[REVIEW]

Child Language: The Parametric Approach

By William Snyder, Oxford University Press, Oxford, 2007, xii+209pp.

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Keywords: *Cross-Linguistic Variation, Language Acquisition, Parameters, Grammatical Conservatism, Statistical Hypothesis Testing*

1. Introduction

Child Language: The Parametric Approach is a comprehensive introduction to first language acquisition research. The fundamental issue which this book focuses on is “What exactly is a child acquiring?” In the process of addressing this issue, the following questions are discussed in this book. The first one is “What form does adults’ grammatical knowledge take?” Although it may be difficult to provide a definite answer to this question, it may be possible to evaluate the adequacy of hypotheses by deriving predictions from them about the acquisition of grammar and testing them against children’s knowledge of their language. If so, the next question which is raised is “How do we test these predictions against children’s knowledge?” Because it is impossible to examine children’s knowledge directly, we need to devise a method which can indirectly assess what children know about their languages. With experimental and corpus-based methods both available in acquisitional studies, a further question to be considered is “How do we analyze and interpret the data obtained?”

This book introduces well-established and current approaches to these questions step-by-step. At the same time, it discusses in considerable depth the overarching relation between “grammatical conservatism” and linguistic theory. It also provides a practical guide for conducting statistical analyses applicable to acquisitional research.

* I would like to express my gratitude to two anonymous reviewers for their insightful and invaluable comments/criticisms for improvement of the manuscript. I am also grateful to Stephen Clark and Christopher Tancredi for their suggestions for stylistic improvements. Needless to say, all remaining errors are my own.

The main claims of the book are summarized as follows: (I) Children are very conservative when they use some constructions. (II) Any hypothesis about grammatical knowledge, if it is well-formulated, must satisfy explanatory adequacy so that it can explain how children attain their target grammar based on the limited information available to them. (III) To achieve explanatory adequacy, the parametric approach, which assumes that grammatical knowledge consists of properties (or principles) universal to human language and parameters which give rise to cross-linguistic variation, is most promising since it reduces the burden involved when children choose their target grammar. Furthermore, this approach makes it possible for researchers to come up with testable predictions about the acquisition of grammar. (IV) Both longitudinal and cross-sectional forms of study are valuable in the investigation of children's knowledge of grammar, and statistical methods and grammatical conservatism also play important roles in analyzing data of such studies.

After a brief overview of the book in section 2, this review focuses on these main claims. Section 3 discusses grammatical conservatism and section 4 shows predictions resulting from application of the parametric approach and surveys two case studies which provide supporting evidence for the predictions: one on phonological acquisition and the other on syntactic acquisition. Section 4 summarizes the statistical methods presented. Section 5 is a brief discussion to the main claims and section 6 offers concluding remarks.

2. An Overview of the Book

After briefly introducing the issues that will be addressed, this book devotes two chapters to the first question: "What form does adults' grammatical knowledge take?" Among the various components of grammar, syntax and phonology are brought into particular focus. Chapter 2 outlines two major frameworks in contemporary syntactic theory: the Principles-and-Parameters framework (P&P framework) and the Minimalist Program (MP). Chapter 3 turns to contemporary phonological theory and introduces two main frameworks: Optimality Theory (OT) and Government Phonology (GP). In these chapters, Snyder also discusses the adequacy of each framework, with reference to grammatical conservatism.

In the subsequent three chapters, this book addresses the second and third questions: "How do we test the predictions against children's knowledge?" and "How do we analyze and interpret the data obtained?" Three

methods of investigating children's knowledge of their languages are introduced: The first one is to record and analyze children's spontaneous speech, and the remaining two are experimental methods. Chapter 4 and Chapter 5 present computational and statistical methods for hypothesis testing with longitudinal corpus data. Chapter 6 reviews two experimental methods for cross-sectional studies: The elicited production task, which is devised to experimentally induce children's utterances, and the truth-value judgement task, which is developed to investigate their comprehension of sentences. This chapter also reviews statistical methods for cross-sectional studies and discusses the implications that grammatical conservatism may have for data obtained in experimental studies. Chapter 7 presents three case studies, and Chapter 8 concludes the book.¹

3. Grammatical Conservatism

Throughout this book, Snyder pays considerable attention to an important property which children's spontaneous speech exhibits, that is, grammatical conservatism: "children do not begin making productive use of a new grammatical construction in their spontaneous speech until they have both determined that the construction is permitted in the adult language, and identified the adult's grammatical basis for it" (p. 8). This section reviews his own research on the acquisition of verb-particle construction in English, which reveals that children show the property of grammatical conservatism in their spontaneous speech (section 3.1), and also presents his claim that careful consideration is required of children's utterances or responses in experimental research, which sometimes seem to overlook that property and may lead us to a hasty conclusion about children's knowledge (section 3.2).²

¹ Although we cannot go into details, this chapter also addresses the important issue of the initial setting of parameters. Given two (or more)-valued parameters, there are two possibilities to be considered. The first is that children start with a certain value for the parameter, that is, a "default" value. The second is to deny the existence of any such default value with all the parameters: some parameter settings (or all of them in an extreme hypothesis) are left unspecified. Sugisaki and Snyder's (2002) corpus-based study on the acquisition of preposition-stranding/pied-piping reported that no child showed evidence that the relevant parameter was set to a default value in his/her grammar.

² This does not mean that experimental research is not worth conducting. Both of the experimental methods introduced (i.e. the elicitation task and the truth-value judgement task) have some advantages over the longitudinal method and they are recommended in this book (see Ch. 6).

3.1. Acquisition of the Verb-Particle Construction in English

The verb-particle construction is idiosyncratic to English. As presented in (1)–(3), adult grammar has the following properties (pp. 56–57). Both the word order V(erb)-N(oun)P(hrase)-Particle and V-Particle-NP are possible with a full NP, but the order V-Particle-NP is impossible with a pronominal NP as in (1). Only the verb hosts the placement of tense or aspect morphology, and the particle never inflects with respect to either tense or aspect as in (2). Finally, the combination of a verb and a particle is highly idiosyncratic. It is impossible to freely replace one particle with another as in (3).

- (1) a. Sue finished her dinner up.
b. Sue finished up her dinner. / *it.
- (2) a. Bob might throw up his dinner.
b. *Bob throw-upped his dinner. / *Bob is throw-upping his dinner.
- (3) a. Toni picked her glass up. / Toni set her glass down.
b. *Toni picked her glass down.

The possible error types observed in children's spontaneous speech are limited to certain features. They might commit errors in word order (1b), in morphology (2b), or in lexical choice (3b), errors which are substantive since they violate some principle of grammar (the error of commission), or they might omit some words and make incomplete utterances as in (4b), errors which are not substantive because they do not violate any principle of grammar (the error of omission).

- (4) a. Mary threw her dinner away.
b. *Dinner away. / *Threw dinner.

A corpus-based research on children's spontaneous utterances of the verb-particle construction showed that most of the errors made were those of omission.³ Among a total of 10,233 recorded utterances, 32 erroneous particle constructions were observed, and out of the 32 errors, only three were errors of commission (p. 67).

- (5) a. Transcript 18, line 1082: took my eye on.
b. Transcript 26, line 97: put back hm.
c. Transcript 34, line 569: I xx go downed@n.

(5a) is an error of lexical choice, (5b) of word order, and (5c) of morphological marking. As a whole, the results showed that children were very

³ See Ch. 4 for the details.

conservative, especially in their speech, and rarely made substantive errors which violated adult grammar.

3.2. Cross-sectional Studies and Grammatical Conservatism

Thornton and Gavruseva (1996) conducted an elicited-production study on the acquisition of a construction with left-branch extraction. In English, this construction is disallowed as in (6), but in Russian it is allowed as in (7) (p. 98).

- (6) a. *How many did John read [__ books]?
 b. [How many books] did John read?
- (7) Skol'ko pročita-l Ivan [__ knig-Ø]
 how.many read-PST John book-GEN.PL
 ‘How many books did John read?’

They observed that most of the English-learning children under investigation allowed extraction of *wh*-possessors out of NP as in (8) (p. 99).

- (8) Who do you think 's food the baboon tried?
 (Whose food do you think the baboon tried?)

This finding apparently showed that the children used constructions which did not exist in their target language. However, Snyder notes that we should not rush to the conclusion that the children therefore did not have knowledge of the Left Branch Constraint. Chen et al. (1998) conducted a more elaborate elicited-production study and reported that children's production of the left-branch extraction was infrequent. Furthermore, the study of their spontaneous speech showed that the sorts of left-branch extractions which were common in the elicited-production studies were not observed in the data. Thus, Snyder concludes that the following one-way implication is plausible: ‘If a given form is in fact grammatically available to the child, then it can be elicited in a well-designed elicited-production study’ (p. 103).⁴

4. Evaluation of Hypothesis

Recall the fundamental issue of this book mentioned in section 1: ‘What

⁴ The same point is considered regarding the truth-value judgement task, and Snyder points out that, as in the elicited-production task, the following one-way implication holds: ‘If a given <sentence, meaning> pair is in fact grammatically available to the child, then he/she will accept that <sentence, meaning> pair in a well-designed truth-value judgement study’ (p. 109).

exactly is a child acquiring?" Every approach to this issue faces the logical problem of language acquisition: How can a child choose a target grammar among the permitted options, based on the limited information available? This book evaluates the parametric approach (P&P framework, MP, GP, or OT) as promising because it enables us to give an optimal answer to the problem. This approach hypothesizes that the information the child acquires is abstract in nature—not specific examples he/she encounters in the input, but rather much more general information given in the form of parameters with two (or more) values, or of constraint ranking. With abstract principles and parameters, the permissible grammars are restricted by UG, and the child has only to choose his/her grammar from them.

The parametric approach also makes it possible to derive testable predictions about the acquisition of certain constructions. In order to test the predictions, however, a problem arises as to how to determine exactly when children acquire the constructions. This section considers two types of predictions derivable under the parametric approach, and summarizes the claim with respect to this problem (section 4.1). This section also reviews two studies which provide supporting evidence for the predictions in order to show how well the approach works (section 4.2).

4.1. Predictions and Statistical Hypothesis Testing

Any hypothesis adopting the parametric approach, if it is well-formulated, provides the following testable predictions with respect to the acquisition of two constructions: Concurrent Acquisition and Ordered Acquisition (p. 7).

- (9) Concurrent Acquisition: If the grammatical knowledge (including parameter settings and lexical information) required for construction A, in a given language, is identical to the knowledge required for construction B, then any child learning the language is predicted to acquire A and B at the same time.
- (10) Ordered Acquisition: If the grammatical knowledge (including parameter settings and lexical information) required for construction A, in a given language, is a proper subset of the knowledge required for construction B, then the age of acquisition for A should always be less than or equal to the age of acquisition for B. (No child should acquire B significantly earlier than A.)

A potential problem which acquisitional research in general faces is that quite limited information is available to us about children's knowledge at a given point in their development. In other words, as we cannot pin down exactly when the children have acquired a given piece of grammati-

cal knowledge, we cannot determine with absolute confidence whether they have acquired construction A “at the same time as” or “prior to” construction B. The longitudinal and cross-sectional methods devised in acquisitional research enable us to indirectly assess children’s knowledge, but the data obtained by adopting these methods are not completely immune to the potential problem mentioned above. With respect to this problem, this book makes a strong claim that statistical methods provide us with an objective view in assessing children’s knowledge and then gives a detailed guide for statistical analysis. In longitudinal studies, either the Binominal Test (with the adjustment by Bonferroni correction) or a test of correlation works to check concurrent acquisition, and any one of the Binominal Test, a test of correlation, or the paired *t*-test is sufficient to check ordered acquisition.⁵ In cross-sectional studies, different types of analysis are applicable, depending on the form of the data. If the data are given as a percentage (or raw number) of correct responses, the correlation test, for concurrent acquisition, or the paired *t*-test, for ordered acquisition, is preferable. If the data are converted into a categorical classification, either “pass” or “fail,” a test of contingency (χ^2 or Fisher Exact Test) is more suitable.

4.2. Supporting Evidence

4.2.1. Phonological Acquisition: GP and Acquisition of Syllable Structure in Dutch

Pan and Snyder (2004) conducted a longitudinal study on the acquisition of Dutch syllable structure within the framework of GP.⁶ Languages vary with respect to the possibility of S-initial consonant clusters in word-initial position. The English word *spy*, for example, begins with /s/ followed by a consonant (in this case, non-sibilant obstruent /p/). In Spanish, on the other hand, such a cluster is disallowed in the word-initial position. Hence, English words like *spray* and *sphere* were borrowed into Spanish with an epenthetic vowel: *espray* “spray,” *esfera* “sphere.” In GP, this cross-linguistic variation is attributed to the following two parameters (p. 121).⁷

⁵ In addition to these statistical methods, some measures are in order to analyze the data in longitudinal study: FRU (“First clear use, followed soon after by Repeated Use”) and MLUm (“Mean Length of Utterance in morphemes”). See Ch. 5 for the details.

⁶ See Ch. 3 (pp. 41–50) and Ch. 7 (pp. 119–129) for the theoretical background and the experimental details.

⁷ See Kaye (1989) and Pan and Snyder (2004) for the analysis.

- (11) The Branching Rhyme Parameter
Rhymes may branch [No/Yes]
- (12) The MEN(Magic Empty Nucleus) Parameter
Empty nuclei are licensed before an s+C sequence [No/Yes]

According to these parameters, the post-nuclear rhymal position is available only in a language with branching rhymes, and the nucleus preceding this position can be empty only if the language has "magic licensing (Kaye (1996))." In English and Dutch, both the parameters are set as [Yes], while in Spanish the Branching Rhyme Parameter is set as [Yes] but the MEN Parameter [No].

This hypothesis provides a testable prediction of ordered acquisition as in (13) (p. 122).

- (13) In a language like English, any given child will acquire the possibility of branching rhymes prior to, or at the same time as, but never significantly later than, the possibility of s+C clusters in word-initial position.

Pan and Snyder collected their data from the Fikkert-Levelt corpora, which contains spontaneous-production data from twelve children. Their results were as follows. Eight of the twelve children acquired both branching rhymes and word-initial s+C sequences. Of these children, seven acquired branching rhymes prior to word-initial s+C sequences, and one acquired branching rhymes and word-initial s+C clusters in the same transcript. Among the remaining four children, three acquired branching rhymes prior to word-initial s+C sequences and one failed to acquire either of them by the end of the corpora. Interestingly, none of these children acquired word-initial s+C sequences prior to branching rhymes. All of these findings were fully consistent with the prediction in (13).⁸

⁸ Related to this study, the issue of whether children show grammatical conservatism in their phonology should be addressed. In a study based on children's spontaneous data (Fikkert (1994)), it is observed that one Dutch-learning child often inserted a vowel before /s/-initial clusters. Under the GP analysis, such utterances might be produced if the MEN Parameter were set as [No] in this child's grammar, a value contradicting that of adult Dutch. This indicates that children might be less conservative in their phonology, but it is noted that we should not draw any hasty conclusion. Another possible explanation is that the child was not sure if magic empty licensing is in fact available in adult Dutch and she just tried to choose the option (i.e. epenthesis) that was better than the others available to her (for example, the omission of the word-initial /s/). If such an explanation is plausible, children still show grammatical conservatism.

4.2.2. Syntactic Acquisition: MP and Acquisition of Japanese-Style Scrambling

Kang (2005) conducted a cross-sectional study on the acquisition of Japanese-Style Scrambling within the framework of MP.⁹ Cross-linguistic variation is observed with respect to the presence/absence of Japanese-style scrambling.

- (14) a. [_{IP} John-ga [_{CP} [_{IP} Mary-ga [_{VP} sono hon-o katta]]
 John-Nom Mary-Nom that book-Acc bought
 to] omotteiru].
 that thinks
 “John thinks that Mary bought that book.”
- b. [_{IP} sono hon-o [_{IP} John-ga [_{CP} [_{IP} Mary-ga [_{VP} katta]]
 that book-Acc John-Nom Mary-Nom bought
 to] omotteiru]].
 that thinks
 “John thinks that Mary bought that book.”

(14a) maintains the canonical word order, while (14b) does not (p. 23). In (14b), the object in the embedded clause moves out to the matrix clause. In spite of the difference in word order, these two sentences have the same meaning. Assuming the basic tenets of the MP, Bošković (2004) argues that Japanese-style scrambling is possible only in languages that lack articles, and attributes this variation to the following DP-parameter (p. 24).

- (15) The DP Parameter: The Hierarchy of Projections {does, does not} include a DP-layer above NP.

The strongest acquisitional prediction given by this analysis is that if a child is learning a language with Japanese-style scrambling, then as soon as his/her grammar in fact allows this type of scrambling, it will also lack true articles. This prediction cannot be tested unfortunately, because grammatical conservatism makes it extremely unlikely that the child will invent a system of articles for which there is no evidence in the input.

Kang considers further syntactic differences among the languages and points out that there is a correlation between the article system and overt case-marking: In languages that lack articles, noun phrases are marked with overt case-markers. Given this correlation, there are two pre-requisites for the possibility of Japanese-style scrambling: The lack of true articles

⁹ See Ch. 2 (pp. 9–31) and Ch. 6 (pp. 115–118) for the theoretical background and the experimental details.

and the existence of overt case-marking. This analysis provides a testable prediction of ordered acquisition as in (16) (p. 115).

- (16) If a child is acquiring a language with Japanese-style scrambling, then overt case-marking will be acquired prior to, or concurrently with, but never significantly later than, this type of scrambling.

To test this prediction, Kang conducted a cross-sectional comprehension study on Korean children. The test items included the following types of sentences: those which tested children's knowledge of Korean nominative and accusative case-markers and those which tested their knowledge of Japanese-style scrambling which is also found in Korean. To analyze the obtained data, Kang used a statistical test of contingency and the results showed a correlation between the knowledge of case-markers and the knowledge of Japanese-style scrambling: Most of the children passed on both the object-marker items and the scrambling items, or failed on both of them. One child showed partial acquisition of the constructions under discussion. He/she passed the object-marker items but failed the scrambling ones. As a whole, these results confirmed the ordered acquisition of the two constructions.

5. Discussion

In this book, Snyder makes some strong claims based on the notions of grammatical conservatism and statistical hypothesis testing. In this section, let us briefly discuss the potential problems and points worthy of note behind these claims.

One of the central and crucial claims put forward in this book is that any proposed parameter must have a "subset-superset" character to make the theory embodying it compatible with grammatical conservatism.¹⁰ If the set of structures permissible with one value of a parameter comprises a proper subset of the set of structures permissible with the other value, and if children start with the value of the parameter which specifies the subset, conservative

¹⁰ It is noted that of the two phonological frameworks introduced in this book, GP is preferable to OT as an explanatorily adequate hypothesis, since most of the parameters proposed in GP have a subset-superset character. By contrast, OT makes it difficult for children to be grammatically conservative, since most of the constraints are in the dominance relation; if any two of them are changed in this relation, it may lead to incorrect ranking in relation to the other constraints. The child at this stage may commit an error which does not exist in adult grammar. See Ch. 3 and Ch. 8 for discussion.

learning becomes possible. However, the claim that children are consistently conservative in learning their grammar and never commit errors in violation of adult grammar is too strong and thus it is still controversial (see Hyams (2008), Lillo-Martin and Snyder (2008) for example). Of course, as Snyder points out, careful attention should be paid in analyzing the data obtained in experimental studies. Children's errors might not necessarily reflect their lack of grammatical knowledge, and might just be experimental artifacts or might be a reflection of the immaturity of non-linguistic knowledge or cognitive systems, such as pragmatic principles, processing ability or working memory (Wexler and Manzini (1987), Thornton and Wexler (1999), Philip (1995), among others. See also fn. 8). Furthermore, the character of parameters is also still controversial. Parameters with more than two values or which give rise to no superset-subset relations have been frequently proposed (see Hyams (2008) for example). Thus, we need to consider how children set their initial hypotheses about their target languages (related to this issue, see fn. 1).

Another claim put forth in this book is that it is essential to apply statistical analysis to the data obtained both in longitudinal and experimental studies. This point has not been foregrounded in the previous introductory books for acquisitional research based on generative grammar. Nevertheless, this is a basic principle that every acquisitional research should uphold, because the research can access only indirect evidence of children's knowledge. The statistical analysis is the optimal method currently available, and this method enables the research to counter such criticism that the basis on which the research is founded is too subjective or intuitive and therefore cannot be regarded as scientific in the determination of the age at which children acquire a certain construction and the knowledge required for it.

6. Concluding Remarks

This book provides a comprehensive overview of linguistic theories and methods for acquisitional research. This review has provided a brief summary of the book and a short discussion of a few select problems. It has focused on the following main claims Snyder makes. (I) Adults' grammatical knowledge takes the form of abstract principles and parameters. (II) We can test the predictions each hypothesis makes by employing corpus-based and experimental methods. (III) We should pay careful attention in analyzing and interpreting the data obtained, taking grammatical conservatism into consideration and applying statistical methods.

This book also provides detailed practical instruction as how to conduct statistical analyses in corpus-based or experimental research with specific examples. Although some of the claims made in it are controversial, this book is recommendable as an introductory textbook, not only to readers interested in acquisitional research based on generative grammar, but also to readers interested in other related fields of study. The parametric approach has brought about a number of fruitful acquisitional studies, and readers will be inspired to investigate child language by the many insightful studies presented in the book.

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[received December 20 2009, revised and accepted May 9 2010]

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