Measures Matter: Reading Comprehension may not be the Best Measure of Reading Ability

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Background

- Most research on individual differences has used reading comprehension as the primary measure of reading ability.
- Recent research suggests spelling skill may be a more precise predictor of reading ability.
- According to the lexical quality hypothesis (LQH), high and low-skill readers are differentiated by the quality of word representations.
  - High quality: accurate spelling, sound, and meaning components and strong connections between them
  - Low quality: absent, inaccurate, or underspecified spelling, sound, and/or meaning components, and weak connections between them
- During reading, spelling is the primary pathway to activating that word’s meaning.
- Measuring spelling skill directly measures the accuracy of the spelling component.
- Reading comprehension may measure a variety of skill (e.g., working memory, inferencing).
- Thus, high-skill spellers are thought to have high-quality spelling representations that will facilitate activation of word meanings.

Current Study: The current study investigates differences in total reading time when participants are assessed for both reading comprehension ability and spelling skill.

Methods

Participants: One hundred and eight Kent State University students participated in this study for course credit.
  - 12 removed for failing to answer comprehension questions with 80% accuracy; 6 removed for track loss.
  - 90 participants contributed data.

Skill Assessment

- Spelling recall measure.
- Nelson-Denny Test of Reading Comprehension.

Stimuli

- Half of the sentences contained strong context.

Context: Viciously snarling and growling, the boxer soon barked at the baggage attendant.
Neutral: As we had all expected and feared, the boxer soon barked at the baggage attendant.

Procedure

- Participants read 16 experimental sentences followed by comprehension questions while their eye movements were recorded.
- The average comprehension question score was 86%.

Results

- Analyzed using a Linear Mixed-Effect Model (LMM) using R statistical software (R project, 2013).
  - Moderate correlation between spelling and comprehension skill ($r=3.1, p<.05$).
  - Greater number of high-skill readers than high-skill spellers.
  - Main effects of spelling and comprehension skill:
    - High-skill readers read more quickly than low-skill readers.
    - Replicates previous individual differences research with spelling measure.
    - High-skill spellers are significantly faster readers than high-skill comprehenders.
    - Low-skill spellers are significantly faster readers than low-skill comprehenders.
    - Better model fit for spelling skill than comprehension skill.
    - Spelling skill is a better predictor of total reading time than reading comprehension skill.

Conclusions

- Spelling is a valid measure of reading ability.
  - Replicates previous research in individual differences using a spelling measure.
  - High-skill comprehenders took longer to access words and to integrate them into the text representation than high-skill spellers.
  - LQH: High-quality representations and strong connections from spelling to meaning may facilitate reading time in high-skill spellers.
  - Low-skill comprehenders had longer reading times than low-skill spellers.
    - Few participants scored <33% on the comprehension test.
  - Spelling is a more precise measure of reading ability than reading comprehension.

References

