

The Relationship Between Language Disorders and Reading Disabilities

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Developmental language disorders have traditionally been defined, studied, and treated by speech-language professionals. Developmental reading disabilities, on the other hand, have historically been the purview of researchers and practitioners in psychology and education. In the past two decades, there has been increasing recognition by both communities that it is not unusual for a single individual to encounter difficulties in acquiring both oral and written language. We will briefly review these findings, and will discuss some of the unresolved questions about the nature of the presumed relationship between language disorders and reading disabilities.

The Reading Problems of Children with Early Language Disorders

There have been more than a dozen studies pertaining to the academic prognosis for young children with diagnosed speech-language disorders (Aram & Hall, 1989; Bashir & Scavuzzo, 1992). In these studies, research samples have been selected on the basis of clinical records and/or research assessments of preschool language impairment. Follow-up evaluations of these samples have then been conducted during the subjects' school years or later. The sampling criteria, the initial skill levels, and the measures of outcome status have not always been well specified or comparable from study to study. Nevertheless, several general trends appear to be evident in the available data.

Overall, about 40% to 75% of preschoolers with early speech-language disorders have been found to develop reading problems later on. Many, it should be noted, also experience difficulty with math achievement, and most continue to exhibit residual oral language weaknesses beyond the preschool period. The degree of risk for academic problems appears to be considerably reduced for children whose early weaknesses are confined to phonological production, or "specific articulation deficits" (e.g., Catts, 1992; Lewis & Freebairn, 1992). Somewhat worse prognoses, on the other hand, have typically been observed for children whose language impairments are accompanied by more general cognitive deficits than for children with "specific" language impairment (Aram & Hall, 1989).

Generally speaking, regardless of general aptitude or therapeutic history, the more severe, broad, and persistent the early language impairment is, the greater the risk of later reading problems appears to be (e.g., Aram & Hall, 1989; Bishop & Adams, 1990; Catts, 1992; Stark et al., 1984). Nevertheless, it is also the case that some children with only mild to moderate language delays, and who appear to overcome their spoken language difficulties by the end of the preschool period, have later been found to develop reading disabilities (e.g., Scarborough & Dobrich, 1986; Stark et al., 1984).

The Language Problems of Disabled Readers

Schoolchildren, adolescents, and adults with diagnosed reading disabilities have consistently been shown to have poorer oral language skills than their nondisabled peers. Their weaknesses often include the perception, production, and metalinguistic analysis of speech; the production, comprehension, and metalinguistic analysis of complex syntactic forms; and the recognition, retrieval, definition, and morphological analysis of words (e.g., Mann & Brady, 1988; Siegel & Ryan, 1984, 1988; Wolf, 1991). Some of their oral language weaknesses, however, may merely be secondary consequences (often termed "Matthew effects") of their reading problems. That is, one of the likely sequelae of early reading failure is exposure to fewer and less complex reading materials, both in the classroom and outside it. To the extent that improvements in vocabulary, morphology, syntax, and metalinguistic insight are ordinarily fostered by exposure to increasingly challenging printed materials and instructional expectations, the slower growth of these language skills by disabled readers may not be particularly surprising.

Some recent longitudinal research indicates, however, that many of the oral language weaknesses associated with reading disability antedate the onset or diagnosis of reading failure. In particular, measures of metalinguistic differences among 4- to 6-year-olds are consistently among the best predictors of subsequent primary grade reading achievement (e.g., Share, Jorm, Maclean & Matthews, 1984). Such findings accord well with contemporary theory, in which weaknesses in metaphonological analysis skills (especially "phonemic awareness") are hypothesized to have a particularly direct relationship to difficulties in mastering the "decoding" component of reading. That is, children who have not grasped that spoken words are composed of phonemic segments will be at a great disadvantage in discovering the "alphabetic principle" that letters often stand for phonemes, as is necessary for decoding print (e.g., Fowler, 1991; Stanovich, 1988).

Additionally, reading acquisition is likely to be facilitated by a child's more general understanding of the structural relations among components of oral language (morphology and syntax) and of lexical structure and propositional meanings. Weaknesses in these competencies during the late preschool and early school years may thus impede a child's academic progress, particularly with regard to reading comprehension skills rather than decoding (e.g., Catts, 1992; Bashir & Scavuzzo, 1992). Findings consistent with these views have been obtained in several prospective longitudinal studies (e.g., Butler, Marsh, Sheppard & Sheppard, 1985; Catts, 1992, Wolf, 1991).

There is even some evidence that the oral language antecedents to reading disability are evident at very early ages. Longitudinal studies that have followed the development of younger preschoolers (Bryant, Bradley, Maclean & Crossland, 1989; Scarborough, 1991) indicate that deficits in phonological and syntactic proficiency can emerge by the age of 2 to 3 years in children who will later become poor readers. Hence, even though some children with reading disabilities do not appear to have had prior difficulties with spoken language, in many cases the reading disability does appear to be associated with longstanding prior difficulties in acquiring oral language.

What is the Relationship between "Normal" and "Disordered/Disabled" Verbal Abilities?

Although there is abundant evidence for the development of reading problems by many children with early language disorders, and for a prior history of language problems in many children who become disabled readers, the severity of deficits in oral and written verbal skills does not appear to be equivalent in many individuals. That is, when language-impaired preschoolers are followed up, they are likely to be worse than a control group, or below a normed average, in reading skill; however, it is not clear what proportion of these cases have academic weaknesses that are deficient enough to be called "reading disabilities." Likewise, although oral language weaknesses often precede reading disabilities, the data suggest that relatively few disabled readers had such severe early language problems that diagnoses of "language disorder" were warranted. Consequently, the actual comorbidity of "language disorders" (by clinical standards) and "reading disabilities" (by contemporary criteria) may be somewhat lower than has sometimes been assumed. Cogent arguments have been advanced, however, against the tradition of making discrete classifications of "normal" versus "disordered/disabled" diagnostic groups (e.g., Leonard, 1987; Stanovich, 1988;

Shaywitz et al., 1992). Instead, many cases of so-called language disorders or reading disabilities may simply represent the low end of a normal continuum of individual differences in the development of these verbal skills. If so, given the partially overlapping but partially distinct task demands of language and reading, and given that measurement error and temporal fluctuation would be expected to occur, it would not be surprising that extreme placements along one continuous dimension would often be associated with "subclinical" degrees of weakness along the other continuum. Hence, the fact that skills are not as extremely deficient in both domains does not preclude a causal relationship between language differences and reading outcomes.

Should Subtypes Be Defined According to Specificity, Selectivity, and Familiarity Criteria?

With regard to both speech-language and reading problems, the issue of subtyping remains controversial. For instance, is it theoretically meaningful or practically useful to make a distinction between children whose language/reading levels are discrepant from their general cognitive levels versus children whose "nonspecific" language/reading deficits are associated with a more general pattern of delayed development? To date, there is little indication that the characteristics of such potential subtypes are notably dissimilar, particularly with regard to poor readers. Furthermore, from the limited evidence available, it appears that responses to treatment do not differ for such subgroups (e.g., Cole, Dale & Mills, 1990). These findings, however, do not necessarily preclude there being important etiological differences.

Similarly, should children whose articulatory difficulties are accompanied by broader semantic-syntactic problems be distinguished from the smaller proportion of children with "selective" phonological deficits? Academic prognoses are more favorable for the latter, but it is possible that this simply reflects a severity difference rather than the existence of qualitative subtypes. Likewise, should a child whose greatest difficulty with print involves reading comprehension be distinguished from the child for whom decoding is the weakest component of reading skill? Or, should a child with low achievement in math/science as well as in reading/writing be distinguished from a child with "selective" problems in literacy achievement only? Again, few meaningful differences between groups with selective and nonselective deficit profiles have been established, but relatively little research has directly addressed these questions.

Differences in children's family backgrounds, as well as in their current levels of functioning, could also be

a basis for defining subgroups with different etiologies. Language disorders and reading disabilities each tend to run in families (e.g., Lewis, Ekelman & Aram, 1989; Scarborough, 1991), but there are also many children who present with no family history of either kind of problem. Whether it is meaningful to distinguish between "familial" and "nonfamilial" cases cannot be determined from available evidence. It is interesting to note, however, that this may be related to the severity of deficits, since greater degrees of family aggregation tend to be seen for less severely affected individuals (e.g., Byrne, 1974).

Further complicating the subtyping issue is the fact that an individual child's profile of language or reading deficits may change substantially over time. For instance, a 3-year-old who exhibits across-the-board (nonselective) delays in acquiring language may, by age 5, show only (selective) weaknesses in just one facet of language skill (e.g., Bishop & Edmundson, 1987; Scarborough & Dobrich, 1990). Similarly, second graders who read very poorly in comparison to their levels of math achievement and their overall aptitude may, by the sixth grade, show a more general pattern of decrements in both aptitude and achievement (possibly as a consequence of "Matthew effects"). Also, how far below age or grade level a child's language or reading skills appear to be may change considerably from year to year (e.g., Bishop & Edmundson, 1987; Shaywitz et al., 1992),

In short, refinements in our estimates of the prevalence and comorbidity of language disorders and reading disabilities must await further discussion and research pertaining to these definitional and diagnostic issues. Until then, a complete answer cannot be given to the key question of whether the etiological picture—including the relation of language disorders to reading disabilities—is different for the various subtypes that can be defined by making the distinctions above. Nevertheless, based on what is already well established, it is possible to consider several possible accounts of how and why both reading and language problems may often develop within the same individual.

Some Possible Relationships Between Language Disorders and Reading Disabilities

We are inclined to believe that the precise nature of the relationship between language disorders and reading disabilities may be somewhat different for different individuals. Three pictures of possible relationships will thus be drawn.

First, the role of oral communication in the educational process is important, not just for learning to read

but also for learning in other academic areas. A child who begins school with oral language deficiencies that are so broad and severe as to obstruct communication, therefore, would be expected to have achievement problems simply because his or her language skills are not sufficiently well developed to accomplish the task. When, as is often the case, such severe language disorders are nonspecific (i.e., are associated with more general developmental delays), the academic obstacles may be even greater, and a high rate of failure in reading and other subjects would be expected.

Second, even when early language problems are not so severe as to prevent the child from understanding and being understood by teachers and classmates, learning to read—especially to decode—may nevertheless be impeded by a more specific difficulty with processing, representing, and consciously manipulating the phonemic elements of speech. If, as appears likely, the development of phonemic awareness is tied to one's overall level of language proficiency, then even children who have apparently outgrown their earlier speech-language deficits may still be behind in this respect, and may thus have difficulty grasping the correspondences between letters and phonemes. In such cases, in other words, the link between the earlier language impairment and the later reading disabilities is indirectly mediated by a more circumscribed, proximal cause of the reading failure. Recent intervention research that has focused on training young children in metaphonological analysis skills has shown considerable promise as a means of facilitating the acquisition of decoding skills in children who enter school with limited phonemic awareness, and it may be fruitful to incorporate such approaches into treatment programs for language-impaired preschoolers at even younger ages.

Last, the relationship between language and reading abilities may, in some cases, turn out to be even more complex, because becoming a good reader requires an adequate overall degree of linguistic competence, of which phonemic awareness is just one critical part (Kamhi & Catts, 1989; Scarborough, 1991). For some children, the same limitation that was responsible for their early difficulties in acquiring oral language may persist (even though the language impairment was apparently outgrown) and contribute to their difficulties in acquiring written language (including acquiring fluent word recognition skills, becoming familiar with orthographic patterns and punctuation rules, becoming proficient in reading comprehension, producing correct and well-structured written work, and so forth). In such cases, the child may need assistance not just with discovering the phonological structure of language, but also with becoming more aware of regularities in other domains, in order to progress beyond the beginning stages of reading.

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The Role of Phonological Awareness in Early Reading Acquisition

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One of the most politically charged debates in education surrounds the teaching of beginning reading (Adams, 1990). Articles with titles such as "The Reading Wars" (Kantowitz, 1990) have appeared in the popular press and provide some idea of the dissension in the reading community over how reading is to be taught to young children. As educators and researchers debate the value of sound-based approaches (also called code-based