

invariance between term status groups at each assessment period, (3) preterm infants will obtain lower caregiver-reported imitation scores compared to term infants, and (4) imitation abilities at the assessment period with the most robust imitation factor will predict M-CHAT-R/F scores at 18 months.

**Results:** Distinct imitation factors at 4, 6, and 9 months were modeled with confirmatory and exploratory factor analyses. Relationships between the factors and established measures of infant communication (CSBS; ASQ) and sleep (BISQ) revealed convergent and discriminant validity, respectively. Strict measurement invariance was demonstrated for the 4- and 9-month factors, and metric invariance for the 6-month measure. Full term infants scored higher on imitation at 9 months, though variance in this outcome was related to term status differences in sensorimotor skills. Lastly, the 9-month imitation factor, coupled with 6-month sensorimotor skills, predicted 18-month ASD risk over and above gestational age.

**Conclusions:** This study provides support for the assessment of infant imitation, utilizing imitation to detect risk in preterm infants, and extending the age of identification for ASD risk into the first year. PediaTrac™ imitation, in combination with the PediaTrac™ sensorimotor domain, may be useful in detecting developmental risk, and specifically risk for ASD, within the first year, leading to earlier initiation of intervention. Further, with its minimal completion time and ease of dissemination through digital platforms, this measure can expand access to care and improve long-term outcomes for children and families.

**Categories:** Autism Spectrum Disorders/Developmental Disorders/Intellectual Disability

**Keyword 1:** prematurity

**Keyword 2:** autism spectrum disorder

**Keyword 3:** test development

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### 3 Clinical Utility of Neurocognitive Monitoring During Therapy in Survivors of Childhood Acute Lymphoblastic Leukemia (ALL)

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**Objective:** Survivors of childhood ALL treated with CNS-directed chemotherapy are at risk for neurocognitive deficits that emerge during treatment and impact functional and quality of life outcomes throughout survivorship. Neurocognitive monitoring is the recommended standard of care for this population; however, information on assessment timing and recommendations for assessment measures are limited. We examined the role of serial neurocognitive monitoring completed during protocol-directed therapy in predicting parent-reported neurocognitive late effects during survivorship.

**Participants and Methods:** Parents of 61 survivors of childhood ALL completed a semi-structured survey focused on parent perspective of neurocognitive late effects as part of a quality improvement project. Survivors completed protocol-directed treatment for newly diagnosed ALL on two consecutive clinical trials (St. Jude Total Therapy Study 15, 47.5%; Total Therapy 16, 52.5%). The majority of survivors were White (86.9%), 52.5% were male, and 49% were treated for low risk disease. Mean age at diagnosis was 7.77 years (standard deviation [SD] = 5.31). Mean age at survey completion was 15.25 years (SD = 6.29). Survivors completed neurocognitive monitoring at two prospectively determined time points during and at the end of protocol-directed therapy for childhood ALL.

**Results:** During survivorship, parents reported that 73.8% of survivors experienced neurocognitive late effects, with no difference in frequency of endorsement by protocol ( $p = .349$ ), age at diagnosis ( $p = .939$ ), patient sex ( $p = .417$ ), or treatment risk arm ( $p = .095$ ). In survivors with late effects, 44.3% sought intervention in the form of educational programming (i.e., 504 or Individualized Education Program). Among the group with late effects, compared to those without educational programming, those with educational programming had worse verbal learning (CVLT Trials 1-5 Total, Mean[SD];  $T = 56.36$  [11.19],  $47.00$  [10.12],  $p = .047$ ) and verbal memory (CVLT Short Delay Free Recall,  $Z = 0.86$  [0.67],  $-0.21$  [1.01],  $p = .007$ ); Long Delay Free Recall,

$Z = 0.91$  [0.92],  $-0.25$  [1.25],  $p = .020$ ) during therapy. Compared to those without educational programming, survivors with educational programming had lower estimated IQ ( $SS = 109.25$  [13.48],  $98.07$  [15.74],  $p = .045$ ) and greater inattention [CPT Beta  $T = 56.80$  [13.95],  $75.70$  [22.93],  $p = .017$ ] at the end of therapy.

**Conclusions:** Parents report that nearly three quarters of children treated for ALL with chemotherapy only experience neurocognitive late effects during early survivorship, with no difference in frequency by established risk factors. Of those with late effects, nearly half required educational programming implemented after diagnosis, suggesting a significant impact on school performance. Results from neurocognitive monitoring beginning during therapy has utility for predicting educational need in survivors experiencing late effects. Our findings provide direction on the timing and content of neurocognitive monitoring, which is the recommended standard of care for childhood cancer patients treated with CNS-directed therapy.

**Categories:** Cancer

**Keyword 1:** pediatric neuropsychology

**Keyword 2:** leukemia

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#### 4 Does Working Memory Training for Children Need to be Adaptive? A Randomised Controlled Trial

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**Objective:** A common assumption to maximise cognitive training outcomes is that training tasks should be adaptive, with difficulty adjusted to the individual's performance. This has only been tested once in adults (von Bastian & Eschen, 2016). We aimed to examine children's outcomes of working memory training using adaptive, self-select and stepwise approaches to setting the difficulty of training tasks compared to an active control condition.

**Participants and Methods:** In a randomised controlled trial (ACTRN 12621000990820), children in Grades 2-5 (7 to 11 years) were allocated to one of four conditions: adaptive working memory training, self-select working memory training, stepwise working memory training, or active control. An experimental intervention embedded in Minecraft was developed for teachers to deliver in the classroom over two weeks (10 x 20-minute sessions). The working memory training comprised two training tasks with processing demands similar to daily activities: backward span with digits and following instructions with objects. The control condition comprised creative building tasks. As part of a larger protocol, children completed at baseline and immediately post-intervention working memory measures similar to the training activities (primary outcome): backward span digits and letters versions, following instructions objects and letters versions. Primary analyses were intention-to-treat. Secondary analyses included only children who completed 10 sessions.

**Results:** Of 204 children recruited into the study, 203 were randomised, with 95% retention at post-intervention. 76% of children completed all 10 training sessions. Comparisons between each working memory training condition and the active control on working memory measures were non-significant ( $f^2 = 0.00$ ), with one exception. Children in the self-select condition on average performed 1-point better than the controls on the following instructions objects measure ( $p = .02$ ,  $f^2 = 0.03$ ). A pattern emerged that the self-select condition performed better on most measures.

**Conclusions:** We found little evidence that an adaptive approach to setting the difficulty of training tasks maximises training outcomes for children. Findings suggest that working memory outcomes following training are limited and are not modulated by the approach to setting the difficulty of training tasks. This is consistent with findings from von Bastian & Eschen (2016), who also observed that the self-select condition (and