

An Abbreviated Adult Reading History Questionnaire (6-item ARHQ-Brief)

[Changes from v1.1 to v.1.2 are minor edits to be consistent with the publication in the Journal of Learning Disabilities.]

WHO SHOULD COMPLETE THIS & HOW SHOULD THIS BE USED?

- (1) If you are an adult and want to know if you likely had a positive history of RD/dyslexia.
- (2) If you want to know if your young child is at increased risk for developing RD. (then ideally both biological parents would fill out regardless of whether they are living with their children).
- (3) Some states and districts are considering to implement this kind of questionnaire at the beginning of school entry to get an initial sense about which students should be prioritized for further assessment or support.

BACKGROUND

- (1) Asking the kind of questions as we do in this questionnaire to the parents is considered a **reliable way to get family history** of reading disorder (RD; dyslexia), or adults to find out if they likely had or have RD. Many of the large-scale studies (like genetics) have relied on these approaches.
- (2) It has been long known that having a **family history increases the likelihood of having a reading disorder** (RD; dyslexia) – we call this “moderately to highly heritable”. Chances are higher and the more likely severe if you have close family members that are genetically related (identical twin, biological parents, siblings etc), more members, and they are more severe in their reading problems – this is based on the polygenic model and intergenerational multiple deficit model (iMDM) of complex traits (van Bergen et al. 2014). RD is considered a complex trait.
- (3) **If you have a family history, the chance that your child will have RD is thought to be 34-54%** (mean 45%) and much higher than if you do not have a family history (8-16%; mean 12%) (Snowling & Melby-Lervåg, 2016). The stats are somewhat higher than what I would expect given that we typically think that 5-10% of all children have RD (up to 20% have some symptoms of RD). But you get the point – it’s much higher risk if you have a family history.
- (4) Currently, **RD is thought to be mostly passed on genetically and not through the environment** (e.g. parents not liking books, not having many books at home, and reading much in front of their children) (Swagerman et al. 2017; Wadsworth et al 2002).
- (5) About 4% of the all adults are thought to struggle and have RD also. But many grew up at a time where proper laws were not in place, or their circumstances did not allow them to get identified. **This questionnaire can also help adults to get a sense of how likely they have/had RD.**
- (6) Please note that the current questionnaire asks about parental history. It does not ask about other family members. Also, children may have RD without having a family history (see above). So, **it’s still important to properly screen and assess the children themselves.**

ARHQ-Brief FORM

You can print out the questionnaire at the end of this document.

INSTRUCTIONS & SCORING

Instructions: An adult fills out the form but who exactly depends on the purpose (see “Who should complete this?” above).

Scoring of ARHQ-Brief: Scores on the ARHQ-Brief are calculated by totaling the points an individual scores on the 6 items on the questionnaire, and dividing by 24. This should yield a percentage score for that person. Generally, scores greater than .32 are considered to be indicative of a positive history of reading disorder (RD, aka developmental dyslexia). If both parents’ scores are available, average the scores to compute the final score.

CRITERIA

Generally, **scores greater than .32** are considered to be indicative of a positive history of RD/dyslexia in adults, and children at risk for developing dyslexia.

SOURCE OF ARHQ-Brief ITEMS

Six items from the original ARHQ (Lefly & Pennington, 2000) were selected: Items 2, 4, 5, 7, 8, and 14. If you are using IDA's web version, <https://dyslexiaida.org/screening-for-dyslexia/dyslexia-screener-for-adults/>, use items 15, 17, 18, 20, 21, and 4. (Note that the way they ask responses are slightly altered from the original however, for a reason I am unaware).

RELIABILITY, VALIDITY & ACCURACY

Internal consistency reliability: .850 (exceeds the recommended 0.80)
Receiver operating characteristic (ROC) area-under-the-curve (AUC): 83.6%
Sensitivity: 72.4%, **Specificity:** 81.5%, **Accuracy:** 78.3% of adults correctly classified @ the optimal .32 threshold (vs. 23-item ARHQ @ the original .3 threshold: 57.8% accuracy, & @ .4 threshold: 80.7% accuracy).
Variance explained of adult reading: 50.0% (vs. 23-item ARHQ: 35.6%)
Variance explained of child reading (Grade 2): 31.1% (vs. 23-item ARHQ: 20.0%)
Variance explained of independent child dataset (after controlling for varied age): 30.7% (vs. 23-item ARHQ: 18.0%)

LIMITATIONS OF CURRENT WORK

- (1) Small sample size and restricted to the Bay Area though we also included an independent sample for validation to overcome this shortcoming.
- (2) Many children had relatively high reading ability.
- (3) Many adults had no formal diagnosis, and so we relied on their current reading ability from a neuropsychological assessment.

PLEASE CITE: CITATION FOR THE 6-ITEM ARHQ

Feng L, Hancock R, Watson C, Bogley R, Miller Z, Gorno-Tempini ML, Briggs-Gowan MJ, Hoeft F. (2020) A Development of an Abbreviated Adult Reading History Questionnaire (ARHQ-Brief) Using a Machine Learning Approach. PsyArXiv. September 17. doi: [10.31234/osf.io/8u5fe](https://doi.org/10.31234/osf.io/8u5fe) <http://psyarxiv.com/8u5fe>

This is also now in press in *Journal of Learning Disabilities* and is included as Supplemental Material.

CITATION FOR THE ORIGINAL 23(+3)-ITEM ARHQ

Lefly DL, Pennington BF. (2000) Reliability and validity of the Adult Reading History Questionnaire. *Journal of Learning Disabilities*, 33(3), 286-296. <https://doi.org/10.1177%2F002221940003300306>

ABBREVIATED ADULT READING HISTORY QUESTIONNAIRE (ARHQ-Brief)

PLEASE NOTE: This reading history questionnaire applies to you and **not to your children**. Please circle the number of response that most nearly describes your attitude or experience for each of the following questions or statements. If you think your response would be between numbers, place an "X" where you think it should be.

1. How much difficulty did *you* have *learning to read* in elementary school?

None				A great deal
0	1	2	3	4

2. Did *you* ever reverse the order of letters or numbers when you were a child?

No				A great deal
0	1	2	3	4

3. Did you have difficulty learning letter and/or color names when you were a child?

No				A great deal
0	1	2	3	4

4. All students struggle from time to time in school. In comparison to others in your class, how much did you struggle to complete your work?

Not at all	Less than most	About the same	More than most	Much more than most
0	1	2	3	4

5. Did you experience difficulty in high school or college English classes?

No; enjoyed and did well		Some		A great deal; did poorly
0	1	2	3	4

6. How would you compare your current spelling to that of others of the same age and education?

Above Average		Average		Below Average
0	1	2	3	4

From: Feng L, Hancock R, Watson C, Bogley R, Miller Z, Gorno-Tempini ML, Briggs-Gowan MJ, Hoelt F. (2020)
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