Reading Horizons

Acquisition of Syntax–A Developmental Process

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Abstract

Recent studies of elementary school children's language have revealed developmental trends in the acquisition of syntax. The following discussion reviews studies of the productive oral syntax (Le., studies of syntax based on natural conversation) of children between ages 5 and 9 years, in terms of: developmental characteristics of productive oral syntax; the relationship between conservation (a measure of cognitive maturity) and productive oral syntax; and recommendations for classroom instruction. Findings from the cited studies lend strong Support to the theory that language learning is a developmental process.

ACQUISITION OF SYNTAX—
A DEVELOPMENTAL PROCESS

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Although interest in language acquisition dates back to time before Christ (Dale, 1976), it has been since the last generation that organized, systematic attempts have been made to study children's utterances. Early studies were mainly concerned with total length of response, sentence length, and sentence complexity (Bear, 1939; Davis, 1937; Hoppes, 1933; McCarthy, 1954; Nice, 1925). Generally lacking a theoretical base, the early studies produced much data but offered few interpretations.

During the last three decades, however, the study of language has taken a new focus. Chomsky's theory of transformational grammar and the work of Jean Piaget are primarily responsible for this change. Chomsky (1965) views language acquisition as a process based on the language user's implicit or explicit understandings of the syntactic rules of the language. Research based on Chomsky's model of grammar concerned the supposed rule-learning process and assumed that children induce hypotheses about the syntax of their language and produce utterances based on their own set of derived rules. As they develop, they gradually approximate the adult model. Thus, the child was viewed as an active participant in the acquisition of language, and language learning was viewed as an hypothesis-making process.

Piaget (1974), on the other hand, viewed language from a developmental perspective, i.e., as a process that occurs in a sequence of stages and involves interaction among the environment, cognitive processes, and linguistic abilities. The notion of developmental sequence includes the ideas that the stages are ordered chronologically, that the rate at which one passes through the stages may vary, but that the order in which one passes through the stages remains invariable.

Recent studies of elementary school children's language have revealed developmental trends in the acquisition of syntax. The following discussion reviews studies of the productive oral syntax (i.e., studies of syntax based on natural conversation) of children between ages 5 and 9 years, in terms of: developmental characteristics of productive oral syntax; the relationship between conservation (a measure of cognitive maturity) and productive oral syntax; and recommendations for classroom instruction. Findings from the cited studies lend strong support to the theory that language learning is a developmental process.

Developmental Characteristics of
Productive Oral Syntax

Although researchers have generally concluded that the language of early elementary school children is sophisticated and much like the language of adults, syntactic maturity of early elementary children is hardly complete. Dale (1976) noted that beyond 5 or 6 years of age, growth continues in mastery of subject-verb agreement and in mastery of case endings on personal pronouns. In addition, children reacquire the irregular past and perfect verb forms, i.e., use of irregular verb forms seems to go through a developmental sequence and is not complete until after 5 or 6 years of age. Thus, youngster will say "He comed and we played," evidence of a transitional stage in which children are acquiring the past tense "-ed" rule but have not yet learned about exceptions.

Developmental trends characterize various aspects of syntactic development. Length of response and length of the researcher's unit of analysis has frequently been found to increase with age or grade. The unit of analysis has been the sentence, the T-unit (Hunt, 1965), and the communication unit (Loban, 1976). A T-unit or communication unit is an independent clause and all the dependent clauses attached to it. Davis (1937) and Nice (1925) each found that mean number of words per sentence increased with age. Fox (1972), Loban (1976), and O'Donnel, Griffin, and Norris (1967) found an increase across grades in number of T-units or communication units per response and in mean number of words per unit. Morrow (1978) found significant increases with age in the productive oral syntax of 6-, 7-, and 8-year-olds in mean number of words per T-unit, and a significant increase in total number of T-units per response between 6- and 7-year-olds. Fox (1972) found significant differences between kindergartners and first graders in number of T-units per response, number of words per T-unit, and mean number of words per T-unit. O'Donnell et al. (1967) found a significant increase in length of T-unit between kindergarten and the end of first grade.

Sentence complexity has been found to increase with age. Strang and Hocker (1966) reported the frequency trend from most to least frequent in the language of first graders was from use of simple to complex sentences. Increases with age were found by both Davis (1937) and Templin (1957) in the use of the following more complex sentence structures: simple-with-phrase, compound, complex, and elaborated. Morrow (1978) segmented the productive oral language of 6-, 7-, and 8-year-olds into T-units and then applied the Botel, Dawkins, and Granowsky (BDG) formula for syntactic complexity. The BDG syntactic complexity counts increased with age and there was a significant increase in syntactic complexity between 6- and 7-year-olds and between 6- and 8-year-olds.

Use of subordinate or dependent clauses has also been the subject of research. Davis (1937) and Templin (1957) found the use of total subordinate clauses increased with age, and Loban (1976) found the use of total dependent clauses increased with age, although the rate of growth was inconsistent.

Many researchers (Francis, 1963; Morrow, 1978; O'Donnell

et al., 1967; Shubkagle, 1961; Strang & Hocker, 1965; Strickland, 1962) have studied syntactic patterns. While they have found a great variety of syntactic patterns in the oral language of early elementary school children, certain patterns were used with great frequency by children at many grade levels. The most frequently used patterns were subject-verb-direct object (Francis, 1963; Shubkagle, 1961; Strang & Hocker, 1965; Strickland, 1962), subject-verb (Morrow, 1978; O'Donnell et al., 1967; Shubkagle, 1961; Strang and Hocker, 1965), and subject-verb-object (Morrow, 1978; O'Donnell et al., 1967).

Strickland (1962) also found numerous changes in children's use of syntactic patterns when subjects were grouped by grade level. Ten of the patterns ranked among the most frequently used 25 in the language of upper elementary grade subjects did not appear at all in the language of first graders. Both Loban (1976) and Strang & Hocker (1965) concluded that it was not the pattern itself, but what was done to achieve flexibility within the pattern that was an indicator of language growth.

Finally, Loban (1976) noted that his research and that of others found the following to appear: conditional dependent clauses such as "if..." in the language of 6 and 7 year olds, subordinate clauses beginning with "when," "if," "because" in the language of 7- to 8-year-olds, and subordinate clauses beginning with "meanwhile," "unless," and "even if" in 8- to 10-year-olds' language.

Three researchers (Loban, 1976; O'Donnell et al., 1967; Menyuk 1963, '64a & '64b) used transformational grammar to analyze young children's productive oral syntax. Loban counted types of transformations (single-base, multi-base, multi-base deletion). O'Donnell et al. studied sentence-combining transformations. Menyuk wrote child grammars at three levels of grammar: phrase structure, transformational, and morphological.

Loban (1976) found that his subjects whose language samples were selected for transformational analysis used more of all three types of transformations (mentioned above) in their late school years than in their early years.

Major findings from the O'Donnell investigation of the sentence-combining transformations in the oral productions of kindergarten, 1st, 2nd, & 3rd grade students included the following:

First, as the mean number of words per T-unit increased by grade, so did the mean number of sentence-combining transformations per T-unit. Further, the increases in mean number of sentence-combining transformations per T-unit were the greatest at the grade levels where increases in mean number of words per T-unit were also the greatest.

Second, there were increases at all three grade levels and significant increases at grades two and three in rate of incidence of sentence-combining transformations in main clause coordination.

Third, there was a significant increase at grade one in rate of occurrence of sentence-combining transformation in nominal constructions.

Fourth, there was a great use at all grade levels of nom-

inal constructions as direct objects and a significant increase at grade one.

Fifth, there was a significant increase at grade one in rate of incidence of sentence-combining transformations in adverbial constructions.

Menyuk (1963,'64a,'64b) analyzed the language of nursery school children, kindergartners, and first graders in terms of grammatically acceptable structures (acceptable in adult grammar) and restricted structures (restricted to child grammar) and wrote child grammars at three levels of grammar—phrase structure, trans-formational, and morphological—to describe children's acquisition of adult syntax. At the phrase structure level are the syntactic structures used to form simple active declarative sentences. At the transformational level, application of transformational re-write rules enables the formulation of compound and complex (in addition to simple) sentences, passive (in addition to active) sentences, and imperative, interrogative, and exclamatory (in addition to declarative) sentences. A sequence of inflectional rules is applied at the morphological level, enabling, for example, formulation of past tense and third person singular verb forms.

Menyuk noted a number of developmental trends. At the phrase structure and morphological levels, all nursery school children, kindergartners, and first graders used all grammatically acceptable structures. Therefore, only comparisons at the transformational level, where varying numbers of children used acceptable structures were made. At the nursery school level, there was a developmental trend in use of acceptable grammatical structures (Menyuk, 1964a). At the first grade level, significantly more first graders than nursery school children used the passive and auxiliary "have," "if," "so," and nominalization (Menyuk, 1963). Also, significantly more first graders than kindergartners used the auxiliary "have" and the conjunction with "if" (Menyuk,1964a).

At the phrase structure, transformational, and morphological levels, varying numbers of nursery school children, kindergartners, and first graders used restricted structures. Therefore, compari-sons by grade level were made at all three levels of grammar. These comparisons revealed a developmental trend in decreasing use of restricted forms (Menyuk, 1964a). To cite a few examples, significantly more nursery school children than kindergartners used noun phrases redundantly, omitted articles, and omitted or substituted forms in the third person present or past tense of verbs (Menyuk, 1964a). Significantly more nursery school children than first graders used preposition omission, article omission, than first graders used preposition omission, article omission, there substitution, and verb form substitution. Significantly more first graders than nursery school children used noun phrases redundantly (Menyuk, 1963), as did significantly more first graders than kindergartners (Menyuk, 1964a).

Menyuk also described changes in the use of restricted struc-tures by writing alternate rules for sentences with restricted structures. Major findings concerning these alternate rules were: 1) use of alternate rules gradually decreased with age; 2) decrease in subjects' use of alternate rules was somewhat erratic; and

3) decreases in the percentage of children using particular alter-
nate rules coincided with increases in the percentage of children
using more differentiating rules, resulting in the finding that
children acquire syntax by proceeding from application of the
most general rule to application of increasingly differentiating
rules.

Based on the results of the cited studies, Menyuk drew some
conclusions. First, the grammar of younger children is simpler
because children use an incomplete set of rules to produce an
utterance (1964b). Second, there were fairly steady but somewhat
erratic decreases in the use of restricted forms (1964a). Third,
with some erratic exceptions, there was an almost steady rise
in the percentage of children at each four-month age interval
who used transformations (1964a). Fourth, almost all basic struc-
tures used by adults to generate their sentences were found in
the language of children between two years, ten months and three
years, one month (1964a).

Generalizations across studies by Loban, Menyuk, and O'Donnell
in which transformational grammar was used to analyze children's
productive oral syntax are limited because the purposes (therefore,
the syntactic structures of analysis) were unique to the research-
ers. In general, however, it appears that children develop their
own grammars and gradually approximate the adult model. As they
do so, there are increases in number of specific types of trans-
formations. Language learning appears to occur by application
of general rules to application of specific rules.

Generalizations across studies of early elementary school
children's productive oral syntax based on traditional grammar
and T-unit analysis also reveal developmental trends. The following
trends by age or grade level appear to exist: 1) an increase in
sentence length; 2) an increase in use of complete sentences;
3) an increase in use of more complex sentences; 4) an increase
in use of subordinate clauses; 5) an increase in number of T-units
per response; 6) and increase in mean number of words per T-unit;
7) an increase in number of coordinate constructions within T-
units; 8) an increase in number of dependent clauses per T-unit;
and 9) an increase in syntactic complexity within T-units.

Relationship Between Conservation
and Productive Oral Syntax

Researchers have also looked at the relationship between
the ability to conserve, a measure of cognitive maturity, and
children's productive oral syntax. According to Piagetian theory,
when a child can conserve the child reasons that a substance or
object retains its identity in spite of changes in appearance.

On the basis of performance on a Piagetian conservation task,
Sinclair de-Zwart (1969) divided children into three groups; con-
servers, intermediaries, and nonconservers. Children were then
asked to describe simple situations, a measure of language pro-
duction (e.g., the difference between a short thick pencil and
a long thin pencil) and to comprehend certain orders (e.g., "find
a pencil that is shorter but thicker than this one"). Results

revealed no difference among the three groups on the comprehension measure; differences existed, however, on the production measure. Conservers tended to use comparatives, to use different terms for different dimensions using two couples of opposites (e.g., big/little, fat/thin), and to describe two objects differing in two dimensions in two sentences coordinating the two dimensions (e.g., this pencil is long[er] but thin[ner], the other is short but thick). Nonconservers, on the other hand, tended to use absolutes rather than comparatives, to use undifferentiated terms for different dimensions (e.g., "fat" for both long and thick), and to describe two objects differing in two dimensions by describing only one dimension or by using four separate sentences. De-Zwart concluded that use of coordinated syntactic structures (e.g., "more" or "less") is more closely associated with a more mature level of cognitive thinking than is use of lexical terms ("long" "thick") and that cognitive functioning and linguistic structurings parallel each other.

Worth (1979) looked at syntactic variables in language samples of first graders who were categorized as conservers or nonconservers. Conservers used significantly more complex communication units, insertion-type communication units, and nominalization-type insertions than did their nonconserving counterparts.

In summary, results of studies by Sinclair de-Zwart (1969) and Worth (1979) revealed that conservers are more likely than nonconservers to produce language more sophisticated in use of specific sytactic variables. Conservers were more likely to use comparatives, different terms for different dimensions, coordinated sentences, and complex communication units.

Recommendations for Classroom Instruction

Based on the results of the cited studies, the implications for classroom instruction suggest that teachers should be aware of the influence of cognitive maturity, as well as the influence of experience, on the process of language development. As children do not grow cognitively at the same rate, they also do not develop language at the same rate, nor necessarily in the same fashion. Therefore, children within the same classroom will vary in level of cognitive maturity and in the production and comprehension of specific features of language. Teachers must keep in mind that language development proceeds along a course unique to each student. Instructional strategies and materials may need to be individualized according to level of mental maturity, as well as to quantity and quality of experiences in general and with language in particular.

Additionally, teachers should be aware of the possibly erratic course of development of some language variables. The development of some language features may not proceed along a predictable course within a particular student or across students in general. Growth spurts may be followed by plateaus or even temporary regressions. Teachers must understand that erratic characteristics of language development may be normal. Appropriate teaching strategies, then, would facilitate language growth by providing many and varied opportunities to use language in both oral and written

form and by providing role models who exhibit more mature language patterns.

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