

Past research on children indicates that digit span (DS) predicts reading ability, even more so than intelligence measures (Alloway, 2009). Research indicates that a repetition based sentence span task may also predict reading ability (Magimairaj & Montgomery, 2012). DS is a simple number based repetition task, while sentence span is verbal repetition, which may be more impactful in reading ability. Therefore, we investigated whether DS or sentence span added unique variance to predicting reading ability after IQ was accounted for in 107 healthy adult participants. The participants' average age was 23.09 years ($SD=6.47$), and 37.4% were male. The ethnicity distribution was as follows: 43.1% Caucasian, 35.3% African American, 7.8% Hispanic, 11.8% Asian, and 2.0% mixed.

Hierarchical regression indicated that DS did not predict additional variance in reading after accounting for intelligence (WASI Full Scale IQ; Wechsler, 1999). In step 1, intelligence accounted for significant variance in reading ($R^2=0.34$, $F(1, 105)=54.46$, $p<0.01$), and was correlated with reading ability ($\beta=0.58$, $B=0.50$, $SE=0.067$, $t=7.38$, $p<0.01$). In step 2, DS was entered into the second block and did not account for significant variance ($\Delta R^2=0.002$, $\Delta F(1,104)=0.29$, $p=n.s.$). Results indicate that IQ accounted for 30% of variance in reading abilities.

However, a separate hierarchical regression indicated that sentence span predicts additional variance in reading after accounting for intelligence. Similarly, intelligence accounted for significant variance in reading ($R^2=0.34$, $F(1, 105)=54.46$, $p<0.01$), and was correlated with reading ability ($\beta=0.58$, $B=0.50$, $SE=0.067$, $t=7.38$, $p<0.01$). Sentence span was entered into the second block and also accounted for significant variance in reading ($\Delta R^2=0.061$, $\Delta F(1,104)=10.53$, $p<.01$). Results indicate that IQ scores accounted for 27% of variance, and sentence span scores accounted for 9% additional variance in reading ability. Therefore indicating that sentence span may be a more valuable contributor to reading ability than digit span; furthermore, this finding indicates that sentence span provides potentially valuable information, which is not captured in current intelligence measures. Multiple measures, tapping into different components of reading capability could assist reading assessment and intervention; further research should be conducted to better understand other components of reading ability.