

## Introduction

### Effect Sizes

- **Effect sizes** quantitatively measure the magnitude of observed effects (e.g., Field, 2018).
- Effect sizes are particularly important in meta-analysis. In meta-analysis, effect sizes are pooled, confidence intervals determined, and comparisons made (Field, 2018).

### Fluency

- **Fluency:** the ability to read texts with grade-level accuracy, speed, and expression (Biancarosa & Shanley, 2016).
- Struggling readers may receive targeted instruction to improve their fluency, as fluency deficits can impair other literacy domains (e.g., reading comprehension, text interpretation).
- Progress monitoring includes assessing word reading speed and accuracy—a number of assessments are available (e.g, TOWRE, GORT, DIBELS, WJ, WIAT).
- To date, it is unknown whether effect sizes from these assessments are interchangeable, particularly for Early Years fluency intervention studies.

## Research Questions

- What fluency measures do researchers use?
- For researchers who use multiple fluency measures, what trends are apparent?
- Does the data suggest that fluency measures are interchangeable?

## Method

### Search and Systematic Review

#### Intervention search

- Interventionist websites (e.g., Kelly, 2011) were used to find types of reading fluency interventions used between 2008-2018.
- Multiple database and keyword searches were used to find reading fluency interventions and reduce search bias.

#### Publication search

- Using multiple database and keyword searches, 614 potential publications were identified for further study.

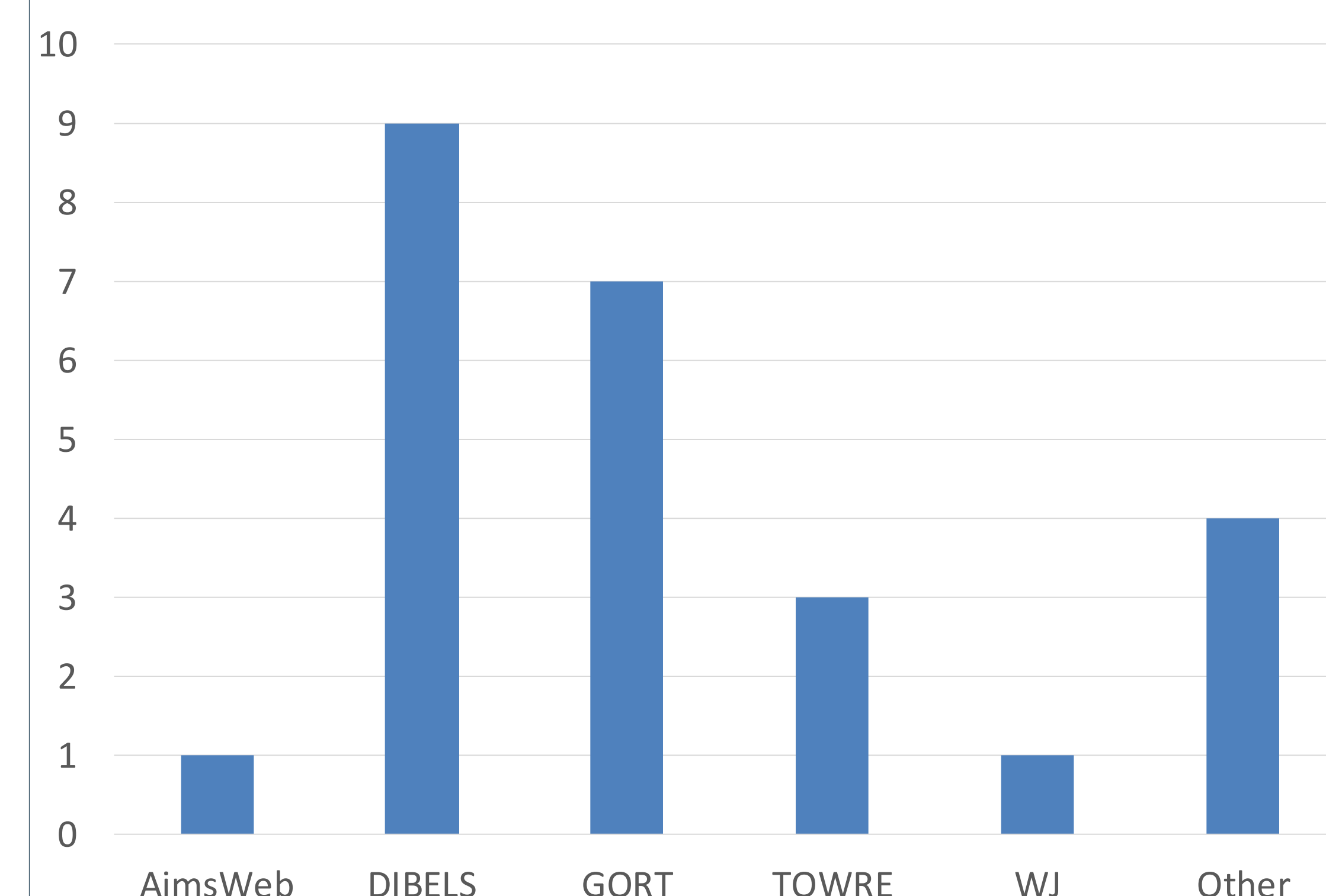
#### Review

- Each publication was reviewed to ensure rigorous studies were selected for further study.
- 19 publications met inclusion criteria.

### Coding and Analysis

- Information from included publications was coded into SPSS.
- E.g., intervention name, grade level(s), significant/not significant findings, effect sizes.
- Analyzed findings for trends and patterns.

Figure 1. Frequency of fluency measures used.



## Results

Figure 2. Number of publications that used 1, 2, and 3 unique fluency measures.

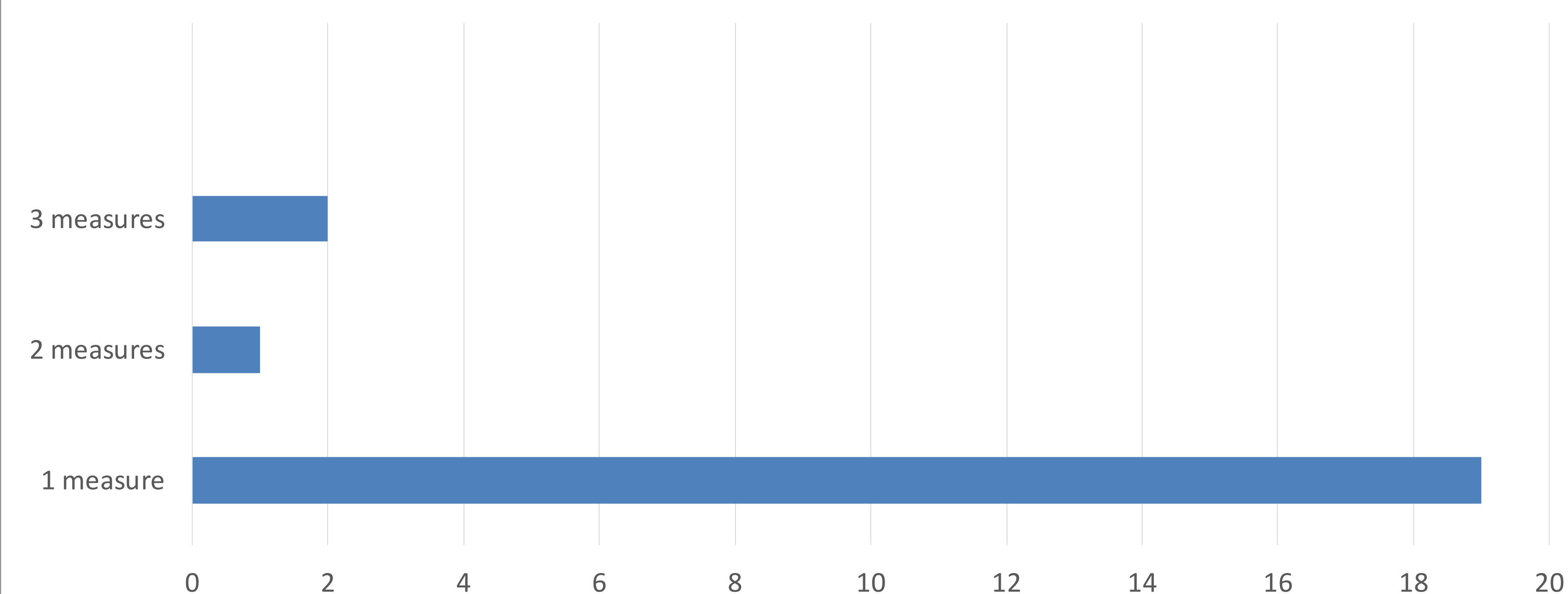
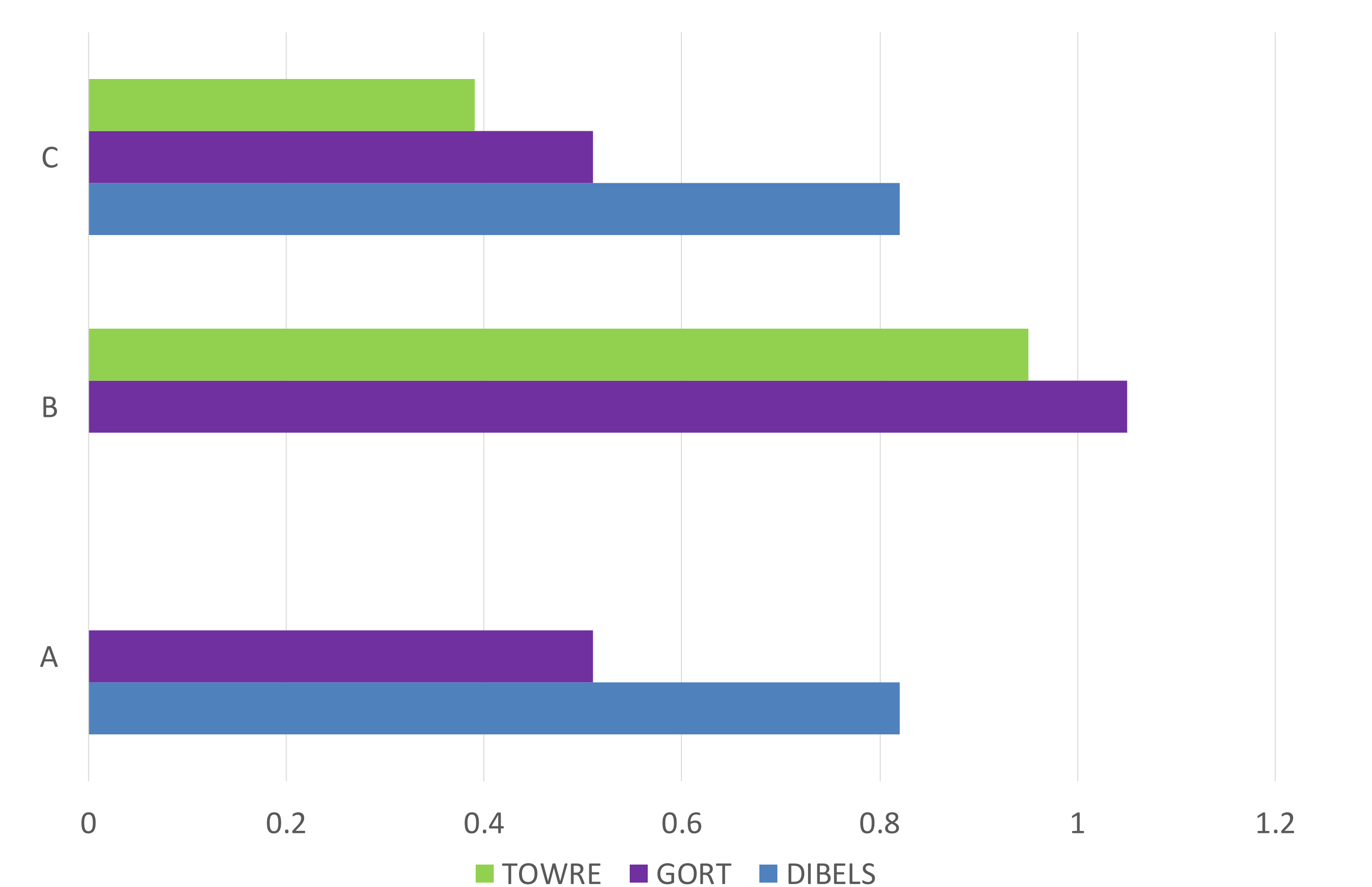


Figure 3. Effect sizes compared for the 3 studies (denoted by A, B, C) that used multiple fluency measures.



## Conclusions

A majority of studies measured fluency with one type of assessment.

A small number of studies used multiple fluency assessments.

- Comparing effect sizes demonstrated large differences between fluency tests.
- This is particularly of concern when comparing GORT and DIBELS effect sizes because they both assess word reading using speed and accuracy using paragraph format.
- Could be due to the presentation of frequently-used words in the interventions and/or assessments.

Although very preliminary, these results highlight the risks of assuming that effect sizes from different fluency measures are directly comparable.

## Future Directions

- These preliminary results can help inform interventionists, educators, and assessment training programs across Canada and beyond.
- Understanding effect size comparisons when different assessments are used can help researchers to make evidence-based decisions.
- When intervention researchers have multiple assessments and lack of known interchangeability, it would be helpful to use multiple assessment tools to enable future comparisons.

## References

- Biancarosa, G. & Shanley, L. What is fluency? In K. D. Cummings and Y. Petscher (Eds.) *The Fluency Construct: Curriculum-Based Measurement Concepts and Applications*. New York, NY: Springer. doi: [https://doi.org/10.1007/978-1-4939-2803-3\\_1](https://doi.org/10.1007/978-1-4939-2803-3_1)
- Field, A. (2018). *Discovering statistics using IBM SPSS Statistics—5th Ed.* SAGE Publications, Inc. London: UK.
- Kelly, C. (2011). *Reading intervention programs: A comparative chart* [PDF file]. Retrieved from <http://www.readingrockets.org/pdfs/Reading-intervention-programs-chart.pdf>