

The Influence of Socioeconomic Status on Rhythm Perception in Children with and without Dyslexia

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Introduction

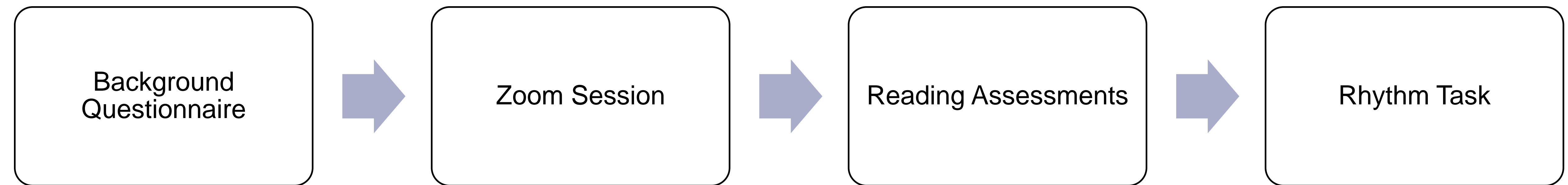
- Reading skills are essential for children to be successful
- There is a positive relationship between reading skills and socioeconomic status (SES) (Zuilkowski et al., 2019)
- There is also a positive relationship between reading skills and rhythmic perception (Huss et al., 2011)
- Research has found evidence to support musical interventions for children with low reading skills
- Children at risk for low reading skills may be identified early on by testing on rhythm perception tasks (Carr et al., 2014)
- However, there is no information on the relationship between SES and rhythm perception
- The relationship between SES and rhythm perception may have important implications for providing early interventions to children at risk for low literacy
- The goal of the current study was to test the relationship between SES and rhythm perception to provide more information on the interaction between these variables

Participants and Reading

English Assessment	Typically Developing Children (TD; n = 36)	Children with Dyslexia (DYS; n = 25)	T-Statistic
Age	9.82 ± 1.51	10.02 ± 1.38	.53
KBIT-2 Matrices	112.89 ± 12.71	107.92 ± 10.37	1.62
WRMT-3 Word Identification	115.31 ± 10.86	92.84 ± 14.46	6.93*
WRMT-3 Word Attack	110.75 ± 10.40	93.24 ± 14.31	5.54*
TOWRE-2 Sight Word Efficiency	107.67 ± 14.84	84.28 ± 13.11	6.34*
TOWRE-2 Phonemic Decoding Efficiency	106.39 ± 12.38	82.40 ± 12.62	7.38*
Rapid Digit Naming	103.56 ± 11.97	95.32 ± 14.59	2.41*
Rapid Letter Naming	102.64 ± 11.15	89.84 ± 13.92	3.98*

* = p < 0.05

Procedure



- Two rhythmic patterns played
- Indicate whether they are the same or different



Huss et al., 2011

Results

Summary of participant demographics. Data presented as mean ± SD. *p < 0.05

Correlation	Typically Developing Children (TD; n = 36)	Children with Dyslexia (DYS; n = 25)
Income to Word ID	r = .23, p = .19	r = .16, p = .46
Income to Word Attack	r = .27, p = .13	r = .19, p = .39
Income to Sight Word Efficiency	r = .26, p = .14	r = .03, p = .90
Income to Phonemic Decoding Efficiency	r = .31, p = .08	r = -.12, p = .59
Education to Word ID	r = .06, p = .71	r = -.19, p = .36
Education to Word Attack	r = .22, p = .20	r = -.20, p = .33
Education to Sight Word Efficiency	r = .04, p = .81	r = .01, p = .98
Education to Phonemic Decoding Efficiency	r = .06, p = .73	r = .22, p = .30
Income to Rhythm Accuracy	r = .15, p = .39	r = -.17, p = .43
Education to Rhythm Accuracy	r = -.28, p = .10	r = .02, p = .92

Household income and parental education and rhythm accuracy by group.

Correlation	Typically Developing Children (TD; n = 36)	Children with Dyslexia (DYS; n = 25)
Income to Rhythm Accuracy	r = .15, p = .39	r = -.17, p = .43
Education to Rhythm Accuracy	r = -.28, p = .10	r = .02, p = .92

Conclusions

- Our findings did not support the hypothesis that SES and rhythm processing were positively related in either typically developing children or children with dyslexia
- This may indicate differences in the way these cognitive functions are influenced by environmental factors
- Rhythm perception may be more resilient to adverse environmental factors than reading skills
- More research on this relationship is necessary to help develop the best possible interventions for children at risk for low literacy

Future Directions

- Ensure there is greater variability in participant SES
- Recruit in schools
- Prevent exclusion of low SES participants by giving them the option to take the assessment in person at their schools (once COVID-19 decreases)
- Account for cost-of-living differences