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.

---

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

Hannah-Lise T. Schofield[1,2], Alannah R. Srsich[1], Nancy J. Bunin[1,2]
[1]Children's Hospital of Philadelphia, Philadelphia, PA, USA. [2]Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, USA

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 allogenic 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).

Measures included were the Working Memory Index score from the Behavior Rating Inventory of Executive Function (BRIEF; Gioia et al., 2000) and the Digit Span subtest from the Wechsler Intelligence Scale for Children, Fourth Edition (WISC-IV; Wechsler, 2003) and the Wechsler Adult Intelligence Scale, Fourth Edition (WAIS-IV; Wechsler, 2008).

Results: Mean scores on parent-reported WM scores and cognitive measures of attention/WM fell within normal limits, including the Digit Span Total score (M = 48.42, SD= 6.33), Digit Span Forward score (M = 47.28, SD = 9.9.83), and Digit Span Backward score (M = 48.94, SD = 6.31). However, further analyses suggested that between 11-32% of patients had scores falling at least one standard deviation below the mean on these measures, with more than half of the sample (52.6%) identified with at least one measured weakness in attention and WM. The most commonly identified weakness (33.3% of patients) was Digit Span Forward.

Correlations between parent-reported WM issues and cognitive measures of attention and WM were generally strong, with parent report of WM significantly correlated with the Digit Span Total score (r(18)= -0.52, p=.02) and the Digit Span Forward score (r(18) = -0.51, p=.03). No correlations were found between Digit Span Backward and other measures of attention and WM.

There were no significant differences in WM scores between patients with ALL and AML. Additional analyses will examine potential contribution of medical factors (e.g., pre-HSCT treatment) to pre-HSCT performance on measures of attention and WM.

Conclusions: These results suggest that, prior to undergoing HSCT, pediatric patients present with attention and WM issues. This finding has implications for research related to neurocognitive outcomes in HSCT, indicating the need to obtain pre-HSCT cognitive data in this area in order to fully understand potential change after HSCT. In addition, providers may need to consider adapting communication methods with patients during their transplant stay, given potential attention and WM issues within this population.

Categories: Cancer
Keyword 1: oncology
Keyword 2: attention
Keyword 3: working memory

Correspondence: Hannah-Lise Schofield, Ph.D., ABPP-CN; Children's Hospital of Philadelphia/Perelman School of Medicine at the University of Pennsylvania; schofieldh@chop.edu

---

48 Longitudinal Language Outcomes in Pediatric Brain Tumor Patients Diagnosed in Early Childhood

Iris Paltin[1,2], Mariam Kochashvili[3], Megan Sy[1,2], Hannah-Lise Schofield[1,2], Zoe Kearns[2], Kelly Janke[1,2]
[1]University of Pennsylvania, Philadelphia, PA, USA. [2]The Children's Hospital of Philadelphia, Philadelphia, PA, USA. [3]Earlham College, Richmond, Indiana, USA

Objective: Pediatric brain tumor (PBT) survivors are at risk for speech (e.g., articulation, prosody, fluency) and language (e.g., vocabulary, grammar, narratives, pragmatics) difficulties (Hodges et al., 2020). It is important to understand what treatment and/or demographic factors are associated with language functioning soon after diagnosis, and what factors are associated with language functioning years after treatment completion. This study characterizes longitudinal language functioning for clinically referred PBT survivors diagnosed in early childhood.

Participants and Methods: Participants were 48 PBT patients (54% supratentorial, 6% disseminated), 21% with NF-1, who were diagnosed by age 6 (M = 43.2 months, SD 24.5) and received tumor-directed intervention including surgery (85%), chemotherapy (69%), and/or radiation therapy (50%). Hearing concerns existed for 29% of the patients. Age at first neuropsychological evaluation was 2-15 years (M=7.6, SD=3.63), age at second neuropsychological evaluation was 5-19 years (M=12.04, SD=3.86), with an average of 4.42 years (SD=2.37) between evaluations. Patients were 63% male, 77% White, 94% non-Hispanic, and fluent English speakers. Verbal IQ, working memory, fluencies, comprehension, memory, and parent-reported functional communication outcomes were assessed as part of comprehensive batteries. Rates of weak performance (1 SD<Mean) were compared to the expected base rate of 16%.