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# REVIEWS

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BISHOP, DOROTHY V. M. & LEONARD, LAURENCE B. (eds), *Speech and language impairments in children: causes, characteristics, intervention and outcome*. Hove, UK. Psychology Press, 2000. Pp. xiii + 305.

Communication is a critical component of cognitive and socio-emotional development. Language provides the basis for representing the world. It is the most effective medium for a child to convey personal and social needs, and it allows us to judge whether a child understands classroom demands. It is a basic prerequisite for accessing the curriculum. As Pinker (1994) has argued ' … language is so tightly woven into the human experience that it is scarcely possible to imagine life without it' (p. 17). The majority of children acquire language in an effortless fashion. However, for a substantial minority the language acquisition process is effortful and often requires additional, specialized support. Language and communication difficulties pose many challenges for researchers and practitioners. While there is an increasing awareness of the needs of these children and young people, there is uncertainty about the nature and extent of their problems. In addition, the evidence on which to base effective interventions is sparse. Thus questions concerning these children and young people raise issues at both theoretical and applied levels. There are major debates about the mechanisms responsible for the specific patterns of linguistic difficulties presented by the children. At the applied level, there are continuing debates about the roles of teachers, speech and language therapists, and psychologists in addressing the children's needs. In England, at least, there are debates about the responsibilities of health services and education authorities in meeting the children's needs. Parents are often caught in the middle. Opportunities to discuss these concerns in a balanced and evidence-based fashion are to be welcomed. The chapters presented in this collection are the plenary sessions from a conference designed to address these dilemmas in an open and forward-thinking manner.

In spring of 1999 the Third International Symposium on children's speech and language disorders took place in York, England. The editors of this volume presented plenary papers and have brought together the other keynote presentations from the conference. The symposium involved leading researchers in the field, and the conference programme reflected the wide range of issues that are at the top of the research and practice agenda for children who have specific language and communication difficulties. The programme provided an opportunity for state of the art research to inform

practice. Moreover, it allowed the researchers to be familiarized with the current concerns of practitioners and parents. The merging of these different perspectives and different sets of expertise led to challenging and thoughtful debates. The editors aimed to continue this by producing a book that would appeal to a wide readership including academics, professionals, and parents. Contributors were invited to place their own research in a broader context 'avoiding highly technical papers'. Without the continual questioning of the professional and the parent this is a challenging task indeed.

In many ways the book differs from other texts or monographs on language impairment. In the first place, chapters discussing the profiles and needs of quite different language impaired populations are included. This emphasizes the fact that children with language and communication difficulties form a heterogeneous population (see chapters by Bishop, Deonna, Leonard, Stackhouse, and Tallal), with differing language profiles and educational needs (see chapters by Conti-Ramsden & Botting and Whitehurst & Fischel), and with varying prognoses (see chapters by Paul and Snowling). Secondly, the chapters are organized in such a way that the reader is guided with clear headings, and there are within-chapter links. The chapters are all clearly structured and lucidly written. Each provides the reader with an introduction to the key issues about topics, a more detailed description and analyses of the data, and a conclusion section drawing together major themes. (For example, the chapter by Plomin & Dale provides an accessible introduction to genetics; it then proceeds to describe a range of complex issues including group heritability and quantitative trait loci; and it concludes by discussing the ways in which these authors see gene research developing.) The editors have managed to maintain this structure through virtually all the chapters. Thirdly, experts with a range of professional backgrounds and expertise have written the chapters. These diverse perspectives provide an exciting (if sometimes disconcerting) picture of the area. Yet the chapters differ quite dramatically in the level of prior knowledge and expertise they require of the reader. A number of chapters (see, for example, Whitehurst & Fischel and Plomin & Dale) report sophisticated statistical analyses that would tax experienced researchers. Other chapters rely on more descriptive presentation of the data reporting standard scores and percentages to support their descriptions and interpretations. Equally, the structure of the language systems and neurophysiological dimensions are discussed at varying degrees of sophistication. Thus, the central content of some of the chapters will be accessible to a wide readership whereas the points of substance in other chapters will be accessible only to those at masters level and beyond.

Four themes underpinned the organization of the conference: causes, characteristics, intervention and outcome. The sixteen chapters are not, however, directly linked to this structure and the uninitiated reader must rely on either the editors' forward or the chapter titles to identify the particular

themes. This is unfortunate. Contrasts between particular sets of chapters would have structured the material and guided the reader. It is the conflicts and contrast that help set the research and practice agenda. However, there are three themes that appear to capture the essence of the chapters presented: causal processes in language and communication difficulties, intervention, and the wider impacts of experiencing a language and communication problem.

Identifying the causes of language and communication problems has been the central concern of academic studies for many years. The papers presented here traverse a range of different causal paths. Plomin & Dale's focus is on the genetics of language delay, suggesting that vocabulary delay may be genetically distinct from normal development, with children in the delayed group having greater heritability indexes. This of course opens up the search to identify genes that could predict persistent risk. In direct contrast to the genetic perspective, Whitehurst & Fischel explore the link between disadvantage and poor language skills. They discuss the relationship between language delay and the acquisition of literacy in children reared in poverty. Central to their argument is the differential effect of particular linguistic factors at different developmental points. So while phonological problems are important at the earlier stages of literacy acquisition, by the time the children are eight years of age, semantic and pragmatic problems play a greater role. Tallal's chapter develops her research agenda, locating the cause of language and speech impairments in children's reduced capacities to process successive and rapid information. These data are then linked to physiological changes in the cortex, and possibilities for neuroplasticity are addressed. The voyage from genes, to environment, to cognitive processing explanations is alluded to in a number of the other chapters. The messages are complex. Different aspects of the language system are vulnerable at different points and in some cases limitations can be compensated for.

The theme of intervention was also addressed at a number of levels. To a large extent the particular intervention models described parallel the differences in the causal models of language difficulties outlined in the other chapters. So, for example, Fey & Proctor-Williams address the facilitating role of grammar, while Tallal focuses on processing. Weismer's chapter provides an excellent overview of the needs of late talkers, and these are linked to treatment interventions. Leonard's chapter considers cross-linguistic research and identifies those factors that are language-specific and those that cross language boundaries. He then argues that by documenting these differences it is possible to tailor interventions to the language concerned. In general the authors highlight the importance of robust designs to exclude the possibility that extraneous factors or uncontrolled variables explain the results. Yet, there is a general openness about the limitations of conclusions. The need for well-designed and appropriately controlled intervention studies

and case studies is of paramount importance if we are to evaluate theoretical models and provide guidelines for evidence-based practice.

The wider impacts of experiencing a language and communication problem have often been relegated to the educational domains. Parents, practitioners, and teachers are increasingly aware of both the wider impact of experiencing a language and communication problem and the complexities of precisely profiling these difficulties. It is a clear strength of this collection that these issues are addressed in a number of the chapters. Two broad areas are considered – reading and behaviour. Snowling's chapter is both balanced and constructive in the way that it addresses the problems surrounding associated literacy difficulties. A high proportion of the longitudinal cohort she describes leave school with poor literacy skills. Yet this is not universally the case: different forms of reading disability are apparent for different children. Equally, Conti-Ramsden & Botting's large cohort of much younger children raises similar questions. These authors discuss the different educational models that exist to cater for the needs of the children and suggest an alternative organisation of specialized input to meet the children's language and communication difficulties.

Turning to behaviour and interaction there are two important aspects to consider. Bishop's chapter describes a subset of children with speech and language difficulties and who have pragmatic difficulties that cannot be accounted for by structural limitations of the language system. She cogently argues that we need to be aware of the problems that may extend beyond the traditional boundaries of SLI so that the children can obtain suitable education and intervention. Goodyer's chapter develops these issues. He describes the link between language delay/disorder and associated emotional and behavioural disturbance, arguing that different associations may exist between SLI and psychopathology for different subgroups of children. It is unfortunate that none of the papers provide profiles of these skills across one population. It is not clear, for example, from the work presented whether combinations of literacy and language difficulties make a child more vulnerable to behavioural problems. Nor whether particular profiles of processing difficulties may result in particular patterns of problems with other aspects of the curriculum such as arithmetic and number. Seeing the wider ramifications within the context of the whole child and her language profiles as a developmental trajectory is missing.

The range of topics covered in the book provides a commendable reference source for researchers and practitioners. All chapters are built on a sound edifice of research providing sufficient depth to evaluate contrasting views. This is not a book that lends itself easily to be read chapter by chapter. Selective organized reading is required. By reading chapters on complimentary issues it is possible for the reader to identify current conflicts and

themes. For practitioners separate chapters will allow a more in depth analysis of particular problems.

In many ways this collection is disturbing. It is evident that researchers in the field have made great advances in identifying patterns and profiles of language disability. It is equally evident that there is a considerable distance to travel before it is possible to link acquisitional processes (see chapter by Tomasello) with core deficits (see chapters by Whitehurst & Fischel and Tallal) and with mechanisms for clinical identification (see chapters by Bishop and Rice) and intervention. As Whitehurst & Fischel state at the end of their chapter: 'We have just embarked on the journey and are a long way from our destination' (p. 69).

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Lebeaux, D., *Language acquisition and the form of the grammar*. Amsterdam: John Benjamins Publishing Company, 2000. Pp. 277.

The relationship between language acquisition and linguistic theory has typically been unidirectional from theory to developmental data. Theoretical constructs independently developed in syntactic models of the adult grammar of a given language are used to account for initial and intermediate stages of acquisition. In this book Lebeaux takes a different approach: he has the more ambitious aim of exploring what language acquisition can in fact contribute to linguistic theory. The focus of his investigation constantly shifts from the interpretation of child data to their implications for a theory of grammar and back again to the analysis of the data. The core question at the heart of Lebeaux's book is the following: what is the best way to structure a grammar? Specifically, what are the representational and derivational levels sufficient and necessary to account for language structure and language acquisition?

Starting from the empirical basis of child language data Lebeaux constructs in the course of the book a powerful argument for the existence of two different kinds of linguistic representations: thematic and Case representations. Three primitive operations of Agreement, Merger (Project $\alpha$) and Conjoin $\alpha$ are introduced on the derivational side to illustrate the mechanisms of sentence structure composition.

The book is divided into a short introduction and five chapters, the first of

which is devoted to a redefinition of the problem of language acquisition and its relationship with linguistic theory. Revisiting a classic argument on the centrality of positional patterns in early child grammar, Lebeaux begins the chapter by arguing for the insightfulness of Braine's (1963) original proposal of early utterances structured in terms of pivot and open class items. The relationship between the pivot element and the open class element is redefined here as the relationship between head and complement. More precisely the idea is that closed class features, such as for example Case features, are at the base of the governor–governee relationship, and cross-linguistic parametric variation is reduced to the different realization of closed-class features in the various languages of the world. There is therefore a finite number of possible parametric variations, a desirable outcome in itself, and predictable consequences in terms of the levels at which such parametric variation will be realised in the different languages. In the second half of Chapter 1 Lebeaux considers the question of triggers, i.e. what determines the property of a closed class element. Possible triggers for the establishment of word order in German as a verb final language are then examined in some detail by way of example.

Chapters 2 through 5 flesh out Lebeaux's original proposal with a number of syntactic operations that are crucial not only to account for mechanisms of language acquisition, but also to construct a theory of the structure of the grammar more generally. Chapter 2 introduces the operation Project $\alpha$, renamed Merger in Chapter 4, and discusses its relevance to the transition from telegraphic speech to later stages of development when functional elements are incorporated. The central argument is that in the early stages of acquisition, when functional elements such as determiners, verbal inflections, complementizers and case-marking prepositions are absent (the so-called stage of telegraphic speech), the child's utterances are the direct realisation of thematic relations of agent, patient, goal, etc. In Lebaux's words the child 'is speaking thematic representations' (p. 67) in this phase, in the sense that individual lexical entries project a thematic grid. For example, a verb like *want* is associated with the thematic roles agent and theme, which will be mapped onto the external and the internal arguments of the verb, i.e. the subject and the object. A telegraphic utterance of the kind *want car* will thus project the following thematic structure: [V N agent ø V *want* [N theme *car*]].

Assuming that this level of representation is correct for pre-functional stages of acquisition, how does the child move into a stage at which closed class elements are incorporated into the child's utterances? In other words, how can we account for the transition from utterances such as *want car* to *I want the car*? Lebeaux argues that the application of the operation Project $\alpha$ is responsible for the transition from lexical/thematic structure to syntactic phrasal structure. The assumption is that closed class elements must be

perceived by the child to some extent even at a time when they are still filtered out from her own production. The first step towards the incorporation of functors is the segmentation of functors; the second step consists of identifying the Principle Branching Direction of the language, and the third and final step is the attachment of closed class items in accordance with the Principle Branching Direction. From a derivational point of view, the target phrase marker is arrived at through successive application of Project α, first to project from the lexicon onto the thematic grid and then onto the syntactic structure. (The mechanics of Project α/Merger are later revisited in Chapter Four, where Project α is considered together with the Agreement operation).

Chapter Three is devoted to introducing another operation, Adjoin α, and discussing its relevance for the acquisition of relative clauses. Similar to Project α, Adjoin α is an operation that applies derivationally and whose consequences are visible at various levels of representation. In essence Adjoin α operates to adjoin a second structure to a first by way of saturation of a head. If this fails a default operation called Conjoin α is made available. There exists crosslinguistic parametric variation as to whether Adjoin α applies or the default operation Conjoin α does. In a language like English where a relative clause must agree with its head, the construal of a relative clause is nothing more than the saturation, through Adjoin α, of the relative linker, via co-indexation with the head of the relative clause as in (1).

(1) The man$_i$ who$_i$ I knew.

By contrast, in a language where Conjoin α applies, the relative linker is not saturated in the syntax, so Adjoin α need not apply, and a co-relative, rather than a relative clause, is used to adjoin two structures. In this case, too, there is crosslinguistic parametric variation associated with the choice of relative linkers, closed class elements. Parametric variation is thus firmly located in the finite set of functional elements. The availability in UG of two syntactic operations to join two structures is crucial to account for some puzzling acquisition facts. Lebeaux proposes an interesting explanation for some of Tavakolian's (1978) findings on children's interpretation of OS (object head/subject relative marker) relatives in complex sentences of the type in (2):

(2) The lion kissed the duck that hit the pig.

With such sentences, children often fail to interpret the object of the matrix clause (*the duck*) as the subject of the relative clause. Lebeaux's argument is that under conditions of computational complexity, as in the case of (2) where there are two predicates and three animate participants, children fall back on the default, the less syntactically demanding Conjoin α operation. When Adjoin α applies, the relative linker *that* is saturated by coindexing with the

object of the main clause *the duck*; when Conjoin α is adopted instead no such dependency is created, the two sentences are interpreted as co-ordinated rather than subordinated, and the constituent *the lion* is the subject in both clauses.

Note that Conjoin α is not available in the target grammar of English, but it is nevertheless an option allowed by UG. Of course in the course of development English-speaking children must come to reject Conjoin α as a possible relativizing operation, as this option is not allowed in the mature grammar. Lebeaux is not very explicit as to how exactly this comes about; he simply states that where relative clauses are simply too computationally complex for the child and are filtered out altogether, children start from a stage in which the default, computationally simpler, Conjoin α is available. Ultimately, depending on the parametric choices of the language the child is exposed to, she will have to choose whether to retain the Conjoin α operation or whether Adjoin α applies instead. Schematizing the order of application of the two operations within brackets, moving to the obligatoriness of Adjoin α in English means that 'the innermost brackets are removed' (p. 133).

In connection with the acquisition of relative clauses Lebeaux also considers the role of the parser in the transition from immature to mature grammar. According to the theoretical stance adopted in his work, parsing considerations indirectly determine the early grammar inasmuch as computational difficulties force the child to resort to derivational solutions that are grammatically less mature and computationally simpler. When the child is confronted with a structure that is computationally beyond her current system, she falls back onto a less advanced system that allows her to analyse the string even though part of the meaning will be filtered out or erroneously construed.

The fourth chapter on Agreement and Merger goes back to some of the issues dealt with in Chapter Two. These concern the inventory of basic operations and the transition from lexical/thematic structure to phrasal structure. Lebeaux assumes two basic processes in the grammar: assignment of features (for example the case of thematic role assignment), and copying of features. If copying of features is unidirectional it gives rise to a government relationship, for example Case government; if feature copying is bidirectional then we have a prototypical case of Agreement. Agreement is crucial to another basic syntactic operation: Move α. In essence movement can be thought of as a bi-product of the more primitive feature copying operation involved in Agreement. For example *wh*-movement is driven by the agreement requirement between the +/−*wh* feature in Spec-C position and the +/−*wh* feature in the C head. Similarly Adjoin α is a consequence of the need to saturate the feature associated with the Relative Clause linker. In Lebeaux's words 'an operation O is initiated by a feature F iff the satisfaction of F requires that O take place' (p. 151).

After introducing Agreement as the driving force behind Move α and Adoin α, Lebeaux moves back to the issue of telegraphic speech and the transition from lexical/thematic structure to phrasal structure. His assumption is that children's grammar at this early pre-functional stage is nevertheless a possible grammar, in fact a subset of the adult grammar. He then goes on to present evidence from the psycholinguistic literature on errors to show that there exists a template of closed class elements onto which the open class elements are projected. Two quite distinct levels can be distinguished: a lexical/thematic level (the level of telegraphic speech) and a functional level (proper of the mature grammar). Language comprehension and production are mediated by a conceptual filter in the child grammar. That filter typically streamlines utterances to a reduced phrase marker. Three alternatives are entertained as to the nature of the reduction itself: (i) the phrase marker is directly generated in its reduced form by the child's grammar; (ii) a reduction transformation operates on a fuller structure; (iii) the actual phrase marker is the same as in the adult grammar, but missing functional positions are filled by null elements. Lebeaux opts for the first of these hypotheses and makes some concessions for the plausibility of the third at a later stage in development. On the assumption that telegraphic utterances have reduced representations that only express thematic relations, the question arises once again as to how the crucial transition is made to incorporate closed class elements and features proper of the mature adult grammar. Lebeaux proposes that the mature representation is arrived at 'by the projection of the theta representation into a different representation, a pure representative of Case relations' (p. 166). The Case representation includes closed class elements such as determiners, and it also includes the case assigning features of the verb but not the verb itself. The operation Merger (Project α) then merges the Case and thematic representations to yield a fully mature representation. Merger has three main effects: (1) it inserts lexical items into the slots made available by the Case frame; (2) it percolates the theta relation assigned to nouns to the NP as a whole; (3) it copies the Case associated with the determiner position onto the head noun so that the whole NP is now case-marked. In the last section of the chapter further evidence for the independent existence of thematic representations outside child language is provided by idioms. In a survey of a number of English idioms Lebeaux argues for the existence of two separate classes of idioms with differing properties: pre-merger idioms (e.g. *take advantage*, *break bread*) and post-merger idioms (e.g. *kick the bucket*, *hit the ceiling*).

Chapter 5 is devoted to the structural consequences of the application of syntactic operations to children's shallow derivations. Three problematic cases in which children's immature linguistic behaviour differs from adults' are considered in great detail: control in relative clauses, the application of condition C, *wh*-questions, and strong crossover. In all three cases Lebeaux

shows that an explanation for children's divergence from the adult grammar can be found in their failure to apply syntactic operations at the appropriate Deep Structure (DS) level. Unlike adults' representations, children's are anchored at a level closer to Surface Structure. It follows that the application of syntactic operations such as binding and control is not at the expected DS level, but at a shallower DS' level. Children's incorrect interpretations are not due to the lack of knowledge of conditions of binding and control, or to representational differences of null categories such as PRO or *wh*-traces, but to the fact that syntactic operations apply at a different, more shallow level.

This book is a very thorough and engaging exploration of the representational levels and the derivational mechanisms involved not only in child grammar, but also in the adult mature grammar. Lebeaux constantly shifts between empirical conundrums in child language data and the implications that they have for linguistic theory.

The analyses in this work are exceptionally insightful and original and of interest both to the theoretical syntactician and to the language acquisition scholar. Lebeaux's ideas on the nature of early child grammar already had a considerable impact when they were first proposed in his 1988 thesis, and they are still relevant today. It is however surprising that no effort was made to update the work in view of its publication in 2000. A considerable body of research on the very same themes dealt with in the book has appeared over the last 12 years and the complete absence of any reference to it is rather worrying. For instance, Hyams' (1986) account of subject drop in English child language as an example of work on triggers is somewhat outdated and incomplete after the appearance of several subsequent studies (Bloom, 1990; Valian, 1991; Rizzi, 1994; Wexler, 1994; Hoekstra, Hyams & Becker, 1996). Similarly, the assertion that '[t]he phenomenon of telegraphic speech is well known to every linguist, as well as every parent, YET VERY LITTLE HAS BEEN MADE OF IT IN THE LITERATURE' (p. 154, my emphasis) sounds rather odd when a great deal of language acquisition research over the last decade or so has been devoted specifically to this issue. The book would have benefitted from a concluding chapter; the abrupt termination after a particulary long and intense *tour de force* in Chapter 5 leaves the reader with a sense of unfulfilled closure.

Lebeaux's work is however of exceptional calibre and his contribution will be of considerable (historical) interest to scholars working in language acquisition and linguistic theory.

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