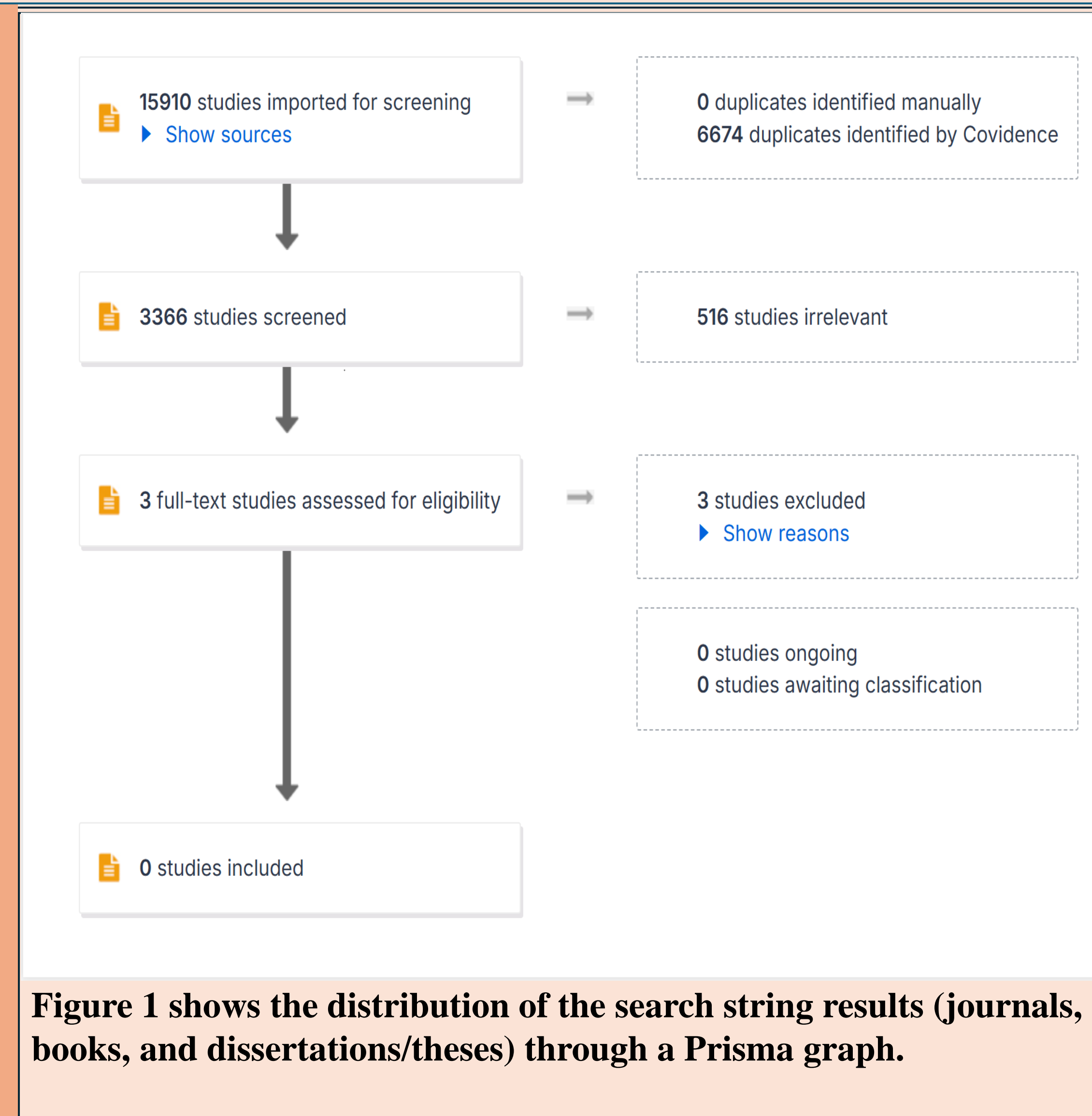# Meta-Analysis: Dyslexia Predictors

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Abstract

- Dyslexia is a developmental learning disorder that is neurobiological in origin (Snowling 2022). It is characterized as having trouble decoding, recognizing, and spelling words (Cutting 2009).
- Some predictors of dyslexia include phonological awareness, phonological memory, rapid naming, family risk, and impaired spelling and reading ability of words.
- The purpose of this meta-analysis is to determine which combination of predictors most prominently lead to dyslexia.
- We do this by finding thousands of studies related to predicting dyslexia, screening the title, abstracts, and eventually screening entire texts.
- Data incorporated in the meta-analysis will be extracted from articles that pass through full-text screening to determine which predictors are most prominent in dyslexia identification.
- This data can be potentially used in further studies to identify individuals with dyslexia and aid early intervention.

Introduction

- The present study is a meta-analysis determining the measures related to dyslexia.
- Dyslexia is typically relative to other cognitive abilities, meaning individuals with dyslexia struggle with the phonological aspect of language, but have display normal levels of other cognitive abilities (Prahl 2022).
- The purpose of conducting this meta-analysis is to identify the best combination of variables that predict if someone has dyslexia.
- This research will help bridge the gap between diagnosing dyslexia and early intervention, with the hope of preventing further reading comprehension problems in children and adults.
- By finding the most common predictors of dyslexia, further research can be done to find if there is a biological link between certain predictors and the degree to which researchers can use these predictors to develop more direct identification and intervention.

Figure 1 shows the distribution of the search string results (journals, books, and dissertations/theses) through a Prisma graph.

Methods

We conducted a meta-analysis through Covidence, a platform designed for data analysis and extraction. Several databases were searched with different search strings resulting in 9,236 results. These results are going through title and abstract screening which will result in studies to undergo full text review. After full text review, the necessary data from each article will be screened and coded for the data needed for the study. The data collected will measure the prominence of certain predictors such as phonological awareness (ability to hear how spoken words are alike and how they are different), phonological memory (ability to store speech information in your short-term memory), and rapid naming (ability to efficiently access the pronunciations of known words in your long-term memory) (Wagner 2021).

Results/Conclusion

While the meta-analysis is still ongoing, we plan to see results that are able to correlate certain measures with a more structured definition of developmental dyslexia. The key takeaway from this study is determining the most common predictors to create a more rigid standard for identification.

Discussion

We are conducting the meta-analysis to determine which predictors of dyslexia were most prominent. In this way, the results will hopefully lead us to a greater understanding of combatting dyslexia through early intervention and as well as provide a more rigid identification. Knowing the reoccurring predictors helps connect the gap between diagnosis and intervention of dyslexia because there is no solidified identification strategy. One strength of this study is the sheer number of articles/theses gathered from the word string searches (over 9,000). Though the meta-analysis is thorough, one limitation to this research is the databases searched. The study sourced from APAPsychInfo (ProQuest), ERIC, Proquest Dissertations and Theses, and PubMed. Future studies should utilize studies from other databases to gain a deeper and more widespread understanding and expand their studies into early intervention processes.

Acknowledgements

References

Wagner, R.K., Beal, B., Zirps, F.A. *et al.* A model-based meta-analytic examination of specific reading comprehension deficit: how prevalent is it and does the simple view of reading account for it?. *Ann. of Dyslexia* **7**1, 260–281 (2021). https://doi.org/10.1007/s11881-021-00232-2

Snowling, M. J., Hulme, C., & Nation, K. (Eds.). (2022). *The science of reading : A handbook*. John Wiley & Sons, Incorporated.

Cutting, Laurie E, et al. "Effects of Fluency, Oral Language, and Executive Function on Reading Comprehension Performance." Annals of Dyslexia, U.S. National Library of Medicine, June 2009, www.ncbi.nlm.nih.gov/pmc/articles/PMC2757040/.

Prahl, Alison. "Listening Comprehension Special Considerations." American Journal of Speech-Language Pathology, 2022, www.proquest.com/scholarly-journals/listening- comprehension special considerations /docview /1826194078 /se-2