LANGUAGE INTERVENTION PROGRAMMING AS A REVOLUTIONARY ACTIVITY

Carol Lynn Waryas
Department of Communicative Disorders
University of Mississippi

ABSTRACT

This paper suggests that language intervention programming is a revolutionary activity in the sense that both language targets and training procedures will change as we learn more about the nature of language and its development and use. Contemporary issues which form the basis for current developmentally-based language training programs are discussed, specifically: the multiple sources of developmental information, the multi-dimensional nature of the language system, language as communication, the role of alternative modality training, and language in relation to cognitive and social development. In response to these changing perspectives, it is suggested that therapists need to adopt new techniques for evaluating language disorders and to assume a new role in the remediation of them — specifically, that of integrating and synthesizing relevant information for the team management of the language disordered child. Finally, it is suggested that the best way to survive the "language revolution" is to become an informed consumer of its products, or even an active participant in the process.

INTRODUCTION

Stremel (1972) concisely summed up what were (and are) the cardinal issues which face the individual who is involved in language intervention programming — determining what to train and how to train it. The fact that these two issues remain equally cogent to our profession six years later does not mean that we have failed to investigate them in the interim or that we have found no answers. Such suppositions would be easily contradicted by the welter of books, articles, papers and programs which have appeared in the last few years. In fact, there appears to be an almost geometric progression in the amount of these materials available since the beginning of what might be termed the "language revolution" in the field of speech pathology of the early 1960's.

The nature and sources of this revolution have been described by many, including Dale (1976), Waryas and Stremel-Campbell, (1978), and McLean and McLean, (1978) among others, and the relationship of these linguistic approaches to other theoretical formulations has been described by Houston (1971) and Reber (1973). The effect of this revolution upon language practitioners, however, has received less attention. The importance of this omission was brought into sharp focus by a speech therapist who once told me, after hearing me speak on some new theoretical formulations in language training, "This is all so interesting, but also so confusing. When I was trained back in the 1950's, we didn't have language to worry about!" Another 'casualty' of this revolution, an audiologist colleague, once said, "I think you language people change your terms as soon as people begin to understand what you're talking about." It is an unfortunate fact that the rapid evolution of the study of language has led to the development of confusion, of suspicions of "antics with semantics" (or the use of arcane terminology to confuse the outsider) or even worse, of the view that language researchers can best be likened to the blind men and the elephant, now reporting that language is like a tree, now like a leaf, depending on what aspect of language they have hold of.

71

It is understandable that one might, as a result of these facts, be drawn to simplistic or reductionistic explanations of this thing called language which confine it to manageable, stable limits and which provide ready answers to the questions raised by Stremel (1972). However, it is probable that when one feels that one has the final answer to these questions, then one no longer understands the reasons for the questions themselves. In the final analysis, it is the continuance of these questions which provides the impetus for constantly improving the services we provide to the communicatively-handicapped individual, a task which itself has no final solution. In other words, it is necessary to realize that the study of language, its disorders and remediation, as areas of scientific endeavor, will be characterized by revolutions and counterrevolutions; and by the continual formulation, rejection, synthesis, and reexamination of concepts. In some cases, this revolution may even take the form of returning to previously rejected notions, but with new perspectives on the original concepts.

Thus, it is suggested that language intervention programming is a revolutionary endeavor in two senses of the word. First, our concept of what should constitute our targets in language intervention will continue to change as we learn more about the language system itself and the factors underlying its development and use. Second, our procedures will also undergo tremendous changes as we learn more about the processes involved in normal development and the effects of our current training procedures.

Rees (1978) reported an anecdote from Dr. David Yoder which must certainly give one pause in considering what we may be doing in our current training programs. Dr. Yoder reported that he once walked into a room and handed a child a cup, whereupon the child said: "It's a cup. It's pink. It's plastic. You drink out of it." In other words, the child, in essence, 'passed' the verbal expression subtest of the ITPA but 'failed' the whole social function of language, or rather, it might be better stated that his previous language training failed him. Such occurrences are not so much illustrative of bad programming but of the evolution of language programming. We must accept that today's "state of the art" may become next year's outmoded approach, and that the study of language and its development and disorders will continue to evolve and change.

What follows is intended as a "consumer survival kit" for dealing with the language revolution, first presenting some of the key issues that appear to form the bases of our current revolutionary approaches followed by suggestions for taking an active part in a very exciting endeavor — the continued development of language intervention programs.

THE ISSUES

"Developmental approaches" to language intervention

The role of developmental information, pro and con, in the construction of language intervention programs has been discussed at length by many authors including Waryas (in press) and Graham (1976) who provided a review of both developmental and non-developmental approaches. The basic assumption underlying the notion of a developmental approach to language training is that analyses of the normal course of language development will provide information which may be relevant to the design of language intervention programs. This information generally takes the form of specification of the sequence of emergence of language structures and functions, and related skills or abilities. Thus this information in no way denies the value of non-developmentally based **procedures** for facilitating language learning, such as the use of behavioral technology. This explains why one may plausibly speak of "behavioral-

psycholinguistic approaches to language training" (Stremel and Waryas, 1974) with the instructional procedures and the content coming from seemingly diverse sources.

The notion of the "developmental sequence" has long been an article of faith for many researchers in language intervention programming, serving as a shibboleth to differentiate developmental psycholinguists from behaviorists. Now, however, the 'state of the art' is such that if one asks the question "Do you follow the developmental sequence in training?", one is liable to get the following reply: "Which developmental sequence? — Social? Cognitive? Semantic? Syntactic? Pragmatic?" Rather than weakening the posture of the developmental psycholinguists as might be expected, this division of the concept of sequential development into several areas of investigation has served rather to strengthen and enrich it by extending the concept of language, its role in communication, and its interface with other aspects of behavior. The greatest research goal at present is to delineate how all of these aspects of development interact in normal development and disorders.

The net effect of this for language intervention programming and the language therapist appears to be two fold: first, to release language training from its isolated therapy room where the child is asked to name pictures, and the therapist hopes that somehow the structures that have been trained will generalize to the realm of the child's daily existence; and second, to increase concomitantly the scope of the language therapists' responsibilities to the communicatively-handicapped child. It is beyond the intent of this brief article to deal with each of these areas of developmental information in great depth. Rather, it is hoped that this discussion will prompt the reader to pursue some of these issues, and thus disprove the contention by Lepschy (1975) that "Theory is never of any direct interest to the person who trains children or patients". (p. 35)

Language in 3-D

It was suggested earlier that language theorists are often seen as resembling the blind men and the elephant, since the primary focus on language has progressively moved from syntax, or the study of language structure; to semantics, the study of meaning; and, most recently, to pragmatics, or the study of language function. As Rees (1978) has indicated, however, one doesn't simply stop looking at syntax and semantics because we are looking at pragmatics as well. It is an additive, and not a replace process of analysis. The notion of the interrelatedness of these three parameters has been presented by Bloom and Lahey (1978), who suggest that language disorders can best be described as delay in or disruption of the interaction between these components. Bates and Johnson (1977) have begun to lay the groundwork for what may be the next cycle in the study of language — what might be termed "pragmatic syntax" — by describing the ways in which the functions which one wishes to carry out with language may affect the structures which one selects to express these functions.

What has been the effect of this continual change in perspective in linguistic analyses of the language system itself **vis a vis** the evolution of language training programs? First, as might have been expected, language intervention programs have tended to follow the lead provided by linguistic theory, so that syntactically-based programs (Bricker, 1972; Miller and Yoder, 1972) have been followed in turn by semantically-based programs (MacDonald and Blott, 1974; Miller and Yoder, 1974; Leonard, 1975); to programs which have attempted to incorporate developmental pragmatic factors as well in the sequence of language training (Waryas and Stremel-Campbell, 1978). At this point, one may wonder how one can juggle all three dimensions of language at the same time within

a single program of training. An illustrative example, drawn from an early stage of language training (admittedly highly oversimplified) is provided by the following:

1. Information regarding the earliest form classes to emerge in children's speech indicate that they tend to be contentive in nature, largely consisting of nouns and verbs (Brown and Fraser, 1964; Brown, Bellugi, Fraser, 1964) and to a lesser extent adjectives, prepositions, and pronouns.

2. Brown's (1973) analysis of the relational meanings of early child utterances has indicated that certain **propositions** or semantic intents seem to be present in the early speech of all children and that certain semantic relations, such as **agent + action** or **action + object** may initially predominate over others.

3. Analysis by Halliday (1975) has indicated that children's early utterances can be categorized in terms of the functions that they carry out in social interactions (what Austin (1962) termed "getting things done with words"). Certain functions, such as the **instrumental** (which serves to satisfy material needs) or the **regulatory** (which serves to regulate the behavior of others) emerge before other functions, such as the **informative** (which serves to transmit information).

With this background, it is suggested (Stremel-Campbell, 1978) that initial language training might concentrate simultaneously on all three aspects of language by training two word structures such as "give cookie" in the context of one child using his language to control the behavior of another child — specifically by causing him to give a desired object by the use of language. The simultaneity of this process is diagrammed:

	Syntactically	Semantically	Pragmatically
"give cookie"	V & N	action + object	instrumental

The integration of these three developmental aspects of language within a training program corresponds to Miller and Yoder's (1972) contention that in order to talk, a child must have something to say, a way to say it, and a reason for saying it. It is thus possible to synchronize the introduction of the what, how, and why, each following its developmental sequence.

Language as communication reconsidered

The fact that language exists for a reason other than to provide linguists with something to study (and behaviorists something to manipulate) — that is, for the purposes of establishing and maintaining social relationships and providing symbolic representation of one's perceptions and cognitions (DeLaguna, 1927) seems sometimes to have been lost in the rush to **train** language. This has resulted in language such as the pink plastic cup example cited previously. In addition, this has had several other damaging results which are just now being overcome. First, the notion of "language as structure" tended to predominate the field until recently. Research into several divergent areas is beginning to redress this balance, specifically, studies of the role of extralinguistic and supralinguistic features (such as body language and intonation) in children's language development, reviewed and summarized by Wood (1976); the study of pre-language communication systems (Mahoney, 1975, Bruner, 1974/75) and the role of cognitive factors in the emergence of language structure (Edwards, 1973, Cromer, 1976, Miller, 1978); the study of child sociolinguistics (Ervin-Tripp and Mitchel-Kernan, 1977) as well as the whole issue of the relationship of language structure to its social and cognitive context, or the study of pragmatic development **per se** (Bates, 1976; Rees, 1978).

In addition, the emphasis on "language as structure" seems to have led in the past to the notion of "language as **spoken** structure." From this notion has arisen the debate over whether or not sign language or other alternative modalities of communication are indeed language systems, particularly since it has been demonstrated that chimpanzees are able to learn such systems, and language has long been assumed to be specific to man (Fouts, 1978). As Fouts pointed out, however, such a position would absurdly suggest that if sign is not language, and language is the common property of all men, then the deaf are not human. It is obvious that the "package" that language comes in — spoken words, manual signs, Blissymbolics (Archer, 1977), or other forms, and the way it is sent — by physical production or by the use of communication aids (Vanderheiden and Grilley, 1976) does not in itself determine whether or not these forms are language. What determines this are the criteria of whether such systems constitute a conventionalized, shared system of communication which employs structural messages to convey encoded meanings in order to fulfill various communicative functions.

The utility of alternate modalities of language training appears to be receiving general acceptance by professionals (Fristoe and Lloyd, 1978), but several points of caution are necessary in our rush to "get on the bandwagon." First, it is necessary to consider whether an alternative modality is being used as a 'language initiator', in the hopes of eventually moving to an aural/oral mode or whether it will continue to constitute the primary or only system of communication for the individual. If the first option is the case, then we need to examine procedures for establishing the basis for and facilitating this transition. Next, in our flush of success in teaching children to sign or to use prepared symbols, we must not forget that we have the concomitant responsibility of providing him with an environment that can 'read' and send sign to him. It profits him little to be taught to sign with his speech teacher if his "communication" system doesn't work in his everyday environment. In this case, language training is reduced to the status of teaching the child parlour tricks. Finally, we need to be cognizant of the ramifications of our selection of alternative modalities — for example, what determines a choice between teaching ASL or Signed English, or what are the values of Blissymbolics over other symbol systems (Fristoe and Lloyd, Wilbur, 1977)? In particular, we need to avoid the plight of one therapist who reported that she had five children in one group using alternate modalities of communication — all different!

Another result of the focus on language as spoken structure has been a tendency to focus on the expressive rather than the receptive aspects of communication. As indicated by Bloom and Lahey (1978), this has largely been a result of the fact that training procedures have been based on the normal literature which has in turn dealt almost exclusively with language production. Another contributing factor is the simple fact that comprehension, since it is a covert process, is harder to study and train (Waryas, 1974). A "truism" which bears repeating is that language is a two-way process, that we must train the child to be both a speaker **and** a listener, or a sender **and** a receiver, if we are indeed teaching him to use language. The importance of the whole domain of receptive language skills cannot be overstressed since all training requires "reception" by the child and before a child can produce signals, he must at some time have received them (Waryas and Waryas, in preparation). The lack of developmentally-sequenced programs of receptive language training results not from the fact that receptive skills are not developmentally important — in fact, the case could be made that they are the most important, as suggested by the work of Huttenlocher (1974), but rather from the fact that we know so little at present about their developmental course. Winitz and Reeds (1975) and Courtright and Courtright (1976) provide compelling support for the notion of the primary role of receptive skills in the initial stages of language development.

Language in the Context of the Child's Total Development

McLean and McLean (1978) have provided a cogent and insightful analysis of the relationship of language development to the domains of the child's social and cognitive functioning. (To this model might be added the notion of a neurological substrata which provides the developmental framework for linguistic, cognitive and social development.) McLean and McLean have termed their model of language "transactional", which implies several things relevant to the issue of language intervention. First, the three components of the model interact with each other in reciprocal ways. Just as language can be considered a "3-D" system, so too, language comprises only part of a "3-D" system of development. McLean and McLean (1978) further suggest that the child acquires the cognitive and social bases of language from interactions with the world of people, objects, and actions. The specific form of the linguistic code is acquired through the child's interactions with mature language users in the environment, in a sort of dynamic partnership.

What does this suggest to us as language trainers? It is perhaps at this point that the most revolutionary aspects of current approaches become evident. First, the notion that language must be viewed in the context of the child's total cognitive and social functioning means that there is no such thing as a single evaluative instrument which will provide us with a complete picture of the child's communicative functioning. This is particularly true of most standardized tests, which moreover are subject to invalidity as well because of lack of congruence between the population of children on which the test was originally normed and those to whom it is applied (one could speculate on the differences one might obtain on a test of English morphology normed on children in Toronto and administered in the Mississippi Delta, or vice versa), or lack of appropriate adaptation of the test to other possible handicapping conditions the child might have, such as cerebral palsy.

It is apparent that standardized testing procedures are necessary for certain purposes, such as administrative record keeping, but as the primary source of information regarding how and where to start therapy, they are less than informative in most instances. First, many tests do not report results in a form other than a single 'language age' or percentile ranking, thus providing no specific information regarding the nature of the errors which were made. Second, some tests provide such subtest information, which presumably reflect a child's relative strengths and weaknesses in various areas. Unfortunately, however, such subtest skills may bear only a questionable (if any) association to what we know about language expression and reception. For example, subtests of 'sound blending' abilities are based on a notion which runs completely counter to everything we know about the actual process of speech perception (Bloom and Lahey, 1978). Third, even when certain types of errors can be identified from test results, it is difficult to know if this represents a valid estimate of the child's actual language abilities. For example, Prutting, Gallagher, and Mulac (1975) found that results obtained with the NSST tend to under-estimate children's actual control of certain language structures in their spontaneous speech.

The procedures which are suggested to supplant standardized tests as the primary metrics for evaluating children's language are Language Sampling and Nonstandardized Elicitation techniques. The first procedure represents an outgrowth of the work of developmental psycholinguists such as Brown (1973). Precise formulations of how to collect, analyze, and interpret language samples can be found in Crystal, Fletcher, and Garman (1976); Barrie-Blackley, Musselwhite, and Rogister (1978); and Bloom and Lahey (1978). It is suggested that the most valid estimate of the child's language abilities

— in terms of his control of **form, content,** and **use** — can be obtained through such procedures, thus allowing one to identify areas of difficulty in actual communicative language for further examination. A more in-depth examination of specific aspects of language can then be carried out by the construction and administration of 'special purpose' assessment techniques (Miller, 1978; Leonard, 1978), such as ones which might be designed to assess the child's receptive control of the pronoun system, or the regularities of verb tense morphology (Waryas, in press). These two general types of assessment procedures — language sampling and nonstandardized elicitation techniques — provide the basis for determining the existence of functionally 'real' language problems and a means of assessing the extent and nature of the deficiency.

Once training targets have been identified in the area of language, the assessment process is not complete, however. If we assume that language development proceeds from a cognitive and social basis, as the research summarized by McLean and McLean (1978) would suggest, then the role of these factors in causing or maintaining the language deficit must be explored. Miller (1978) suggests that a close correlation exists between the child's level of cognitive development as measured by Piagetian-type tasks and at least his level of expressive language. It may be that in cases of extreme language delay where cognitive factors seem to be indicated, language therapy should take the form of pre-linguistic cognitive development training, to provide a base for the acquisition of language forms. Suggestions for the construction of such procedures are provided by Bloom and Lahey (1978). According to Premack (1972), language "maps" (or provides a symbolic representation of) one's underlying cognitive organization. Without this basis, language training would be largely an exercise in futility.

The area of the child's social functioning is probably the least understood and the least amenable at the present time to quantification. It is obvious to anyone who has attempted to teach language that language is a voluntary behavior, one which is greatly influenced by the context of communication. More than this, however, as Olson (1970) suggests, language is "the primary means of socialization by the environment". As Lewis and Cherry (1977) observed:

> To focus on one aspect of the development of the individual is possible. To understand that aspect, however, one must study the development of the individual in his social context (p. 243).

Most therapists would agree that it is much easier to train a child who wants to communicate but only lacks the means than one who possesses the means, but doesn't care to communicate with others, such as is often seen in cases of emotional disturbance. In such cases, the trite goal of 'establishing rapport' assumes a new significance.

As Bloom and Lahey (1978) suggest, once a language problem has been identified and the language goals determined (or pre-language cognitive or social goals, if necessary), then one must plan procedures for intervention. At this point it might be appropriate to digress slightly to note that it is in the area of **procedures** and not language **goals** that the greatest differences will be found between language training programs to be used with children with different etiologies. For example, the Stremel-Waryas program (Stremel and Waryas, 1974; Waryas and Stremel-Campbell, 1978), although originally designed for use with retarded children, has been successfully used with children with language delay, children with specific learning disabilities, and children learning English as a second language or through the modality of sign language. The language system and the demands that it makes on the individual to learn to produce and understand it are the same for all children. The retarded child, the deaf child, and the child with language delay must all come to grips with the problem of acquiring a shared system of

77

communication which operates in accord with rules. The crucial differences will come in how we, as therapists, attempt to aid him in the process of learning to behave "as though he knew the rules" (Ervin, cited in Slobin, 1971).

The social context of language again comes into prominence when we plan language procedures, particularly in four areas outlined by Bloom and Lahey (1978): determining means of reducing the effects of maintaining factors (such as poor speech models at home), selecting motivators and reinforcers (the most powerful of which will probably be the communication situation itself), deciding the best means of structuring the therapy session itself, and delineating the role that others can play in the therapy process. The power of such programs as the one reported by MacDonald, Blott, Gordon, Spiegel, and Hartmann (1974), which indicates that parents can serve as the primary agents of language intervention if appropriately trained by the language specialist, cannot be ignored. Many therapists' initial reaction to the notion of working with paraprofessionals in language therapy is that they simply don't have the time to invest in finding and training them. The thrust of this paper so far has been to suggest a widening of domains of behavior with which the therapist needs to be involved. It is apparent that this can be accomplished only if other individuals assume some of the traditional functions of the therapist. Such involvement should not signal loss of control to the therapist, since it in essence means greater control of the process of language learning. First, if language is being constantly trained by a child's parents, teachers, and peers, in a variety of contexts throughout the day, then the problem of producing generalization from the training setting will be greatly reduced. Next, the therapist's role becomes that of co-ordinating language therapy with other aspects of the child's development, again aiding the functionality of the therapy process. Finally, what is being suggested constitutes nothing less than a 'team approach' to language intervention, a concept which has a precedent in the team management of other communicative disorders, such as cleft palate.

By taking language training out of the speech therapy room, it may appear that one is relinquishing much of the control one has in directing the course of therapy. For example, if one brings only certain pictures or objects into the room for the child to talk about, one can largely control what will be said. However, this feeling of control may often be purchased at the expense of providing the child with communication skills which are less than adequate for his daily existence. In reality, how many times outside of a therapy room is a child confronted with a request to "tell me about this picture"? Rather than complicating the process of conducting language therapy, however, one soon finds that in the context of the child's normal daily activities, it becomes easier to set occasions for language structures to become associated with meanings and functions — the '3-D' aspect of language — and for language to become a vehicle for functional communication in real life contexts, thus becoming its own reinforcer. In essence, what is being suggested is an **ecological** perspective on the language training process — that is, the view that language learning takes place within the totality of the child's constant interplay with individuals, objects, and events in his environment, and language intervention, to be effective, must also.

Survival Strategies for the Language Revolution

The suggestion has been made that language intervention programming is a constantly changing process, both in terms of what we view as the appropriate targets and procedures for training and how we modify the services that we provide. Ingram (1971) suggests that this fact should encourage rather than discourage us:

I have at times had the feeling of being up against some monolithic, immovable set of assertions and dogmas, which I could neither fully assent to nor get around. Now, it seems, everything is wide open, and it is possible to question, to re-evaluate, to shift models around so that they can be made use of for particular purposes . . . (p. 151).

Two points need to be made at this juncture. First, this freedom does not mean that one is freed from the responsibility of structuring language training or of collecting and analyzing data. Indeed, this freedom means that one must be even more rigorous in designing and evaluating the efficacy of one's procedures in this expanded arena of activity. Structured programming is important, but only insofar as it interfaces appropriately with the linguistic and interpersonal needs of the individual. As Siegel (1972) said:

Ultimately, understanding of the language problems of children with language delays will be greatly enhanced at the points where these various approaches intersect — where linguistics helps us to identify what is or is not learned, learning theory suggests how it is learned, and the interpersonal orientation concerns the circumstances in which the learning occurs and is manifested. (p. 137)

Next, this freedom has the concomitant requirement that the therapist understand something about the current theoretical advances that have a bearing in our field. All language tests and programs are based on some theoretical model of the language system and of how or why it is acquired. When one adopts one of these tests or procedures, one is, in essence, subscribing to the theoretical model upon which it is based. This is not meant to suggest that a language therapist must possess expertise in all areas of language research in order to be effective in therapy. It does suggest, however, that in order to make sound judgments regarding the potential utility of different approaches in achieving specific goals, the possibility of integrating diverse approaches in a functional fashion, and when revisions are needed in existing procedures, one must be cognizant of and responsive to major theoretical shifts in the field.

In other words, the language therapist must fill the roles of integrator and synthesizer — not only of information regarding each individual client and how he functions in communicating with his environment, but also of information regarding how input from a variety of disciplines can interface to serve his needs. This is a major challenge, but one which must be met if we are to provide Language Intervention Programming service, and not merely LIP service to the needs of the communicatively-handicapped individual.

The fact that this challenge can be met is indicated by Siegel and Broen (1976), who stated that:

. . . the most reliable and useful language assessment [and training] device is a clinician who has a good grasp of language in its various aspects and a willingness to probe and be inventive in creating new approaches . . . (p. 118).

In this regard, the clinician need not always wait for the language researcher to produce the theoretical advances which must then be translated to the therapy setting, because good clinical practice is good research. In summary, then, perhaps the best way to avoid becoming a 'casualty' in the 'language revolution' is for one to wade into the midst of the fray.

Address correspondence to:

Carol Lynn Waryas, Ph.D.
Department of Communicative Disorders
University of Mississippi
University, Mississippi 38677
U.S.A.

REFERENCES

References

Archer, L., Blissymbolics — A nonverbal communication system. **Journal of Speech and Hearing Disorders, 42,** 568-569, 1977.

Austin, J., **How to do things with words.** New York: Oxford University Press, 1962.

Barrie-Blackley, S., Musselwhite, C. and Rogister, S., **Clinical oral language sampling.** Danville, Ill: The Interstate Printers and Publishers, 1978.

Bates, E., **Language and Contexts — the Acquisition of Pragmatics.** New York: Academic Press, 1976.

Bates, E. and Johnston, J., Pragmatics in normal and deficient child language. Short course presented at the American Speech and Hearing Association annual convention, Chicago, Ill., November, 1977.

Bloom, L. and Lahey, M., **Language Development and Language Disorders.** New York: John Wiley, 1978.

Bricker, W., A systematic approach to language training. In R.L. Schiefelbusch (Ed.), **Language of the mentally retarded.** Baltimore: University Park Press, 1972.

Brown, R., **A first language — the Early Stages.** Cambridge: Harvard University Press, (1973).

Brown R., Bellugi, U., and Fraser, C., Explorations in grammar evaluation. **Monograph of the Society for Research in Child Development, 21,** 1964.

Brown, R., & Fraser, C. The acquisition of syntax. **Monographs of the Society for Research in Child Development, 21,** 1, 1964.

Bruner, J.S. From communication to language. A psychological perspective. **Cognition,** 3, 255-287, 1974/75.

Crystal, D., Fletcher, P., and Garman, M., **Grammatical analysis of language disability.** New York: Elsevier North Hollan, 1976.

Cromer, R., The cognitive hypothesis of language acquisition and its implications for child language deficiency. In D. Morehead and A. Morehead (Eds.), **Normal and deficient child language.** Baltimore: University Park Press, 1976.

Courtright, J. and Courtright, I., Imitative modeling as a theoretical base for instructing language-disordered children. **Journal of Speech and Hearing Research, 19,** 655-663, 1976.

Dale, P., **Language Development: Structure and Function.** Hinsdale, Ill.: The Dryden Press, 1976.

DeLaguna, G., **Speech: Its function and development.** Bloomington, Ind: University Press, 1927.

Edwards, D. Sensory-motor intelligence and semantic relations in early child grammar. **Cognition, 2/4,** 395-434, 1973.

Ervin-Tripp, S. and Mitchell-Kernan, C. (Eds.), **Child discourse.** New York: Academic Press, 1977.

Fouts, R., Research in chimpanzee sign — Implications for acquisition. Paper presented at the Fifth Annual Conference on Communication: A Symposium on Language Acquisition, Assessment, and Intervention. The University of Mississippi, University, MS, March-April, 1978.

Fristoe, M. and Lloyd, L., A survey of the use of non-speech systems with the severely communicatively impaired. **Mental Retardation, 16,** 99-103, 1978.

Fristoe, M., Lloyd, L., and Wilbur, R., Nonspeech communication: Systems and symbols. Short course presented at the American Speech and Hearing Association annual meeting, Chicago, Ill., November, 1977.

Graham, L., Language intervention and programming. In L. Lloyd (Ed.), **Communication assessment and intervention strategies.** Baltimore: University Park Press, 1976.

Halliday, M. Learning how to mean. In E. Lenneberg & E. Lenneberg (Eds.), **Foundations of language development: A multidisciplinary approach, Vol. I.** New York: Academic Press, 1975.

Houston, S., The Study of Language: Trends and Positions. In J. Eliot (Ed.) **Human Development and Cognitive Processes.** New York: Holt, Rinehart, and Winston, 1971.

Huttenlocher, J., The origins of language comprehension. In R. Solso (Ed.), **Theories in cognitive psychology: The Loyola Symposium.** Potomac, MD: Lawrence Erlbaum Associates, 1974.

Leonard, L., Developmental considerations in the management of language disabled children. **Journal of Learning Disabilities, 8,** 232-237, 1975.

Leonard, L., Non-standardized measures for assessing language disordered children. Paper presented at the Fifth Annual Conference on Communication: A Symposium on Language Acquisition, Assessment, and Intervention. The University of Mississippi, University, MS, March-April, 1978.

Lepschy, G., Some problems in linguistic theory. In E. Lenneberg and E. Lenneberg (Eds.) **Foundations of Language Development.** Vol. I, New York: Academic Press, 1975.

Lewis, M. and Cherry, L., Social behavior and language acquisition. In M. Lewis and L. Rosenblum (Eds.), **Interaction, conversation, and the development of language.** New York: John Wiley & Sons, 1977.

MacDonald, J. and Blott, J., Environmental language intervention: The rationale for a diagnostic and training strategy through rules, contexts, and generalization. **Journal of Speech and Hearing Disorders, 39,** 244-257, 1974.

MacDonald, J., Blott, J., Gordon, K., Spiegel, B., and Hartmann, M., An experimental parent-assisted treatment program for pre-school language-delayed children. **Journal of Speech and Hearing Disorders, 39,** 395-415, 1974.

Mahoney, G., An ethological approach to delayed language acquisition. **American Journal of Mental Deficiency, 80,** 139-148, 1975.

McLean, J. and McLean, L., **A transactional approach to early language training.** Columbus, OH: Charles Merrill, 1978.

Miller, J., Assessing children's language behavior: A developmental process approach. In R.L. Schiefelbusch (Ed.), **Bases of language intervention.** Baltimore: University Park Press, 1978.

Miller, J. and Yoder, D., A syntax teaching program. In J. McLean, D. Yoder, and R. Schiefelbusch (Eds.), **Language intervention with the retarded: Developing strategies.** Baltimore: University Park Press, 1972.

Miller, J., & Yoder, D. An ontogenetic language teaching strategy for retarded children. In R.L. Schiefelbusch & L.L. Lloyd (Eds.), **Language perspectives — Acquisition, retardation, and intervention.** Baltimore: University Park Press, 1974.

Premack, D., Two problems in cognition: Symbolization, and from icon to phoneme. In T. Alloway, L. Kranes & Pliner (Eds.), **Communication and affect.** New York: Academic Press, 1972.

Prutting, C., Gallagher, T., and Mulac, A., The expressive portion of the NSST compared to a spontaneous language sample. **Journal of Speech and Hearing Disorders, 40,** 40-48, 1975.

Reber, A., On psycho-linguistic paradigms. **Journal of Psycholinguistic Research, 2,** 289-319, 1973.

Rees, N., Pragmatics of language: Applications to normal and disordered language development. In R.L. Schiefelbusch (Ed.), **Bases of language intervention.** Baltimore: University Park Press, 1978.

Siegel, G., Three approaches to speech retardation. In R.L. Schiefelbusch (Ed.), **Language of the mentally retarded.** Baltimore: University Park Press, 1972.

Siegel, G. and Broen, P., Language assessment. In L. Lloyd (Ed.), **Communication assessment and intervention strategies.** Baltimore: University Park Press, 1976.

Slobin, D., **Psycholinguistics.** Glenview, Ill.: Scott, Foresman and Co., 1971.

Stremel, K., Language training: A program for retarded children. **Mental Retardation,** April, 47-49, 1972.

Stremel-Campbell, K., The use of sign language to facilitate language acquisition in language disordered children. Paper presented at the Fifth Annual Conference on Communication: A Symposium on Language Acquisition, Assessment, and Intervention. University of Mississippi, University, MS., March-April, 1978.

Stremel, K., and Waryas, C., A behavioral-psycholinguistic approach to language training. In L. McReynolds (Ed.), **Developing systematic procedures for training children's language.** ASHA monograph #18, 1974.

Uzgiris, I. and Hunt, J., **Assessment in infancy.** Urbana, Ill: University of Illinois Press, 1975.

Vanderheiden, G. and Grilley, K. (Eds.), **Non-vocal techniques and aids for the severely physically handicapped.** Baltimore: University Park Press, 1976.

Waryas, C., Language acquisition research and language intervention programming: Theories and queries. In K. Ruder and M. Smith (Eds.), **Developmental Language Intervention: Psycholinguistic applications.** Baltimore: University Park Press, in press.

Waryas, C., and Stremel-Campbell, K., Grammatical training for the language deficient child: A new perspective. In R.L. Schiefelbusch (Ed.) **Language intervention strategies.** Baltimore: University Park Press, 1978.

Waryas, C. and Waryas, P., Receptive language and auditory processing skills. In J. Spradlin (Ed.), **Receptive language skills of the mentally retarded,** in preparation.

Winitz, H. and Reeds, J., **Comprehension and problem solving as strategies for language training.** The Hague: Mouton, 1975.

Wood, B., **Children and communication: Verbal and non-verbal language development.** Englewood Cliffs, N. J.: Prentice-Hall, 1976.