

39 Perceived Workload and Language Order Effects on the Cordoba Naming Test in Spanish-English Bilinguals

Krissy E. Smith^{1,2}, Isabel D. C. Munoz^{3,2}, Raymundo Cervantes^{1,2}, Andrea R. Preciado^{4,2}, Tara L. Victor¹, Natalia Garcia^{1,2}, Paula V. Bracho^{5,2}, Enrique Lopez², Alberto L. Fernandez⁶, Yvette De Jesus^{7,2}, Daniel W. Lopez-Hernandez^{8,2}

¹California State University Dominguez Hills, Carson, California, USA. ²The Lundquist Institute, Torrance, California, USA. ³California State University Northridge, Northridge, California, USA. ⁴Tecnologico de Monterrey, Monterrey, Nuevo Leon, Mexico. ⁵Tecnologico de Monterrey, Monterrey, Nuevo Leon, USA. ⁶Universidad Catolica De Cordoba, Center, Cordoba, Argentina. ⁷California State University Fresno, Fresno, California, USA. ⁸University of California San Diego Health, San Diego, California, USA

Objective: The Cordoba Naming Test (CNT) is a 30-item confrontation naming task. The administration of the CNT can be administered in multiple languages. Hardy and Wright (2018) conditionally validated a measure of perceived mental workload called the National Aeronautic Space Administration Task Load Index (NASA-TLX). They found that workload ratings on the NASA-TLX increased with increased demands on a cognitive task. Researchers found interactions in a study examining language proficiency and language (i.e., in which the test was administered) on several tasks of the Golden Stroop Test. Their results revealed that unbalanced bilinguals' best-spoken language showed significantly better results compared to balanced bilinguals' where language use did not matter. To our knowledge, no study has examined the order effects of Spanish-English bilingual speakers' CNT performance and perceived workloads when completed in Spanish first compared to English second and vice-versa. We predicted that persons that completed the CNT in English first would demonstrate better performances and report lower perceived workloads on the CNT compared to completing the CNT in Spanish second. In addition, we predicted that persons that completed the CNT in Spanish first would demonstrate worse performance and higher

perceived workloads on the CNT compared to completing the CNT in English second.

Participants and Methods: The sample consisted of 62 Spanish-English healthy and neurologically bilingual speakers with a mean age of 19.94 (SD= 3.36). Thirty-seven participants completed the CNT in English first and then in Spanish (English-to-Spanish) and 25 participants completed the CNT in Spanish first and then in English (Spanish-to-English). The NASA-TLX was used to evaluate CNT perceived workloads. All the participants completed the NASA-TLX in English and Spanish after completing the CNT in the language given, respectfully. A series of paired-samples T-Tests were completed to evaluate groups CNT performance and perceived workload.

Results: We found that the English-to-Spanish group performed better on the CNT in English first than completing it in Spanish second, $p = .000$. We also found that the English-to-Spanish group reported better performance and less mentally demanding on the CNT when it was completed in English first compared to completing it in Spanish second, p 's < .05. Regarding the Spanish-to-English group, we found participants performed worse when they completed the CNT in Spanish first compared to completing the CNT in English second, $p = .000$. Finally, the Spanish-to-English group reported worse performance completing the CNT in Spanish first, more temporal demanding, and more frustrating compared to completing the CNT in English second, p 's < .05.

Conclusions: As expected, when participants completed the CNT in English, regardless of the order, they performed better and reported lower perceived workloads compared to completing the CNT in Spanish. Our data suggests that language order effect influenced participants CNT performance possibly due to not knowing specific items in Spanish compared to in English. Future studies using larger sample sizes should evaluate language order effects on the CNT in Spanish-English balanced bilingual speakers compared to unbalanced bilingual speakers.

Categories: Inclusion and Diversity/Multiculturalism

Keyword 1: bilingualism/multilingualism

Keyword 2: self-report

Keyword 3: naming

Correspondence: Krissy E. Smith, California State University Dominguez Hills, krissy.e.smith@gmail.com

41 Analyzing Perceived Workloads in Bilinguals and Monolinguals' Digit Span Performance

Yvette De Jesus¹, Krithika Sivaramakrishnan¹, Adriana Cuello Cancino², Mariam Gómez Curiel², Natalia Lozano Acosta³, Isabel D.C. Muñoz⁴, Krissy E. Smith⁵, Daniel W. Lopez Hernandez⁶

¹California State University Fresno, Fresno, California, USA. ²Tecnologico de Monterrey, Monterrey, Nuevo Leon, Mexico. ³Tecnologico de Monterrey, Monterrey, Nuevo, USA.

⁴California State University Northridge, Northridge, California, USA. ⁵California State University Dominguez Hills, Carson, California, USA. ⁶University of California San Diego Health, San Diego, California, USA

Objective: A common neuropsychological task used is the Digit Span, known as a test of attention and working memory. The Digit Span Forward (DS-F) task evaluates attention; meanwhile, the Digit Span Backward (DS-B) and Sequencing (DS-S) evaluate working memory. Research shows that persons that speak multiple languages demonstrate better attention and working memory abilities compared to monolingual speakers. The NASA Task Load Index (NASA-TLX) was conditionally validated by Hardy and Wright (2018) to measure perceived mental workload. Research also shows that bilinguals report higher perceived workloads on cognitive tasks compared to monolinguals. With that said, it was hypothesized that bilinguals would demonstrate better performances on Digit Span tasks compared to monolinguals. Additionally, it was hypothesized that bilinguals would report higher perceived workloads on all digit span tasks compared to monolinguals.

Participants and Methods: The sample consisted of 29 psychologically and neurologically healthy participants with a mean age of 29.66 ($SD = 7.14$). Participants were divided into two groups: English monolingual speakers ($n = 10$) and English and other language bilingual speakers ($n = 19$).

Participants completed all the subtests of the Digit Span (i.e., DS-F, DS-B, DS-S) in English. The NASA-TLX was used to measure DS-F, DS-B, and DS-S perceived workloads. The NASA-TLX was completed after each Digit Span subtest in English. We used ANOVAs to evaluate DS-F, DS-B, and DS-S performance and their perceived workload between our language groups.

Results: We found no significant differences between language groups on the DS-F. However, the bilingual group reported the DS-F to be more temporally demanding and frustrating compared to the monolingual group, $p's < .05$, $np^2 = .14-.15$. Next, we found that the monolingual group outperformed the bilingual group on the DS-B task, $p = .027$, $np^2 = .17$. On the other hand, the bilingual group reported the DS-B task to be more temporally demanding and frustrating compared to the monolingual group, $p's < .05$, $np^2 = .18-.20$. Finally, on the DS-S task the monolingual group outperformed the bilingual group, $p = .043$, $np^2 = .14$. Meanwhile, the bilingual group reported the DS-S task to be more mentally and temporally demanding compared to the monolingual group, $p's < .05$, $np^2 = .18-.34$.

Conclusions: Contrary to our hypothesis, results show that monolinguals outperformed bilinguals on DS-B and DS-S, but not DS-F. However, as expected, bilinguals did report higher perceived workloads (e.g., frustration) on Digit Span tasks compared to monolinguals. A possible explanation could be that bilinguals' efforts to remember the numbers were more taxing compared to monolinguals' because they had to inhibit from verbally responding in their other language. Rushing bilinguals to provide responses, ultimately developing higher perceived workloads on Digit Span tasks. Future work should investigate if time perspective may be influencing bilingual speakers Digit Span performances and perceived workloads.

Categories: Inclusion and Diversity/Multiculturalism

Keyword 1: bilingualism/multilingualism

Keyword 2: working memory

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Correspondence: Yvette De Jesus, California State University Fresno, yvettedejesus.02@gmail.com