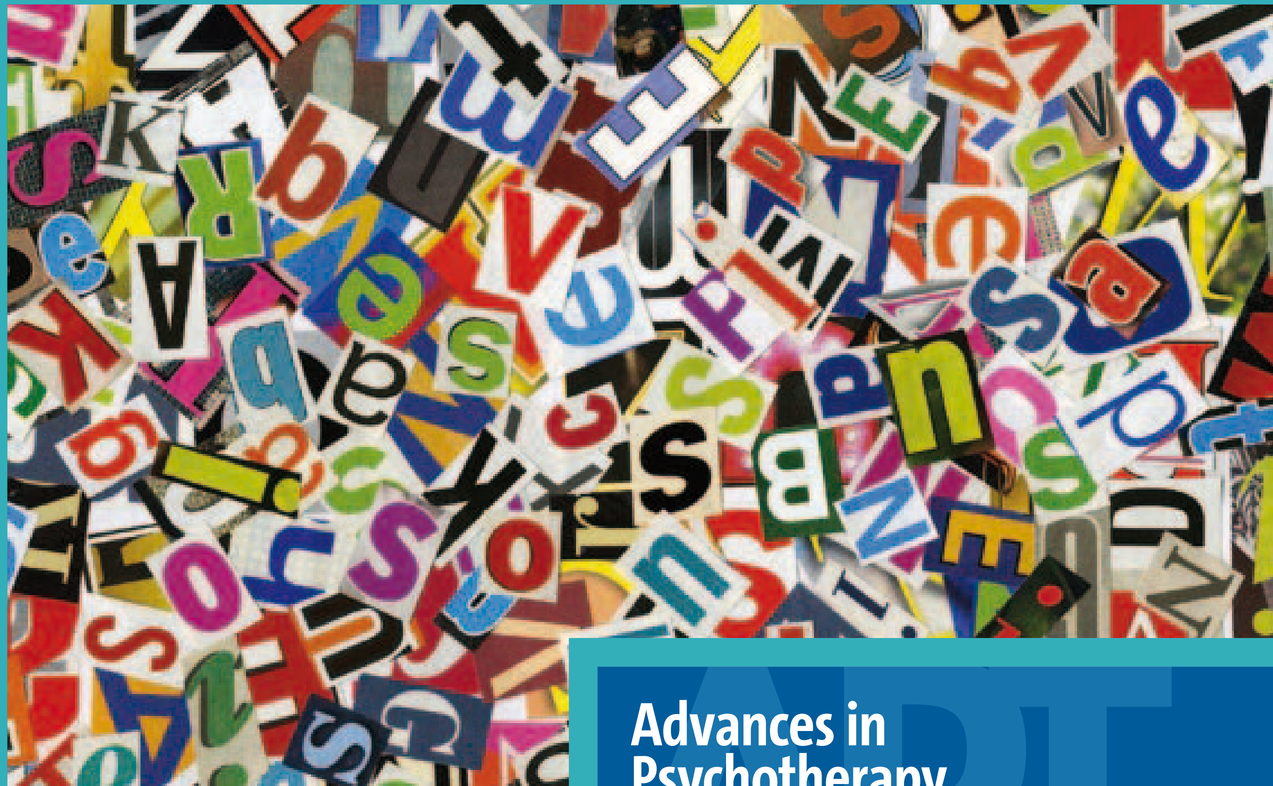
Joseph H. Beitchman · E. B. Brownlie

Language Disorders in Children and Adolescents



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Language Disorders in Children and Adolescents

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About the Authors

Dr. Joseph H. Beitchman is a clinician and therapist who has been working with children and adolescents with language delays for more than 30 years. He has written extensively on language impairment and its relation to psychiatric disorders, including learning disabilities, anxiety disorders, and disruptive behavior disorders. He is Professor of Psychiatry at the University of Toronto where he teaches and conducts his research.

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1

Description

Language impairment (LI) is one of the most common developmental disabilities of childhood. It is especially common among children with emotional or behavior concerns; prevalence is as high as 50% in mental health clinics for children and adolescents (Cohen et al., 1998). The Ottawa Language Study was one of the first longitudinal studies to trace the long term outcomes in a sample of children with speech and/or language impairments (Beitchman, Nair, Clegg, Ferguson & Patel, 1986). The children with speech/language impairment were identified through a screening and assessment process from a random community sample of five-year-old children, thus they were not children who had necessarily come to the attention of clinicians. Contrary to common beliefs when the study commenced in 1985, children with LI persisting to age 5 often do not "grow out of" their language difficulties. What was also unknown at that time was the extent to which children and youth with language difficulties also were dealing with emotional or behavior problems; 42% of children identified with LI at age 5 met criteria for a psychiatric disorder at age 12 (Beitchman, Brownlie, Inglis, Wild, Ferguson et al., 1996).

As has become clear in the years since the study began, language disorders and emotional/behavior problems overlap substantially. This volume is intended to give clinicians working with children and youth insight into how LI may be affecting their clients' lives and suggestions for how to work with and support young people with language difficulties and their families.

1.1 Terminology

Language impairment includes a range of related, often-overlapping difficulties with language expression and/or comprehension. However, terminology to describe language difficulties is not straightforward. Not only are different terms and definitions used in different countries, disciplines, and for clinical versus research applications, terminology is often inconsistent even within these contexts (Bishop, 1997; Kamhi, 1998).

In this volume we focus on *language* impairment more than impairment related to phonology (speech). However, we briefly discuss phonological difficulties as they co-occur with language disorders. The volume addresses language impairment that emerges in childhood, not secondary to a neurological event such as a stroke (i.e., acquired language disorders).

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1.1.1 Terms for Language Difficulties

A number of terms have been used to describe language difficulties emerging in childhood, with somewhat different definitions. These include *language impairment*, *primary language impairment,* and *specific language impairment,* among others. The terms *developmental language impairment / developmental language disorder* are used in some contexts to refer to language impairment emerging in childhood, distinguished from acquired language impairment. *Primary language impairment / primary language disorder* refer to language difficulties that are not primarily attributed to conditions such as developmental delay or hearing impairment. *Specific language impairment* is similar to primary language impairment, but has the additional criterion that language functioning be substantially poorer than nonverbal functioning.

In this text we use *language impairment* (LI) to represent the broad category of *language impairment / language disorder or language delay* – in each case, emerging developmentally. We use LI to describe individuals with language impairment, notwithstanding that they may or may not meet the criteria for a diagnosis according to a given set of criteria at a particular point in time. We use the term *language disorder* when discussing specific diagnoses. As we will describe in more detail, language impairment persists; however, its manifestations shift over development (Conti-Ramsden & Botting, 1999). For the clinician, thinking of language impairment broadly will avoid overlooking clients who may have significant communication difficulties that need to be taken into account for effective treatment.

1.1.2 Diagnostic Criteria for Language Disorders

The *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edition (DSM-5; American Psychiatric Association, 2013) and *International Statistical Classification of Diseases and Related Health Problems,* 10th Edition (ICD-10; World Health Organization, 1992) diagnostic criteria for language disorders are shown in Tables 1 and 2, respectively. Diagnostic subtypes of language disorders in the ICD-10 criteria differentiate between expressive language impairment (difficulties producing language, without impaired comprehension) and receptive language impairment (difficulties comprehending language). Similar subtypes were used in the DSM IV-TR (American Psychiatric Association, 2000), however, the single category language disorder is used in DSM-5.

The ICD-10 includes two mutually exclusive language disorders: expressive language disorder and receptive language disorder. In addition to low (-2 SD) expressive language standardized test scores, the expressive language disorder diagnosis requires that expressive language test scores be at least 1 SD lower than receptive language test scores. The ICD-10 criteria for receptive language disorder do not require poorer receptive language scores than expressive language scores, and in fact do not refer to expressive language performance – thus, an individual with poor scores in both domains could receive the diagnosis of receptive language disorder. This is based on the rationale that expressive language competence requires receptive language competence.

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Table 1
Diagnostic Criteria for Language Disorder: DSM-5

	DSM-5 Language Disorder (315.39)
Symptoms	Persistent difficulties in the acquisition and use of language across modalities (i.e., spoken, written, sign language, or other) due to deficits in comprehension or production that include: 1. Reduced vocabulary (word knowledge and use) 2. Limited sentence structure (ability to put words and word endings together to form sentences based on the rules of grammar and morphology 3. Impairments in discourse (ability to use vocabulary and connect sentences to explain or describe a topic or series of events or have a conversation). Language abilities are substantially and quantifiably below those expected for age.
Discrepancy	n/a
Impairment	[Language abilities are substantially and quantifiably below those expected for age,] resulting in functional limitations in effective communication, social participation, academic achievement, or occupational performance, individually or in any combination.
Onset	Onset of symptoms is in the early developmental period.
Exclusions	The difficulties are not attributable to hearing or other sensory impairment, motor dysfunction, or another medical or neurological condition and is not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay.

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Table 2
Diagnostic Criteria for Expressive and Receptive Language Disorder: ICD-10

	ICD-10 Expressive Language Disorder (F80.1)	**ICD-10 Receptive Language Disorder (F80.2)**
Symptoms	Expressive language skills, as assessed on standardized tests, below the 2 standard deviation limit for the child's age.	Receptive language skills, as assessed on standardized tests, below the 2 standard deviation limit for the child's age.
Discrepancy	Receptive language standardized test scores within 2 standard deviations of the mean for the child's age.	Receptive language skills at least 1 standard deviation below nonverbal IQ as assessed on a standardized test.

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Table 2 (continued)

	Expressive language standardized test scores at least 1 standard deviation lower than nonverbal IQ.	Use and understanding of non-verbal communication and imaginative language functions within the normal range.
Impairment	n/a	n/a
Onset	n/a	n/a
Exclusions	Absence of neurological, sensory or physical impairments that directly affect use of spoken language, or of a pervasive developmental disorder. Most commonly used exclusion criterion: nonverbal IQ below 70 on a standardized test.	

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The severity of difficulties in the ICD-10 criteria is specified as 2 SD below the mean for age. In addition, a 1 SD discrepancy is needed, with nonverbal IQ at least 1 SD higher than language test scores for the diagnosis to apply. The ICD-10 language disorder diagnoses do not include impairment criteria or onset criteria (although the diagnoses apply to developmental rather than acquired language impairment). Exclusions listed are similar to exclusions for the DSM-5 diagnosis of language disorder.

A new category in DSM-5 is social (pragmatic) communication disorder, which involves difficulties with pragmatics (i.e., social aspects of communication), see Table 3. There is no comparable ICD-10 diagnosis. Pragmatics are particularly relevant to clinicians addressing psychosocial issues because of the overlap between social and communication skills. The DSM-5 social (pragmatic) communication disorder diagnosis is defined by pragmatics difficulties – both expressive, such as difficulties using adaptive language to fit varying social contexts, and receptive, such as difficulties comprehending nuances and social meanings in the communication of others. As with the DSM-5 language disorder diagnosis, onset must be early in development. Impairment in communication, social participation, relationships or academic/occupational functioning is also required. Since pragmatics difficulties are defined by social communication difficulties, impairment is more likely to be noticeable for pragmatics difficulties than for structural language difficulties (i.e., difficulties with vocabulary and grammar that define the language disorders discussed above).

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Table 3
Diagnostic Criteria for Social (Pragmatic) Communication Disorder: DSM-5

	DSM-5 Social (Pragmatic) Communication Disorder (315.39)
Symptoms	Persistent difficulties in the social use of verbal and nonverbal communication as manifested by all of the following: 1. Deficits in using communication for social purposes, such as greeting and sharing information in a manner that is appropriate for the social context. 2. Impairment of the ability to change communication to match context or the needs of the listener, such as speaking differently in a classroom than on a playground, talking differently to a child than to an adult, and avoiding use of overly formal language. 3. Difficulties following rules for conversation and storytelling, such as taking turns in conversation, rephrasing when misunderstood, and knowing how to use verbal and nonverbal signals to regulate interaction. 4. Difficulties understanding what is not explicitly stated (e.g., making inferences) and nonliteral or ambiguous meanings of language, for example, idioms, humor, metaphors and multiple meanings that depend on the context for interpretation.
Discrepancy	n/a
Impairment	The deficits result in functional limitations in effective communication, social participation, social relationships, academic achievement, or occupational performance, individually or in combination.
Onset	The onset of the symptoms is in the early developmental period (but deficits may not become fully manifest until social communication demands exceed limited capacities).
Exclusions	The symptoms are not attributable to another medical or neurological condition or to low abilities in the domains of word structure and grammar, and are not better explained by autism spectrum disorder, intellectual disability (intellectual developmental disorder), global developmental delay, or another mental disorder.

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1.1.3 Alternative Classification Frameworks for Language Impairment

In addition to the diagnostic schemes in the ICD-10, other subtyping systems exist. For example, Rapin and Allen (1987) described six subtypes of language disorders, with combinations of problems across components of language; other typologies and combinations of difficulties have been proposed (Rapin

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& Dunn, 2003). These frameworks point to combinations of communication deficits and strengths that have been observed clinically. However, frameworks proposed to date have limited empirical validation and do not fit the language profile of all children. In addition, profiles of specific language skills shift over time and are not stable across development (Conti-Ramsden & Botting, 1999; Tomblin, Zhang, Buckwalter, & O'Brien, 2003; van Balkom, van Daal, & Verhoeven, 2004).

1.1.4 Speech Disorders

Phonological (speech) impairment often co-occurs with language impairment (Beitchman et al., 1986). Phonological impairment can be expressive (difficulties accurately articulating speech sounds) or receptive (difficulties with speech perception). Phonological errors are developmentally normative in early childhood; when difficulties are persistent and substantially below developmental expectations, phonological disorder diagnoses may apply. These include the DSM-5 speech sound disorder (315.39) and the ICD-10 specific speech phonological disorder (F80.0). The ICD-10 diagnosis of specific speech phonological diagnosis is mutually exclusive with expressive and receptive language disorders; individuals with comorbid speech and language impairment could potentially meet criteria for the ICD-10 diagnosis of either receptive language disorder or expressive language disorder. In contrast, the DSM-5 phonological disorder diagnosis (315.39) does not exclude language disorder; individuals with comorbid speech and language impairment could potentially meet criteria for both language disorder and phonological disorder. Diagnostic criteria for both DSM-5 and ICD-10 phonological disorder exclude difficulties attributable to sensory, physical or neurological impairments. Stuttering [DSM-5 childhood-onset fluency disorder (315.35) or ICD-10 stuttering (F98.5)] is another common speech disorder of children and youth. Unlike phonological disorders, stuttering does not appear to be associated with language impairment (Nippold, 2012).

1.1.5 Historical Terms

Historical terms for language disorders have included: *developmental aphasia* (expressive type; receptive type), *developmental Wernicke's aphasia*, and *developmental dysphasia.* The term *aphasia* is no longer in use because it suggests an impairment that is sudden and acquired through brain damage, which does not apply to developmental language disorders (Bishop, 1997). Historical terms for social (pragmatic) communication disorder are pragmatic language impairment and semantic pragmatic disorder. Historical terms for phonological disorder have included *functional speech articulation disorder, speech articulation developmental disorder,* and *dyslalia* (pronunciation errors); terms specifying particular pronunciation errors have included *lisping* (substituting *th* for *s*) and *lalling* (substituting *w* for *r*). Stuttering has been termed *fluency disorder*.

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1.2 Definition

1.2.1 Language Domains

Language use involves multiple skills within a number of domains; these skills involve both receptive (comprehension) and expressive (production) components. Table 4 lists the domains of language and related receptive and expressive skills, under the broad categories of *content, form,* and *use* (Bloom & Lahey, 1978).

Semantics
Semantics, the *content* of language, refers to the meanings of words, phrases, sentences, and discourse more broadly. Receptive semantic skills include receptive vocabulary (knowledge of word meanings) and comprehension of spoken (and written) language; expressive semantic skills include expressive vocabulary (words used in spontaneous speech) and production of utterances that express the intended meaning.

Phonology
The *form* of language includes phonology (speech sounds) and grammar. Receptive phonology includes the perception, recognition, and classification of speech sounds; expressive phonology involves production of speech sounds. Phonological awareness, a related set of skills, includes the ability to parse words into component speech sounds, and to identify and generate rhymes.

Grammar: Morphology and Syntax
Grammar involves both word-level grammatical markers *(morphology)*, for example, the suffix *ed* to indicate past tense; and sentence-level word order rules *(syntax)*, for example, subject – verb – object. Receptive grammar skills involve correct word and sentence interpretation (e.g., for the sentence "The dog will sit behind the cat," understanding the relative positions of the animals and the future timeline). Expressive grammar skills involve the use of morphology and syntax to correctly express precise meaning according to the rules of the particular language.

Pragmatics
Finally, the social use of language is the domain of *pragmatics.* Pragmatics are culturally specific practices and skills related to social uses of language, conversational norms, and the use of nonverbal communication, such as eye contact and gestures. Because *pragmatics* refers to appropriate and/or effective use of language, what constitutes pragmatic difficulties will vary by culture and by social contexts and subcultures. Pragmatics also include skills in social discourse and narrative, such as tailoring speech to the listener, giving appropriate context based on the listener's knowledge, and shaping language to suit particular purposes (e.g., persuasion, apology). Pragmatic skills overlap with social skills and other clinical issues such as social anxiety. In fact, often clinicians work with clients who may not have particular language difficulties, on more effective communication, including aspects of pragmatics.

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Table 4
Language Domains

Domain	Component	Definition	Examples of skills and indicators: Expressive	Receptive
Content	Semantics	Meaning of words, phrases, sentences, discourse.	Vocabulary used in spontaneous speech *Says "duck."*	Comprehension of words *Can point to a duck.* Comprehension of sentences and longer discourse *Understands "The biggest duck quacked the loudest."*
Form	Grammar			
	Syntax	Sentence word order	Sentence complexity and accuracy *Says "I already put my sandwich on the table."*	Correct interpretation of word order *Understands "The duck that was behind the goose swam around the island."*
	Morphology	Grammatical markers (e.g., walked; walks)	Correct usage *Says "I walked."*	Correct interpretation Ability to detect errors
	Phonology	Speech sounds	Production of developmentally appropriate sounds *Pronounces "I thought I saw a rabbit."* Phonological awareness *Produces rhyming words* *Segments words into speech sounds*	Perception, differentiation, and classification of speech sounds Phonological awareness *Perceive rhymes and speech sounds*
Use	Pragmatics	Social use of speech	Using language effectively for specific purposes Conversational skills	Understand social uses of language, e.g., persuasion, sarcasm

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1.2.2 Late Language Emergence

Late language emergence (LLE) refers to early language development that occurs later than expected based on the child's age. Children with LLE have also been described as "late talkers" (e.g., Rescorla, 2005; Whitehouse, Robinson, & Zubrick, 2011) or as having delayed expressive language development. There is considerable variation in the timing of language acquisition and development (Fenson et al., 1994). Children with LLE reach language acquisition milestones (e.g., single words, two-word phrases) substantially later than other children.

Some researchers define LLE by developmental milestones, for example, vocabulary of 50 words and combining words into two- to three-word phrases by 24 months. Children who fail to meet one or both of these milestones constitute the lowest 10%, based on a population sample (Fenson et al., 1993). In other studies, norm-referenced criteria to define LLE are used, such as the 10th percentile or lower score on language acquisition measures or language developmental indices (e.g., Zubrick, Taylor, Rice, & Slegers, 2007). Using this definition, differences from typical development are large; in one study, young children who met criteria for LLE had mean vocabularies of 20 words, versus 235 in the typically developing comparison group (Zubrick et al., 2007). Timing of language development among typically developing children is faster in girls than boys particular at the low end of the distribution, thus boys are considerably more likely to meet criteria for LLE (Zubrick et al., 2007).

Outcomes of Late Language Emergence

The majority of "late talkers" develop language within the low normal range

Children with LLE continue to have substantially lower vocabularies, and to have less developed skills in other language areas such as grammar, than children who had typical timing of language acquisition (Roos & Weismer, 2008; Weismer, 2007). Although a large proportion of children with LI have experienced LLE, the reverse is not true – the majority of children classified with LLE go on to develop language within the normal range. However, they tend to score in the lower normal range, during childhood and adolescence persistently scoring lower on average than children with typical timing of language acquisition (Rescorla, 2005, 2009). However, children with LLE, unlike children with LI, do not appear to be at increased risk of longer term emotional or behavioral difficulties (Whitehouse et al., 2011).

1.2.3 Diagnostic Criteria: Language Impairment / Language Disorders

Language disorders are heterogeneous

Three general points are important to emphasize with respect to diagnostic criteria. First, individuals with language impairment / language disorders are heterogeneous. The same diagnostic labels are used for individuals with different profiles of strengths and weaknesses across language and related domains including working memory, auditory and phonological processing, and nonverbal cognitive skills. These profiles of strengths and weaknesses tend to vary over time and may cross diagnostic thresholds, such that individuals

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meet criteria for a diagnosis at some points and are subclinical at others, while continuing to show general difficulties in the communication domain (Bishop, 1997; Conti-Ramsden & Botting, 1999, 2004).

Subclinical levels of language impairment may be important

Second, although it is useful to have clear definitions of language disorders, particularly for research purposes, communication difficulties that do not meet diagnostic criteria may nevertheless be clinically important. There are a number of varying definitions of language disorders; most are primarily based on cutoffs on standardized tests. Children who test above diagnostic thresholds or do not meet exclusionary criteria according to particular diagnostic criteria may nevertheless have communication difficulties that lead to significant impairment, and/or that make conventional modes of treatment unlikely to be effective without adaptation. Clinicians should continue to consider the role that communication difficulties may be playing in a client's life if an assessment identifies subclinical weaknesses in language or other communication domains, even if full criteria for a language disorder are not met.

Language disorders are often unrecognized

Finally, language disorders are often unrecognized. A number of studies have shown that in clinical settings, one third to one half of children may meet criteria for a language disorder, and of these, as many as half may not have been previously diagnosed (Cohen, Davine, Horodezky, Lipsett, & Isaacson, 1993; Cohen, et al., 1998). These numbers increase in inpatient mental health treatment settings and clinical settings for youths involved with the justice system (Giddan, Milling, & Campbell, 1996; Warr-Leeper, Wright, & Mack, 1994). Clinicians working with children and youths need to have language and communication difficulties on their radar even if these issues are not mentioned in the referral or presenting information. "Universal precautions" are needed in working with clients, to avoid overestimating expressive and reception language competence and misattributing comprehension or expression limitations.

Language impairment is both delay and disorder

Language impairment is both delay and disorder. It is a delay in that children and youths with LI have characteristics similar to younger children. For example, children with expressive LI have a mean length of utterance (a metric of language development), that is lower than that of age peers, meaning they use shorter, less complex communication. From this perspective, LI can be understood dimensionally as the lower end of the continuum in language functioning. At the same time, some aspects of language in children with LI, such as inconsistent grammar and phonological processing difficulties, are not characteristic of typical language development (Leonard et al., 2003; Rice & Wexler, 1996).

1.2.4 Expressive Language Impairment

Expressive and receptive symptoms associated with language disorders are shown in Table 5. Children with expressive language impairment generally sound considerably younger than their chronological age, using simpler words and shorter, less complex sentences than their typically developing age peers. They make more grammatical errors than other children – for example, using the wrong endings for verbs or nouns. In particular, inconsistent use of grammatical markers (rather than consistent errors) is a key marker of language impairment (Leonard et al., 2003). Children with expressive LI may also have a limited vocabulary and are often slower than their peers in learning new

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Table 5
Symptoms of Expressive and Receptive Language Impairment in Children and Adolescents

Expressive language impairment symptoms	
General	– Sounds like younger child or youth – Uses simpler words than age peers – Uses shorter sentences than age peers – Uses less complex sentences than age peers – Uses nonspecific words – Avoids situations requiring speech – Can be misattributed to behavioral, attitudinal, or general cognitive problems
Grammar	– Inconsistent use of markers (morphology) – Incorrect verb agreements – Problems with word order (syntax)
Semantics	– Limited vocabulary in expressive language – Unclear, nonspecific statements or statements that do not reflect intended meaning
Pragmatics	– Inappropriate conversational skills / behavior – Difficulty joining groups already engaged in play or conversation
Discourse	– Difficulty organizing narratives – Difficulty expressing ideas
Receptive language impairment symptoms	
General	– Comprehension level similar to a younger child or youth – Difficulty understanding complex sentences – May become frustrated or withdrawn due to lack of comprehension – Noncompliance due to lack of comprehension can be misattributed to behavioral or attitudinal problems
Grammar	– Difficulty interpreting complex sentences
Semantics	– Smaller vocabulary than age peers – Difficulty following conversations – Slower to learn new words
Pragmatics	– Misinterpretation of intent – Difficulty making inferences from language
Discourse	– Difficulty comprehending complex discourse

words (Brackenbury & Pye, 2005), however, for some children with expressive LI, semantics may be an area of relative strength. In addition, children and youths with expressive language disorders may have difficulties at higher levels of discourse, in expressing their ideas and organizing narratives (Vallance, Im, & Cohen, 1999).

Compensating for Language Impairment

Children and youths with expressive LI often use compensatory strategies to cope with their expressive language challenges. For instance, they may fre-

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quently use nonspecific words because they are unable to produce an appropriate specific term. They may also respond more globally to their language difficulties by speaking little in social situations and avoiding situations requiring speech. This may partly account for links between LI and social withdrawal or shyness (Bedore & Leonard, 1998; Rice & Wexler, 1996; Voci, Beitchman, Brownlie, & Wilson, 2006).

1.2.5 Receptive Language Impairment

Receptive LI is more subtle and difficult to detect than expressive LI. A child with receptive language difficulties may have difficulties following directions or interpreting situations because of their difficulties with comprehension. It may not be obvious that some of their comprehension difficulties are specifically linguistic (i.e., difficulty processing words or sentences). They may appear to be noncompliant or to have behavioral challenges if they respond inappropriately to verbal requests or other communication. Comorbidity between receptive language impairment and expressive language impairment is expected. This is reflected in the ICD-10 (and DSM-IV-TR) criteria, which include a category for impaired expressive language with unimpaired receptive language, but no category for impaired receptive language with unimpaired expressive language.

Although there are differences between LI children and their typically developing peers, it is important to emphasize that language impairment is subtle, and often undetected. Because language occurs within a specific context, the content of children's communication tends to be noticed and responded to, rather than their language skills and usage, especially for school-aged children. Research shows that adults view children with language impairment more negatively than typically developing children on dimensions outside of the language domain – for example, intelligence, social maturity, leadership potential, and school readiness – on the basis of very brief language samples (Becker, Place, Tenzer, & Frueh, 1991; DeThorne & Watkins, 2001; Rice, Hadley, & Alexander, 1993). It is likely that in situations when language is not made salient, these attributions may overshadow the subtler aspects of communicative competence.

1.2.6 Definitional Issues

Defining language disorders is not straightforward. Different definitions are used for the DSM and ICD (and in their different editions). In research contexts, different criteria are often used for different studies. We discuss a number of definitional issues below.

Clinical Versus Research Contexts

Language disorders are defined relatively stringently in many research studies, as reduced heterogeneity of the sample is helpful to understand causes and outcomes of the disorders (e.g., Bishop, 1997). However, broader definitions make more sense clinically; services are often just as much indicated for

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