

Language and Students with Intellectual Disabilities

This chapter examines the language and communication problems associated with intellectual disabilities. Ideas about intellectual disabilities are changing, and teachers, as well as other education professionals, should be aware of these changes. Children with intellectual disabilities are a diverse group, ranging from those with relatively minor developmental delays to those with severe impairments. An examination of the range of language and communication problems experienced by students with intellectual disabilities and the factors that contribute to these impairments leads to some approaches to helping students improve their language and communication skills.

Learning Outcomes

By the end of this chapter, you should be able to:

1. Explain the definition and causes of intellectual disabilities.
2. Describe the specific language and communication characteristics of children with intellectual disabilities, factors related to language development, and the impact of language on the literacy skills of individuals with intellectual disabilities.
3. Discuss methods for enhancing the language and communication skills of individuals with intellectual disabilities.

Karen: A Case Study

Karen, a 10-year-old girl with a measured IQ of 65, presently attends a regular third-grade class in a public school. An aide in the classroom assists Karen and two other children with mild disabilities. Karen has difficulty understanding directions, reading, and completing work independently. She reads at a late first-grade level, and her math achievement is at the second-grade level. Her teacher reports that Karen has made progress while in this classroom. She noted that Karen is reluctant to contribute during cooperative learning groups but will participate with prompting.

Karen's mother has reported that Karen had no apparent physical problems during her early development, although her development was a little slower than that of other children. Karen was late in crawling and could neither stand nor walk at 18 months. When Karen was about 2 years old, her parents became concerned about her lack of speech; however, the family physician told them not to worry—that Karen would catch up. Karen had persistent

otitis media (middle-ear infections) as a young child and continues to experience occasional earaches.

Prior to this year, Karen was in a self-contained, special education classroom. She appeared to make considerable progress in that class. She began to read and opened up to other children in the class. Before being placed in the special education class, Karen had spent 2 years in a regular first-grade program. Her teachers there described Karen as quiet and a hard worker, but also as slow and immature. She had particular difficulty with beginning reading skills and with working independently. She appeared to have few friends.

Karen's parents asked that she be returned to the regular education classroom after her year in special education. Although the district was reluctant to return her to regular education (since she appeared to be progressing in the special education classroom), they agreed to do so. At this point, Karen appears to be making slow but steady progress. It is likely that she will remain in regular education in the future.

Danny: A Case Study

Danny is a 14-year-old boy with Down syndrome (trisomy 21). He presently attends a special education class for children with moderate intellectual disabilities. Danny has a history of significant cognitive and language delays. He did not speak until he was approximately 3 years old. Even then, his speech was difficult to understand. Significant problems with articulation persist.

Danny has a measured IQ in the 40 to 45 range. However, his language age of 4 years (as measured by the Peabody Picture Vocabulary Test) is below his mental age of 5.6. A language sample analysis completed by the speech-language pathologist indicated that Danny had an mean length of utterance (MLU) of approximately 3.5. He used

mostly simple, declarative sentences, and he appeared to have a limited vocabulary, although his poor articulation made this difficult to determine.

Danny is a very talkative, outgoing young man. He loves to hug his teachers and to dance. His school program is focused on functional skills and community-based training. The class makes frequent trips to local malls and restaurants, where students get the opportunity to practice their math and travel skills. Danny's speech and language instruction is focused on improving his articulation and on helping him make appropriate requests. Danny's parents hope that he will be able to live in a group home or an apartment setting and perhaps work in a service-type job.

Definitions and Causes of Intellectual Disabilities

The stories of Karen and Danny illustrate the diversity of the population of children known to have intellectual disabilities. Despite the widespread popular belief that individuals with intellectual disabilities are more alike than different, they actually exhibit a diverse pattern of abilities and deficits. Today, most live at home, but some reside in state or private institutions. An increasing number are educated in regular education classrooms, but many more continue to receive their education in separate classrooms or in special schools. Some work in the community after school, and a small but increasing number go on to higher education. Although all children with intellectual disabilities have deficits in cognition, each child has an individual pattern of strengths and weaknesses. In addition to cognitive deficits, most children with intellectual disabilities have problems with language and communication (Long, 2005).

Our understanding of intellectual disabilities and our expectations for persons with intellectual disabilities are undergoing rapid change. Examples of this change in attitudes and beliefs abound. In the last two decades, there has been a movement away from institutions as the primary sites for treatment and residence for persons with intellectual disabilities toward smaller, community-based, and even family-centered, residences. At the same time, there has been growing pressure on schools to educate children with intellectual disabilities in regular education classrooms. The 2004 Individuals with Disabilities Education Improvement Act and the No Child Left Behind (now, Every Student Succeeds) Act raised the standards and expectations for all children with disabilities, including those with intellectual disabilities. Now more than ever, students with intellectual disabilities are studying the same curriculum as other students, with modifications and supports that enhances their chances for success.

Changes in societal expectations for individuals with intellectual disabilities, especially inclusion in regular education classrooms, have significant implications for language skills. Clearly, there are higher expectations for students with intellectual disabilities to have language and literacy skills that will enable them to fully participate in the classroom. Therefore, we will look at what is known about the language of persons with intellectual disabilities and what can be done to enhance their language skills.

As we examine the research on the speech and language difficulties of children with intellectual disabilities, it is important to keep in mind the diverse nature of this population. In fact, as scientists learn more about the causes of intellectual disabilities, research has become more focused on specific disorders (such as **fragile X syndrome**

and **Williams syndrome**), rather than looking at the population of persons with intellectual disabilities as a whole. This may help in understanding some of the variability that has characterized the research on persons with intellectual disabilities. It is important also to consider against whom children with intellectual disabilities are being compared. Some studies compare children with intellectual disabilities to typically developing children of the same chronological age; other studies match children with intellectual disabilities to children having the same mental age but who are chronologically younger; and still other studies use some measure of language age as the means of comparison. Each of these methods has drawbacks, and each can give quite different results.

On October 5, 2010, President Barack Obama signed into law an act entitled, “Rosa’s Law.” Modeled after a similar law that was enacted in Maryland, Rosa’s Law honors Rosa Marcellino, a girl with Down syndrome. The law is more than symbolic. It removes the terms “mental retardation” and “mentally retarded” from federal health, education, and labor policy and replaces them with people-first language such as “individual with an intellectual disability” and “intellectual disability.” The term “mental retardation” has many negative connotations and is often associated with unpleasant and inaccurate stereotypes. As a result, there is a growing consensus among experts and advocates to eliminate general use of the term *mental retardation* and substitute *intellectual disabilities* in its place.

According to the American Association on Intellectual and Developmental Disabilities (AAIDD), intellectual disability can be defined as “a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills. This disability originates before the age of 18” (AAIDD, 2010). Intellectual function can be measured using a standardized test of intelligence. Individuals who score below an IQ of 75 can be considered intellectually disabled. In addition, they must score below the norm on an assessment of adaptive behavior that includes measures of:

- Conceptual skills—including language and literacy; math concepts such as money and time; and self-direction.
- Social skills—including interpersonal skills, social problem solving, and the ability to follow rules and obey laws.
- Practical skills—including activities of daily living such as personal care, occupational skills, the use of transportation, and the use of the telephone.

Until the signing of Rosa’s Law, the Individuals with Disabilities Education Act (IDEA) used the term “mental retardation.” However, now IDEA also uses the term “intellectual disability” and defines it as follows:

Significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child’s educational performance. [34 CFR §300.8(c)(6)]



This video explains the definition of intellectual disability in more detail and provides information on how to identify individuals with intellectual disabilities. According to the video, what factors are included in adaptive behavior?

https://www.youtube.com/watch?v=V_mTP9WLdcl

One of the most significant developments in our understanding of intellectual disabilities has been increased research on and understanding of the various conditions that cause intellectual disabilities. There are, in fact, a number of conditions that cause intellectual disabilities, including:

1. *Genetic conditions.* Disorders such as phenylketonuria (a genetic disorder that causes a buildup of an enzyme called phenylalanine, causing intellectual disability, **Down**

Table 8.1**Genetic Syndromes Related to Intellectual Disabilities**

	Cause	Incidence	Major Characteristics
Down Syndrome (Trisomy 21)	Most children with Down syndrome have an extra 21 copy of chromosome. Instead of the normal number of 46 chromosomes in each cell, the individual with Down syndrome has 47 chromosomes.	1 in 800 to 1 in 1,100 live births	Usually smaller. Slower physical and mental development. Physical features include flattening of back of head, slanting of eyelids, slightly smaller ears, small mouth with narrow palate. Majority function in mild to moderate range of intellectual disability but wide variation in mental abilities.
Fragile X Syndrome	Mutation in the <i>FMR-1</i> gene on the X chromosome		Males generally more often affected than females. Physical features in males include large ears, loose joints and muscles, elongated face, and enlarged testicles. Mild to severe intellectual disability. Hyperarousal. Significant problems with social skills and attention.
Williams Syndrome	Random genetic mutation (deletion of a small piece of chromosome 7) most often causes the disorder	1 in 20,000 live births	Mild to moderate intellectual disability, a distinctive facial appearance, and a unique personality that combines overfriendliness and high levels of empathy with anxiety.

Sources: www.thearc.org (The ARC); www.ninds.nih.gov/disorders/williams/williams.htm (National Institute of Neurological Disorders and Stroke).

syndrome, or trisomy 21, a chromosomal anomaly in which there is an extra chromosome present on the 21st chromosome pair; see the National Down Syndrome Society website for resources about Down syndrome), fragile X syndrome (caused by a mutation in one of the genes on the X chromosome), and Williams syndrome (caused by the deletion of genetic material from a specific region of chromosome 7; see Table 8.1).



In this video, parents and doctors describe the symptoms of fragile X syndrome.

What do they describe as the major physical characteristics?

<https://www.youtube.com/watch?v=TEce4nhWFaw>



Williams syndrome is described as a unique disorder in this video. What are some of the strengths and challenges of individuals with Williams syndrome?

<https://www.youtube.com/watch?v=M6n4z0XjPh4>

2. *Problems during pregnancy.* The use of alcohol (fetal alcohol syndrome) and maternal drug use during pregnancy.
3. *Problems at birth.* Low birth weight and difficulties during labor and delivery that cut off oxygen to the brain.
4. *Problems after birth.* Caused by childhood diseases, such as measles and chickenpox, that may lead to serious complications such as meningitis and encephalitis or by injuries or lead or mercury poisoning.

5. *Poverty and malnutrition.* Higher risk for malnutrition, poor medical care, and exposure to environmental hazards that may cause intellectual disabilities.

The resulting syndrome of characteristics (called **behavioral phenotypes**) caused by one or more of these conditions can differ in many ways. As Table 8.1 shows, individuals with intellectual disabilities can differ in physical appearance, level of intellectual impairment, social skills, behavior, and so on. As we learn more about the genetic syndromes that cause intellectual disabilities, we are discovering patterns of characteristics that are related to the underlying genetic disorder. In other words, we might think of the term “intellectual disabilities” as a generic term (much like “learning disabilities”) that describes a group of disorders each of which has a distinct set of characteristics.

Until recently, most of the research in the field of “mental retardation” did not differentiate between subgroups of persons with this disability. It is only in the last decade that researchers have begun to examine the patterns of disabilities associated with specific syndromes. As we review the research on the language and cognitive functioning of individuals with intellectual disabilities, you will note that some of the research studies identify specific subpopulations (such as Down syndrome or fragile X), whereas others do not differentiate.



Check Your Understanding 8.1

[Click here to gauge your understanding of the concepts in this section.](#)

Language and Communication Characteristics

Although there is general agreement that language and communication disorders are an important characteristic of intellectual disabilities, there is less agreement about the causes of language deficits in this population and about the specific language difficulties that can be identified as characteristic of persons with intellectual disabilities.

One of the ongoing issues has been the question of whether the language and communication of individuals with intellectual disabilities are delayed or different. Is their language similar to that of typically developing individuals of a younger age, or does it develop differently? Another issue is whether the language deficits of this population are a direct result of the cognitive delays that are characteristic of intellectual disabilities or whether they are a separate problem. The prevailing view has been that language disorders in this population were the direct result of the cognitive deficiencies characteristic of persons with intellectual disabilities. Those individuals with more significant cognitive deficits were thought to have more significant language and communication difficulties. But there have always been puzzling reports of individuals with more severe cognitive deficits performing better in some domains of language than others with less severe disabilities. An emerging point of view is that the language and communication difficulties of individuals with intellectual disabilities may be more closely related to the specific genetic (or other) cause of their disability, rather than the severity of their cognitive deficits (Abbeduto, Evans, & Dolan, 2001; Rondal, 2001). In other words, language and communication difficulties are one of several problems associated with a specific disorder. Individuals with this disorder may have cognitive deficits, socialization difficulties, and specific language differences that are caused by the disorder itself.

Early Language Development

Most research on the early language development of children with intellectual disabilities has been conducted on children with Down syndrome. Young children with Down syndrome have been reported to use the same sort of nonverbal communication as other infants (e.g., smiling, laughing, reaching) but use vocalizations less often with these gestures (Chapman, 1997). In fact, the use of gestures may be a strength in

babies with Down syndrome (Roberts, Price, & Malkin, 2007). When babbling emerges, it follows a pattern similar to that of typically developing young children, with early babbling that leads to more adult-like utterances over time (Stoel-Gammon, 1997). Some researchers have reported delays of up to 2 months in the onset of babble; others have reported no delays. Most children with Down syndrome continue to use babble longer than their typically developing peers, often continuing to babble into their second year of life. They tend to be less responsive to parental input and engage in less turn-taking and requesting than typically developing babies (Chapman & Hesketh, 2000; Rondal, 2001).

The acquisition of first words is significantly delayed in most children with Down syndrome. Children with this condition have generally been found to start using first words at a later age and acquire words more slowly than typically developing children of the same age (Stoel-Gammon, 1997). However, there is a great deal of variability among these children. For example, in a study of 336 Swedish children with Down syndrome, the investigators found that 10 percent of the children began to use recognizable words by age 1 and 80 percent were using words by age 2. However, between 10 and 20 percent of the children had fewer than 10 words by age 3, and some children had not started to talk at all by age 5 (Berglund, Eriksson, & Johansson, 2001).

In general, it appears that young children with Down syndrome are significantly delayed in early language development. These delays continue as the child develops, so that the gap between them and typically developing peers widens. For example, many children with Down syndrome do not begin to speak until age 2 or 3 or use multiword utterances until at least age 4 (Rondal, 2001).

Research on the early language development of children with Williams syndrome has found that language acquisition is usually delayed (Mervis & Becerra, 2007). Compared to children with Down syndrome, children with Williams syndrome have larger expressive vocabularies, although their receptive vocabularies do not appear to be significantly greater (Mervis & Klein-Tasman, 2000). However, children with Williams syndrome do experience delays in vocabulary acquisition compared to typically developing children. One reason for this finding may be their curious pattern of development in referential communication. Most babies point before they use words to describe objects. Pointing is a way to get the attention of adults and begin to engage in communication. But children with Williams syndrome have been found to use words to refer to objects before they point (Mervis & Klein-Tasman, 2000). This unusual pattern may be related to the problems in visuospatial processing (visual perception and discrimination) and to the preference of individuals with Williams syndrome for people rather than for objects.

Limited research on children with fragile X syndrome indicates that they also experience significant delays in early language development (Abbeduto, Brady, & Kover, 2007). Kover, McCary, Ingram, Hatton, and Roberts (2015) examined the early language skills of a sample of 13 children with fragile X syndrome at four points in development: 9, 12, 18, and 24 months of age. They found significant delays in language development by 12 months of age. However, the children did show evidence of growth in language skills over time, indicating that their sample of children with fragile X syndrome were developing language in a delayed manner and that the gap between them and typically developing children increases over time.

In general, delays in early language development, including the emergence of first words, appear to be characteristic of all children with intellectual disabilities. However, there are specific differences in the types of delays that are related to genetic phenotypes.

Speech Production and Phonology

Difficulties with speech production are more common among children with intellectual disabilities than among typically developing children (Griffer, 2012), but there is a good deal of variation both within and between different phenotypes (e.g., Down syndrome, fragile X syndrome, Williams syndrome). Estimates of the incidence of speech production deficits have been reported to be as low as 5 percent and as high as 94 percent (Shriberg & Widder, 1990).

Most of the research on speech sound disorders among individuals with intellectual disabilities has been conducted with persons with Down syndrome. Difficulties in speech intelligibility are characteristic of individuals with Down syndrome. They tend to be difficult to understand, and this problem continues through childhood and into the adult years (Barnes et al., 2009; Martin, Klusek, Estigarribia, & Roberts, 2009). In a comprehensive review of the research on speech sound disorders in this population, Kent and Vorperian (2013) reported that the research indicates that speech sound disorders, including difficulties in the domains of voice, speech sound production, fluency and prosody, and intelligibility, are frequently found. These difficulties may be caused by a variety of factors, including anatomical differences in the vocal tract, tongue, and facial musculature; impaired hearing; impaired motor functioning; or central processing disorders that affect language and cognitive functioning (Martin et al., 2009).

Delays and differences in phonological development are also frequently found in children with intellectual disabilities. For example, individuals with Down syndrome have been reported to have significant delays in the development of phonology that are characteristic of younger children (Roberts, Price, & Malkin, 2007). The most common phonological errors are reduction of consonant clusters (saying *bake* for *break*) and final consonant deletion (saying *cah* for *cat*) (Klink, Gerstman, Raphael, Schlanger, & Newsome, 1986; Sommers, Patterson, & Wildgen, 1988). As they grow older, the lag in phonological development increases, and the error patterns persist, even when compared to typically developing younger children matched for mental age (Roberts et al., 2005).

Compared to individuals with Down syndrome, those with fragile X syndrome have fewer phonological difficulties. Yet, persons with fragile X syndrome are usually delayed in the acquisition of phonology and can be difficult to understand (Roberts et al., 2005). These delays may become greater after age 10 and can affect their reading performance (Adolf, Klusek, Shinkareva, Robinson, & Roberts, 2015). In contrast, the limited research on the phonological skills of individuals with Williams syndrome suggests that their phonological abilities are similar to those of typically developing children. However, unlike their typically developing peers, their phonological skills seem to develop independently from other language skills (Stojanovik, Setter, & van Ewijk, 2007).

The research on the phonological development and speech production abilities of children with intellectual disabilities, especially those with Down syndrome, suggests that education professionals should be prepared to help these children enhance their phonological and speech production skills. Many children with intellectual disabilities have articulation difficulties that interfere with their ability to be successful in school and in social interactions. Intervention that includes both individual therapy and classroom-based applications may be useful in helping children with intellectual disabilities become more successful learners. In addition, for some, augmentative or alternative communication techniques may be needed.

Morphology and Syntax

As was true with phonology, research on the morphological and syntactic development in children with intellectual disabilities has generally focused on individuals with Down syndrome. In general, researchers have found that although there are significant delays in the development of morphology and syntax, the pattern of development is similar to that found in nondisabled children.

Although children with Down syndrome have generally been reported to develop grammatical morphemes in the same order as typically developing children, they lag significantly behind same-age peers (Roberts, Price, & Malkin, 2007) even when matched for mental age (Finestack, Sterling, & Abbeduto, 2013). This suggests that morphological development may be especially difficult for children with Down syndrome. Children with fragile X syndrome have also been found to lag behind in morphological development, but the gap between these children and their typically developing peers narrows as they get older (Finestack, Richmond, & Abbeduto, 2009).

Delays and some differences in the development of syntactic skills are commonly found in children with Down syndrome and fragile X syndrome. The syntactic delays of children with Down syndrome begin as soon as they make the transition from single to multiword utterances. As they age, their mean length of utterances (MLU) continues to lag behind that of typically developing peers, even when compared to younger children with the same mental age (Roberts, Price, & Malkin, 2007). They use shorter, less complex sentences. Researchers who have studied the receptive syntactic skills of children with Down syndrome have also reported significant delays in development (Price, Roberts, Vandergrift, & Martin, 2007). For example, like typically developing children, the MLU of individuals with Down syndrome generally increases with chronological age up to adolescence but at a much slower rate than that found in typically developing children (Rondal, 2001). While some researchers have claimed that individuals with intellectual disabilities reach a ceiling in their morphosyntactic development, others have found no evidence for such a ceiling (Chapman, Hesketh, & Kistler, 2002).

Price and colleagues (2007) found that boys with fragile X syndrome had delays in syntactic development compared to younger, typically developing boys, but that these delays were not as great as those of boys with Down syndrome. However, there is a lot of variability in this population, especially in regard to morphological and syntactic development. For example, Abbeduto and colleagues (2007) report some findings that the language of individuals with fragile X syndrome may be more complex than predicted by MLU. Males with fragile X syndrome have been reported to have receptive syntactic skills at about the level that would be expected for their mental age but also to have expressive syntax significantly below expectations (Abbeduto & Hagerman, 1997). Finestack, Sterling, and Abbeduto (2013) found a similar result and suggested that difficulties with expressive syntax may be due to social anxiety. Oakes, Kover, and Abbeduto (2013) examined the receptive syntactic skills of adolescents with fragile X syndrome compared to typically developing peers matched for nonverbal mental age and adolescents with Down syndrome. They found that the adolescents with fragile X syndrome achieved lower overall scores on receptive syntax than the typically developing group but higher scores than the subjects with Down syndrome. As is often true with fragile X syndrome, females outperformed males. So, although there is evidence for delays in syntactic and morphological development in this population, it may not be surprising to find that some children with fragile X syndrome may show unusual patterns of development that could be due, at least in part, to their difficulty expressing themselves in conversational situations.

In contrast to the patterns of delay found in most children with intellectual disabilities, the syntactic skills of individuals with Williams syndrome have often been reported to be at or even above what would be expected for their mental age. They can use a variety of grammatical forms, including complex constructions such as relative clauses and the passive voice (Bellugi, Lai, & Wang, 1997). However, according to Mervis (2009), recent research with children with Williams syndrome has found that their morphological and syntactic development is similar to or slightly behind that of typically developing peers.

The research on syntactic skills of children with intellectual disabilities suggests that there is more variation in the population than might be expected. Although most, if not all, can be expected to develop syntactic skills much more slowly than do typically developing children of the same age, for some (such as children with Williams syndrome), syntax is a relative strength. The research also suggests that most children with intellectual disabilities could benefit from continued instruction in syntactic skills throughout their school years.



As you watch this video of a 7-year-old girl with Down syndrome talking with her mother, note both her use of syntax and her articulation of words. In what ways is Ciarra's language development similar to and different from that of a typically developing child?

<https://www.youtube.com/watch?v=RwIXyoHMfYA>

Semantics

Earlier in this chapter, we noted that young children with intellectual disabilities, especially those with Down syndrome, are delayed in their development of first words. Parent reports indicate that only 12 percent of 12- to 23-month-olds, 80 percent of 24- to 35-month-olds, and 90 percent of 36- to 47-month-olds produced one word (Berglund et al., 2001). Compare that to typically developing children who generally produce their first word between 10 and 15 months of age. By age 4, only 50 percent of the children studied had at least 50 words in their spoken vocabulary. At age 5, the range of vocabulary acquisition was from no words to over 600 words.

In contrast to the above findings, some studies have found that the development of vocabulary is an area of strength for children with intellectual disabilities. For example, in a study of children and adolescents with Down syndrome, Chapman, Schwartz, and Kay-Raining Bird (1991) found that individuals with intellectual disabilities performed significantly better on the vocabulary-comprehension task than on tests of syntactic skills—in fact, they outscored a nonverbal mental age-matched control group on their vocabulary comprehension. Other studies have shown that examination of language produced in natural settings indicates that children with Down syndrome have a more diverse vocabulary than do nondisabled children matched for mental age (Miller, 1988). On the other hand, individuals with Down syndrome have been found to use both fewer words and a less diverse vocabulary than mental age-matched peers on narrative tasks (Chapman, 1997). To understand these conflicting results, one should consider two factors: the task and the age differences. First, the results of research suggest that individuals with intellectual disabilities may be able to perform better on structured tasks than when asked to produce open-ended narratives. Second, you should remember that students with intellectual disabilities matched for mental age will be older. As a result, they have had more exposure to diverse vocabulary. Despite this experience, their vocabulary skills are significantly below typically developing children of the same age, which can have an impact on their reading skills (Næss, Melby-Lervåg, Hulme, & Lyster, 2012).

Most studies of children with fragile X syndrome have found vocabulary development to be an area of relative strength. For example, Abbeduto and colleagues (2003) found receptive vocabulary to be similar to mental age in a sample of children with fragile X with a mean age of 16 years. On the other hand, in a study of boys age 3 to 15 years, Price, Roberts, Vandergrift, and Martin (2007) found that boys with fragile X syndrome had receptive vocabularies significantly below those of younger children with typical development, even when controlling for nonverbal cognition. The expressive vocabulary skills of individuals with fragile X syndrome have generally been found to be significantly reduced compared with developmentally matched peers (Finestack et al., 2009). Some of the variations in vocabulary in this population may be due to the different subtypes of fragile X syndrome. For example, there is a subtype that has autism as well as fragile X syndrome. This group generally is more significantly delayed in language development. In their comparison of children Down syndrome and children with fragile X syndrome, Finestack and colleagues (2013) found both expressive and receptive vocabulary of both groups to be similar to that of typically developing children matched for nonverbal mental age.

The semantic abilities of children with Williams syndrome are significantly different from others with intellectual disabilities. Children with Williams syndrome typically have an usually large and sophisticated vocabulary and may use words that not even typically developing children use. For example, one study reported that, when asked to name all the animals they could, adolescents with Williams syndrome gave responses including yak, ibex, and condor, whereas individuals with Down syndrome gave responses such as dog and cat (Bellugi et al., 1997). Other studies have found the semantic organization skills (Lee & Binder, 2014) and receptive vocabulary (Brock, Jarrold, Farran, Laws, & Riby, 2007) of children with Williams syndrome to be similar to those of typically developing children. However, children with Williams syndrome are likely to have more difficulty with spatial, temporal, and quantitative concepts (words such as “under” and “over” and “before” and

“after”) (Mervis & Becerra, 2007). This may be due to the often-reported difficulties of these children with visuospatial processing.

Clearly, there are significant differences in semantic abilities among persons with intellectual disabilities, but the primary pattern seems to be one in which production lags behind comprehension. Teachers and others who work with these children should help them use a more diverse vocabulary in their speaking and writing by using techniques such as word banks to enhance their semantic production.

Pragmatics

There has been good deal of research on the pragmatic abilities of individuals with intellectual disabilities. The research reveals a mixed pattern of strengths and weaknesses as well as some interesting differences between the different phenotypes of intellectual disabilities (e.g., Down syndrome, fragile X syndrome, Williams syndrome).

Conversational Competence. To communicate effectively, it is necessary to develop pragmatic language skills such as turn-taking, topic management, and conversational repair. The conversational competence of persons with intellectual disabilities has been studied in each of these areas.

In typical conversations, participants take turns talking, occasionally speaking at the same time. Persons with intellectual disabilities have been found to have few problems with taking turns in conversations. Studies of young children with Down syndrome (Tannock, 1988), school-age children (Roberts, Martin, Moskowitz, Harris, Foreman, & Nelson, 2007) as well as adults (Abbeduto & Rosenberg, 1980), show that they take turns in conversations and make few errors, much as typically developing people do.

Although individuals with intellectual disabilities appear capable of taking turns in a conversation, what is even more important is what they do when it is their turn. Typically, people with intellectual disabilities do not make significant contributions to maintaining the conversation (Abbeduto & Hesketh, 1997). They might make comments such as *Okay* or *um-um* but do not *extend* the topic by adding new information. In their study involving school-age children with Down syndrome, Roberts and colleagues (2007) reported that, although the children initiated topics about as frequently as typically developing children matched for mental age, the quality of their conversational contributions differed. Specifically, although they responded to the speaker, their responses were limited and did little to encourage further interaction.

Research on the conversational skills of people with intellectual disabilities has also found that they have difficulty *repairing* conversations that break down. If you are talking with someone else and do not understand what is being said, you will usually do something to clarify the conversation. You might say, “What?” or “Excuse me?” as a signal to the speaker that you do not understand. People with intellectual disabilities are *capable* of using such conversational repairs but fail to use them when they are needed (Abbeduto, Davies, Solesby, & Furman, 1991; Robinson & Whittaker, 1986). Children with intellectual disabilities have also been found to be slow in responding to clarification requests made by others (Scherer & Owings, 1984). Moreover, researchers have found that the development of conversational repair skills appears to plateau during the school years and not improve with experience (Abbeduto, Short-Meyerson, Benson, & Dolish, 1997).

There is a small but growing body of research on the conversational skills of individuals with fragile X and Williams syndromes. Compared to children with Down syndrome, boys with fragile X syndrome use more “noncontingent” (off-topic) discourse and more perseveration (repeated words and phrases) in their conversation (Roberts et al., 2007). Adolescents with fragile X syndrome have also been found to produce more repetitive speech during conversation (e.g., *I—I—I left the house*) and more “tangential” language (utterances that are off topic) than other persons with intellectual disability or autism (Belser & Sudhalter, 2001; Sudhalter & Belser, 2001). Although individuals with fragile X syndrome may be better at using grammatical forms to express themselves, they are relatively poor communicators (Abbeduto, Brady, & Kover, 2007).

A significant percentage of individuals with fragile X syndrome also exhibit characteristics of autism. It has been estimated that between 60 and 75 percent of individuals with fragile X syndrome also meet the criteria for autism (Hall, Lightbody, & Reiss, 2008). Pragmatic language impairments are a defining feature of autism. Researchers who have compared the pragmatic language skills of children with fragile X syndrome who also exhibit symptoms of autism and those who do not have found similar impairments in pragmatics across both populations (Klusek, Martin, & Losh, 2014). Difficulties with pragmatic language were found to show up most clearly in conversational language samples, which suggests that individuals with fragile X syndrome as well as those with autism have difficulty communicating with others.

Individuals with Williams syndrome have frequently been described as being very sociable and friendly, to the point where they may, at times, put themselves in danger. For example, they may strike up conversations with complete strangers or express their “love” for someone they just met (Jones et al., 2000). After completing a series of studies examining several aspects of pragmatic language in children and adolescents with Williams syndrome, Jones and colleagues (2000) concluded that hypersociability (an unusually strong drive toward social interaction with others) is characteristic of individuals with Williams syndrome.

Despite their sociability, individuals with Williams syndrome have been found to have difficulty with aspects of pragmatic language, including turn-taking, topic maintenance, and a tendency to perseverate on topics that are of particular interest to them (Hoffman, Martens, Fox, Rabidoux, & Andridge, 2013; Rondal, 2001). In addition, individuals with Williams syndrome tend to provide too little information to their conversational partner and are more likely than typically developing children to misunderstand their conversational partner (Mervis & Becerra, 2007). For example, in a study of conversational skills of school-aged children (7–12 years old) with Williams syndrome, Stojanovik (2006) found that the Williams children used fewer “continuations” in their conversations (adding new information that tends to continue the conversation). Stojanovik found that, although the children with Williams syndrome had no obvious problems with topic maintenance, language structure, and turn-taking, their conversational behavior was typically characterized by very little exchange of information, speech that was heavily dependent on their conversational partner’s lead, and general difficulties with interpreting meaning.

In considering all of the research on the communicative abilities of persons with intellectual disabilities, Abbeduto (1991) concluded that “deficits in verbal communication are a defining feature of intellectual disabilities and should figure prominently in assessments of adaptive behavior” (p. 108). Although problems with verbal communication do seem to be quite common among people with intellectual disabilities, there is considerable variability within the population.

Obviously, the ability to engage in effective communication with others is a critical skill for classroom success. Teachers and other education professionals should be alert to the problems that students with intellectual disabilities may have in expressing themselves and understanding others. Placing students in heterogeneous groups can be a good way to encourage communicative interaction if the groups are well managed and the group activities carefully chosen.

Speech Acts. The concept of speech acts was described in Chapter 1. These acts occur whenever one has the intention to communicate. Requests, commands, and declarations are examples of speech acts. Children with intellectual disabilities have been described as being delayed in both their use and understanding of speech acts (Abbeduto & Hesketh, 1997). Although they have significant delays, their development of speech acts is similar to that of other children. That is, they can make requests, ask questions, and so on, like younger, typically developing children. In one study (Abbeduto, Furman, & Davies, 1988), children with and without intellectual disabilities were asked to interpret sentences requiring either a yes or no response or an action. For example, *Can you close the window?* could be either asking whether one is able to close the window or requesting that someone actually close the window. In their study, Abbeduto and colleagues found that in their ability to

understand what the speaker actually wanted, adolescents with intellectual disabilities were similar to younger, nondisabled children matched for mental age. Although comprehension of speech acts is delayed, this has been found to be a relative strength, at least in children with Down syndrome. In fact, adults with Down syndrome may be quite good at understanding the messages that others are trying to convey.

One specific difference in speech-act usage by individuals with Down syndrome is the use of politeness. Children and adolescents with Down syndrome have been found to use less polite forms compared to typically developing children of the same mental age (Nuccio & Abbeduto, 1993). In other words, rather than saying, "May I please have the doll?" in requesting a toy, they were more likely to say, "You better gimme my doll." The study authors believe that this difference in the use of polite forms of request is not due to an inability to produce the polite form. In fact, the individuals with Down syndrome who were part of the study demonstrated the ability to use polite requests in certain contexts. Instead, the researchers concluded that individuals with Down syndrome fail to recognize the *need* to use a polite form. This finding suggests that teachers may need to monitor the conversation of students with Down syndrome and model a different form of requesting if this is a problem.

Referential Communication. In **referential communication** tasks, children are evaluated on their ability to explain a task to another person. This procedure reveals their ability to take into account the information needed by someone else to complete the task. Individuals with intellectual disabilities have been reported to have problems with referential communication tasks. They have difficulty producing messages that make the task clear to others. They tend to pay less attention to the important features of the task or object that would help their listener complete the task. Although they are generally better at the listener role than the speaker role, they are still delayed relative to typically developing children of the same mental age.

One way to test referential communication is with a *barrier task*. For this procedure, children are seated across from each other with a barrier between them that prevents them from seeing each other. One child is the speaker; the other is the listener. Each has an array of blocks or other items. The speaker's blocks—the model—are arranged in a design. The speaker's task is to tell the listener how to arrange the blocks to match the model, using only verbal directions. Using just such a procedure to study the referential communication abilities of adolescents with intellectual disabilities, Longhurst (1974) found that when the individuals with intellectual disabilities were in the speaker's role, they were remarkably unsuccessful in directing the listeners to complete the task. However, when they were the listener, they were able to successfully perform the task when directions were given by nondisabled adults.

A second way to evaluate referential communication is by asking individuals to describe an activity (such as a game) to someone else. In one such study (Loveland, Tunali, McEvoy, & Kelly, 1989), adolescents and adults with Down syndrome were asked to explain a game to an experimenter. These individuals with intellectual disabilities performed quite well, giving the necessary information to the listener without a great deal of prompting. However, as Abbeduto (1991) points out, since we do not know how nondisabled persons would have handled this task, it is difficult to judge how good these results really are.

Most of the research on referential communication has been carried out with persons with Down syndrome. However, a recent study compared the referential communication of adolescents with intellectual disabilities caused by two different syndromes—Down syndrome and fragile X syndrome—to that of typically developing 5-year-old children matched for mental age (Abbeduto et al., 2006). The participants in the study were asked to play a game in which they had to describe a novel shape to a listener so that he or she could pick out the shape from among several choices. The researchers found that both the adolescents with Down syndrome and those with fragile X syndrome were less effective than the younger, typically developing children in helping their partner successfully complete the task. There were also some specific differences between the groups. Those with Down

syndrome tended to give fewer descriptions to their partners, leaving it up to the partners to request more information. The individuals with fragile X syndrome used less consistent referents—sometimes inventing new descriptions for the same item, leaving their partners confused. These results suggest that, although referential communication can be difficult for all individuals with intellectual disabilities, the pattern of difficulties may vary due to the specific syndrome related to the disability.

It appears from the research on referential communication that persons with intellectual disabilities have some difficulty getting their messages across to others. This can cause significant difficulties in social interaction. Listeners may become confused and be less interested in carrying on a conversation. Classroom activities that require the use of referential communication skills can help children become better speakers and listeners. Guessing games, “20 Questions,” and even “Show and Tell” provide opportunities for students to develop and use referential-communication skills.

Apply Your Knowledge 8.1: Communicative Interaction



Read this transcript of an 8-year-old student with Down syndrome as she talks with her teacher, and then respond to the questions.

Conclusion

Review of the research on the language and communication abilities of people with intellectual disabilities has revealed several things. First, in most cases, the language skills of this population can be described as delayed rather than different. That is, children with intellectual disabilities seem to develop through the same stages as nondisabled children, only much more slowly (see Table 8.2 for a summary). Second, there is a good deal of variation in the language and communication skills of persons with intellectual disabilities. These variations may be due to cognitive delays, physical characteristics, or the underlying cause of the individual's developmental disability. As research into the language and communication characteristics of specific syndromes continues, it is likely that we will better understand the variations in language performance among individuals with intellectual disabilities. In the section that follows, we will examine some of the factors that may contribute to the language and communication difficulties of individuals with intellectual disabilities.

Factors Related to Language and Communication Impairments

In most cases, it is not possible to say with certainty what causes the language and communication impairments of any individual (just as it is not possible to explain typical language development). It is true that in some individuals there are obvious physical characteristics (such as a cleft palate or protruding tongue) that can explain some of the communication difficulties of that person. But, in most cases, the best we can do is to talk about factors that may *contribute* to language and communication disorders. What are these contributing factors? We could have quite a long list, but we will limit our examination to three factors: cognitive functioning, specific language disorder, and input language.

Cognitive Functioning. Deficits in cognitive functioning are *the* defining feature of intellectual disabilities. Cognitive abilities—as measured by intelligence tests—are the first criteria in determining whether an individual is intellectually disabled. There may be a temptation to assume a person having low measured intelligence is functioning at low levels across the board, but this is rarely the case. Each individual has a unique set of cognitive strengths and weaknesses. In addition, as we have seen with language and

Table 8.2**Language and Communication of Individuals with Intellectual Disabilities**

Prelinguistic Development	Phonology and Morphology	Syntax	Semantics	Pragmatics
Nonverbal communication similar to other infants but uses vocalizations less often with gestures	Difficulties with speech production	Sentence length similar to mental age-matched controls	Problems understanding idiomatic expressions	Delays in understanding and use of speech acts
Use of gestures may be area of strength for babies with Down syndrome	Development similar to typical but delayed	Mean length of utterance of Down syndrome increases with chronological age, but more slowly	Delays in semantic development	Down syndrome: uses less polite forms
Babbling follows pattern similar to that of typically developing young children	Reduction of consonant clusters and final consonant deletion	Order of development of rules similar to typical	Vocabulary a relative strength for children with fragile X syndrome	Difficulty with speaker role
Children with Down syndrome start using first words at later age and acquire words more slowly	Children with fragile X experience delays in phonological development	Children with fragile X syndrome experience delays but not as great as those in Down syndrome	Williams syndrome: have relatively large vocabulary but specific deficits	Turn-taking intact
Young children with fragile X syndrome are delayed in early language development	Delays in morphophonological development	Syntax of those with Williams syndrome at or above expected for mental age		Less significant contributions to conversation
	May be some specific deficits in morphology			Difficulties with conversational repairs
				Fragile X: uses more tangential language and more repetition

Sources: Abbeduto et al. (1991); Abbeduto et al. (2003); Abbeduto et al. (2007); Abbeduto & Hesketh (1997); Bellugi et al. (1997); Chapman (1997); Chapman & Hesketh (2000); Goetz et al. (2008); Klink et al. (1986); Longhurst (1974); Mervis (2009); Mervis & Becerra (2007); Mervis & Klein-Tasman (2000); Nuccio & Abbeduto (1993); Roberts et al. (2005); Roberts et al. (2007); Rondal (2001); Shriberg & Widder (1990); Sommers et al. (1988); Stoel-Gammon (1997); Sudhalter & Belser (2001); Tannock (1988).

communication, there may be differences in cognitive function that can be attributed to specific syndromes that can result in intellectual disabilities. What is the relationship between cognition and language development for persons with intellectual disabilities?

Memory difficulties have long been associated with intellectual disabilities. However, as we learn more about memory, we learn that people with intellectual disabilities have both strengths and weaknesses in this domain. For example, there is evidence that long-term memory is a relative strength in individuals with Down syndrome, but most have significant difficulties with short-term memory, especially verbal short-term memory (Chapman & Hesketh, 2000; Laws & Gunn, 2004; Næss et al., 2012). Similarly, individuals with fragile X syndrome have been found to have difficulty with auditory short-term memory (Abbeduto, Brady, & Korver, 2007). On the other hand, individuals with Williams syndrome generally have relatively intact verbal short-term memory. However, they have significant difficulties with tasks that require them to match pictures or objects (visuospatial tasks) (Mervis & Klein-Tasman, 2000). Both long-term and short-term memory are associated with language development. Initial language learning requires short-term memory skills to identify and store information. Long-term memory is needed to retrieve previously stored linguistic information. So deficits in either of these skills could affect language development.

Attention is another cognitive function that is necessary for successful language learning. While the ability to attend to tasks is generally intact in individuals with Down syndrome, that is not the case for children with fragile X syndrome. In fact, difficulty in paying attention and sustaining attention has been found to be characteristic of children

with this disorder (Cornish, Sudhalter, & Turk, 2004). Children with fragile X syndrome, especially boys, tend to be restless, impulsive, and easily distracted. These characteristics can interfere with learning in many domains, including language.

If nothing else, the research on cognition and language in persons with intellectual disabilities shows that knowing a child's IQ is not enough. One must consider the pattern of individual strengths and weaknesses. Often that pattern is determined by the behavioral phenotype associated with syndromes that cause intellectual disabilities.

Specific Language Disorders. There is no doubt that most people with intellectual disabilities have impairments of cognitive functioning. They also have problems in several areas of language development. Might we conclude, then, that the cognitive impairments cause the language disabilities? Might it be just as true to assert that the language impairments cause delays in cognitive development?

These are not easy questions to answer because language and cognition are interrelated in very complex ways. To try to answer these questions, researchers have compared the language of children with intellectual disabilities to that of nondisabled children who are matched for nonverbal mental age. If their language performance is similar, this suggests that language development is dependent on cognitive development. If, on the other hand, the language development of the subjects with intellectual disabilities is less advanced than that of the nondisabled subjects, one could conclude persons with intellectual disabilities have a specific language disorder that cannot be explained by cognitive delays alone.

Research on the relationship between cognition and language in persons with intellectual disability has yielded inconsistent results. Our review of the research has revealed that delays in most aspects of language development are characteristic of children with intellectual disabilities. For the most part, their language development is like that of younger children matched for mental age and similar to children with specific language impairments (Eadie, Fey, Douglas, & Parsons, 2002). This suggests that children with Down syndrome may, in fact, have a specific disorder in language that goes beyond their cognitive differences. However, there are exceptions to this finding, for example, in pragmatics. In their review of the research on the language development of persons with Down syndrome, Roberts, Price and Malkin (2007) point out that the language disorders associated with this disorder occur early in development, occur in many domains of language, persist through life, and are generally greater than would be expected for mental age. They also point out, however, that this is not true of all individuals with Down syndrome or for all areas of language development.

Perhaps the answer is not to worry unduly about whether children with intellectual disabilities have an underlying language-processing disorder. Rather, teachers and clinicians should strive to identify the specific pattern of language and communication difficulties in each child and provide appropriate intervention and supports.

Parent-Child Interaction. In the search for causes of language and communication difficulties in children with intellectual disabilities, another aspect is input language. We know from research on typical language development that children learn language by participating in communicative interactions with parents and other caregivers. We also know that parents alter their language to make it more compatible with their child's ability to comprehend.

Despite the fact that infants and young children with intellectual disabilities are delayed in development, recent research has found that parents of children with intellectual disabilities provide an adequate language environment for their child. They talk to their children as often as do parents of typically developing children and use similar speech acts. They respond to the communicative attempts of their children just like parents of typically developing children of the same language age. In fact, there is evidence that they respond to a broader range of behaviors in their children, including body movements, facial expressions, and made-up signs (Stephenson & Dowrick, 2005). Mothers of

children with intellectual disabilities alter their linguistic input appropriately for the language-development level of their children (Rondal, 1978). Although they tend to use more directives in their communication with their children, they become less directive as their children become more linguistically advanced (Abbeduto & Hesketh, 1997).

It seems clear that parents of children with intellectual disabilities generally provide an appropriate language environment for their developing children. In most cases, differences in communicative interaction are an appropriate response by parents to their children's slower language development. On the other hand, these parents must be careful not to overcompensate for their children's language impairments. They must work hard at giving their daughters and sons the opportunity to initiate interaction and should be responsive to their children, even if they feel that the children may be acting inappropriately. Children with intellectual disabilities whose parents respond optimally to their child, for example, by putting nonverbal communication acts into words, being responsive to their child's requests, and imitating their child's vocalizations, either exactly or with slight modifications, have been found to have more advanced language and communication development (Yoder & Warren, 2004).

In the beginning of this section, we noted the difficulty in finding a specific cause for the language impairments experienced by most persons with intellectual disabilities. Indeed, our search for a cause has yielded some clues but no firm answers. Cognitive disabilities clearly play a role but do not account for all the language difficulties of people with intellectual disabilities. Parents and other caregivers may talk differently to children with intellectual disabilities, but it is likely that these differences are as much the *result* of language differences as the cause. Lack of motivation, adaptive behavior deficits, physical disabilities, and specific language impairments have been proposed as the cause of the language deficiencies of individuals with intellectual disabilities. Evidence increasingly supports the notion that genetic disorders such as Down syndrome, fragile X syndrome, and Williams syndrome may include specific language deficits as a characteristic of the syndrome. As research on these syndromes continues, we may be better able to understand the specific patterns of language strengths and deficits within subgroups of individuals with intellectual disabilities.

Literacy and Students with Intellectual Disabilities

Along with changing expectations for community living and inclusion in school, there have been changes in expectations for the academic achievement of individuals with intellectual disabilities, including those with moderate to severe disabilities. As Knight, Browder, Agnello, and Lee (2010) pointed out, under the Individuals with Disabilities Education Act (IDEA), students with disabilities must (a) *have access to* the general curriculum, (b) *be involved in* the general curriculum, and (c) *progress in* the general curriculum (IDEA, 2004). Recent research has provided evidence that when given the opportunity to learn academic content, students with moderate and severe developmental disabilities can do so (see Knight et al., 2010).

Teacher Perspective

One of my seventh graders has an IQ of 60. He received early intervention, but he did not learn to read until he was in fourth grade. He was taught to read by his speech teacher. He was developmentally ready at that time (not before). If he had been deemed hopeless as far as literacy was concerned, he probably would never have learned. His mother told me at the last teacher-parent conference

that he reads all of the time now. I have given my students a 25-book goal for the year, and he is trying to reach it. (The books have to be at least 90 pages.) Now that we are getting more into nonfiction, I am going to have them obtain more information from resources and will also teach them life skills that use their literacy skills.

One of the most critical academic skill are for any student is literacy development. Developing skills in reading and writing is both an end in itself and a means to learning across the curriculum. However, until recently, it was generally assumed that most students with intellectual disabilities were incapable of developing significant literacy skills. As Browder, Wakeman, Spooner, Ahlgrim-Delzell, and Algozzine (2006) noted, historically, literacy development for persons with intellectually disabilities has received little attention. Whereas students with mild levels of intellectual disabilities might be expected to develop reading skills as high as the second- or third-grade level, individuals with lower measured intelligence were not expected to develop reading skills at all. However, there is now a good deal of evidence that, given appropriate instruction, students with intellectual disabilities can learn to read and write (Katims, 2000; Kliever, 2008). The impetus to more fully include individuals with intellectual disabilities in the community, including in school, makes it even more important for educators to understand the literacy skills of individuals with intellectual disabilities and the most effective ways to enhance those skills.

Because the longstanding assumption has been that students with intellectual disabilities cannot learn to read and write, the prevailing approach to instruction has been "functional" in nature. Functional reading instruction typically involves teaching "survival" words through a sight-word approach. Students are taught to "read" specific words that are thought to be essential for survival in the world. For example, they might be taught to recognize the word *exit* on a sign or to read words on food labels. Research on the use of this approach has found that students with intellectual disabilities can learn to recognize a number of words using this method, but their ability to use this skill in real situations may be limited (Browder & Xin, 1998). In addition, for many students with intellectual disabilities, sight-word instruction is the only literacy training they receive in school. Some students learn (and relearn) the same words year after year, with little, if any, exposure to books or writing activities.

Currently, researchers are trying to discover more about the problems that underlie the reading and writing deficiencies of most students with intellectual disabilities. Undoubtedly, the language difficulties described in previous sections of this chapter are a factor. One of the specific skills that has been studied is phonological processing. Compared to students with learning disabilities, relatively little research has examined the phonological skills of individuals with intellectual disabilities. However, the limited research has confirmed that significant difficulties in phonological processing exist in this population and that reading instruction that incorporates phonological instruction can be effective (Allor, Mathes, Roberts, Cheatham, & Champlin, 2010; Channel, Lovell, & Conners, 2013; Conners, 1992; Joseph & Seery, 2004; Saunders, 2007).

One example of this research comes from a study by Conners, Rosenquist, Sligh, Atwell, and Kiser (2006). They taught 20 children with intellectual disabilities (mean IQ = 54), ages 7 to 12 years old, using a phonological training program of their own design. Students completed three units consisting of six to nine lessons per unit: oral practice in sound blending, letter-sound association, and sounding out. When compared to a matched group of students who did not receive this instruction, the phonological training group significantly outperformed their peers on measures of sounding out. However, there was significant variability in the results. About half of the children who received the instruction correctly sounded out 80 percent or more of the words on the posttest, whereas six students (30%) identified fewer than 20 percent of the words. The authors of the study found that previous instruction in phonological analysis and entering reading levels were important factors in success on the sounding-out task. Similarly, Goetz and colleagues (2008) found that intensive phonics instruction that included segmentation tasks and blending skills in the context of learning letter sounds and working with words in books significantly enhanced the reading skills of children with Down syndrome who were age 8 to 11.

Although phonological skills are an important factor in literacy development, other aspects of literacy have also been included in instructional programs for students with intellectual disabilities. For example, van Wingerden, Segers, van Balkom, and Verhoeven

(2013) examined the reading comprehension skills of children age 9 to 13 with intellectual disabilities in comparison to those of younger, typically developing first graders. They found that the children with intellectual disabilities were similar to the younger, typically developing students in their ability to perform low-level comprehension tasks (such as answer a factual multiple choice question). However, they had significant difficulty with higher level reading comprehension tasks, such as inferencing and choosing a title for the reading passage. Allor and colleagues (2010) have been examining the effects over time of a comprehensive reading program on the reading skills of children with intellectual disabilities whose IQs range from 40 to 69. They found that the children were able to make considerable progress in phonemic decoding, word attack skills, and comprehension.

The research on the literacy development of children with intellectual disabilities suggests that instruction in phonological skills should be part of a comprehensive reading program for students with intellectual disabilities. Moreover, a rich literacy environment in which children have an opportunity to listen to stories read to them, to talk about what they hear, and to write at the level of their ability should be part of a comprehensive literacy program for students with intellectual disabilities. The message from research and experience is that these children can develop literacy skills. They do so more slowly than their peers of the same age and may never reach the literacy levels of those peers, but they can do more than memorize lists of sight words.



There are many apps that can be useful for teaching literacy skills. Watch this video of a child using the “First Words: Animals” (Learning Touch) app. What elements of the app would be useful for teaching beginning literacy skills to children with intellectual disabilities?

<https://www.youtube.com/watch?v=3VaZKErG5So>



Check Your Understanding 8.2

Click here to gauge your understanding of the concepts in this section.

Language Instruction for Individuals with Intellectual Disabilities

Finding the cause of the language and communication disabilities of children with intellectual disabilities is not always possible. Fortunately, it is not essential to know the cause of the problem in order to do something about it. This section presents some general principles for intervention with students with intellectual disabilities, discussing two specific intervention approaches for language and communication impairments.

Instructional Principles

Roberts and colleagues (2007) suggested that the following language intervention guidelines could be effective for students with Down syndrome as well as those with other intellectual disabilities:

- **Initiate language intervention early in development:** There is evidence that interventions in the first 3 years of life foster prelinguistic skills and lead to enhanced development of language skills.
- **Provide intervention to increase speech intelligibility:** Speech intervention in individuals with Down syndrome and other intellectual disabilities should be individualized to target specific phonological processes and speech errors that persist.

- **Assess language in a variety of communication contexts to determine language goals for intervention:** Language should be assessed using standardized tests as well as language samples and a variety of elicitation methods. Language assessments should occur in a variety of contexts such as in the classroom, with peers, at home, and in the community.
- **Consider augmentative or alternative communication:** Use unaided systems such as pointing, body language, facial expressions, or manual sign language, or use aided methods such as voice output communication aids (VOCAS).
- **Manage otitis media and associated hearing loss:** Otitis media (middle-ear infections) can cause fluctuating hearing loss that can affect language development. It is important to test for otitis media and evaluate hearing on a regular basis.

Exciting research is being done incorporating early intervention with the use of technology to enhance the language skills of very young children with significant disabilities. Janice Light and Katherine Drager (2010) have reported that young children (under 1 year old) with Down syndrome and other developmental disabilities made significant increases in word usage, turn-taking, and other language skills after participating in individualized, home-based, instructional sessions that used computers to augment spoken language skills. You can find out more about this project by visiting their website, Early Intervention for Young Children with Autism, Cerebral Palsy, Down Syndrome, and Other Disabilities.

Specific Instructional Approaches

There are few instructional methods that have been developed to teach language and communication skills exclusively to students with intellectual disabilities. In general, instructional methods for enhancing language and communication in this population lie along a continuum from highly structured, didactic teaching to more naturalistic, child-oriented approaches (Yoder, Kaiser, & Alpert, 1991).

Among the more highly structured procedures are those that use applied behavior analysis methods such as imitation, modeling, and/or reinforcement. These approaches take the child through a highly structured sequence of steps toward a goal that is set prior to instruction. Instructional approaches based on applied behavior analysis (ABA) principles have been quite successful in enhancing the language and literacy of children with significant disabilities, including intellectual disabilities and autism.

Hicks, Rivera, and Wood (2015) used an ABA technique (direct instruction) to teach prepositions to three elementary-aged students with intellectual disability. The instructor followed a script to present the student with positive examples and nonexamples of the target preposition. For a positive example, the instructor picked a pencil out of a box and held it above the box while saying, "This is above." For a nonexample, the instructor picked a pencil out of a box and held it next to the box while saying, "This is not above." Using this approach, the experimenters were able to successfully teach each of the children the meaning of three prepositions.

One widely used ABA approach is discrete trial training. Discrete trial training involves teaching a specific task (e.g., naming an object) through individualized, intensive practice. Although discrete trial training has been used primarily with individuals with autism, Downs, Downs, Johansen, and Fossum (2007) evaluated its effectiveness in teaching receptive and expressive language skills, such as identification of objects, behaviors, emotions, colors, and shapes, and conversational skills to 4- and 5-year-old children with significant disabilities, including intellectual disabilities. The children received 10 to 15 minutes of discrete trial instruction each day for 27 weeks. The researchers found that the children who received the discrete trial training were able to master a large number of new words, although there was wide variation in the results.

Another ABA-based approach is constant time delay. When using this method, the instructor initially presents a stimulus item (e.g., a picture of a cup) and immediately

provides a word prompt (e.g., “This is a cup”) and asks the child to say the word. After establishing that the child can say the word, for the next trial, the instructor waits a prescribed time (3–5 seconds) for a response before prompting the child to respond. Hua, Woods-Groves, Kaldenberg, and Scheidecker (2013) used a constant time delay procedure to teach vocabulary to four young adults with intellectual disability. The instructor wrote the target word on a flashcard, modeled the pronunciation, and asked the participant to read it. Then the instructor showed the definition printed on the back of the flashcard, read the definition, and asked the participant to read it. Then the instructor asked the student to read the word and give a definition without referring back to the flashcard. If the student was unable to read the word or give the definition within 3 seconds, the instructor read the word and the definition. The participants in this study learned more words and retained those words over time when taught with the constant time delay method compared to a control condition where the participants simply read a passage and answered questions.

One of the concerns about ABA methods such as discrete trial training is that the behaviors that are taught may not generalize to new settings. Several instructional methods have been developed that apply ABA principles to more naturalistic settings. For example, incidental (or milieu) teaching uses a structured approach to instruction (arranging the environment to teach specific skills, use of prompts and reinforcement, and collecting data on outcomes) to teach specific skills. Ganz, Cook, and Earles-Vollrath (2007) described the steps in using an incidental teaching procedure as follows:

1. Choose a learning objective.
2. Arrange the environment to prompt an initiation from the student.
3. Wait for the student to initiate.
4. Prompt the student to elaborate.
5. If correct, give specific praise and access to the materials



For more information about incidental teaching and an example of its use, watch the video. What are the key steps in incidental teaching described in this video?

<https://www.youtube.com/watch?v=VwoAYir7Vsk>

Another naturalistic approach based on ABA principles is the **mand-model procedure**. In this approach, the adult initiates the interaction using activities and objects that the student is using at the moment; the adult prompts a response by using a “mand” (a demand or request). Like incidental teaching, this technique uses natural activities in the child’s environment as the basis of instruction. However, modeling, rather than operant conditioning, is used to teach the language skill. Warren (1991) gives the following example:

Context: (The child is scooping rice with a spoon and pouring it into a bowl.)

Adult: Tell me what you are doing.

Child: Beans.

Adult: Well then, say, “Pour beans.”

Child: Pour beans.

Adult: That’s right, you’re pouring beans into the pot.

In this example, the adult saying “Tell me what you are doing” elicited a response. If the child had not responded, the adult could have told the child to say the name of the object. Since the child did respond, the adult modeled for the child a more adult form of responding. This technique helped children with significant language

impairments increase their communication (Rogers-Warren & Warren, 1980). In a study with four elementary-level students with moderate intellectual disabilities, Hemmeter, Ault, Collins, and Meyer (1996) found that using **incidental teaching** and mand-model techniques significantly increased the language interaction of the children in their study.

Still another hybrid approach to teaching language skills is the **interrupted-behavior-chain strategy**. In this approach, a targeted language skill is inserted in the middle of an already established sequence of behaviors. Caro and Snell (1989) give an example of the application of this strategy in grocery shopping. Having taught an individual to read a grocery list, locate items on the shelf, and pay the cashier, the teacher could interrupt the behavior sequence to ask the student to say which items had already been placed in the grocery cart, and then praise a correct response. If the student produced an incorrect response, the instructor would model the correct response and prompt the student to produce it. This is an example of the combination of a natural environment (grocery shopping) with a structured instructional technique (prompting, modeling, reinforcement).

Hunt, Goetz, Alwell, and Sailor (1986) describe the use of the interrupted-behavior-chain strategy with a student named Everett, a 7-year-old boy with severe intellectual disabilities. The first step in this intervention was to identify sequences of behaviors that Everett could presently perform or was currently being taught. In Everett's case, he was able to independently get a drink from the water fountain and get food from the refrigerator. He was being taught to start and listen to a record player and to play an arcade game. Then interruptions were inserted into these behavior sequences at particular points. For example, as he leaned down to take a drink, Everett would be asked *What do you want?* and then prompted to choose by pointing to the picture of the water fountain from among a group of four pictures. Using this approach, Everett increased his ability to identify the correct picture and learned to point to a picture to request water. The researchers suggested that interrupting a previously established chain of behavior may motivate students to learn the communication skill so they can continue with the activity. A review of research on the interrupted-behavior-chain strategy found that it can be an effective way of teaching language skills to students with varying degrees of intellectual disability (Carter & Grunsell, 2001).

Both traditional ABA approaches and milieu methods use instructional methods that might be useful in planning instruction for students with intellectual disabilities, including the following:

- Focus on a specific skill or skills that is/are needed in the child's environment.
- Use appropriate and desired reinforcers.
- Provide instruction in the most naturalistic setting possible.
- Consider the need to generalize a learned skill to new environments.

Enhancing Generalization

One of the most significant problems faced by teachers of students with intellectual disabilities is helping them generalize new learning. A number of research studies have found that difficulties with generalization can be reduced if children are taught in the settings in which they will need the skill they are learning (e.g., Caro & Snell, 1989; Stowitschek, McConaughy, Peatross, Salzberg, & Lignngaris/Kraft, 1988). If, for example, children learn to approach others by practicing this skill in the cafeteria, then it should be easier for them to ask someone in the cafeteria to share a table if they need to do so. Generalization of language skills can be enhanced by using a variety of communicative partners, teaching skills that are actually in demand in the natural environment, and practicing skills in situations that are as close as possible to real environments.

**Check Your Understanding 8.3**

[Click here to gauge your understanding of the concepts in this section.](#)

Summary

In this chapter, we have seen how changes in our understanding of intellectual disabilities have placed new demands on language instruction for persons with intellectual disabilities. We have reviewed recent trends in literacy and in educational services. Then, in describing the specific language and communication characteristics of persons with intellectual disabilities, we noted that although delays in language development are often found in people with intellectual disabilities, there appear to be some specific differences in their language abilities. We have examined possible causes of these language and communication impairments, including discussions of cognitive delay, specific language disorder, and deficiencies of input language. A discussion of intervention techniques included both structured and naturalistic instructional methods that have been used to help individuals with intellectual disabilities enhance their language and communication skills.