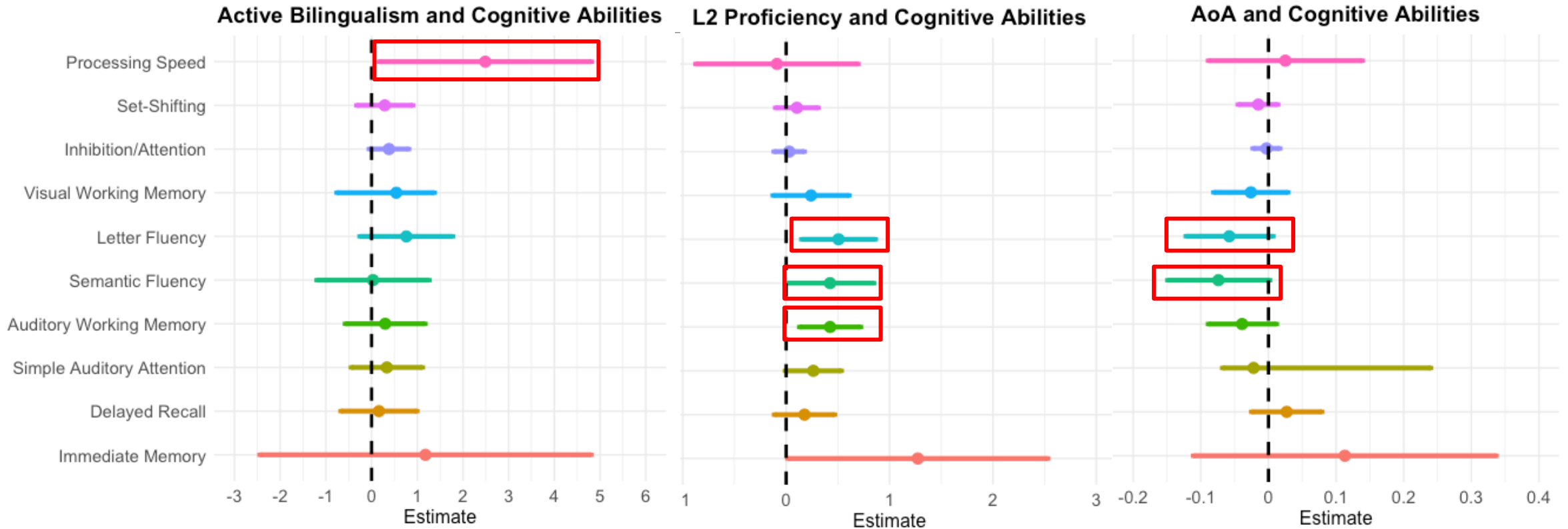
- Aspects of executive functioning, episodic memory, and visuospatial abilities
- Children, young adults, and older adults
- Some inconsistent findings

Proposed mechanisms

- Inhibition and switching between languages
- Strengthening of attentional and executive control neural networks



# Deconstructing Bilingualism: Offspring Study



(Arce Rentería, M., et al. in preparation)

Covariates: age, sex/gender, years of education, parent years of education



# How do we know if we should test them in English or another language?

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The neuropsychological evaluation of bilingual people in their dominant language is the preferred approach.

- Lack a gold-standard approach for determining language dominance.

Some clinicians may evaluate individuals in English if they demonstrate conversational fluency in English

- Insufficient indicator of the language proficiency required for higher order cognitive processing assessed in a neuropsychological evaluation.

CHAPTER 10

## CENTERING SOCIAL FORCES AND CULTURAL EXPERIENCES IN NEUROPSYCHOLOGICAL ASSESSMENT

*Miguel Arce Rentería, Justina F. Avila, Jet M. J. Vonk, and Jennifer J. Manly*

*APA Handbook of Neuropsychology: Vol. 2. Neuroscience and Neuromethods*

# How to know what language to test them in?

## Considerations When Assessing Linguistic Proficiency Through Self-Report

Aspect of bilingualism	Information to assess per aspect of bilingualism
Age of acquisition	Age at which individual started learning their second language Age at which the individual acquired their second language (i.e., started using it comfortably and regularly)
Past language use	Languages used at home during childhood Language used throughout schooling
Proficiency	Current self-reported proficiency in all languages across various domains: <ul style="list-style-type: none"><li>• speaking</li><li>• reading</li><li>• writing</li><li>• understanding</li></ul>
Current language use	Current use of language (i.e., percent time) used in a typical week across various settings: <ul style="list-style-type: none"><li>• family</li><li>• friends</li><li>• at home</li><li>• at work</li><li>• for leisure activities</li><li>• to count</li></ul>

## Objective Assessment:

- Multilingual Naming Test (MINT; Gollan et al., 2011)
  - Naming 68 items in both English and Spanish
  - First dominant language followed by non-dominant language
  - Bilingual index scores will range from 0 to 1 and provide a measure of the extent to which knowledge of the two languages is balanced

# Testing Considerations

## Administering English tests to non-English dominant speakers

- Across all domains, performance may heavily represent English proficiency rather than abilities desired for testing


## Translation

- Dialect differences
- English version of tests went through rigorous piloting, changes happen with translation
- Psychometrics may change

## If using a bilingual psychometrist are they qualified to interpret?

- Ensure their training in language/culture is adequate and they are familiar with non-English language versions of tests

## The Relative Utility of Three English Language Dominance Measures in Predicting the Neuropsychological Performance of HIV+ Bilingual Latino/a Adults

Caitlin Miranda<sup>a</sup>, Miguel Arce Rentería<sup>a</sup>, Armando Fuentes<sup>a</sup>, Kelly Coulehan<sup>a</sup>, Alyssa Arentoft<sup>e</sup> , Desiree Byrd<sup>b,c</sup>, Ana Rosario<sup>a</sup>, Jennifer Monzones<sup>a</sup>, Susan Morgello<sup>b,d</sup> and Monica Rivera Mindt<sup>a,b,c</sup>

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doi:10.1017/S1355617718000632

## Assessment of Naming in Non-native English Speakers with Epilepsy

Amanda Gooding,<sup>1</sup> Jeffrey R. Cole,<sup>2</sup> AND Marla J. Hamberger<sup>2</sup>

frontiers in  
**HUMAN NEUROSCIENCE**

**ORIGINAL RESEARCH ARTICLE**  
published: 22 February 2011  
doi: 10.3389/fnhum.2011.00013



## Language mapping in multilingual patients: electrocorticography and cortical stimulation during naming

**Mackenzie C. Cervenka<sup>1\*</sup>, Dana F. Boatman-Reich<sup>1</sup>, Julianna Ward<sup>2</sup>, Piotr J. Franaszczuk<sup>1</sup> and Nathan E. Crone<sup>1</sup>**

<sup>1</sup> Department of Neurology, Johns Hopkins University School of Medicine, Baltimore, MD, USA

<sup>2</sup> Department of Psychiatry and Behavioral Science, Johns Hopkins University School of Medicine, Baltimore, MD, USA

*The Clinical Neuropsychologist*, 2012, 26 (1), 88–101  
<http://www.psypress.com/tcn>  
ISSN: 1385-4046 print/1744-4144 online  
<http://dx.doi.org/10.1080/13854046.2011.640641>

 **Psychology Press**  
Taylor & Francis Group

## **CE** Interpreter-Mediated Neuropsychological Testing of Monolingual Spanish Speakers

**Rachel Casas<sup>1</sup>, Edmarie Guzmán-Vélez<sup>1</sup>,  
Javier Cardona-Rodríguez<sup>3</sup>, Nayra Rodríguez<sup>3</sup>,  
Gabriela Quiñones<sup>3</sup>, Borja Izaguirre<sup>2</sup>, and Daniel Tranel<sup>1,4</sup>**

# Ethical Considerations

RESEARCH

## Challenges and opportunities caring for neurology outpatients across language differences

Jessica H. Tran, BS\*, Betty M. Luan Erfe, MD\*, Christopher J. Kirwan, PhD, and Nicté I. Mejía, MD, MPH

*Neurology: Clinical Practice* June 2019 vol. 9 no. 3 208-217 doi:10.1212/CPJ.0000000000000634

Correspondence  
Dr. Mejía  
nmejia@partners.org

To provide equitable high-quality patient care, health care systems must be well equipped to address patients' needs and preferences including as it pertains to language.

**Multicultural Guidelines: An Ecological Approach to Context, Identity, and Intersectionality**

Adopted by the APA Council of Representatives in August 2017

## APA Ethical Principles of Psychologists and Code of Conduct

### 9.02 Use of Assessments

(a) Psychologists administer, adapt, score, interpret, or use assessment techniques, interviews, tests, or instruments in a manner and for purposes that are appropriate in light of the research on or evidence of the usefulness and proper application of the techniques.

(b) Psychologists use assessment instruments whose validity and reliability have been established for use with members of the population tested. When such validity or reliability has not been established, psychologists describe the strengths and limitations of test results and interpretation.

(c) Psychologists use assessment methods that are appropriate to an individual's language preference and competence, unless the use of an alternative language is relevant to the assessment issues.

**Guideline 3. Psychologists strive to recognize and understand the role of language and communication through engagement that is sensitive to the lived experience of the individual, couple, family, group, community, and/or organizations with whom they interact. Psychologists also seek to understand how they bring their own language and communication to these interactions.**

