THE KEY TO
DIAGNOSIS AND
THERAPY FOR
LANGUAGE-
DISORDERED
CHILDREN

Normal Language Development

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**The Key to Diagnosis
and Therapy for
Language-Disordered Children**

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foreword

Not very many years ago the speech pathologist could expect to en-
counter in his training only a limited amount of information about the
normal development of speech and language. In basic textbooks on
speech disorders, the subject of how speech develops in the normal
child might have been found in a single chapter, the bulk of which was
devoted to a review of the "stages" of development from the birth cry
to the first word. Little was said about language development after the
turning point of "true speech" beyond estimates of the spoken vocabu-
lary at selected age points, and less about evolving comprehension.
Text materials in child development were similarly limited in their ac-
counts of speech and language. Recognizing that clinical judgments
about a child's status in language acquisition inevitably require a com-
parison of that child's skills with what is presumed to be normal, speech
pathologists were ready consumers of research data as it began to be-
come more available.

The scientific study of child language, using the analytic tools of the
field linguist and the experimental psychologist, has come into its own
only in the last 15 years or so. The impact on the study of child de-
velopment, special education, and speech pathology has been profound
and far-reaching. One of these specialties has so altered its training,
skills, responsibilities, and image that it has retitled itself speech and
language pathology. From hundreds of studies of normal children, data
on the development of language comprehension and production have
accumulated, serving as guidelines of normal development. These
studies have dealt with phonology, syntax, and semantics; most re-
cently promising efforts have appeared in the study of the development
of children's use of language in communication, e.g., in dialogue and in
varying contextual settings. The area of child language that has been
studied most intensively in this period is syntax, particularly in syn-
tactic (or, more recently, syntactic/semantic) analyses of children's
spontaneous production of spoken language. The speech and language
pathologist is expected to have an operational knowledge of this ma-

terial in order to function effectively in the clinical assessment of the child's language abilities. Similarly, the normative data have set the stage for the creation of tests to sample and evaluate these abilities in clinical diagnosis.

Moreover, the study of child language has affected clinical intervention strategies in various ways. Depending on which theory of how children acquire their language is most persuasive to the clinician, he may adopt procedures making heavy use of imitation, shaping, and reinforcement, or of stimulation and modeling; he may utilize an "additive" approach, building up sentence structures by adding words one at a time, or a "developmental sequence" approach, presenting sentence structures in the forms and stages as they appear in normal child development. If the clinician is of the opinion that the child learns syntactic constructions in his effort to encode meanings and intentions that he has developed independently of and prior to mastery of the relevant linguistic skills, he will wait for evidence from the child's non-linguistic behavior that he has achieved a given stage of conceptual maturity before attempting to teach him the given syntactic structure; if, on the other hand, the clinician believes that the child's cognitive growth is affected by his language skills, he will in some instances attempt to teach a given linguistic construction in order to enhance the child's development of meanings and intentions. These and other unresolved questions continue to be debated.

Another effect of the study of child language has been on the evolution of a theory of child language disorder. The development of refined skills for the detailed description of language behavior in normal children has made it possible to do the same for children whose language behavior is deviant. We know enough now to ask a question like "What is a language disorder, anyway?" Are language-deviant children more delayed than different, or do they manifest language behaviors that are not found in language-normal children at any age? Is it possible to find each of the components of phonology, syntax, and semantics selectively impaired? Is there a set of language behaviors that is characteristic of the language-disordered child? Is it possible for a given child to have linguistic deficits in the absence of cognitive deficits?

The authors of this volume have not undertaken to answer all of the questions raised above, but their findings and interpretations have implications for almost all of them. Their study is intended to be limited to the development of syntactic forms, but inevitably there are implications for issues in phonology and semantics as well. Having found the available data, as rich as it is, inadequate to their needs as practicing speech and language clinicians, they set about to collect their own data on a group

of normal children. Their efforts may be characterized as an in-depth study of the stage-by-stage development of syntactic forms in children with normal language development, contrasted with (*a*) similar data on the stage-by-stage development of a language-disordered child, and (*b*) observational data on a typical clinical language-disordered population. The result is a wealth of information about normal development against which the clinician may evaluate the productions of any child with a suspected language disorder, as well as detailed examples of the production of actual language-disordered children for further comparison.

The authors state that their experience in collecting and analyzing their samples has significantly affected their approaches to language assessment, as indeed the sections on clinical implications show. The effect on therapy strategies is not inconsiderable. Their conclusions about the different-rather-than-merely-delayed nature of the linguistic deficit make important reading.

This volume signals the involvement of the speech and language pathologist in the serious study of child language, both normal and disordered.

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preface

We, the authors of this handbook, had worked 3 and 5 years respectively with language-impaired children in clinical settings before embarking on this long-term study of normal language development. The constant involvement with language impairment tended to obscure our understanding of normal language development. Many perplexing questions arose regarding the nature of normal language and the ongoing process of language acquisition. In order to clarify our own understanding of normal language development, we undertook this longitudinal observation of language as it developed in normal children from 18 to 36 months.

This voluminous task was very enlightening and we began to see many applications of our observations to our clinical work of diagnosis and remediation of language-impaired children. As we shared our findings with our various colleagues, they also found them to be exciting and clinically applicable. They encouraged us to compile our findings in the form of a handbook.

This handbook is intended for practicing clinicians and students involved with language development and disorders. It is hoped that this detailed description of the ongoing process of language development will contribute to a more accurate concept of normal language development and inspire improved and more efficient diagnostic and therapeutic approaches.

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CHAPTER ONE

introduction

We have been working for several years in speech and hearing clinics where a main concern has been evaluation and treatment of children with language disorders. In these settings the diagnosis of pre-school children is a primary task. It is quite easy to identify a non-verbal 2- or 3-year-old with a language disorder. It is a different problem to evaluate young children who are talking but who have difficulties expressing their ideas appropriately. Our task is to determine whether their expressive skills are simply delayed or deviant. A child may have normal conceptual development but lack the expressive language skills with which to communicate his ideas.

Our particular dilemma is directly related to the recent changes in psycholinguistic research. Originally McNeill proposed that knowledge of grammar was largely innate and that semantic categories were subsequently learned (1). More recently Schlesinger has proposed that cognition is central to the use and acquisition of language. Thus the syntax develops after the child knows what he wants to say (2). Cazden has defined macrodevelopment as the semantic intention of a communication, and microdevelopment as the ability to syntactically and morphologically code the intention. Cazden believes that "synchronization of the two aspects can vary" (3).

In our clinical setting, we must determine when the syntactical development is not appropriate to the child's semantic and cognitive development. It became apparent to us that, in working exclusively with language-impaired children, it was too easy to lose perspective of the normal progression of language development. We looked to the current literature on language development and found most of it to be theoretical, limited in scope, or based on cross-sectional research designs (4–9). This did not give us a practical, all-encompassing understanding of the ongoing process of language development, which is

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necessary if a clinician is to make prudent decisions regarding diagnosis, case selection, and the planning of therapeutic programs. We then looked to our speech pathologist colleagues whose own children have acquired language, and they seemed to share our questions and concerns.

Therefore, we became interested in doing a longitudinal descriptive study of normal children's expressive language development between the ages of 1¹/₂ and 3 years, a period during which a normal child masters most grammatical forms (10). It was necessary to look in minute detail at a few "normal" children in much the same ways as Braine did with Gregory, Andrew, and Steven; Bellugi and Brown did with Adam and Eve; Weir did with Anthony; and Bloom did with Kathryn, Gia, and Eric (11–14).

These are some of the questions which had been perplexing us: What are the steps of language growth a child demonstrates over the critical months of emerging language? Do children differ markedly in their stages and sequence of growth? What are the critical stages of language acquisition beyond the gross milestones of single words at 12 months, two-word phrases at 18 months, and sentences at 24 months? Is there an order in the mastery of syntactical and morphological forms which could aid in planning a therapy program? By what means do children learn grammar? Do these methods have implications for therapy? How do the language acquisition patterns of our clinical population compare to the patterns of normal children? What signs can we use to differentiate between deviant and delayed language learning patterns?

Our purpose in doing the study has been realized. We have grown in our understanding of the ongoing process of language development, and as a result of this study, we have made many substantial changes in our methods of diagnosis and treatment of language-impaired children. Seven of eight children in the study dramatized the vast discrepancy between their language development and that of the children in our clinical population. In addition, as the study progressed, one child's pattern of language development deviated markedly from that of the others, which further served to differentiate and define language disorders. This has aided us in earlier identification of language-impaired children, and has made it possible to plan more effective therapy programs tailored to the specific problems and manner of language learning of each language-impaired child.

A totally unexpected result of the study was its enormous impact upon our diagnosis and treatment of school-aged children. It is easy to overlook expressive language problems in these children if the listener reacts to the content of their conversation, rather than to the formulation of the language with which they express their ideas. We have found

that many school-aged children in our clinical population who are experiencing academic problems have disturbances in the process of language expression similar to those of pre-school children.

Originally our goal was better personal understanding, but we feel that this study has practical implications for all professionals working in the area of language development. We hope our findings will be useful to other clinicians and will also provide impetus for further detailed investigation of the very complex process of language development.

This handbook will include a description of the study and its general results, a discussion of specific syntactical and morphological development in each child's language, the deviant pattern shown by the language-impaired child, and diagnostic and therapeutic implications of the study. Our purpose has not been to present a sophisticated linguistic and statistical analysis. Roger Brown in his book, *A First Language, The Early Stages,* gives an extensive review of developmental psycholinguistic research and presents five stages of linguistic development (15). We have not discussed previous research in detail, but our work would most closely align with Brown's five stages of linguistic development.

It is hoped that the practicing language clinician will glean information from the data on normative and deviant language development which will be valuable in planning appropriate therapy programs. The raw data and observations from the study are given in detail so that the clinician acquires a feeling of the ongoing process of language development. The clinician is thus not limited to our conclusions concerning the data, but the material is available so that other diagnostic and therapeutic conclusions can be reached.

CHAPTER TWO
methodology

Our study followed eight apparently normally developing children through the critical language learning period of $1^1/_2$ to 3 years. Subjects were chosen who were free from prenatal, birth, or neonatal difficulties and known developmental delays. Standard English was the only language spoken in their homes. The longitudinal nature of the study required commitment on the part of the subjects' parents, and many difficulties were encountered in maintaining a group of eight subjects over the necessary period of time. One child who began the study eventually moved out of town, and another never began to talk and was placed in a therapy program. A brief description of the eight study children and their families follows:

Warren: Father: laborer and part-time college student
Mother: finished one college quarter
Male sibling: $2^1/_2$ years younger

Matthew: No father in the home
Mother: unemployed, low income, no education beyond elementary school
Female sibling: 1 year older, enrolled in language therapy

Brook: Father: high school teacher
Mother: speech pathologist in private practice
Male siblings: 2 and 7 years older

Timmy: (the language-impaired child)
Adoptive father: geologist
Adoptive mother: unemployed high school math teacher
Male sibling: 3 years younger

Michael: Father: camp manager, theological student until 4 months prior to completion of the study
Mother: 1 year college
Female sibling: $1^1/_2$ years younger

Kristin: Father: audiologist
Mother: unemployed speech pathologist
Female sibling: 14 months older

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David: Father: bank loan officer
            Mother: unemployed elementary teacher
            Female siblings: 7 and 2 years older, the latter enrolled
                        in language therapy
            Male sibling: 8 years older
Anne: Father: manager of bank's data processing operations
            Mother: part-time speech pathologist
            Male sibling: 20 months younger

Language samples were obtained from these children at 3-week intervals beginning at age 15 to 18 months, when the children began to use two-word combinations. Samples were tape recorded at the child's home in the presence of his mother and two certified speech pathologists. One clinician attempted a concurrent written transcription and the other engaged the child in spontaneous conversation. Transcriptions were limited to the child's utterances and did not include statements made by the clinicians. Standard materials were used during each session to stimulate conversation, and the child selected from this assortment of family figures, toy furniture, and Golden Press Shape Books. An effort was made to stimulate the child with open-ended questions, aiming the language level slightly above that of the child. Later the two speech pathologists transcribed the tapes, discarding any utterances about which agreement could not be reached due to poor intelligibility. The number of utterances discarded for this reason was minimal, averaging less than one utterance per sample until the age of 2 years, when their speech was essentially intelligible.

Each sample was evaluated by means of nine different measures. First, these data were evaluated according to Laura Lee's "Developmental Sentence Types" (16, 17). Lee advised that a corpus of 100 utterances is necessary for reliable analysis of pre-sentence structures, using Developmental Sentence Types, 1971 revision, Table 1. Length of utterance was charted as either single words, two-word phrases, constructions (utterances of more than two words not including a noun and a verb in subject-predicate relationship), or sentences (utterances which contain a noun and a verb in subject-predicate relationship). Phonemic analysis was not attempted.

In addition to the above analysis, observations were made of behaviors such as jargon, echoing, verbal play, and gestural communication. Jargon is defined as an unintelligible utterance made up of syllables rather than words which has conversational inflection. Echoing is defined as the repetition of a part or all of the verbalization of the previous speaker. Verbal play is defined as a child's experimentation with a word or word combinations without intervention from another person, i.e., numerous repetitions of a word or phrase, or successive utterances

TABLE 1

Development Sentence Types

Pre-sentence utterances were scored according to the categories developed by Laura Lee.

Single Words	
Noun	Designator
car, Daddy, kitty-cat	*here, there*
truck, Mommy, Santa Claus	*this, that*
cookie, girl, hot-dog	*it*
Phrase structure	Phrase structure
Plural: *books, cars, men*	Plural: *those, these*
Transformations	Transformations
Pronoun: *me, something, nobody*	Question: *this? that? here? there?*
Question: *book? car? truck (right?)*	

Two-Word Combinations	
Noun Elaboration	Designative Elaboration
Noun phrase	Designator + noun
Article: *a car, the truck*	*here car, there truck*
Possessive: *Daddy car, Billy truck*	*this car, that truck*
Quantifier: *more car, other truck*	*it car, it truck*
Adjective: *big car, dirty truck*	Phrase structure
Attributive: *baby bear, police car*	Plural: *these cars, those truck*
Phrase structure	Adverb: *this now, that again, it too (there,*
Plural: *the cars, more trucks*	*now, here, again* = fragments)
Additive: *car truck, Mommy Daddy*	Transformations
Adverb: *now car, truck too, car again*	Pronoun: *here something, there one*
Subject-object: *car garage, Mommy window*	Negative: *not this, not that (not here, not*
Transformations	*there* = fragments)
Pronoun: *this one, my truck, her cookie*	Conjunction: *and this, and that (and here,*
Negative: *not car, not truck*	*and there* = fragments)
Conjunction: *and car, and truck*	Question: *that truck? this car (right?)*
Question: *a car? another truck (OK?)*	Wh-question: *what this? who that?*
Wh-question: *what car? which one?*	

Constructions	
Noun phrase	Designator + noun phrase
my big car, some more truck, a red box	*here another car, there a truck, this a red*
Noun phrase + prepositional phrase	*car, that my truck, it a big car, it my truck*
the car in front, the spot on the floor	Phrase structure
Quantifier + prepositional phrase	Plural: *here some more cars*
all of them, some of the other cars	Adverb: *here some more cars*
Phrase structure	Additive: *there Mommy Daddy*
Plural: *some other cars*	Transformations
Adverb: *now the car, other truck too*	Pronoun: *that somebody car, here his car*
Additive: *the car the truck*	Negative: *that not car, this not a truck*
Subject-object: *the doggie window*	Conjunction: *here a car and truck*
Transformations	Question: *that a car? this a car (right?)*
Pronoun: *his other truck, all of mine*	Wh-question: *who that boy? what that one?*
Negative: *not the car, not that one*	
Conjunction: *and the car, car and truck*	
Question: *the other car? this one too (huh?)*	
Wh-question: *what big car? which other one?*	
how about that one? how many cookies?	
how much milk?	

TABLE 1—*Continued*

Single Words

Adjective	Verb	Vocabulary Item
big, pretty, broken, fixed **one, two, more** **up, down, on, off, in**	**sleep, eat, walk, fall** **(look, lookit** = imperative sentence)	**yes, no, OK, sh, hey, hi** **bye-bye, night-night, oh** **bow-wow, bang-bang,** moo

Phrase structure
Transformations
  Pronoun: **mine, his**
  Question: **red? big (huh?)**
	Phrase structure
	  Tense markers: **going, fell**
	Transformations
	  Negative: **can't, won't (don't**
	    = imperative sentence)
	  Question: **see? sat (OK?)**
		Phrase structure
		  Adverb: **again, now, too**
		Transformations
		  Conjunction: **because**
		  Question: **huh? right? OK?**
		  Wh-question: **what? Who?**
		    where? when? how? why?

Two-Word Combinations

Predicative Elaboration	Verbal Elaboration	Fragments

Noun + descriptive item:
car broken, truck dirty
light off, coat on
car there, truck here
Phrase structure
  Plural: **cars here, hats on**
Transformations
  Pronoun: **that pretty, it big,**
    something here, another
    on
  Question: **car broken? it**
    gone (right?)
  Wh-question: **where car?**
    what here? who there?
	Verb + noun: **see car, open**
	box
	verb + particle: **fall down**
	(Noun + verb = sentence:
	  baby sleep, that go, it all)
	Phrase structure
	  Tense markers: **saw car**
	  Plural: **eat cookies, see cars**
	  Adverb: **eat now, fall too**
	Transformations
	  Pronoun: **see it, find one**
	  Negative: **not fall, can't go**
	  Conjunction: **and sleeping**
	  Question: **see it? go home**
	    (OK?)
	  Wh-question: **where go?**
	    What take? what find?
	    (who go? what come? =
	    sentence)
	  Infinitive: **wanna go, gonna**
	    go
		right here, over there
		all gone, all clean
		Phrase structure
		  Prepositional phrase: **for**
		    me, in car
		  Plural: **on chairs**
		  Adverb: **too big, up now,**
		    there now, here again
		Transformations
		  Pronoun: **to you, in it**
		  Negative: **not big, not here**
		  Conjunction: **and big, but**
		    dirty, and here
		  Question: **in here? all gone**
		    (huh?)

Constructions

Noun phrase + descriptive
  item
the car broken, a truck dirty
this light off, red coat on
other car there, a truck here
car in garage, hat on head
Spot a good dog, you bad
boy
Phrase structures
  Adverb: **light off now, car**
    here too, truck too dirty
Transformations
  Pronoun: **he bad boy, it off**
    now
  Negative: **this not broken**
  Conjunction: **car and truck**
    here
  Question: **it off now? car**
    over there (huh?)
  Wh-question: **where that one?**
    who in car? what color
    car? what in here?
	Verb + noun phrase
	  see a car, want a cookie
	Verb + particle + noun
	  fall down floor, go in barn
	(Noun phrase + verb = sen-
	  tence: **the car go, a boy**
	  eat)
	Phrase structure
	  Tense markers: **goes in barn**
	  Adverb: **see car now, go in**
	    too
	Transformation
	  Pronoun: **want it now**
	  Negative: **not fall down**
	  Conjunction: **and find car**
	  Question: **see that one? eat**
	    more cookies (OK?)
	  Wh-question: **where put**
	    car? what take out? what
	    find there? what doing to
	    car?
	  Infinitive: **wanna see it,**
	    gonna go home, gotta
	    find it
		right over there
		over here now
		Words in series:
		  1, 2, 3, 4, etc.
		  dog, cow, pig, etc.
		Phrase structure
		  Prepositional phrase: **in the**
		    car, for the boy
		  Plural: **on the chairs**
		  Adverb: **in car too**
		Transformations
		  Pronoun: **on my head**
		  Negative: **not in it**
		  Conjunction: **and for me**
		  Question: **in here too? in the**
		    car (right?)