



Test Review of the Feifer Assessment of Reading (FAR)

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Abstract

The Feifer Assessment of Reading (FAR) is a comprehensive reading test for children ages 4 through 21 years. The FAR was designed to evaluate the underlying cognitive and linguistic processes of reading. It has 15 subtests to evaluate aspects of phonological development, orthographical processing, decoding, reading fluency, and comprehension skills. Academic achievement tests endeavor to evaluate core neuropsychological and theoretical perspectives that identify students at risk. However, reading tests have historically not focused on why a student may struggle with reading interventions. A neuropsychological approach to reading posits that multiple neural pathways assist the reading process. These processes include orthographic mapping, phonemic awareness, fluency, decoding, and comprehension. The aim of the test is to help the evaluator learn why a student is struggling with reading, as well as to inform intervention. This review explores the Feifer Assessment of Reading (FAR), and its contribution to the neuropsychological evaluation of reading.

Keywords Feifer Assessment of Reading · Pediatric neuropsychology · Reading · Dyslexia

Clinical Intent

The National Assessment of Educational Program indicates that every year more than 30% of fourth-graders read below a basic level. As schools make tremendous efforts to teach their students to read, many poor readers continue to be poor readers despite interventions (Jacobson, 1999; Maughan et al., 1994; Morgan et al., 2008; Protopapas et al., 2011; Short et al., 1986; Sparks et al., 2014). Research indicates that school-based intervention and special education support have not been effective (Bentum, 2003; Jacobson, 1999; Moody et al., 2000; Rashotte et al., 2001; Swanson & Vaughn, 2010). Despite this gloomy data, there is hope. As summarized by Kilpatrick (2015), “It has been shown in multiple empirical studies that a large proportion of students at risk for reading difficulties, as well as students with severe reading disabilities, can develop and maintain

normalized reading skills when provided with the right kind of intervention” (Alexander et al., 1991; Lennon & Slesinski, 1999; Rashotte et al., 2001; Shapiro & Solity, 2008; Torgesen et al., 2010). The FAR was developed to provide practitioners with a tool to understand *why* a student struggles with reading so that the “right kind of intervention” can be used (Feifer & Nader, 2015).

A reading disorder, also known as dyslexia, has been widely accepted as a neurodevelopmental disorder, yet there is great debate on the specific mechanisms and types of dyslexia. A consensus has yet to be reached in terms of which theoretical model “best” captures the cognitive processes involved with dyslexia. Historically, dyslexia tended to be conceptualized through single deficit models, such as the phonological deficit model; however, more recent research has argued that these models do not sufficiently account for the heterogeneity of individuals with dyslexia, and multiple-deficit models continue to emerge (Ring & Black, 2018). “What is clear... is that there are many types of reading disability, and that no one method of assessment or intervention can meet the diverse needs of this heterogeneous and enigmatic population” (Hale, 2008).

The terminology used to describe different subtypes of dyslexia also continues to be debated. For example, Kilpatrick (n.d.) reports that the theoretical catharsis of the well-known dual-route model of reading, which classifies developmental dyslexia as either *surface* (the inability to identify

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the orthographic contents of reading) or *phonological* (the inability to associate letters and sounds) dyslexia, is ambiguous and does not hold empirical substance. Research has concluded that the pathology of developmental dyslexia is rarely caused by one single element, as is implied through the surface/phonological dyslexia typology. Rather, it is practical to infer that a child can have complications in some areas of both the surface and the phonological aspect of reading acquisition (Feifer, 2011; Kilpatrick, n.d.; Ziegler et al., 2008).

The FAR aligns with a multiple-deficit model and claims to take a unique neuropsychological approach to reading, evaluating various cognitive processes involved with reading to better answer *why* a reading deficit exists, and supports the notion that there are multiple subtypes of reading disorders.

The first type of dyslexia described in the FAR is dysphonetic dyslexia, which is “characterized by the reader’s inability to utilize a phonological route to successfully bridge letters and sounds.” (manual page 3). Evaluators must distinguish between phonics knowledge (linking letters to sounds) and phonological awareness (the understanding of the spatial arrangements of sounds in words; Uhry & Clark, 2005). Difficulty with phonological awareness leads to inefficient neural mapping between letters and sounds (Noble & McCandliss, 2005).

The second type of dyslexia described in the FAR, surface dyslexia, is sometimes called visual word-form dyslexia or dyseidetic dyslexia. It describes the reader who can sound out words but cannot automatically recognize words. The most noteworthy challenge with surface dyslexia is orthographical processing/mapping.

Orthographic mapping is the skill of turning unfamiliar written words into memorized sight words (Ehri, 1998, 2005, 2014; Kilpatrick, 2014, 2015). Kilpatrick has described it as the holy grail of reading education as the skill determines if students easily remember the words they see. “Students who are poor at remembering the words they read must rely heavily on phonic decoding and/or guessing words from context. Students with reading problems are very inefficient at orthographic mapping, whereas typically developing readers acquire this skill quite naturally.”

The third type of dyslexia described in the FAR is mixed dyslexia, which is used to describe students who have difficulty with phonological processing skills, rapid and automatic word recognition skills, and language comprehension skills. These students are described by the FAR manual as having “the most severe type of reading disability” (manual page 4). Students with both phonological and orthographical challenges “have deficits in integrating orthography and phonology utilizing left inferior parietal lobule, and in engaging phonological rehearsal/segmentation utilizing left inferior frontal gyrus possibly through the indirect pathway connecting posterior to anterior language processing regions” (Cao et al., 2008).

The fourth type of dyslexia is described as a challenge with reading comprehension. This occurs when children can read, yet they struggle to interpret what they have read.

Test Kit Contents

The FAR test kit includes a manual with a smaller Fast Guide, 10 Examiner Record Forms, 10 Examinee Response Forms, three large stimulus books, three scoring templates, and a laminated storybook. Kit materials are well constructed. The Stimulus Books are wire-bound, making it easy to quickly turn pages during administration. The stimulus books lay flat during administration. The Record Forms include the administration instructions.

The publisher, PAR, also offers digital stimulus books through PARiConnect. After logging into their PARiConnect account on a tablet, the evaluator has access to a Digital Library. While initially PAR provided digital stimulus books via an Adobe reader, that application was unreliable. With the new Digital Library, the evaluator presents each page of the stimulus books through a webpage.

Test Administration

The FAR is administered with paper and pencil. Administration time varies by population: 35 min for PK; 60 min for K-Grade 1; 75 min for Grade 2+; and the optional 15–20 min for Screening Form. Evaluators can begin with the Screening Form composed of the first three subtests: Phonemic Awareness, Rapid Automatic Naming, and Semantic Concepts. Evaluators can then decide to stop or they can continue on and complete the full battery. Evaluators may also decide to administer tests by individual reading index: phonological, fluency, and comprehension.

Scoring System

The FAR takes approximately 5–10 min to hand score the Screening Form and 15–20 min to hand score the full assessment. Online scoring and reporting are available on PARiConnect for an additional fee, with the option of receiving either a score report or an interpretative report. Five index scores are generated: the Phonological Index, the Fluency Index, the Comprehension Index, the Mixed Index (a composite of Phonological and Fluency index scores), and the FAR Total Index (a composite of all subtest scores). Raw scores are calculated as either the number correct or as a reading rate. Using the grade-based normative table, raw scores are converted to standard scores (mean = 100, SD = 15). There are options to review age- and grade equivalents, confidence

intervals, percentile ranks, stanines, z scores, and normal curve equivalents. The five index scores are based on the sum of standard scores. The authors have neatly laid out the subtests that load on each of three index scores: Phonological Index, Fluency Index, and Comprehension Index.

Technical Adequacy

Standardization

The FAR was standardized on a sample of 1,074 examinees in prekindergarten through college. The sample was drawn from approximately 30 states using a population-proportionate, stratified random sampling plan based on 2012 U.S. Census statistics. Individuals were divided into 16 grade groups. The authors considered gender, ethnicity, region, and parent education.

The FAR authors articulate reasons for using grade-based norms to evaluate reading and reading interventions. Reading curriculum is based on a child's grade. Grade-based norms allow the evaluator to make comparisons based on the curriculum a child has been exposed to.

While the total sample includes a representation of African-American and Latino students, the number of those students in each group is much smaller once the sample of 1,074 is divided into 16 grade groups.

Concerns initially arise regarding the lack of candidates with a learning disorder in reading that appear in this study. However, since it is a normative sample, divided into grade-based cohorts, the aforementioned study establishes what we expect students with average skills to achieve in reading. Therefore, these norm samples can be used as a reference to compare scores among those with reading difficulties.

Reliability

The technical report of the reliability of the FAR showed a relatively high level of internal consistency, with median reliability coefficient alphas from .67 to .95, a majority of which fell between .80 and .95. It also showed strong test-retest reliability (majority of coefficients fell in the .80s to .90s for the 127 individuals sampled) and inter-rater reliability (subtest score correlations between evaluators ranged from .87 to 1.00).

Similarly, the FAR Screening Form showed a relatively high internal consistency with median reliability coefficient alphas from .92 to .97 across all grades (PK to college seniors).

Validity

The FAR is based on Feifer's model of reading, which separates reading disorders into four subtypes as described above. The manual indicates that content validity, or the extent to

which the items included on the FAR represented these constructs, was established by item review with a team of clinical psychologists, neuropsychologists, and speech-language pathologists.

The construct validity, or the extent to which a test measures what it claims to measure, of the FAR was assessed by comparing relationships between the FAR and other assessments that measure similar and dissimilar skills. Most importantly, the FAR was compared to other reading tests, including the Process Assessment of the Learner—Second Edition: Diagnostic Assessment for Reading and Writing (PAL-II RW), Gray Silent Reading Tests (GSRT), and the Gray Oral Reading Tests, Fifth Edition (GORT-5) to demonstrate construct validity. The highest correlations were found between the FAR and the PAL-II RW on the Phonological Coding Composite with ISO (.82), Orthographical Coding Composite with Isolated Word Reading (ISO, .70), and Irregular Word Reading (.76) and Semantic Concepts (.76). Correlations between the FAR and GORT ranged between .54 and .63.

Criterion validity was evaluated by comparing FAR performances between several clinical groups and the control group from the initial study. Those with intellectual disabilities (ID) or learning disabilities (LD) scored significantly lower than control on both subtest and Index scores. There were moderate differences between those with attention-deficit/hyperactive disorder (ADHD) and the control group. The FAR Total Index conveyed discrimination between discerning those with LD and those without LD with an accuracy rate of 96.7%. Cut-off values were established between scores of low to mid 70s. Ultimately, the FAR Total Index and the Screening Index accurately classified those without a LD. However, different cut-off scores are provided based on the recommendations of the *Diagnostic Statistics Manual* (5th ed., DSM-5). Classification accuracy for Index scores on determining the four subtypes of reading disorders was not observed.

Studies similar to Feifer's have also indicated high predictive validity in detecting subtypes of dyslexia and/or reading deficits. These tests are further fortified in their construct as they establish similar precursors to learning disabilities in reading among each other, thus indicating patterns ubiquitous in this population (Caroll et al., 2015; Pennington, 2006; Tamboer et al., 2017).

Comparison to Similar Measures

One goal of the FAR was to incorporate many subtests Steven Feifer was already using in his own neuropsychological battery to more thoroughly examine reading concerns. Rather than administering separate tests, they built these subtests into the FAR to improve its ecological validity. In order to

examine reading disorders from a brain-based academic model of learning, the FAR incorporates subtests evaluators may be familiar with in other tests such as the Comprehensive Test of Phonological Process - 2nd Edition (CTOPP-2), PAL-II, GSRT, and the GORT-5.

The FAR's Phonological Index focuses on reading acquisition through phoneme awareness as readers can code a combination of letters into sound. Assessing phoneme-based skills has been observed in the CTOPP-2's Phonological Awareness Composite Scores (PACS) and the Alternate Phonological Awareness Composite Score (APACS), the latter of which observes solely nonword identification. It also shares similar characteristics to the phonological and orthographic processing subtests of the PAL-II. The primary objective of phoneme awareness is for children to develop their abilities to associate letters with sounds in order to successfully recognize phonological patterns in words. Research has shown that rapid automatic naming is associated with reading abilities, though debate still exists surrounding the underlying mechanisms involved in this relationship. Rapid automatic naming (RAN) tasks measure how quickly individuals can name objects, colors, pictures, or symbols (letters or numbers), which some argue are a measure of the speed, processing, and retrieval of phonological information, whereas others argue are more of a measure of orthographic processing. Regardless, there is a large amount of research showing that RAN does correlate with reading. As such, the FAR included the Rapid Automatic Naming subtest, which is also included on the CTOPP-2.

The FAR Fluency Index assesses the ability to identify orthographic content of language that increases reading speed. This requires readers to automatically discern words based on their letters. Orthographic skills have been greatly observed in the Woodcock Johnson and Test of Orthographic Competence (TOC).

The FAR incorporated several tasks used in well-known reading achievement tests, including the GSRT, GORT-5, and the Wechsler Individual Achievement Test, Fourth Edition (WIAT-4). The FAR Silent Reading Fluency subtest is designed to measure an essential component of reading, reading comprehension, similar to the GSRT. In contrast, the FAR made sure to include tasks that also measure oral reading abilities, which have the advantage of allowing for a closer examination of individual patterns in reading. The Oral Reading Fluency subtest requires a student to read a grade level passage out loud and measures the rate and accuracy of reading, similar to the GORT-5 and WIAT-4 Oral Reading Fluency subtest. The FAR went one step further to also include subtests that measure the rate and accuracy of single word and nonsense word reading, to help further dissect factors contributing to dysfluent reading.

The FAR also includes some examination of aspects of executive functioning involved in reading by incorporating a list memory retrieval process on the Word Recall subtest,

similar to the California Verbal Learning Test. In the first trial, the student is asked to recall as many words from the list in a free recall format. During the second trial, the student is asked to recall the words by categories provided by the evaluator. When the evaluator provides the categories for the student, the need for executive retrieval is reduced. This allows the evaluator to determine how executive functioning impacts reading by differentiating storage and retrieval strategies.

It goes without saying that language abilities play a crucial role in reading development and achievement and should be measured as part of an evaluation when reading concerns exist. Verbal fluency tests are widely used as part of standard neuropsychological batteries, as they offer a quick screener of general verbal abilities as well as a glimpse at executive control. Historically, verbal fluency tests require individuals to name as many words as possible in one minute within a specific semantic category (category fluency; i.e., animals) or to start with a specific letter (letter fluency). The FAR Verbal Fluency subtest mirrors this classic neuropsychology test, and is similar to those included in the widely used Delis-Kaplan Executive Function System (DKEFS) and NEPSY-II.

Commentary and Recommendations

The FAR serves an important bridge in the field of neuropsychology. Whereas previous reading tests functioned to validate reading levels, the FAR aims to incorporate many subtests of a battery. Instead of administering multiple achievement and neuropsychological tests, the aspiration of the FAR was to include all of these subtests in one test that shares the same norms and provides greater ecological validity. The FAR saves time because the evaluator does not need to administer and score as many stand-alone measures.

The goal of the FAR is to describe why a student is struggling with reading. This allows the results to guide intervention in a way that feels straightforward.

The FAR authors work hard to simplify language to help describe functions to parents. There is great debate in the field on which dyslexia terminology we should use. It is important to acknowledge that there are arguments against Feifer's subtypes. However, one benefit of his subtypes is that they are straightforward and easy to explain to parents and teachers.

Another benefit of the FAR is that the authors continue to support it. They have recently published a white paper on skills error analysis. In the wake of COVID-19, the authors put together guidelines for digital administration during COVID-19. Initial digital stimulus administration was labored by the use of an outdated Adobe application. PAR has recently integrated the Feifer stimulus books into their digital library, which is easily accessible on PARconnect. This allows evaluators to present the stimulus books on an iPad. Evaluators are able to skip to subtests easily by using the Bookmark function.

While the stimulus books are well made and easy to use, we found the reversal rule to be difficult to follow on some tests. For example, with orthographical processing, in order to apply the reversal rule, the evaluator needs to flip back three pages until the student answers four questions correctly. This is also difficult when using the digital stimulus.

The full FAR battery takes significant time to administer, which may be a practical limitation for time-sensitive evaluations. The Screening Form allows the evaluator to give the first three subtests and analyze that data before deciding to administer the entire test. It also provides insight into areas of strength and weakness which allows the evaluator to adjust the battery accordingly. For example, if a client struggled with phonemic awareness, the evaluator could then administer the subtest from the Phonological Index. This saves time and allows for a streamlined battery.

There are errors in the scoring system. For example, in Silent Reading Fluency the PARIconnect software will only allow you to enter 155 words per minute when the paragraph has 156 words. Some of the stories include comprehension questions that many children will already know the answer to, such as the story about bees.

The FAR is a welcome addition to the field. We anticipate neuropsychologists will appreciate the manual, the speed of administration, and the integration of many familiar neuropsychological concepts. Neuropsychologists are likely to use subtests of the FAR in many of their evaluations. The FAR uses straightforward and easy-to-use language that is likely to aid analysis and subsequent intervention. We believe this will greatly improve the efficiency with which neuropsychologists can communicate their findings, and we are hopeful that these improvements will lead to better interventions for students.

Availability of Data and Material Not applicable

Code Availability Not applicable

Declarations

Ethics Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Conflict of Interest The authors declare no competing interests.

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