# Distinctions Across Different Spanish WAIS-III Similarities and Digit Span Subtests across Mexican and Central American-Born Individuals

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## Introduction

"A test that is fair does not unduly advantage or disadvantage certain examinees because of individual characteristics that are irrelevant to the construct being measured." (AERA, et al., In Press)

Two challenges that exist when assessing the intellectual ability of Spanish-speakers in the United States are:
- No intellectual tests developed for the Spanish speaking population by Spanish-speaking psychologists.
- The use of translated tests should question the construct validity.

Although the WAIS-IV in Spanish, with Spaniard normative data, became available in 2012 for purchase in Spain, the present study focused on the Spanish WAIS-III because it is the currently used and most researched version in the United States (Camara, Nathan, &Puente, 2000) and because it builds upon prior research conducted in the UNCW Neuropsychology Lab.

## Prior Study Findings

In a study conducted by Hernandez-Mejia and Puente, the Mexican, Puerto Rican, and Spaniard versions of the WAIS-III when compared to the English version are qualitatively and quantitatively different (2013). Overall differences across the three different versions were:
- limited standardization sample
- overestimated scale scores, IQ & Index scores
- large confidence intervals
- item bias and construct validity concerns
- different raw scores depending on version used

The culmination of this research study found that the Similarities and Digit Span raw scores were statistically significant different when compared to the English version.

## Objective

Given that each version was normed with their respective geographic locations and that none of those versions included Spanish-speakers residing in the US, the application of population-specific norms is questionable.

The objective of this study was to determine distinctions across the Mexican, Puerto Rican, and Spaniard versions of the WAIS-III Similarities and Digit Span Subtests across Mexican and Central American-Born Individuals

It was hypothesized that:
1. Mexican born individuals would have higher scores on the Mexican Similarities subtest compared to the Puerto Rican and Spaniard version
2. There would be no differences between the three Spanish versions of the Digit Span subtest.

## Method

- The Mexican, Puerto Rican, and Spaniard Digit Span and Similarities subtests were administered in a counter-balanced fashion to each participant.
- Participants were recruited from three distinct community facilities (i.e. health clinic, a non-denominational church, and a Hispanic resource center).
- Inclusion Criteria: Spanish-speaking individuals between the ages of 18 and 65 that were born in either Mexico or Central America
- Participants were not compensated for their participation.
- Attribution: 10 participants

## Demographic Results

- A total of 107 community dwelling individuals between the ages of 21 and 62 with 0-18 years of education participated in this study.
  - $M_{age}$ = 40.52, $SD_{age}$= 11.21
  - $M_{edu}$ = 2.37, $SD_{edu}$ =1.23
  - Gender = 55 females and 52 males
  - Birth Origin:
    - 60 Mexican-born individuals
      - 41 females & 19 Males
      - $M_{age}$ = 40.17, $SD_{age}$= 11.03
    - 47 Central American-born individuals
      - 14 females & 33 males
      - $M_{age}$ = 40.98, $SD_{age}$= 11.55
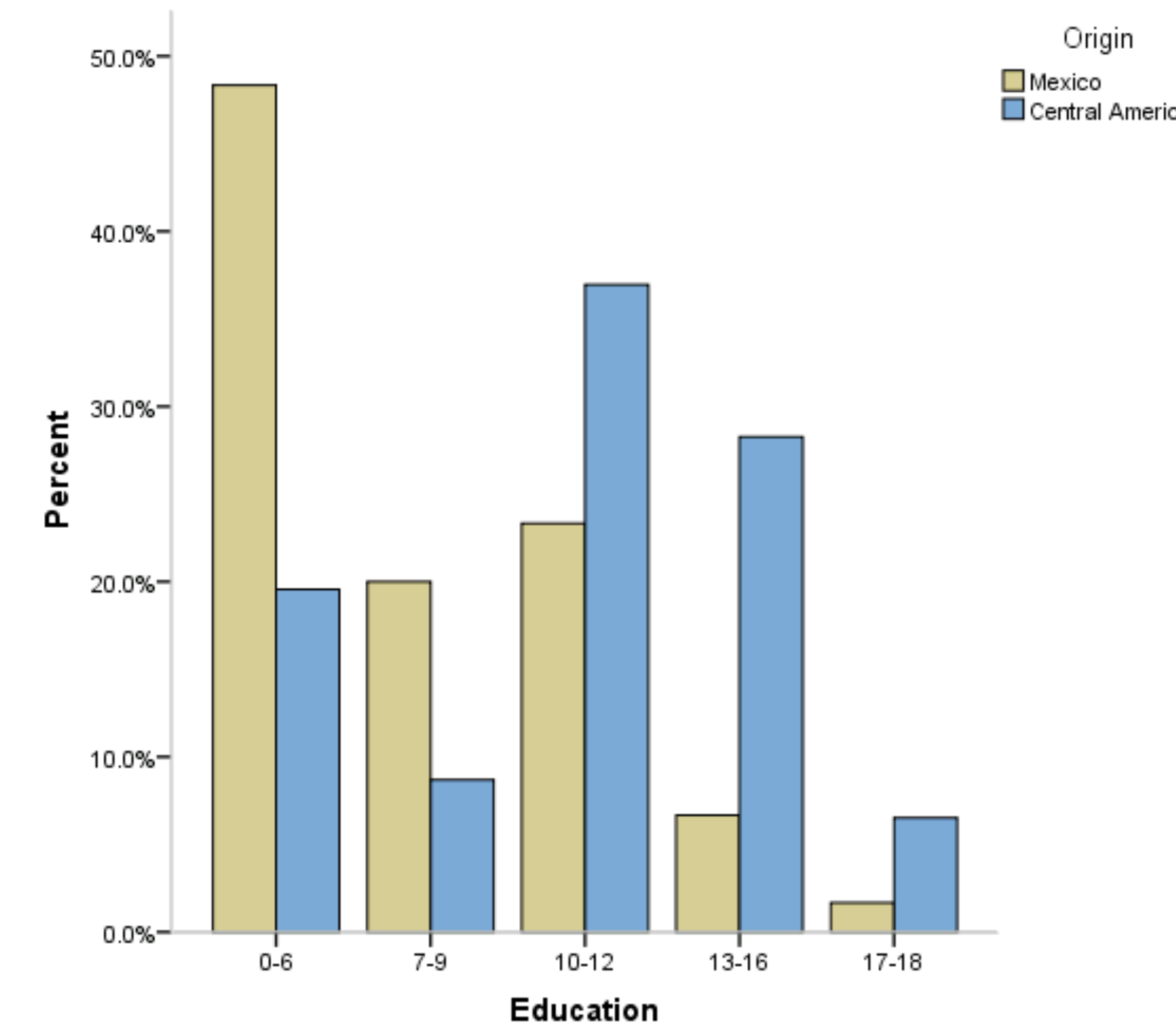


## Repeated Measures ANOVA Results

### Similarities
- The main effect is significant, $F(2, 10) = 23.63$, $p < .001$, but it was qualified by a significant interaction, $F(2, 10) = 3.35$, $p = .037$
  - Mexican vs. Central American for Mexican Similarities subtest: $F(1, 105) = 7.64$, $p = .007$
  - Mexican vs. Central American for Puerto Rican Similarities subtest: $F(1, 105) = 9.471$, $p = .003$
  - Mexican vs. Central Americans for Spaniard Similarities subtest: $F(1, 105) = 5.55$, $p = .020$
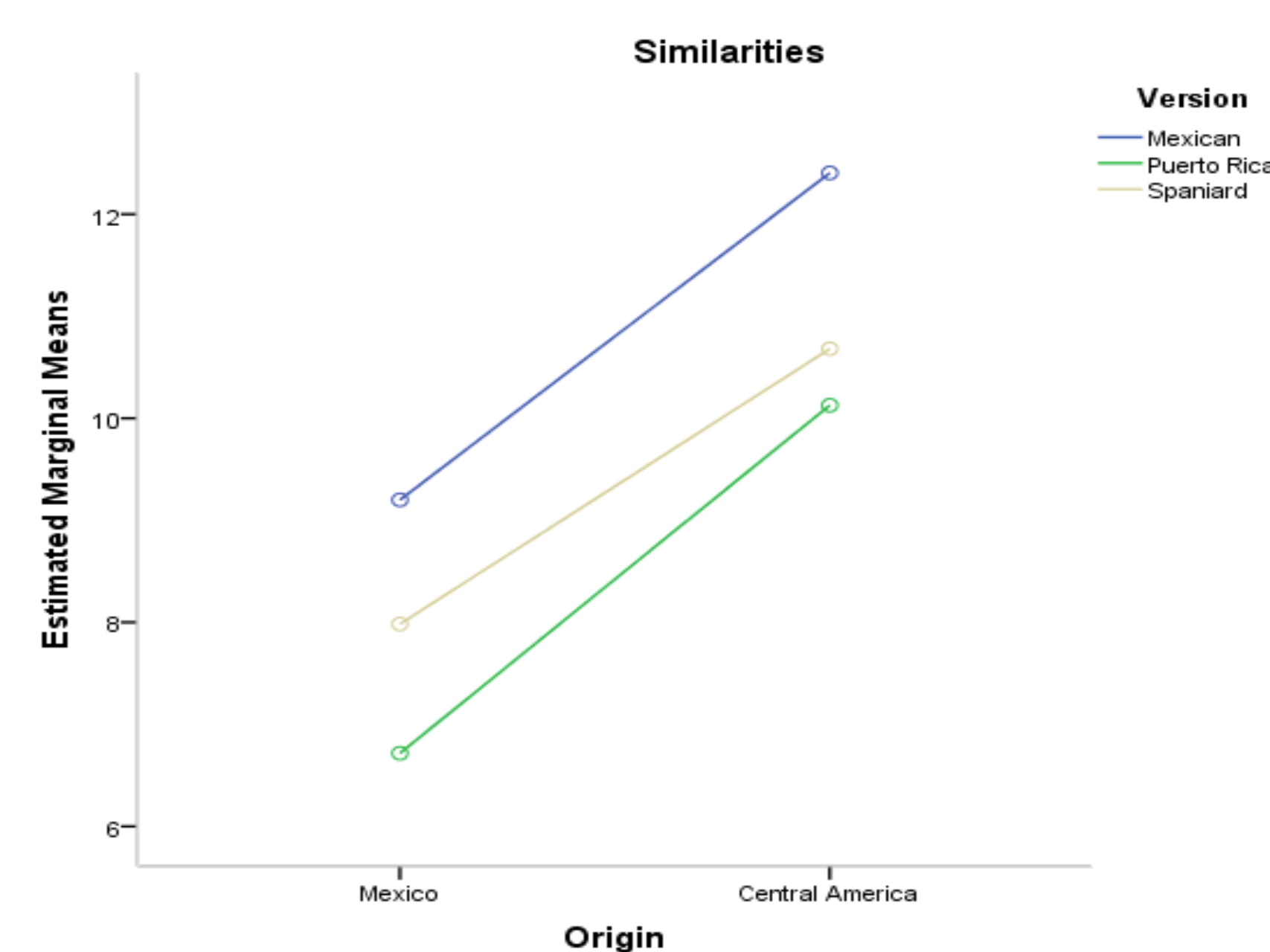


### Digit Span
- No significant main effect was found between the Digit Span subtests, $F(2, 210) = .59$, $p = .555$
- There was no interaction found between Origin of birth and the Digit Span subtests, $F(2, 210) = .22$, $p = .801$
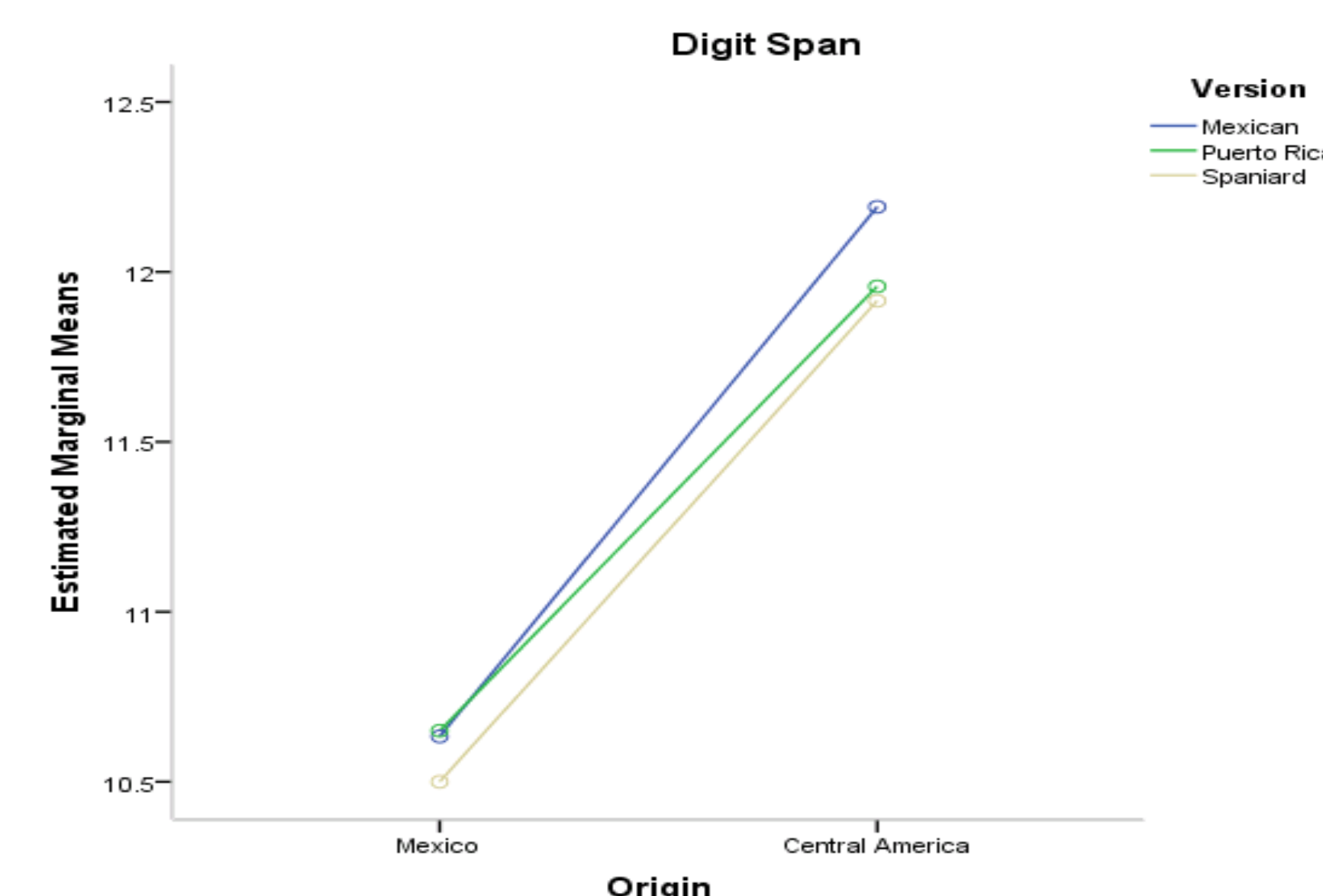


## Discussion

1. Mexican-born individuals had significantly higher scores on the Mexican Similarities subtest than on the Puerto Rican and Spaniard Similarities subtest.

2. No significant differences between the Digit Span subtests.

3. A general pattern indicates that Central American born individuals obtain higher raw scores in comparison to Mexican-born individuals, which may be due to the higher levels of education of Central American-born individuals.

4. For Similarities, the Puerto Rican version yields the lowest scores.
   *It should be noted that participants did not know the meaning of one of the words in Item 6 of the Puerto Rican version.

5. It is understandable to see that Central Americans obtain higher scores when being administered the Mexican version of the WAIS-III, because Central America is geographically closer to Mexico than Puerto Rico and Spain.

## Conclusions & Future Directions

Findings suggest that caution should be taken when the application of specific norms are used to interpret test scores, integrate data, and ultimately formulate diagnoses.

A limitation of this study is the generalizability of the results due to the administration of only one qualitatively different subtest, sample size not reaching power and differences in level of education across both groups.

Future directions of this study are to continue with the data collection, determine the effects of educational attainment across the different Spanish versions, and conduct similar studies with the Spanish WAIS-IV normed in Spain.

## References

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