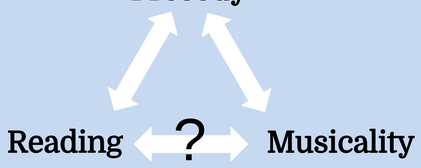
Individual differences in silent reading fluency are associated with musicality and speech perception abilities

Jonathan Z. Liu[1,2], Srishti Nayak[1,3], Peyton L. Coleman[1], Daniel E. Gustavson[1], Jennifer E. Below[1], Kelvin F.H. Lui[4], Catherine McBride[4], Cyrille L. Magne[3], Reyna L. Gordon[1]

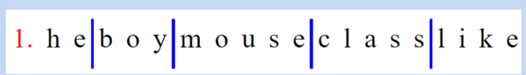
[1]Vanderbilt University Medical Center; [2]Vanderbilt University; [3]Middle Tennessee State University; [4]Chinese University of Hong Kong

Introduction

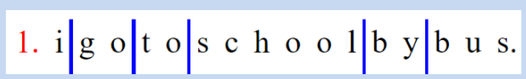


Methodology

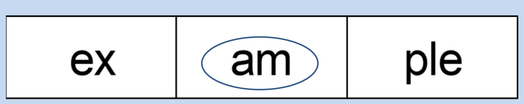
- 18-75 year old adults (N = 35, 27 females, 8 males)
- Silent reading fluency, part A: single word condition



- Silent reading fluency, part B: words in sentence context



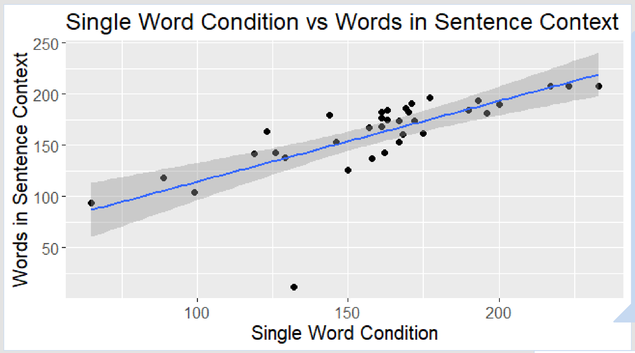
- Lexical stress perception test for speech rhythm sensitivity (prosody): TOPsy



- Musical rhythm discrimination measure
- Self-report musical engagement questionnaire

Results

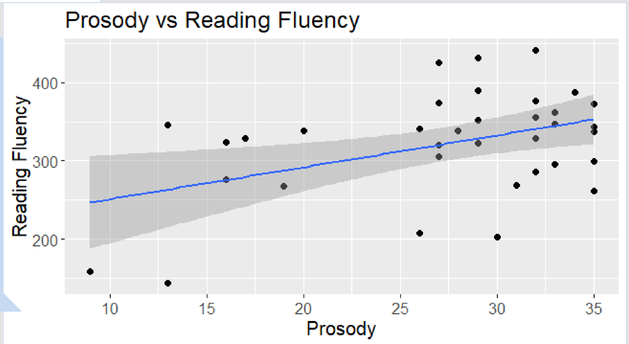
R^2 and β values control for z-scored participant age, sex, and highest level of education.



Higher silent single word condition scores **significantly correlated** with higher words in sentence context scores.

r = 0.728
p < 0.0001

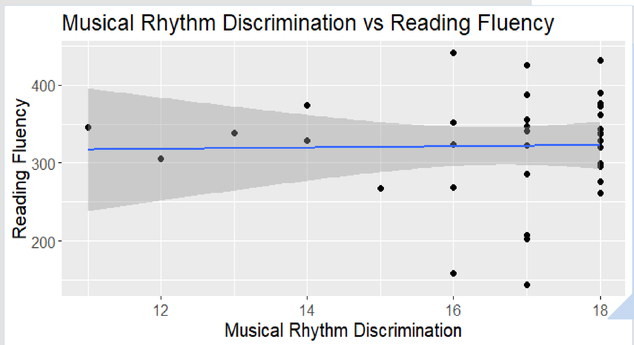
R^2 = 0.601
β = 0.610



r = 0.433
p = 0.00930

R^2 = 0.532
β = 0.428

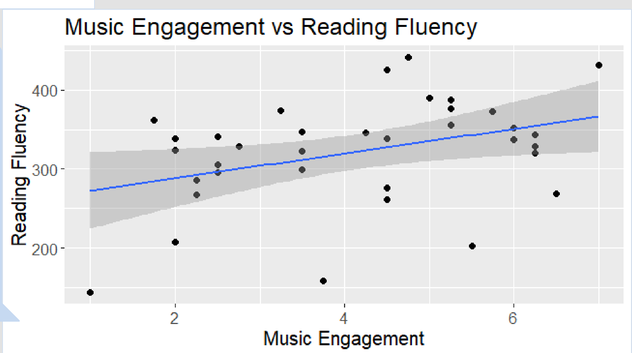
Higher silent reading fluency scores **significantly correlated** with higher speech rhythm perception scores



Reading fluency scores were **not significantly correlated** with music rhythm discrimination scores.

r = 0.0215
n.s.

R^2 = 0.364
β = 0.115



r = 0.375
p = 0.0266

R^2 = 0.413
β = 0.270

Higher reading fluency scores **significantly correlated** with higher music engagement scores

Discussion

Reading ⟷ X ⟷ **Music Rhythm Discrimination**

- Music rhythm discrimination does not appear to be associated with reading fluency.

Reading ⟷ ? ⟷ **Music Engagement**

- Reading fluency and music engagement were correlated, except when age and education were controlled for in regression analysis. Therefore, more research must be done to uncover this relationship.

Key Takeaways

- WordSword English is a reliable measure of silent word reading fluency; however, its timed aspect may negatively affect non-native English speakers and those with performance anxiety, potentially testing a part of reading that is not related to music.
- In addition, a small sample size and uneven sex distribution makes it so that further data collection is necessary.

In the future, we plan to expand this pilot study to 2,000 participants.

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