



I am learning all the time. The tombstone will be my diploma.

—Eartha Kitt

LANGUAGE DISORDERS

Language plays a central role in the conduct of human transactions. It is the vehicle by which we form interpersonal relationships. It is also a vehicle by which we gain access to knowledge and store the information that we've learned in memory. Finally, language is a means by which we create new knowledge, including great literary works. Indeed, some have argued that language is one of the defining characteristics of the human species. It comes about as an interaction of our genetic endowment and an environment that nurtures its emergence. Typically, language emerges effortlessly, but this is not always the case. When a child struggles to acquire his or her first language, with its onset delayed and development protracted in the absence of any other sensory or cognitive deficits and an intact environment, that child is considered to have a *language disorder* or *language impairment*.

Language is a multifaceted phenomena, with particular *form* through which unlimited *meaning* may be expressed and understood in the context of the situation of its *use*. A disruption may occur in any of these three facets of language or in their critical interactions, resulting in language disorders. Although the cause of such disruptions is typically unknown, the result is staggering because of the high societal value placed on verbal skill. Social interaction, knowledge acquisition,

and one's very quality of life are all jeopardized by a failure in typical language development. Understanding language disorders is particularly important in the school setting, given its mandate for the academic development of children and the key role schooling plays in their socialization. Typically, the delayed onset of language is identified in the preschool years, yet the impact of a language disorder is felt well into the school years and beyond, making it important for early educators, classroom teachers, and other education professionals to be alert to and to understand the debilitating impact that a language disorder has on a child's life.

Basics of the Linguistic System

To understand language disorders, the multifaceted nature of the language system itself must be understood, because any or all aspects of it may be impaired. The language system is often thought of as arising out of the intersecting components of form, content, and use. The form of language comprises small units that combine to create larger ones, and it is governed by tacitly understood rules for which combinations are permissible and which are not. The smallest unit of an oral language is a sound, or *phoneme*. Language disorders may, but do not always, include an impairment of the sound system. Even if children do not have difficulty in producing the sounds of their language, they may have difficulty segmenting and recognizing those

sounds as individual units. Awareness of these sound units forms the foundation of phonological awareness, which in turn is the most reliable predictor of early reading success. Phonemes are combined according to language-specific rules to create a slightly larger unit, the *morpheme*, the smallest unit that carries meaning in a language. A morpheme may be either what is commonly considered a word, for example, *jump*, or what is typically thought of as the prefixes or suffixes that shade the meaning of a word. For example, when the past tense suffix *-ed* is added to *jump* (i.e., *jumped*), the meaning of this word is shaded to reflect not only the action but the time frame in which it occurred. Children with a language disorder have particular difficulty acquiring morphemes. Morphemes are then combined in larger units to form the grammar or *syntax* of a language. These units are commonly thought of as simple sentences, or when embedded into one other, a complex sentence. Thus, the form or structure of the language within which we express our ideas to others is completed. The earliest emerging sentences are two-word combinations (e.g., “want cookie”), and late onset of this near-universal stage of language acquisition is often one of the first signs of a language disorder. The potential of a language’s form as a powerful means of expression is realized once it intersects with its content or meaning, for without ideas about the world or internal desires to express, the form of language is empty. The linguist Noam Chomsky illustrated this point in his now famous sentence, “Colorless green ideas sleep furiously,” exemplifying the notion that phonemes and morphemes may be combined into a sentence that has followed all the rules of a language but expresses nothing. The content component of language, or the ideas we hold about ourselves and other people and things in the world, both draw upon and contribute to the child’s conceptual development. Reduced or impoverished vocabulary development is often part of a language disorder.

The third component of the system is use, or *pragmatics*. The central role that language plays in human affairs comes from its communicative function. Arguably, the main purpose of language is for communicating with other people. It is through social interaction with caregivers that the child’s genetic potential for language is guided to emerge. It has been suggested that the use of language in social contexts must also be governed by tacit rules, or successful conversational exchanges could not take place. The *cooperative principle* suggests that speakers and listeners have tacitly agreed on a shared goal to successfully exchange information in ways that

are maximally relevant to one another. Additionally, contextual variations, such as the social status of those communicating, the circumstances, and the purpose of the communication, are all elements of language use and indeed influence the choice of content and form. For example, a child may use polite forms such as “Please, give me a piece of cake” or indirect requests such as “Gee, that cake looks good” when attempting to get something from a grandparent, but the child may choose a more direct approach when talking to a peer: “Give me a piece of cake too!” A listener may understand a statement to be sarcastic when spoken by a peer but as a reprimand if uttered by someone in a position of authority (e.g., “Do you always dress that way when you come to school?!”). A disruption in the use of language in context is most clearly seen in the language disorders experienced by, but not limited to, children with autism spectrum disorders.

Defining Language Disorders

Based on the previously defined components of the linguistic system, language disorders may then be thought of as a disruption in any one or all of them, making it a heterogeneous category of impairments. It may occur solely in the modality of expression, or it may include difficulty in understanding or comprehending form, content, or the context-sensitive variations described in the previous section. Language disorders are most often developmental in nature and of unknown origins, but they can also be the result of an acquired brain injury. Language disorders may occur in the absence of any other known condition and coexist with otherwise normal cognitive function, in which case it is identified as a specific language impairment (SLI). A language disorder also may accompany other developmental disabilities, such as hearing loss, cognitive impairments, cerebral palsy, autism spectrum disorder, or attention deficit hyperactivity disorder (ADHD). Furthermore, it may accompany the impact of certain negative environmental circumstances such as neglect and abuse. Regardless of whether or not there are associated disorders, a language disorder places the child at risk for negative social consequences because of the primary role that language plays in both social interaction and as a vehicle for the acquisition of knowledge. Both spoken and written forms of language may be affected by a language disorder. Indeed, the very nature of the disorder may change over time with changing contextual demands. Specifically, whereas children

may initially be identified with a spoken language disorder during the preschool years, with treatment, the difficulties in oral communication may resolve. Yet, once these same children start school and are faced with the challenges of learning to read and write, they may once again experience difficulty, the characteristics of the disorder changing with new demands being placed on the language system. Language disorders are chronic disabilities that show remarkable stability throughout the life span.

Prevalence, Stability, and Prognosis

Large-scale studies have been conducted in the United States, Great Britain, and Canada of primarily kindergarten children to establish the prevalence rate of language disorders. In studies of kindergarten children from the general population, the prevalence of language impairment without accompanying speech problems ranges between 6% and 10%. When language problems are combined with speech sound impairments, the rate rises to approximately 12%. In high-risk populations, such as children living in poverty, recent studies have shown a much higher prevalence rate than expected in the general population. Reported stability rates are quite variable for children identified as having a language disorder before they start school (age 4 or 5). It has been reported that approximately 40% of these children will go on to have a good outcome, particularly if only expressive language abilities are affected. These moderate rates of improvement are, however, somewhat illusory when regression to the mean or the impact that false positive identification has on subsequent assessments is taken into account. Furthermore, the prognosis is poorer for children with additional comprehension deficits and below-normal nonverbal cognitive abilities. The bottom line is that for children who are correctly identified as having a language disorder by age 4 or 5, the prognosis for spontaneous recovery is poor. Language disorders are chronic, and longitudinal studies clearly demonstrate that they persist into adolescence and adulthood. Encouragingly, studies investigating the efficacy of language intervention indicate those who have had treatment generally fare better than those who have not, yet much more research is needed to clarify the impact of the amount, nature, and timing of treatment on long-term prognoses.

Given that late onset of single spoken words and protracted periods of vocabulary and grammatical development are hallmarks of language disorders, it would seem

that identification of a language disorder during toddlerhood would be ideal so that early intervention could be instituted. Two-year-olds with expressive vocabularies of fewer than 10 words are often considered “late talkers” (about 10%–15% of toddlers); in recent years these children have been widely studied with the hope of determining which of them would “catch up” and which would not. Overall, the current consensus is that the majority of toddlers with early expressive language delay are truly “late bloomers” and they are *not* at risk for further language disorders. In contrast, approximately 40% of late talkers continue to have language difficulties. Although they seem to catch up in their vocabulary development, their continuing difficulties are reflected in difficulties with developing sentence structure. It has been suggested that along with having smaller expressive vocabularies, these children also understand fewer words and use fewer communicative gestures, such as pointing and reaching, as a means of expression. Parent report questionnaires are often the tool used to measure a toddler’s emerging language, but unfortunately, they are not sensitive enough to accurately predict persistent language disorder in individual toddlers.

A great deal of attention has been directed to those children who apparently have a language disorder in the absence of any other condition, that is, those children who have SLI. Although there indeed may be a subgroup of children who have a language disorder without any other concomitant condition, the specificity of language disorders in children is debated widely. Many of these children have nonspecific language impairment, that is, concomitant nonverbal cognitive limitations or other associated developmental disorders. Studies have indicated that nearly 50% or more of children identified as having SLI also have associated developmental motor coordination disorder, ADHD, or other emotional or behavioral problems. Thus, in the educational setting, it would not be uncommon for a child with a language disorder to receive intervention by not only a speech language pathologist but also an occupational therapist, an educational resource specialist, or all three.

Causation

Any behavior as multifaceted and complex as language development most certainly must be affected by a variety of biological and environmental factors. Thus, it follows that language disorders can rarely be fully accounted for by one direct and isolated causal

condition. Researchers are just at the frontier of understanding the neurobiology of developmental language disorders, but studies of family history patterns suggest familial inheritance as a factor in at least SLI, particularly expressive-only forms of the disorder. In the past 15 years, the genetics of language disorders, in particular for SLI, has been of great interest, with some researchers proclaiming that a specific gene for grammar (syntax) has been located. However, there is no conclusive evidence that genes can influence the components of language differentially or indeed influence language differently from other cognitive processes. Even though studies with twins demonstrate the importance of genetic influences upon spoken language disorders, researchers are quick to note that just as a shared environment makes the largest contribution to individual differences in typical language development, it has substantial influence in language disorders as well. More research is needed to identify those important contributing environmental variables. Certain sensory and cognitive deficits have long been associated with language disorders in childhood, but association does not mean causation. Hearing loss is a case in point.

It is commonly assumed that a hearing loss causes a spoken language disorder. Yet it has long been known that two children with exactly the same pattern of loss and residual hearing may have quite different spoken language abilities and disabilities. It is not possible to predict language ability based upon an audiogram. In what sense then does the hearing loss cause the language disorder? Similarly, even though language and cognition are intimately interwoven, in cases of cognitive impairment, language abilities may or may not be commensurate with the child's mental age. Indeed, language abilities in advance of cognition characterize children with William's syndrome. So again, one must ask in what sense does cognitive impairment cause language disorder? Although a great deal more research is needed before a satisfactory answer to the question of "What causes childhood language disorders?" is found, it is most likely to reside in the complex interactions of biology and multiple environmental factors.

Language Disorders and Academic Performance

Language is the medium in which classroom instruction takes place. Teacher-directed lessons, small student work groups, worksheets, and textbooks are all language dependent. Moreover, the nature of the

language of the classroom is different from that which the preschool child experiences at home. For example, the allocation of speaking turns and topics are teacher controlled as compared with that within the home where conversation is most often child initiated and directed. The language itself is not as closely tied to the immediate context in the classroom, making it necessary to depend more heavily on the meaning inherent in words and sentences themselves. While in the home, the preschool child usually talks about the here and now, but once he or she enters school, much more of the talk is distanced in time and place. Finally, language itself not only becomes the medium by which curriculum is accessed through reading and writing but also becomes a subject of study. While the typically developing child navigates these changes in how language is used when entering school, they present significant challenges for the child with a language disorder. Difficulty following multiple instructions, following classroom "rules" like raising a hand before speaking, or staying on topic can be misinterpreted as behavior problems if educators are not aware of the impact of a language disorder on the functional use of language in the classroom.

Language Disorders and Reading

The contributions of oral language abilities to developing literacy skills have been increasingly recognized in recent years. Indeed one of the most consistent findings in the reading literature is that a child's level of phonological awareness is the best predictor of reading success in the early grades. As described earlier, phonological awareness involves the recognition and manipulation of the smallest units of language. With renewed interest in children's reading comprehension, it also has been recognized that important foundational skills relevant to reading comprehension emerge in their comprehension of oral narratives such as stories well before a child enters school. With the well-established links between oral language abilities and reading, spelling and written composition, it comes as no surprise that longitudinal studies of children with language disorders have revealed long-term difficulty in the language arts areas and even in mathematics. Hugh Catts and colleagues have found that although not all children identified with a language disorder at kindergarten will have reading difficulties, there is a significantly high risk for most of them by the time they reach second grade. Two areas of language

impairment contribute somewhat independently to their reading difficulties. Impaired phonological awareness abilities contribute strongly to difficulties in learning to decode written language, whereas impairment in the semantic and syntactic components of oral language contribute more to difficulties in reading comprehension. Indeed, second-grade children who demonstrate poor reading comprehension but intact phonological awareness have been shown to have an oral language disorder that was not identified in their preschool years. Better reading outcomes can be expected for children whose oral language improved between kindergarten and second grade, but the fact remains that the more severe the language disorder is, the poorer the reading outcome will be. Thus, although phonological awareness instruction has been advocated for children with language disorders, it is with the caveat that it be part of comprehensive oral language remediation. Persistence of academic difficulties has been revealed in longitudinal follow-up studies. Adolescents with histories of a language disorder in kindergarten continue to demonstrate spelling, word recognition, and reading comprehension deficits. When interviewed about their level of literacy, they report that while they read regularly, they do not always understand what they have read and that their written language skills do not meet the expectations of classroom curriculum. Even those whose language impairment appeared to have resolved by kindergarten continue to demonstrate a high rate of literacy problems.

Finally, whereas poor reading outcomes are easily understood given the nature of language disorders, the reported difficulties that children with language disorders have with mathematics are not necessarily as intuitive. Children with language disorder are at risk not only for difficulties with the more obvious areas of "word problems" and when asked to verbally explain their solutions to math problems but also for the rote memory aspects of math needed for number recall and calculation. The relationships between language disorders and success in the academic setting underscore the serious long-term impact of a language disorder, its consequences to both the individual and society.

Language Disorders and Socialization

An account of language disorders in children would be incomplete without a consideration of its impact on social competence. The school setting is highly

influential in a child's social development and reciprocally depends upon it. Kindergarten teachers identify social maturity as more important to school readiness than skills like counting and letter recognition. School becomes a primary environment for peer interaction and the development of friendships. Thus, once again, language, as the medium for interpersonal interactions, plays a critical role in the development of social competence, and children with language disorders are disadvantaged.

The social communication difficulties of children with language disorders, while variable, are well documented. These children may demonstrate difficulty initiating interactions with other children and may not be responsive to verbal overtures from peers; they may not be able to gain access to a playgroup or to be integrated into classroom work groups. The general social behavior pattern appears to be one of reticence and withdrawal, which make friendship formation challenging and peer acceptance problematic. As early as the preschool years, other children recognize children with diminished language abilities, and their social interactions are negatively affected. Although not well studied, there are reports that children with language disorders may experience peer victimization and bullying. The precise relationship of language disorders to social competence is a matter of some debate, but the elevated risk for negative social outcomes is not. The limited longitudinal studies that have examined psychosocial and quality of life issues in 20- and 30-year-old adults who have a history of language disorder suggest evolving consequences. The limited data available to date suggest that at least a cohort of mostly males in their 20s, who not only have a history of language disorders but continue to demonstrate diminished language abilities, are satisfied with their lives. It was suggested, however, that when these young men experienced the full weight of adult responsibility, satisfaction ratings might change. Indeed, longitudinal research out of Great Britain revealed that adults in their 30s with a history of severe developmental language disorders indeed had poorer social adaptation and psychosocial adjustment. These adults experienced diminished personal relationships, difficulty maintaining employment, and even difficulty with bullying from coworkers. Although any individual's personal outcome will surely vary, the data are clear on the long-range prognosis for the social competence of individuals with developmental language disorders.

Childhood language disorders are a chronic condition with significant impact upon social, academic, and vocational success. Yet there is evidence, and more is accumulating, that intervention early and tailored to the changing facets of the disorder throughout the school years can improve outcomes for these individuals.

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See also Communication Disorders; Disabilities; Dyslexia; Learning Disabilities

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