

higher levels (Miller & Bichsel, 2004; Goetz, et al. 2013). This study evaluates gender differences in both standardized and everyday math performances, and the way that cognitive and non-cognitive factors impact math. The study is focused on a very understudied group with high levels of math difficulty, namely community college students. We expected to find gender differences in math, and expect these to be in part accounted for by gender differences in strong mathematical predictors, particularly non-cognitive factors.

Participants and Methods: Participants included 94 community college students enrolled in their first math class (60 female; 34 male). Participants were administered the Kaufman Test of Educational Achievement – 3rd edition (KTEA3): Math Computation (MC) and Math Concepts Application (MCA) subtests, as well as an original Everyday Math (EM) measure which assessed their math ability in the context of common uses for math (e.g., financial and health numeracy). Additional measures included math anxiety, self-efficacy, and confidence. Finally, complex span working memory tasks were administered to assess verbal and spatial working memory. Analyses were performed using correlation and regression to examine relationships between the cognitive and non-cognitive variables and standardized and everyday math measures.

Results: Correlations showed that all cognitive and non-cognitive variables are significantly correlated with all three math measures (all $p < .05$). There were no significant gender differences for any of the math measures, nor the working memory, or non-cognitive measures. Regression showed that across all three math outcomes, math anxiety and verbal working memory are significantly predictive of math performance. Overall R^2 values were significant (range 27% to 37%, all $p < .001$). Working memory and math anxiety were unique predictors in all three regressions (all $p < .05$), but other non-cognitive variables such as self-efficacy did not show unique prediction (all $p > .05$).

Conclusions: There was no evidence for gender differences on any studied variable. This stands in contrast to prior studies, although few studies have included community college students. On the other hand, both cognitive and non-cognitive factors were complimentary in the prediction of math outcomes, which is consistent with prior work. Among non-cognitive predictors, math anxiety was particularly prominent. This

study clarifies prior conflicting work regarding gender differences, and highlights the role of both math anxiety and working memory as relevant for multiple math outcomes.

Categories: Learning Disabilities/Academic Skills

Keyword 1: mathematics ability

Keyword 2: working memory

Keyword 3: emotional processes

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46 Are Reading Strategies Related to the Orthographic Depth of Languages Acquired Through Bilingual Education?

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Objective: This longitudinal study investigates whether reading strategies are influenced by the orthographic depth of languages, specifically Spanish or Cantonese, acquired through enrollment in bilingual immersion programs. Spanish shares an alphabet with English and is considered a phonologically transparent language (Sun et al., 2022). Research has shown that second language learners of Cantonese, an opaque language, performed better on orthographic awareness tasks that involve whole-word visual information processing (Wang and Geva, 2003). We hypothesize that students enrolled in a bilingual immersion program will outperform peers in general education (GENED) on selected reading tasks. More specifically, those in Spanish-immersion programs will perform better on English tasks involving phonological processing; whereas those in Cantonese-immersion programs will perform better on single-word/-character processing tasks.

Participants and Methods: Participants (n=102) were native English speakers recruited

from the San Francisco Unified School District. Our sample included 42 females and 60 males. Thirty-nine identified as White, 33 Mixed Race, 25 Asian, 4 Latinx, and 1 Black. Thirty-nine children were in GENED, 33 in Spanish immersion programs (Sp), and 30 in Cantonese immersion programs (Cn). Each child was assessed on a core language/behavioral battery at Kindergarten (T1) and 2nd-3rd grade (T2). Time 2 participants were between 7 and 9 years old.

Those that scored at least one standard deviation below the mean ($SS=85$) on a nonverbal intelligence screener (KBIT-2 Matrices) were excluded to mitigate confounds of intellectual disabilities. Groups' performance in English was compared on English tasks involving phonological processing (CTOPP-2 Blending Words and Elision) and single-word/-character information processing tasks (WJ-IV Letter Word Identification and KABC-II Rebus).

Results: Simple main effects analysis showed that time did have a statistically significant effect on test performance ($p < 0.001$). At T2, analysis revealed a significant impact of school enrollment on Blending Words [$F(2, 51.0) = 4.19, p = 0.018$]. As predicted, post-hoc analysis revealed the students enrolled in the Spanish-immersion program significantly outperformed those in general education on this task. Across the other three tasks, those enrolled in Spanish and Cantonese immersion programs performed as strong as or better than those in GENED, but the variability was not statistically significant.

Conclusions: This study uniquely isolated the effects of bilingual education without confounding factors of access to resources of a more heterogeneous socioeconomic sample. Mixed results partially supported our hypotheses: Spanish-immersion participants performed significantly better than those in GENED on one English phonological processing task (Blending Words). Although Cantonese immersion students had a higher mean performance than those in GENED on single-word/-character processing tasks, the variance was not statistically significant. This implies that bilingual education may offer advantages in either reading strategy. According to the literature, characteristics of a language may influence literacy acquisition; thus, subsequent research may continue to examine the effect of learning multiple languages with varying levels of orthographic depth on the development of English reading strategies.

Categories: Learning Disabilities/Academic Skills

Keyword 1: bilingualism/multilingualism

Keyword 2: reading (normal)

Keyword 3: language: development

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47 Attention and Working Memory (WM) in Pediatric Patients Prior to Hemopoietic Stem Cell Transplant (HSCT) for Hematologic Malignancies

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Objective: HSCT is increasingly used for curative therapy for patients with high risk hematologic diseases. Existing research regarding the neurocognitive impact of HSCT on pediatric patients is notably variable. One area of identified risk is attention/working memory (WM) [Perkins et al., 2007]. The current study examines the degree to which difficulties in attention/WM are present prior to HSCT, as assessed using parent-report of working memory and cognitive tests of attention span and working memory.

Participants and Methods: Participants were 19 children and adolescents ages 6-17 years ($M = 9.63, SD = 3.22$) who were enrolled in a prospective longitudinal study monitoring neurocognitive outcomes in children undergoing HSCT. Participants were eligible for this study if they were 2-18 years old at the time of transplant and had a diagnosis that qualified for an allogeneic HSCT. Participants were ineligible if they had a pre-HSCT developmental delay, were non-English speaking, and had a prior HSCT or prior CAR T-cell therapy. Participants were 53% female and 95% Caucasian. Diagnoses in the current study sample included acute lymphoblastic leukemia ($n=10$), acute myeloid leukemia ($n=8$), and myelodysplastic syndrome ($n=1$).