Neurolinguistic Approach to Reading

A Guide for Speech-Language Pathologists Treating Dyslexia

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Preface

Forty years ago, I was attending a meeting for executives of speech and hearing programs in Ohio, and we were discussing the national headlines that were saying the government was going to be focusing on the literacy problem in the United States. I casually said to my colleague, "The government can pour all the money they have into the problem, but it won't get solved until speech-language pathologists become involved." My friend, ever the entrepreneur, said, "I have no idea what that means, but I like the sound of it."

Unfortunately, over the years, I have been shown to be more correct than I even knew I was at the time. Dyslexia has been the target of mountains of research, and yet thousands of little children—and big ones—have come into the offices of The Kamara Center with undiagnosed dyslexia in fourth grade, ninth grade, and even college. When parents have told schools that something must be wrong, they have been given an endless list of explanations—"The student has to be 2 years behind in reading"; "The student has to be 3 years behind in reading"; "The student isn't available for learning"; "The child has cognitive limitations"; "The child is getting good grades, so the problem can't be significant"; "The child lacks fluency, but he understands what he reads, so it's fine"; "The child lacks comprehension but reads fluently, so the child will improve"; "You should see how severe other children I see are"; "I only work on oral language"; "We don't label children"; "The student is receiving educational benefit, and that is all we are required to provide by law"; "I already have a caseload of 80"; "The student is gifted, so how could he have dyslexia?" and "I don't believe in dyslexia."

My professional experience as a clinician and president of a number of state and national associations has given me opportunity to work with many speech-language pathologists who have shared similar perspectives. Lack of speech-language pathology involvement in diagnosis and treatment of dyslexia is not a local phenomenon, and we can do better than this. We need to seriously address dyslexia and remove the barriers, many of them attitudinal. I hope that the Neurolinguistic Approach to Reading is a useful tool for all those dedicated clinicians who also know that children and adults with dyslexia need and will benefit from our help.

Introduction

What is NAR?

The Neurolinguistic Approach to Reading (NAR) is a broad-based approach to remediating dyslexia. It begins with understanding the well-documented research finding that phonologic perception skills are critical to reading acquisition and that improvement in those skills will improve reading. Even with application of this knowledge to written language acquisition, the road to literacy is not a direct path. Many factors correlate with dyslexia and must be taken into consideration. Children will have their own sets of factors that relate to their struggle to read. NAR begins with a focus on listening skills and moves to spelling, which facilitates reading, the flip side of spelling. NAR materials include a description of the four steps of the program, numerous example exercises, and forms that can be used in exercises. The program has been developed and used by the author at The Kamara Center (TKC) for more than a decade, allowing opportunity to consider outcomes longitudinally and make revisions in NAR to make it more comprehensive. NAR is geared to the speech-language pathologist (SLP) because it draws on oral and written language skills unique to that profession.

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Provider and Recipient of NAR

Qualifications of the Speech-Language Pathologist

Who might be interested in the NAR program?

Although the Neurolinguistic Approach to Reading (NAR) program is written for speech-language pathologists (SLPs), many other professionals and parents know a great deal about language. Some psychologists, for instance, have deep insight into the relationship between language and intelligence and speak with expertise about language. Some parents of children with dyslexia are teachers or linguists and understand much about linguistic rule systems within and across languages. And many parents and teachers have been so dedicated in helping their own children with dyslexia that they have dug deeper into the research and tried different strategies, to the point that they have developed their own type of language expertise. Many people work with children with dyslexia. It takes thousands of hours to learn to read. The child will need many hours of reinforcement for emerging skills. Everyone can be put to good work, but it is critical that the plan be well coordinated across all caregivers and service providers so that the child will not be confused. Ideally, school instruction would postpone phonics instruction until phonology skills can manage the letter task, but realistically, school phonics instruction typically goes on as NAR therapy continues, and even the phonics instruction benefits from the phonology focus of treatment.

What qualifications does the SLP need to use NAR?

State licensure and/or American Speech-Language-Hearing Association (ASHA) certification already reflect SLP qualifications needed to implement and gauge the clinical process with NAR. Traditional educational preparation for a master's degree (the minimum degree requirement for certification and licensure) typically includes course work in phonology, articulation, phonetics, anatomy, physiology, hearing science, psychology, statistics, and speech science, all of which directly relate to dyslexia diagnosis and treatment strategies described in NAR. The phonology rule system expands to encompass other linguistic systems and broader considerations. Course work in syntax, semantics, child language, and human

communication disorders all relate to other written language issues, some of which are addressed in NAR but primarily as they pertain to phonology coding patterns.

What national guidelines regarding reading and writing are available for SLPs?

The proficiencies needed for SLPs' clinical work in written language are also addressed by Spencer, Schuele, Guillot, and Lee (2008) and in the ASHA position statement, guidelines, and technical report, "Roles and Responsibilities of Speech-Language Pathologists with Respect to Reading and Writing in Children and Adolescents," which delineates the phonology, semantic, syntactic, morphology, and pragmatic elements of written language that SLPs address in reading and writing problems (ASHA, 2001).

What is missing in dyslexia diagnosis and treatment?

Despite this wealth of information that the SLP could bring to the individual with dyslexia, one component is typically absent. That is the application of SLP expertise to written as well as oral language. Often in internship, practicum, or even job situations, the correlation between oral and written language issues becomes apparent, and clinicians find ways to apply elements of their education to address written language. In over the past dozen years, many journal articles available to the SLP have presented written language research, nudged greater participation, suggested treatment models for the school setting, and even established the position paper on written language disorder. Still, the reality is that an insufficient number of SLPs diagnose and treat written language disorder.

Why are SLPs not more involved in dyslexia?

Insufficient involvement is not a clinician competency issue. SLPs are uniquely competent to do the work, but multiple factors interfere with participation. Often administrators of SLPs do not permit them to work with written language disorder, only oral language disorder. Insurance companies typically view dyslexia as an educational responsibility and deny coverage. Sometimes the roles and responsibilities of the reading teacher, language arts teacher, and special education teacher in written language disorder are not comfortably sorted, and an SLP can be viewed as external to the remedial process. Another obstacle is SLP availability. Thousands of SLP positions cannot be filled across the United States so that, even if administrators agreed to hire more SLPs, candidates may not be available. When clinicians already have large caseloads, they may be disinclined to take on what they view as more responsibilities. The final obstacle that NAR attempts to address is lack of familiarity with clinician roles and responsibilities. Many SLPs want to work with written language problems, but they have not been exposed to a broad enough conceptualization of the relationships between oral and written language and are not sure where to begin in implementing an effective treatment plan. Yet they are but a step away from significantly improving literacy.

What is a root cause of inadequate involvement?

It is not the purpose of NAR to denigrate the private and public national, state, and local allocation of funding for language-disordered children, but better perspective must be gained on the importance of SLP involvement in the diagnosis and treatment of dyslexia. Most of these delineated obstacles are caused by inadequate funding, but the cost of lost

potential will be much greater in the future than funding SLP intervention would be now, not to mention the personal cost to millions of people living with inadequately treated dyslexia. With such a great number of children struggling to read and write, could it be that our reading programs lack sufficient understanding of the intricacies of language in dyslexia that require SLP involvement?

How do SLPs address articulation disorder?

Diagnosis and treatment of articulation disorder is one of the most common practice areas in speech-language pathology. The role of voluntary and involuntary oral motor function, articulator structure, phonologic perception, and other factors must be sorted and a treatment plan established. Treatment strategies typically involve increasing awareness of articulator structure, movement, voicing, and resonance features of involved phonemes using manipulatives, descriptions, and comparisons; phonologic perception training for target versus actual phonemes; and strategies to habituate increasing gains in phoneme production during speech, including extended pronunciation of written text. SLPs are typically adept in executing this process, even if their clinical setting tends to serve clients with other types of conditions such as voice or disfluency disorders.

What do articulation disorder and dyslexia have in common?

Clinical skills used for articulation disorders are the basic skills needed to implement NAR. Of course, transfer of these principles to letter coding of phonemes represents a next level of language, but it also is a symbolic process that is based on the same principles. The SLP uses phonetic skills to objectify and clarify confusion that the individual is having in coding phonemes. The diagnostic and treatment process focuses on phoneme knowledge, even as the process evolves to encompass other linguistic rule systems, memory, and auditory processing components of the profile. For instance, as sequences of letters representing phoneme strings (words) begin to convey different syntactic and semantic relationships such as number, case, tense, and gender morphology rules, another area of SLP expertise becomes critical in sorting confusion in the individual with dyslexia. A small number of these rules, but ones that are frequently used, that require phoneme coding are included in NAR, for instance, the three pronunciation patterns of past-tense marker /-ed/ and the phonologic rules that determine which pronunciation is used. And a few print punctuation conventions not present in auditory speech are included, for instance, notation of possession or contraction functions for final [s] in words. This description represents the basic NAR program. Of course, individuals with dyslexia have facilitating and inhibiting factors unique to them that must be addressed, but that is true of every condition.

What may surprise SLPs about dyslexia?

Although SLPs know that phonology is an extremely complex linguistic rule system and routinely address error patterns children exhibit when coding sounds of the language as phonemes in oral language, they may be surprised how much the articulation disorder profile is a template for management of the phonologic perception deficit that is characteristic of dyslexia. Nonetheless, their skills to address written language disorder are well in hand and just need to be implemented.

What typically blocks longer reading and writing in children with dyslexia?

NAR addresses only the early stages of the phoneme/grapheme coding process for reading and writing, but as improvement in the phoneme coding deficit occurs, it typically allows children to read longer passages and write longer documents. As this occurs, clinicians will often discover other language vulnerabilities. They will need to address the misperceptions in reading comprehension and errors in contextual writing that involve the same array of rule confusions found in oral language, everything from regularization of irregular past-tense verbs and nouns to pragmatic errors involving use of informal vernacular forms instead of formal expression. Written language remediation has many advantages. It is relatively permanent and therefore does not have the same draw on working memory. Written notation can actually be used to document and clarify oral language errors that escape on the air that carries them. SLPs are particularly accustomed to drawing on visual-auditory connections in treatment because of the nonpermanent nature of spoken language and routinely use multisensory interactions to confirm parameters of oral language.

Dyslexia

How many children have reading problems?

Dyslexia is a puzzling behavioral phenomenon. Why can some people understand the transfer of oral language rules to written language rules and some people cannot, or do so inadequately? Dr. G. Reid Lyon, former chief of the Child Development and Behavior Branch within the National Institute of Child Health and Human Development, was responsible for the direction and management of reading research gathered and sponsored by the National Institutes of Health (NIH). Various documents discussing those findings about children struggling to read have been published over the years and made available to the public. In his contribution to *The Keys to Literacy* (Patton & Holmes, 1998, p. 8), Lyon stated that approximately 5% of children learn to read easily without formal instruction before they enter school, and another 20% to 30% of children learn to read relatively easily when introduced to formal instruction, but for approximately 60% of children, reading is more challenging, and 20% to 30% of children find reading one of the most difficult tasks that they will have to master in life.

Is dyslexia letter and word reversal?

According to the Association for Psychological Science, approximately 70% of adults, including special education teachers, university faculty, and SLPs, think that the primary feature of dyslexia is letter or word reversal, and media often perpetuate this myth (Lilienfield, Lynn, Ruscio, & Beyerstein, 2009). The article stated that, in fact, the common denominator of dyslexia is weak auditory perception of sounds that make up the words of English. After extensive analysis of the research that delineates different diagnostic features of dyslexia, the National Institute of Neurological Disorders and Stroke (NINDS) defines dyslexia simply as unexpected difficulty learning to read despite normal intelligence and motivation. The NIH has explained in various reports that weak phonologic perception is the factor that typically impedes reading acquisition, explicitly stating that

dyslexia is not seeing words or letters backward. These findings can be reviewed at http://www.ninds.nih.gov/disorders/dyslexia/dyslexia.htm. This site also provides links for related publications.

What did Orton say dyslexia was due to?

The confusion about letter reversal and dyslexia is somewhat understandable, considering that neuropathologist Samuel Orton, one of the early writers on dyslexia, defined the condition in 1925 as strephosymbolia, or "turned around symbols" (Beaton, 2004, p. 179). Even Orton, however, acknowledged that the basis of the condition was not just letter reversal but was difficulty associating visual with spoken forms of words. The explanation that dyslexia is based on letter reversal may seem logical to many people. Almost all children learning the alphabet sometimes reverse letters, but eventually they outgrow the confusion. Some children with dyslexia continue to show a few or several reversals as they get older, but so do some children without dyslexia. The positioning of the "balls" and "sticks" alone in 6 of the 26 letters in the lowercase alphabet represents an arduous learning task. To this point, no study has distinguished what pattern of letter reversal coexisting with dyslexia might be significant at what age and whether it is coincidental, a comorbid condition due to some underlying factor, a subgroup of individuals with dyslexia, or just an unexplained feature that sometimes compounds the condition. However, research confirms that letter reversal is not the cause of dyslexia.

What is the best predictor of reading success?

Recognizing that literacy problems have a significant impact on school outcomes, advanced education, and meaningful employment, Lyon presented testimony to Congress, citing the need to gather and conduct more research on reading failure to improve written language skills (Lyon, 1999). Steps to clarify the reading problems facing many American children were undertaken by the National Reading Panel (NRP), which was composed of many scholars in the field of reading, and they presented their report to Congress in 2000. The total NRP project reviewed more than 100,000 studies to arrive at their conclusions, which are summarized in a free report, *Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and its Implications for Reading Instruction: Reports of the Subgroups*, which is available at http://www.nichd.nih.gov/publications/nrp/smallbook.cfm. One panel studied phonologic awareness and reviewed more than 2,000 studies on phonologic perception training to find 52 studies that met more specific NRP scientific research methodology criteria. Key findings of the NRP Phonemic Awareness panel were that children's phonologic perception skills can predict reading success and that remedial reading begins with improving phonologic perception.

What predicts reading success for deaf children?

Even for deaf children, perception of phonemes is important. Colin, Magnan, Ecalle, and Leybaert (2007) note that perception of phonemes, which are auditory units of language, predicts reading success in deaf children on the same basis that it does in hearing children. Deaf children demonstrate capacity to acquire phonologic skills, and their reading improves with explicit instruction to facilitate their learning of this implicit phonologic knowledge that is not as obvious for deaf children as it is for hearing children.