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Use of spelling rules in school-aged children with Williams syndrome

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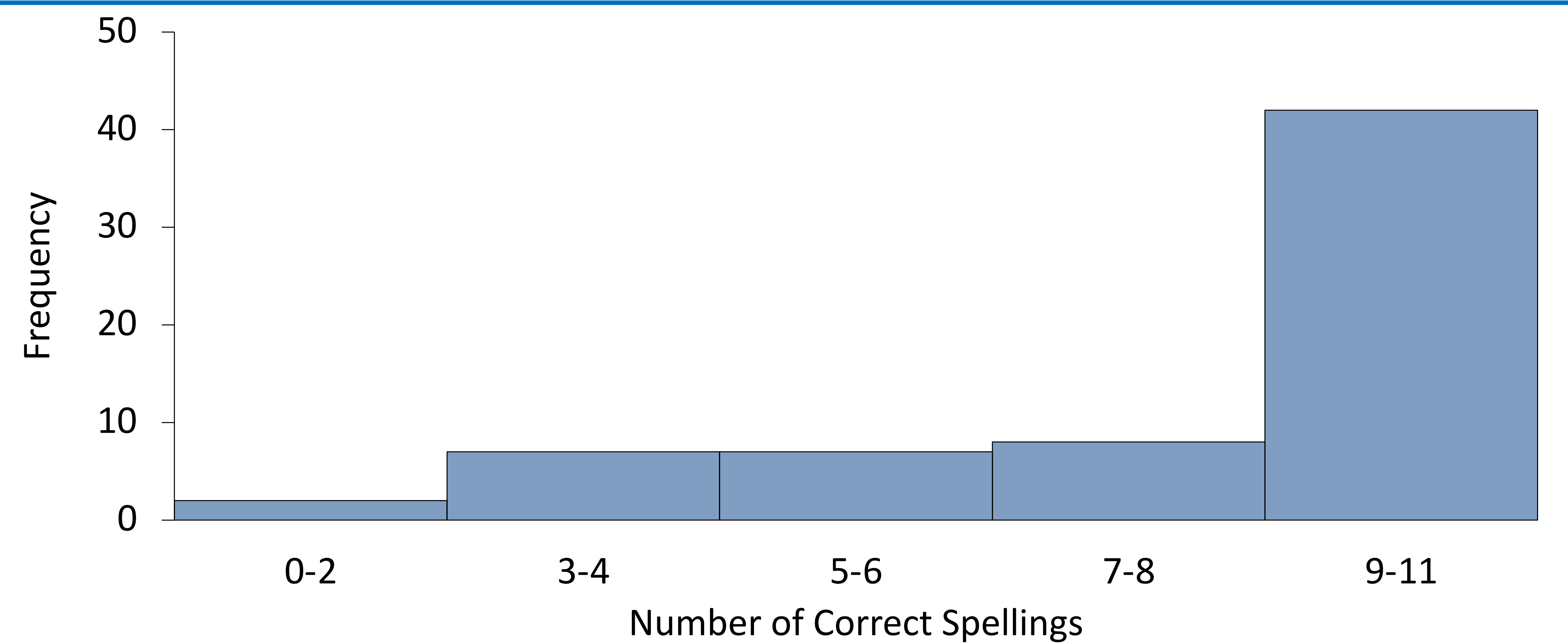
Introduction

- Researchers evaluating children's spelling abilities usually score their spellings dichotomously – as correct or incorrect.
- This type of scoring is not as informative as procedures that take into consideration the plausibility of children's spellings (Treiman et al., 2016).
- We examined the spelling abilities of children and adolescents with Williams syndrome (WS), a genetic disorder associated with intellectual disability, to determine if their spellings were based on English orthographic rules.
- Orthography is how language is represented in written form.
- Children who spell well have orthographic knowledge linking sound and spelling. They may use phonemic and graphemic rules to map sounds to their letter correspondence.

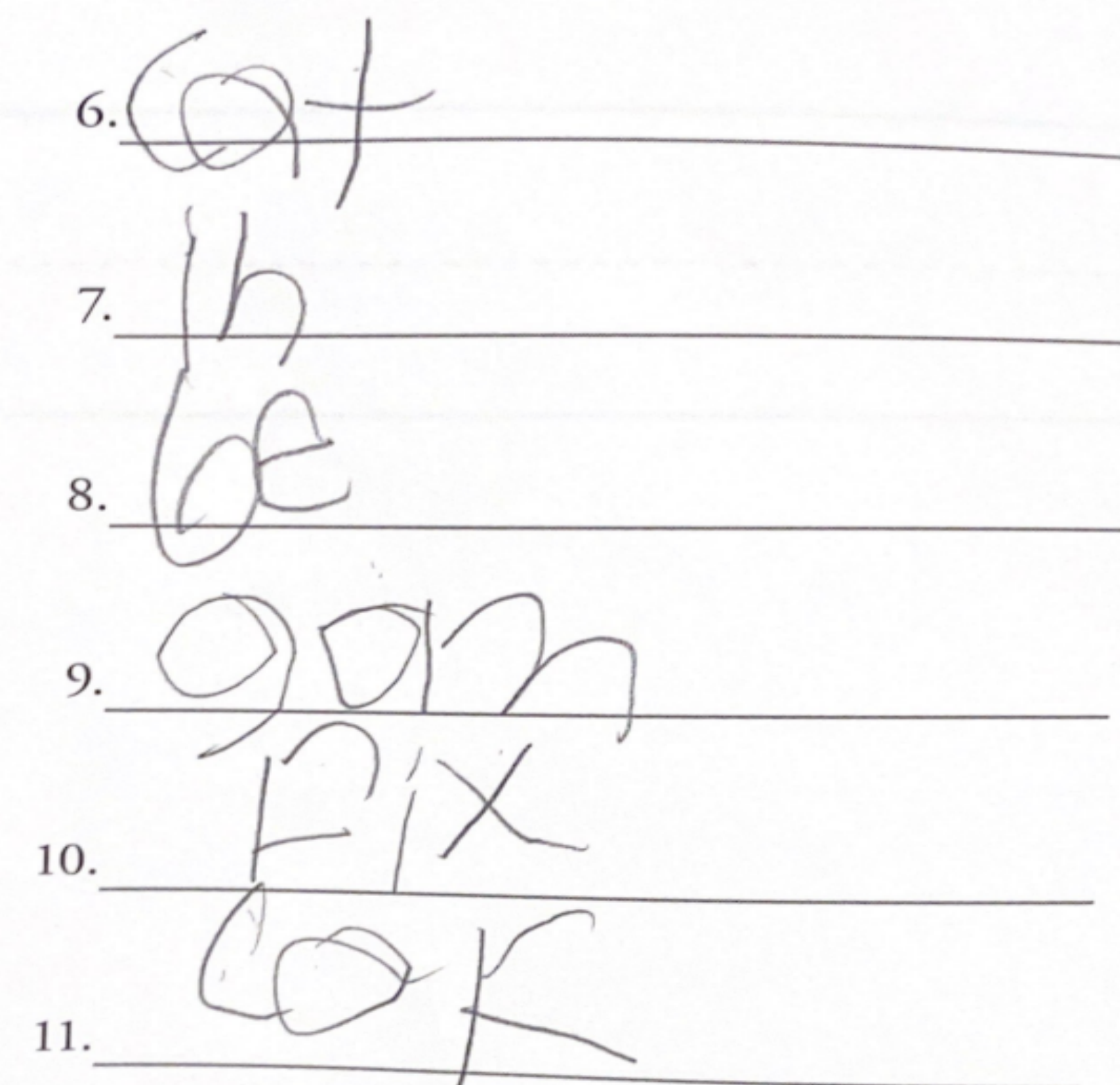
Methods

- **Participants:** 66 9–17-year-olds with WS
 - *M* age = 13.50 years, *SD* = 3.14
- **Measure:** Wechsler Individual Achievement Test-III Spelling subtest (Wechsler, 2009).
- Items 6 to 16 were scored using the Ponto software (Kessler, 2017) to determine the extent to which children's spelling differed from the correct spelling (the "letter distance").
- **Letter distance** is calculated based on the transformations needed to change the child's spelling to the correct spelling. Each insertion or deletion is scored 1, and each substitution is scored 1.4. If the word is spelled correctly, its letter distance is 0. Letter distance scores for the child's spellings were compared to letter distance scores for random spellings, using the Monte Carlo method.
- Improvement scores were obtained by dividing a child's sum of letter distances by the sum of random letter distances.

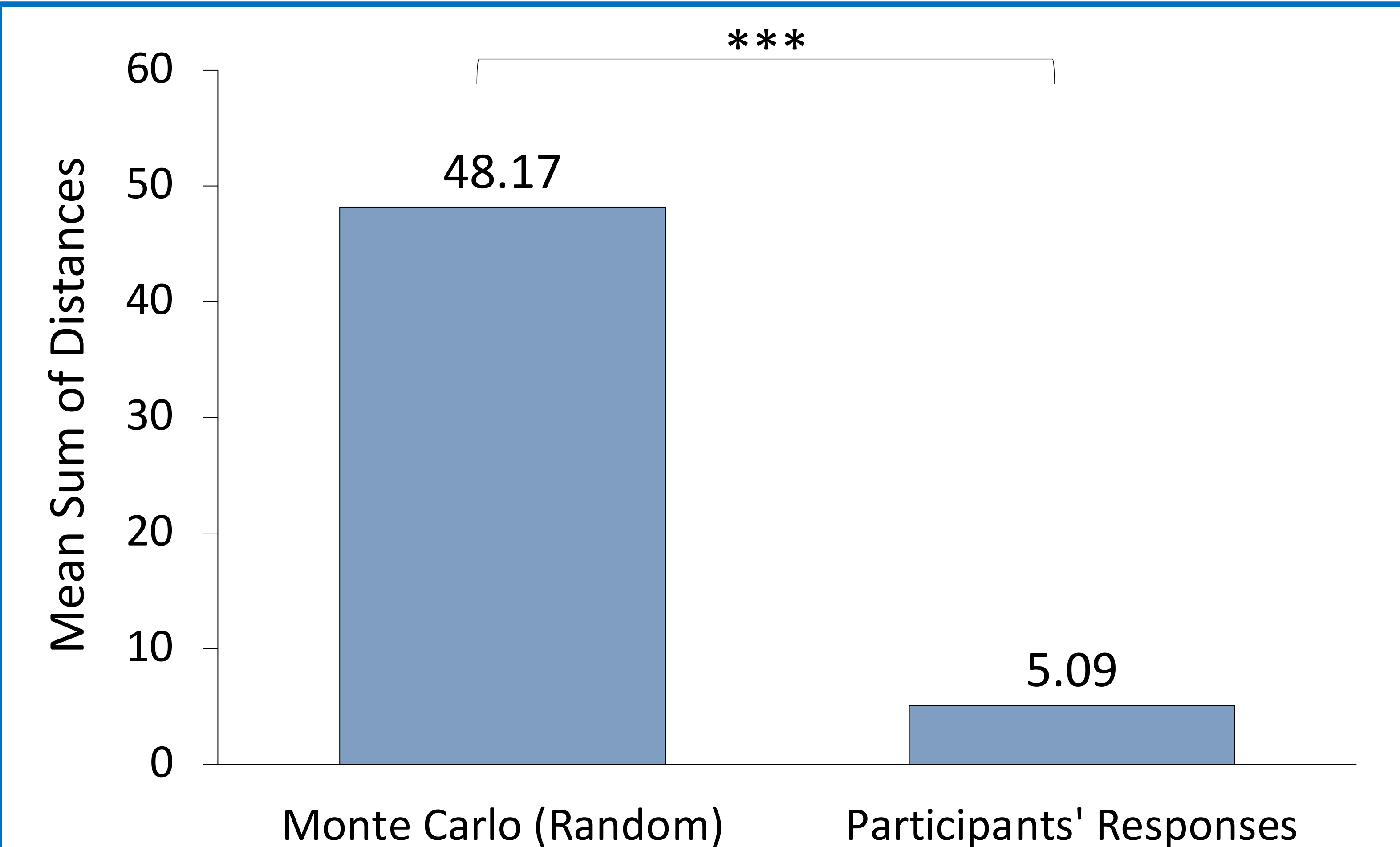
Results



- Children spelled a median of 10 (*MAD* = 1.00) of 11 words correctly (range: 2 – 11).
- Mean improvement score was 0.89 (*SD* = 0.14), which was significantly better than expected if their spelling had been random, $p < .001$.



The letter distance score for item 9, *gam*, would be 1. Insertion of *e* would make the correct spelling, "game."

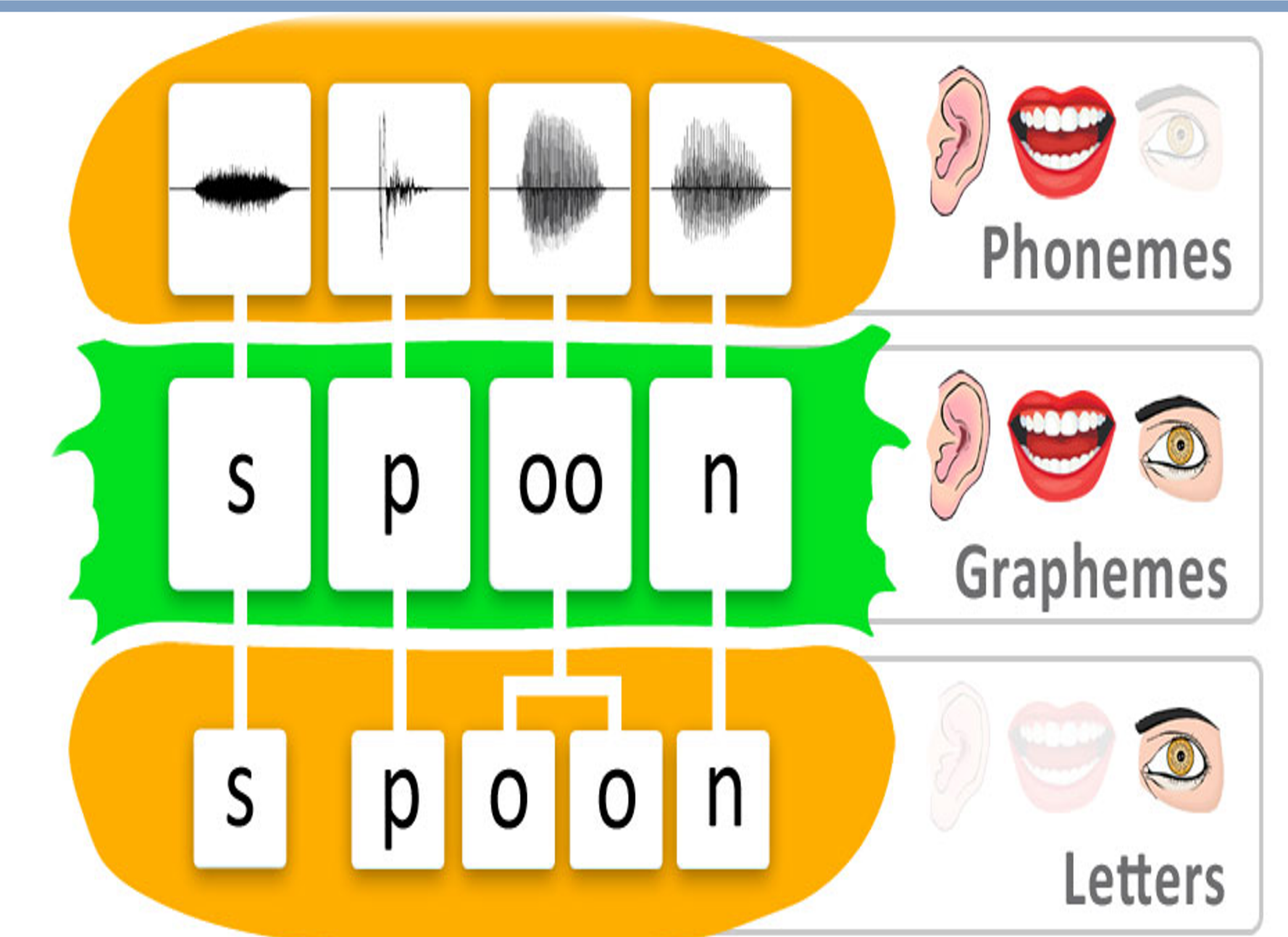


Participants' spellings (sum of distances) were significantly better than expected if their spelling had been random, $p < .001$.

Discussion

- Most older children and adolescents with WS have basic knowledge of English orthographic spelling rules.
- The traditional method of scoring spellings as either correct or incorrect does not encompass children's full spelling ability.
- Often children will have knowledge on basic orthographic rules including:
 - Phonemes
 - Morphemes
 - Graphemes
 - Syllables.

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(Fry, E. B., & Kress, J. E. 2012)