Book Reviews

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This book attempts to integrate symbolic processing, in the form of minimalism, with connectionism. Minimalism represents sentences as symbolic structures resulting from a formal process of syntactic derivation. Connectionism, on the other hand, represents sentences as patterns of association between linguistic features. These patterns are said to obey statistical regularities of linguistic usage instead of formal linguistic rules. The authors of the book argue that human sentence processing displays both structural and statistical characteristics and therefore requires the integration of the two views.

AUDIENCE

The book is intended for a broad cognitive science audience. It is most directly relevant to those engaged in sentence processing research. However, the book is generally accessible to those unfamiliar with either sentence processing research or formal linguistic theory. A number of text boxes contain succinct descriptions of experimental paradigms, and there is an introductory chapter on linguistic theory. The proposal that minimalism plays a central role in sentence processing will interest proponents of the theory. On the other hand, proponents of construction grammar and allied linguistic theories will be interested to learn about the psychological role played by prefabricated grammatical structures. Finally, connectionists will be interested in the experimental evidence for statistical influences in sentence processing.

ORGANIZATION AND STYLE

The text is well laid out, and the style of writing is clear. The book is organized into 10 chapters. Chapter 1 is a short outline of the main ideas in the book and how they are developed in later chapters. Chapters 2–4 contain reviews of the literature and other background material. Chapter 5 describes the authors’ integrated model. Chapters 6–8 present evidence in favor of the model. Chapters 9 and 10 show how the model relates to other aspects of linguistic cognition.
COMMENTS

The review focuses on the largely theoretical sections of the book (chapters 1–5). Limitations of space do not allow for a thoughtful discussion of the empirical sections (chapters 6–8) and the attempts to relate the model to other aspects of language functioning (chapters 9 and 10).

The book begins with a review of experimental literature from the 1950s and 1960s on the role of grammatical rules in sentence processing (chapter 2). According to the authors, the “ultimate conclusion” to be drawn from this literature “was that while grammatically defined representations appear to be computed during language behavior, the grammatical rules that define them may not be used” (p. 45). There are two main critical observations concerning this conclusion and the authors’ review of the literature.

First, the wording of the conclusion glosses over some problematic facts: subjects were sometimes found to employ sentence representations that were not grammatically defined, and the methodological problems were such as to render suspect any strong conclusions about the psychological reality of phrase structure (see the extensive reviews by Levelt, 1974, 1978). Second, the authors’ review omits the considerable evidence for Markovian (probabilistic) models of language processing. This evidence is important for an informed evaluation of modern-day connectionism and for the authors’ own proposals. Corpus linguists may also be interested to learn about the psychological reality of n-grams. Because this important work appears to have been largely forgotten, the following rather extensive list is provided for the interested reader: Deese and Kaufman (1957); Goldman-Eisler (1968); Lefton, Spragins, and Byrnes (1973); Maclay and Osgood (1959); Marks and Jack (1952); Miller, Bruner, and Postman (1954); Miller, Heise, and Lichten (1951); Miller and Selfridge (1951); Muise, Leblanc, and Jeffrey (1972); Onishi (1962); Pollack and Pickett (1964); Richardson and Voss (1960); Scheerer-Neumann, Ahola, Koenig, and Reckermann (1978); Sharp (1958); and Traul and Black (1965).

Chapter 3, “What every psychologist should know about grammar,” provides useful descriptions of linguistic terminology and concepts. It will be useful to readers who are not familiar with linguistic theory. However, the chapter offers an unrepresentative view of linguistic theory because it focuses on theories that employ movement and associated concepts of derivation and trace. There is a danger that readers unaware of the breadth of linguistic theory might be led to think that these concepts are uncontroversial and must be accommodated by a valid model of sentence processing. A more representative coverage of linguistic theory would also have revealed interesting parallels between the authors’ notion of canonical sentoid with the notion of construction in construction grammar and the notions of collocation and the n-gram in corpus linguistics.

The quality of the discussion in this chapter is lowered by the use of unsupported grammatical intuitions. For instance, in part of a complex chain of argument, the authors state categorically that “in a relative clause, adverbs cannot appear before the relative pronoun” (p. 61). No support is given for this generalization, apart from the following example:

This is the horse frequently that raced.
However, the authors’ generalization is not an accurate statement about the distribution of adverbs and relative pronouns. A simple query on the Google search engine (search for “something sadly + that”) reveals many examples of normal sounding relative clause sentences that contain a relative pronoun preceded by an adverb, for example,

Okinawa’s experience offers a sober reminder of the horrors of war, something, sadly, that mankind constantly seems to forget.

... and the puzzles give you feedback when you’re close but not quite – something, sadly, that no traditional book-based puzzle can do for you...

The pattern, <something> <evaluative adverb> <relative pronoun>, seems to be rather common, which, ironically, supports the authors’ general argument for statistical patterning in language. Their own example can be altered in the light of this pattern to read as follows:

This is the horse, sadly, that died.

The adverb no longer modifies the embedded verb, as in the authors’ example,¹ but the distribution of lexical categories remains the same. The use of corpus data requires insignificant effort, and it is difficult to understand why the authors jeopardize their arguments by relying on personal intuition.

Chapter 4 describes contemporary models of sentence processing. These are numerous and subject to constant revision. Under the circumstances, the authors cover a fairly wide and representative sample. They divide the models into two groups: structural models, which employ phrase structure rules, and connectionist models, which are statistical. There is also a short section on hybrid models.

The authors present evidence for statistical influences on sentence processing but argue that connectionist models are limited in a fundamental way. These models excel at pattern completion but only by having learned a limited set of patterns against which to compare the input. The authors argue that sentences are infinite in number and cannot be handled exclusively in terms of pattern completion. They therefore argue that connectionist models must be supplemented by a grammar.

The authors’ critique of connectionism could have been sharpened by reference to previous work on this topic. A succinct empirical argument for integrating structural and statistical aspects was proposed by Goldman-Eisler (1968), along the lines of a nineteenth century distinction Hughlings Jackson made between superior (novel) and inferior (learned) speech. Ferdinand de Saussure (1916/1990) also integrates statistics and structure in his discussion of the way in which paradigmatic series emerge from linguistic experience. More recently, Miikkulainen (1996) and Marcus (2001, appearing presumably too late for the authors to reference), among others, argued that hybrid solutions can overcome certain nontrivial limitations in the ability of connectionist models to generalize to novel inputs. Reference by the authors to this previous work could have presented readers with alternative possibilities of integration against which to assess the authors’ own model.

Chapter 5 describes the authors’ hybrid model of the listener. It combines dual processing with analysis by synthesis, whereby approximations to the input
are successively synthesized and compared against the input until a suitable match is found. The model operates as follows. An input string is first placed in a temporary store and then subjected to preliminary analysis by the connectionist component of the model. The preliminary analysis determines major phrases and their conceptual relationships. The output from this analysis constitutes a “numeration,” which initializes the minimalist component. This component now carries out a standard syntactic derivation and outputs logical and phonological representations of the input. The phonological representation is then compared against the original input string. If the match is good, processing is complete and the listener hears the two representations played simultaneously; otherwise, the whole process starts again and a different candidate representation is generated.

The piquancy of the irony in this proposal will not be lost on those familiar with the history. Generativism was born out of a vigorous rejection of associationism and the notion of linguistic habit. It takes an admirable degree of integrity to admit that this rejection was precipitous and that generativism should have sought to complement, rather than to replace, associationism. Thomas Bever, in fact, made this admission as early as 1970. The proposed model is a courageous and ingenious attempt to integrate the current forms of generativism and associationism into one system. Chapters 6–8 of the book indicate that there is actually a considerable amount of experimental data that is broadly consistent with the hybrid model. However, the authors’ desire for empirical validation is detrimental to the detailed elucidation of the mechanics of the model. Several important issues are not addressed, each of which can seriously undermine the psychological plausibility of the model.

One set of issues relates to the memory requirements of the model. It appears that temporary storage is required for two complete phonological representations of the same sentence. These representations must also presumably be stored in two separate buffers; otherwise, they would interfere with each other. However, the authors do not cite independent psychological evidence for (a) the requisite short-term memory (STM) capacity; (b) the maintenance in STM of two distinct phonological representations of the same sentence, or (c) the existence of two separate phonological buffers. Further, if these buffers have a limited capacity, as one would expect, it is hard to predict how the model would cope with buffer overflow caused by excessive sentence length.

A second set of issues relates to the sequencing of processing events. Precisely when does the listener hear the sentence? Is it only when a suitable match is found? What mechanism prevents the listener from hearing the sentence each time a comparison is made? And what if no match is found? Does the listener then not hear the sentence? From the information given in the book, the model seems to predict a delay in hearing the sentence, spanning the time the input string initially enters the temporary store to the time a suitable match is found. The model also seems to predict variations in this delay, depending on the number of times candidate representations are generated before a satisfactory match is found. Do the authors therefore predict that some sentences are heard systematically later than others relative to onset time?
There is a third set of problems concerning the memory requirements of the model in relation to the sequencing of processing events. If several approximations of the input are generated, a record must be kept concerning failed analyses. Otherwise, the system runs the occasional risk of looping infinitely through the same wrong analyses. In the flow diagram on page 163, the authors present a box that indicates that data from the preceding analysis feeds into the preliminary analysis. Does this data contain a record of previous analyses? If so, what is the nature of the record? A key argument made by the authors is that there are an infinite number of possible sentences. This argument would seem to preclude the use of a strategy in which a token of some kind is stored in order to record each specific structure that has been proposed and rejected. Such a strategy depends on the forbidden assumption that it is possible to enumerate all possible structures. If sentence tokens are out of the question, does the record consist of entire sentence structures? If so, the storage requirements are considerable. In addition, if excessive on-line memory demands trigger an STM purge, records of previous analyses would be lost and the system would presumably get locked into a loop once again, repeating past errors indefinitely.

A fourth set of problems has to do with the fragmentary nature of conversational language in relation to the authors’ claim that “The sentence level is the fundamental object of language perception” (p. 5). Consider the following conversation heard recently on British radio:

Interviewer: Are you on time?
Interviewee: Ish
Interviewer: (laughs) Are you on budget?
Interviewee: Ish
Interviewer: (laughs)

This example illustrates a difficult problem for the authors’ model. The problem is that people communicate effortlessly without using complete sentences. Given a sentence fragment as input, it is not at all clear what the connectionist component of the model would output. The minimalist component seems to have two options. Given an incomplete numeration, it could “crash.” It is not clear from the book what would then happen to the parse or what the behavioral correlates of crashing might be. The other option is to accept the incomplete numeration, generate a complete tree structure, and output a whole sentence. The difficulty is that it would not then be possible to phonologically match a complete sentence with a fragmentary input string.

Moreover, in any case, it must be asked whether minimalist principles are so subtle that they can convert the adjectival suffix *-ish* into an adverb meaning something like *approximately* and then, using material from the discourse context, build a tree structure, complete with inflectional projection node and all the rest, to derive sentences like “I am approximately on time,” “I am approximately on budget,” and so forth. It seems more plausible to regard the creative use of *-ish* here as the product of fluid verbal intelligence rather than something that grammar can reasonably be expected to predict.
A fifth set of problems concerns the relationship between the connectionist and minimalist components. The entire argument of the book seems to hinge on the ability of the minimalist component to inform the connectionist component in some way. However, it is not obvious from the flow diagram on page 163 precisely how the minimalist component informs the connectionist component. There is a box that indicates that results from previous analyses feed into the preliminary analysis, but it is not made clear just what sort of information this box contains. The two components also use different representational formats: distributed representations versus symbolic representations. How is one format translated into the other? If translation between formats is possible, so that the minimalist component can feed into the connectionist component, how does that tally with the authors’ argument (p. 147) that connectionist models cannot represent detailed syntactic structure?

These questions neutralize the impact of the experimental evidence presented in favor of the model in chapters 6–8. Some of this evidence is interesting in its own right. For instance, chapter 7 suggests that numerous findings in sentence processing can be reduced to the operation of a prefabricated N(oun)–V(erb)–N(oun) sentence schema. There also seem to be cases where subjects compute meaning first and syntax later, as predicted by the model (chapter 6). However, there could well be alternative explanations for the data. It might be that connectionist-style processing interacts with conscious verbal problem solving instead of a minimalist component.

SUMMARY

The main strength of the book lies in its wide coverage of psycholinguistic data and models and in its search for coherence. In this search, the authors find, contrary to the spirit of generativism, an important psychological role for statistical influences such as the use of prefabricated grammatical structures. The connectionist component of their model is therefore justified. However, the case for the minimalist component is weak. The chain of argumentation is opaque concerning the links between the connectionist and minimalist components. More extensive discussion of previous work on the integration of statistical and structural aspects would have been helpful. The mechanics of the authors’ own model need to be specified in greater detail to exclude some implausible consequences of the current formulation.

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NOTE

1. As noted by a private correspondent.
REFERENCES


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The highly regarded Children’s Language series continues in 2001 with two new volumes, 10 and 11 (Nelson, Aksu-Koc, & Johnson, 2001, Vol. 11). Under the able leadership of Keith Nelson (who has edited all but two volumes), each volume since 1978 has represented current topics in research on child language; and the series provides a comprehensive overview of the history and progression of the study of language development over the past two and a half decades. Since Volume 7, the papers included in the series were chosen from the range of presentations at the meetings of the International Association of the Study of Child Language, which bring together researchers from Asia, Europe, the Middle East, Australia, North and South America, and Africa. Prior to Volume 7, articles in each volume also represented an international scope.

Volume 10 focuses on the development of children’s discourse competence and represents the scope of the work in children’s narrative and other discourse forms as it currently stands. Narrative has historically been the largest focus of work in children’s discourse, and this volume contains five papers (out of seven) on different aspects of narrative development. However, it also includes one article on the use of politeness forms and routines and three on children’s explanations. This extension of the study of discourse forms other than narrative is an important advance in the study of language development in recent years.

Ruth Berman’s chapter, “Setting the narrative scene: How children begin to tell a story” examines how children introduce story settings in their retellings of a frog story (Mercer Mayer’s *Frog, Where Are You?*) and personal experience accounts of a quarrel or fight they had had with someone else. This study, in a cross-sectional design, recorded the narratives of 3-, 5-, 7-, and 9-year-olds and adults, specifically examining setting elements used in each story, such as characters, location, time, and motivations of characters for the action. Berman found that, across all categories of setting elements, each age group produced more than the younger one before it. Thus, 3-year-olds produced a few introductions of character and place settings but no time or motivation setting elements, whereas 5-year-olds produced more character and place elements and included a few motivation elements. Nine-year-olds produced all elements, but adults produced many more setting elements than all the children’s age groups did. When comparing the setting clauses produced for each story elicitation type (book vs. personal event), Berman noted that in all age groups except the 3-year-olds, the storytellers produced far more setting clauses for the personal event retelling than they did for the picture book retelling. Routine setting elements, such as “One day” or “Once upon a time,” were used for both kinds of stories by young children; but over time the children developed the ability to use less conventional settings specific to each story. Berman points to the underlying cognitive faculties that children develop over time that are necessary for using different narrative elements, especially internalized narrative schemas that change from a simple, inflexible, general form to more dynamic, complex, par-
ticularistic forms. Specifically, these internalized narrative schema allow children to “provide adequate and appropriate background information to set the scene for the story that is about to unfold” (p. 25).

A similar focal point of the cognitive underpinnings of narrative is found in Hanna Jakubowicz Batoreo and Isabel Hub Faria’s chapter, “Representing movement in European Portuguese: A study of children’s narratives.” The authors hypothesize that the development of spatial understandings is based on the ways in which a specific language encodes spatial relations, as well as cognitive sensorimotor concepts; different languages have been shown to mark spatial relationships in very different ways. Batoreo and Faria focus on the expression of movement within space in European Portuguese narratives of children and adults based on retellings of picture sequences. The authors’ sophisticated morphosyntactic and semantic analysis of participants’ story clauses involving the location and movement of characters and objects in the stories offers an important window into the mind of the storyteller and represents an important methodology that links language and cognitive development in powerful ways. The results of the study demonstrate discourse strategies that Batoreo and Faria call *setting a spatial frame*, which consists of the spatial orientation of characters and objects that is given at the beginning of the story, and *spatial anchoring*, which occurs throughout the storytelling, giving information in terms of a spatial frame of reference. According to the authors, these strategies are not firmly established until children are around the age of 10 years.

The language of emotion within two discourse forms, narrative and explanation, is explored by Michael Bamberg’s “Why young American English-speaking children confuse anger and sadness: A study of grammar in practice.” In this study, Bamberg found that young English speakers (around the ages of 4 and 5) confused the terms angry and sad. He asked children to recount a time when they had been angry and another time when they had been sad and explain what it means to be sad and what it means to be angry. He found that the youngest of the 4- to 10-year-olds gave similar, even verbatim, responses to the requests for a narrative of anger and sadness and for an explanation of anger and sadness. Examining the pragmatic structure of the responses, Bamberg pointed out that older children gave explanations and narratives of anger that involved the fixing of blame on some agent, whereas the stories and explanations of sadness focused on eliciting empathy on a victim without blame fixing. The youngest of the children were unable to marshal the pragmatic markers in their talk to mark this distinction. Bamberg argues that children must develop, via cultural learning, the ability to use emotions to stake out positions or stances in conversations by using the appropriate linguistic constructions for making this distinction clear to the listener.

Gillian Wigglesworth and Anat Stavans’ article, “A crosscultural investigation of Australian and Israeli parents’ narrative interactions with their children,” analyzes parent–child interaction around the telling of stories from two picture books with children ages 3, 5, and 7 years. Their interest was in identifying differences between two cultures’ ways of interacting with their children around book-generated narratives. They found that in the Israeli family interaction, the parents made more contributions to the conversation about the story than did
the Australian parents, except when the Australian children were 5 years only. Wigglesworth and Stavans suggest that the Israeli conversations, when the children were 3, 5, and 7 years (and the Australian 5-year-olds’ conversations), were “reading-based activity,” with a greater focus on the story. The Australian conversations when the children were ages 3 and 7 years were “interaction-based activity,” meaning that they were more focused on following the child’s interests and topics emerging from the conversations.

The complexity of the demands for politeness in Japanese discourse is highlighted in “The acquisition of polite language by Japanese children,” by Keiko Nakamura. Like Bamberg, Nakamura employed a pragmatic analysis of children’s conversations to trace the development of their social knowledge as reflected by the use of politeness forms. She observed four Japanese politeness forms as used by 1- to 5-year-olds: aihatsu (greetings and polite expressions), sonkeigo (honorific-respectful language), kenjoogo (humble language), teineigo (addressee honorifics), and bikago (beautification honorifics). She found that children become increasingly sensitive to the social context, hierarchical relationships, and cognitive and linguistic demands through hearing others using the politeness forms in everyday conversation and through role-playing situations in which parents give the child the opportunity to practice politeness forms in hierarchical relationships. Even the youngest Japanese children in her study were able to use appropriate politeness language forms in some situations, first acquiring the most conventional routines and formulaic forms, and eventually being able to apply more sophisticated, nonformulaic forms. Nakamura emphasizes the complexity of negotiating the grammatical, lexical, and semantic features of politeness with social relationships and interactions.

Edy Veniziano tackles the subject of children’s explaining abilities between the ages of 1 and 2 years in her chapter, titled “Interational processes in the origins of the explaining capacity.” While most researchers in child discourse have noted how early the ability to narrate emerges, Veniziano demonstrates that the ability to explain emerges very early as well. Observing two mother–child dyads for a year each in book reading, play, and snack situations, she traced the emergence in the children of expressing and justifying oppositions (protests, denials, refusals, and prohibitions). She found that even when the children were youngest, they were able to verbally express their oppositions; but it was not until early in their 3rd year that they began to justify their opposition with any regularity (about half of the time). According to Veniziano, these results outline a developmental trend in which children’s internal verbal representations “acquire an increasing force and psychological ‘reality’” in order to “let the other know that what she or he envisions is not going to take place” (p. 127). Veniziano argues that, to account for the development outlined in her study, we must acknowledge children’s growing ability to tap into the potential of language to refer to concepts and relations among concepts and to connect and communicate with others in social relationships. Given the early emergence of explanation in this study, this article should cause discourse researchers to take more seriously explanation as a more primary form (along with narrative) than most narrative researchers theorize, rather than being secondary to (i.e., appearing later, emerging from) narrative (e.g., Bruner, 1986).
The chapter that represents some of the newest directions in the study of children’s developing discourse is Kenneth Reeder’s “Children’s attributions of pragmatic intentions and early literacy,” which examines the links between oral language and the development of literacy and between expository (explanatory) discourse and narrative discourse and the importance of pragmatic knowledge, especially identifying speakers’ and writers’ intentions, to children’s emerging literacy. Children ages 6–9 years were presented with a video puppet show and interviewed regarding the speaker–puppet’s intention in asking a specific question. Then each child was given two writing assignments: a letter to a friend in another city describing his or her bedroom (expository-descriptive writing task) and a story retelling based on a wordless picture book (narrative writing task). For both writing genres, older children scored higher on overall quality than younger children. In the narrative task, children with higher pragmatic attribution scores (from the interview regarding the puppet show) demonstrated greater developmental differences between older (mean age, 8;3) and younger (mean age, 7;2) children than those with lower attribution scores. In contrast, in the expository writing task, older participants who demonstrated greater pragmatic attribution ability scored higher on the measure of overall writing quality than did older participants with lower pragmatic attribution ability (with equivalent scores to the older, high-pragmatic attribution children). However, the younger, low attribution group tended to score similar (or even slightly higher) on writing quality than younger children with high attribution scores. Older children overall wrote better than younger children, but those with strong pragmatic attribution skills in both age groups seemed to have an extra advantage in writing, except for younger children writing explanations. Reeder points out that pragmatics underpins writing ability because writing requires communicating with a specific audience for a specific purpose; writers need pragmatic skills as well as formal linguistic skills in order to be considered competent.

This collection of papers, when subjected to the kinds of developmental analyses found in them, represents a description of the development of the field of children’s discourse. As several of the chapters point out, children’s discourse abilities become more elaborated, longer, more complex, more sophisticated, and more flexible over time. Research and theory in the development of children’s discourse, as represented admirably in this book, have gone through similar changes over time; our knowledge and study of discourse development is much more sophisticated, flexible, differentiated, detailed, and diverse in the last quarter of the 20th century. This is borne out in discussions of the codevelopment of language and cognition throughout each of the chapters in this volume. Such discussions by child language researchers have certainly advanced our understanding of children’s thinking. The complexity of cognitive, linguistic, social, emotional, and cultural demands on children as they learn to speak is well documented by these seven studies; and theorizing on the relations among these areas of development has grown and continues to grow significantly. Although the topics and methods here are not particularly new to the study of child language, they represent much deeper, more differentiated, and more integrated approaches to the work of understanding children.
In this introductory textbook to language acquisition Guasti has done an excellent job of presenting the state of the art of generative linguistic research in the field. Her review of the literature is extremely thorough and up to date; and theoretical arguments, empirical findings, and methodological issues are introduced and discussed with great rigor and lucidity.

The book is mainly devoted to the acquisition of syntax from a generative perspective. Except for a chapter devoted to infants’ speech perception and production and another on lexical acquisition, the rest of the book focuses on the nature of syntactic development. Chapter 1 introduces the logical problem of language acquisition in the generative theoretical framework of universal grammar. Imitation, reinforcement, and association are presented as possible mechanisms accounting for language acquisition alongside the innateness hypothesis. Guasti dismisses a model of language development in which imitation and reinforcement play a major explanatory role. Although it is true that not many researchers nowadays would stand by behaviorist tenets of acquisition purely through imitation and reinforcement, a growing number of scholars outside of the generative tradition are reassessing the impact of imitation of the maternal input and of frequency of occurrence as key mechanisms in linguistic development (Akhtar, 1999; Goldberg, 1998; Pine, Lieven, & Baldwin, 1997; Tomasello, 2000; Tomasello & Brooks, 1999). Some concessions are made to the psychological reality of associative mechanisms, but connectionist approaches, in which systematic linguistic behavior is an emergent property rather than given a priori, are also dismissed as a possible way in which children could crack the linguistic code. The innateness hypothesis is therefore presented as the only viable alternative to account for how language is acquired. Although not all knowledge of language is inborn, some core aspects of it are. Universal grammar makes available a series of universal principles and a restricted number of language-specific options (parameters) that have to be set to the correct value according to the positive evidence available in the target language.

Chapter 2 surveys research on infant speech perception and production from the first days of life to the age of 12 months. The studies reviewed provide evidence for infants’ exceptional sensitivity to prosodic rhythmic properties of language and ability to perceive phonemic contrasts. In the course of the first year of life, infants’ discriminatory abilities gradually decrease as they home in
on those properties and contrasts that are meaningful in their native language. Phonological development is thus a selective process in which exposure to the native language automatically restricts the number of relevant contrasts that are necessary and sufficient in the system the child is acquiring. At around 6–8 months hearing infants start to babble and deaf infants exposed to sign language start to engage in manual babbling. At the beginning vocal babbling does not display language-specific phonetic features, but this is no longer the case by the age of 8–10 months, by which time linguistic experience starts to guide children toward the sound of their native language to some degree. Recent studies have also shown that the relationship between babbling and first words is a close one: there is a similarity between the frequency of sounds used in first words and in babbling.

Chapter 3 tackles the acquisition of first words from the perspective of phonological bootstrapping. This is a two-step model of lexical acquisition in which word forms can be identified and stored independently of semantic mapping, during which meaning is attached to the lexical item. By exploiting prosodic information, distributional regularities, phonotactic constraints, and typical word shapes, infants can successfully segment words in connected speech. In the mapping of meaning to phonological form, at least in the case of some concrete nouns, children are guided by a number of biases that considerably narrow the relevant search space. Finally, the role of syntactic, phonological, and semantic bootstrapping is considered for the more complex acquisition of verbs and argument structure.

Chapters 4–10 provide a very comprehensive and informative overview of a number of issues in the acquisition of the syntax of English and other languages at the forefront of linguistic research for the last 30 years. Chapter 4 introduces the structure of early clauses and the debate on the availability of functional categories in children’s grammar by comparing and contrasting the small clause hypothesis and the full competence hypothesis. The central role of verbs in acquisition is explored through the crosslinguistic availability of subject–verb agreement and the optionality of root infinitives in Germanic versus Romance languages. Chapter 5 is entirely devoted to the phenomenon of null subjects in the grammar of children acquiring non-null-subject languages such as English, French, German, Dutch, and Danish. Syntactic, processing, and phonological accounts of the null-subject phenomenon are reviewed in detail, including the truncation analysis, the topic-drop analysis, the sentence-length account, and the metrical account.

Chapter 6 introduces wh- movement in short- and long-distance interrogatives and in relative clauses. Crosslinguistic evidence is provided for the satisfaction of the wh-criterion in root questions, a well-formedness constraint postulating a symmetrical relationship between a wh-operator and a head carrying the wh-feature, typically the complementizer head. As for long-distance questions, a number of studies show that by the age of 3:5 children learning a variety of languages comprehend and produce them, although some errors are also attested, such as the use of a medial wh-word when they extract from embedded subject and object position and the use of the complementizer that in long-distance subject questions. In her review of the numerous studies conducted on
children’s comprehension of relative clauses, Guasti teases apart those errors that are due to infelicitous experimental conditions in which pragmatic considerations bias certain kinds of errors by the children.

Controlling for the appropriateness of pragmatics in experimental conditions is vital to the correct interpretation of the results, as shown again in studies on noun phrase (NP) movement in passive constructions in Chapter 7. According to one of the hypotheses, early passives are, in actual fact, only adjectival constructions, passives involving NP movement are initially unavailable to children at a time when they cannot yet form A-chains. However, evidence from the movement of subject arguments from the complement position of unaccusative predicates to the specifier of inflectional phrase suggests otherwise. Children can and do form A-chains, and errors in the comprehension of passive constructions involving a by phrase are more likely the results of infelicitous pragmatic conditions in the experimental design.

Chapter 8 deals with children’s comprehension of anaphoric relations as formulated in the three principles of the binding theory. A growing body of experimental evidence indicates that children have substantial knowledge of such principles; they can distinguish between reflexives and nonreflexive pronouns and know the local domain in which binding conditions apply. Nevertheless, children do make some puzzling errors in the interpretation of nonreflexive pronouns. In cases of forward anaphora (Goofy admires him), but not in backward anaphora (He admires Goofy), they sometimes take the pronoun to corefer with the referring expression. A possibility that we would like to suggest here is that coreference between a pronoun and a referring expression is pragmatically odd when the latter follows the former. In the unfolding of discourse a more marked referring expression such as a proper noun will precede and not follow a less marked one such as a pronoun when they refer to the same entity, hence, the unavailability of coreference between a pronoun and a following referring expression. Pragmatic considerations are central to children’s interpretation of quantification, a topic dealt with in depth in chapter 9. A number of studies have shown that children treat quantified NPs differently from referential NPs, but they do make errors in interpreting universally quantified sentences. For some researchers this is evidence that children assign these sentences a different interpretation than adults. This position is problematic on two counts: it does not account for all the errors the children make and it poses a discontinuity problem with adult knowledge. A reappraisal of the pragmatics of the experimental conditions in which children are tested has indeed shown that their difficulties with universal quantifiers are more likely to be the consequence of pragmatic infelicitous conditions. When the contexts are pragmatically felicitous, children behave like adults.

The issue of whether children possess the same kind of syntactic and semantic knowledge as adults is further explored in chapter 10 with an overview of studies on the acquisition of control, that is, the interpretation of the subject of a nonfinite clause. Crosslinguistic evidence shows that by the age of 3;0 children know that the subject pronoun of a nonfinite clause is distinct from lexical pronouns, they can distinguish between subject and object control verbs, and they master control into complements but still have difficulties with control into
adjuncts. In addition, residual errors with subject control verbs such as promise require specific lexical knowledge to override syntactic expectations that such verbs will behave as object control verbs.

The book concludes with a brief overview of two pathological conditions: specific language impairment (SLI) and Williams syndrome. In SLI the normal course of language acquisition is disrupted in the absence of mental retardation, known neurological damage, and hearing loss. In Williams syndrome, a rare metabolic disorder with a known genetic cause, individuals whose nonverbal abilities are considerably impaired display linguistic abilities that are relatively spared compared with other populations with similar mental retardation such as Down syndrome. These two symmetrical conditions are taken as examples of a dissociative mechanism between language and other cognitive abilities and hence as proof for the modularity of the language faculty. Linguistically informed studies on children affected by Williams syndrome are still relatively few, and the bulk of the chapter is devoted to the characterization of SLI and possible syntactic accounts of this disorder. Considerably less attention is devoted to a nonsyntactic account such as the surface hypothesis (SH). Although some of the criticism is to the point, such as, for example, the lack of explanatory power for pronoun case errors in English, some other comments are not as accurate. For example, Guasti claims that the different success rates in English between the use of the plural marker -s and the third person singular verbal marker -s cannot be accounted for by salience as proposed in the SH because the two morphemes are homophonous. Hsieh, Leonard, and Swanson (2001) have in fact shown that duration is different in the two morphemes, as are sentence position and frequency, all factors that conspire to make the plural marker more salient than the verbal marker.

The one limitation of Guasti’s book is its very strong bias toward a model of language acquisition in which the only valid explanatory account is offered by the generative model. Constructivist alternatives are not taken into any serious consideration, and there is no reference to the growing body of experimental research in this approach. Except for this failing, this textbook is an invaluable source of detailed and informative discussions of the most recent developments in the literature. The emphasis on crosslinguistic examples is also particularly welcome in a field in which much research is still too biased toward English. A number of pedagogical features, such as intermediate and end of chapter summaries, key tables, study questions, and suggestions for further reading, make the book especially useful for self-study, tutorial discussions, and targeted revisions in undergraduate and graduate courses and as a reference for anyone interested in language acquisition from a linguistic perspective.

REFERENCES


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