

Group membership interacts with reading ability, frequency, length and imageability in a single-word reading task

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Introduction

A significant proportion of English-speaking adults develop limited reading skills, yet much of what we know about reading in adults is based on observations concerning skilled readers. Graves et al. (2014)¹ suggested that there were different ways skilled reading was accomplished. Is this true of people who have limited reading skills? Does any different balance of skills compare to distinct groups of readers such as dyslexic readers? We tested three groups of adult readers - typically developed readers (approximate age match), readers with a childhood diagnosis of dyslexia (approximate ability match) & adult learners in a word naming task. The critical question was whether key psycholinguistic effects would be modulated by the impact of group membership. This question was addressed by estimating the interactions between the effects of item attributes, like frequency, and group.

Method

- 60 participants aged 18 - 70 yrs across three groups: typically developed readers (TD, n=23), adult dyslexic readers (n=20) and adults learning to read (n=17)
- Subject attributes collected were age, group, phonological awareness², TOWRE tests of word and non-word reading skill³ and non-verbal ability⁴
- 104 word sample from Bird, Franklin and Howard (2001)⁵ comprising of 52 pairs of regular and exception words
- Item-level attributes were frequency, regularity, length, neighbourhood size, imageability and age-of-acquisition
- Stimuli presented and responses recorded using DMDX⁶
- Response latencies analysed in R⁷ using lme4 package⁸ and effects package⁹

Results...

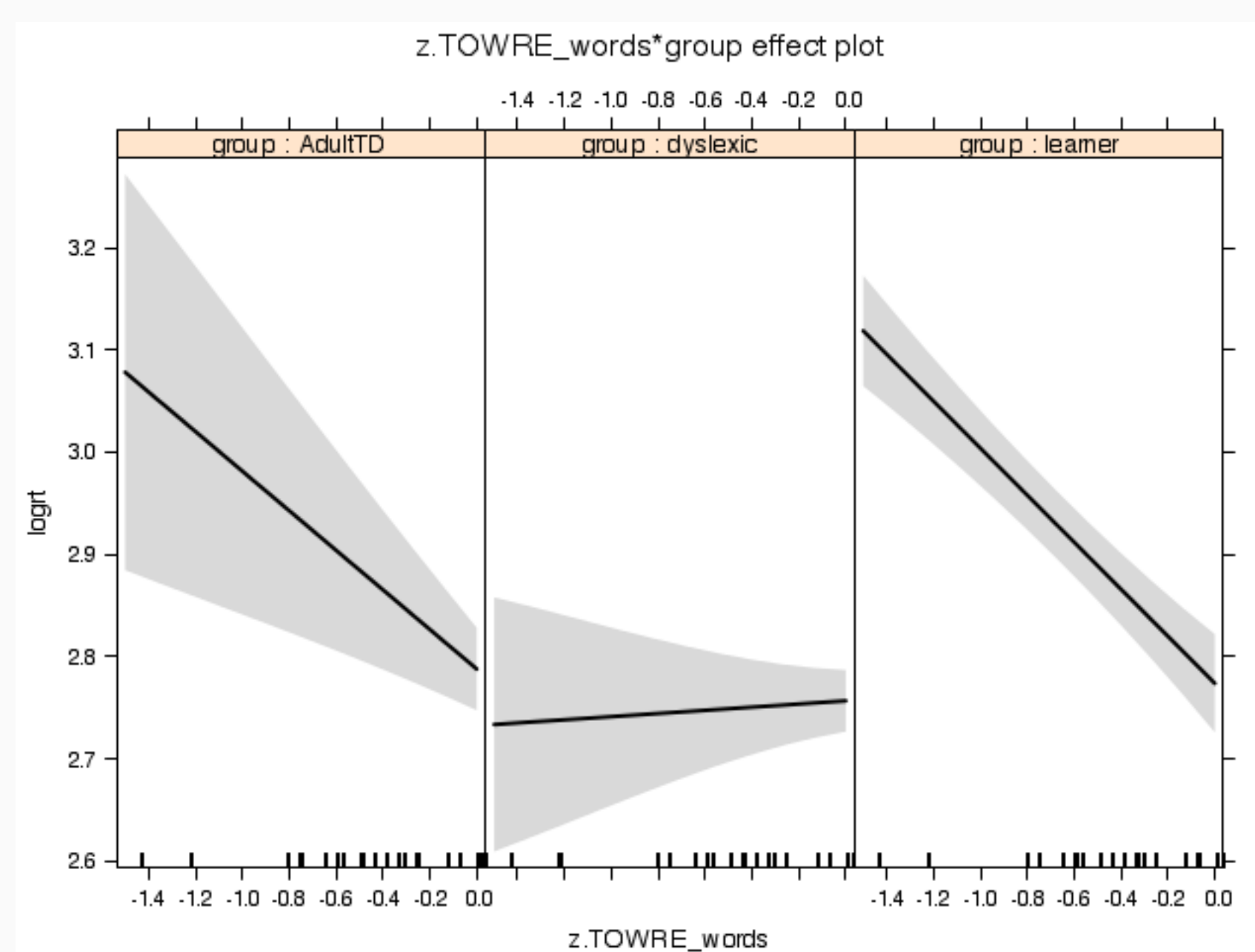


Fig. 1: Word reading ability as a function of group

- Main effect of reading ability and word frequency
- Adult learners read the slowest of the three groups
- Stronger reading ability in the dyslexic group predicted longer response times
- Word frequency interacts with group membership for dyslexic and adult learner readers at levels of significance
- Adult readers show the largest influence of word frequency

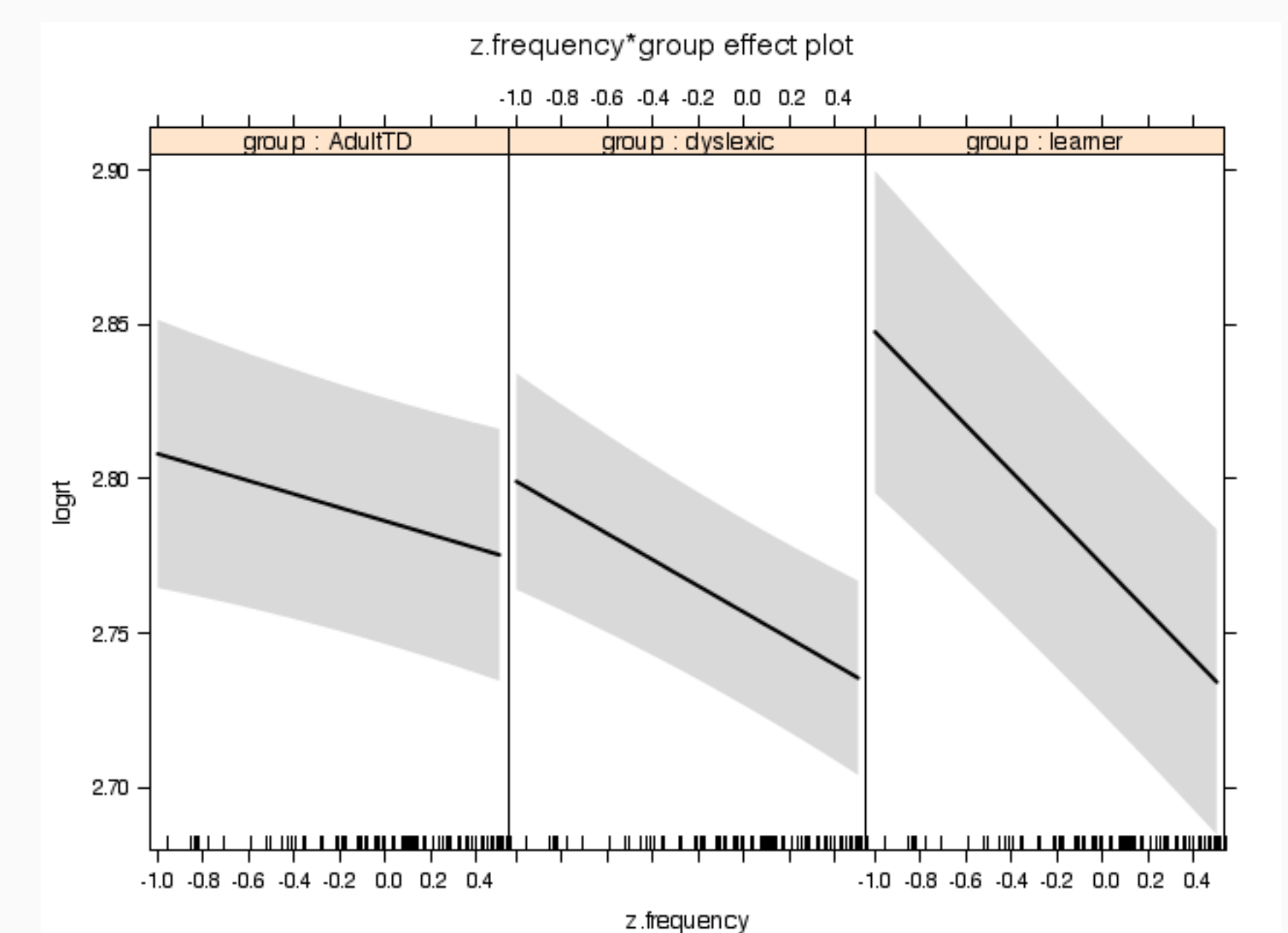


Fig. 2: Word frequency effect as a function of group

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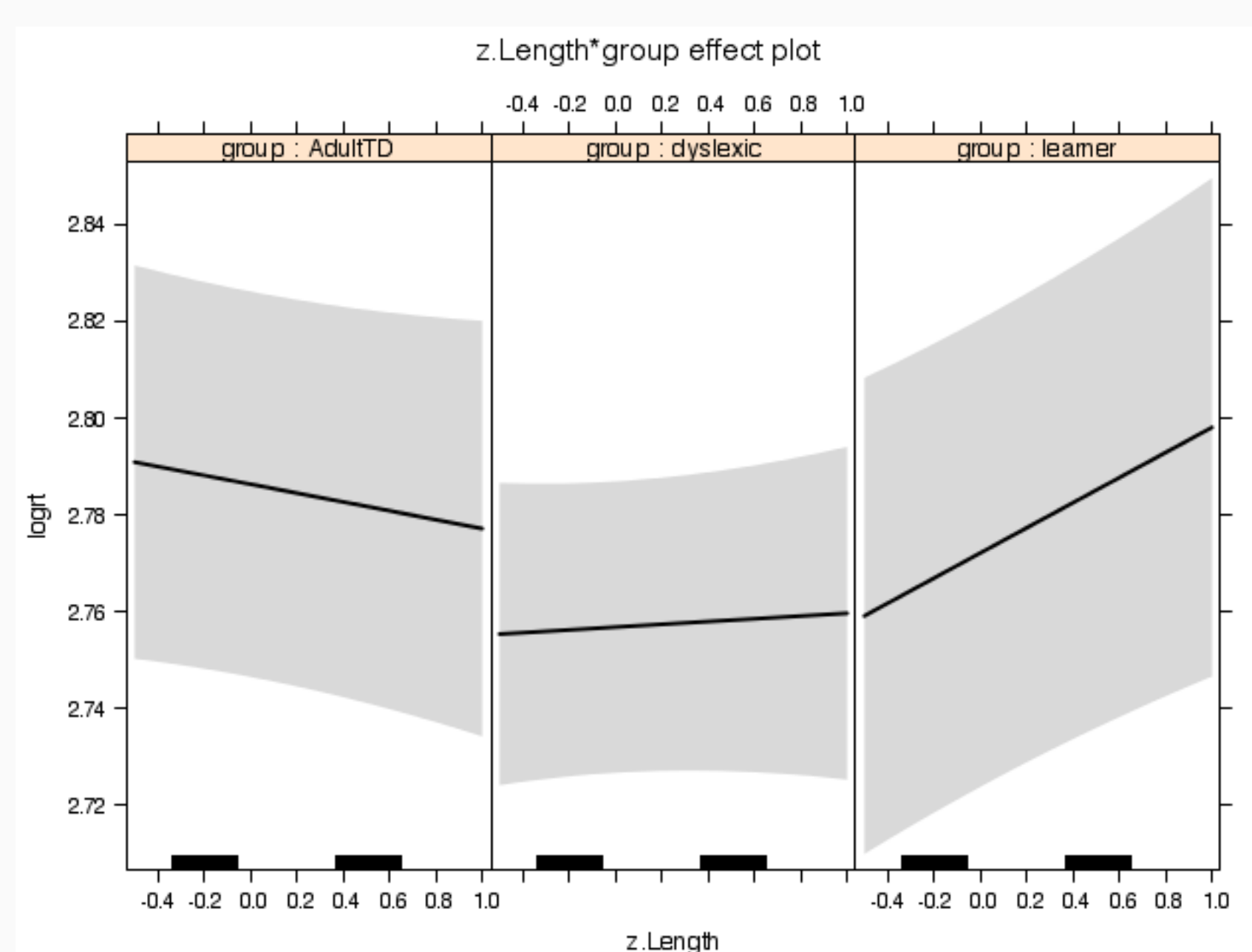


Fig. 3: Word length effect as a function of group

- Typically developed readers show a facilitatory effect of word length
- Longer words predict longer response times in adult learners; this represents a significant effect
- Imageability effect is significant for the adult learner group
- There is an absence of effects from sub-lexical predictors in this dataset

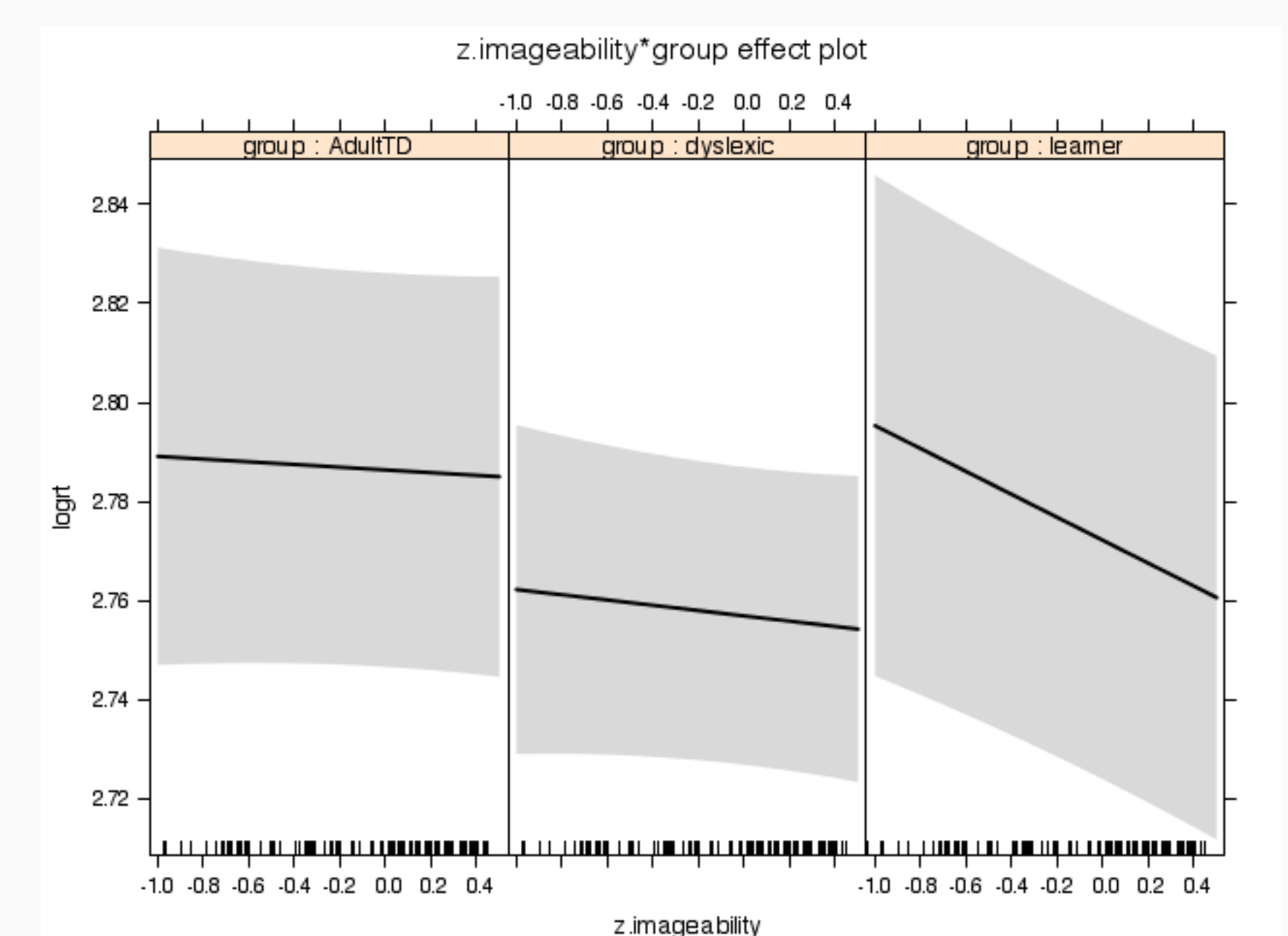


Fig. 4: Word imageability effect as a function of group

Discussion

- Key psycholinguistic predictors are modulated by group membership in this population
- The influence of lexical predictors (frequency, length and imageability) for adult learners suggests an immature reading process more akin to that of younger developing readers
- The absence of sub-lexical predictors such as phonological awareness and non-word reading skill at a significant level for the adult learners is surprising if we accept that they may be displaying an immature reading style
- Imageability as a significant interaction for adult learners suggests that word recognition may be influenced by semantic processes; this may reflect an alternative balance of skills for adult learners or may be akin to the triangle model of effects that occur when phonology skills are weak (Strain & Herdman, 1999)¹⁰
- Future studies could investigate whether improvement of reading skills sees a reduction in these effects or whether they remain a strategy to reading for adult learners

References

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