REVIEWS

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Despite the fact that millions of people around the world use two or more languages on a daily basis, monolingualism is still the gold standard by which milestones of linguistic development and use are evaluated in predominantly monolingual English-speaking societies of North America, Britain and Australia. Increasing worldwide mobility due to political and economic reasons is however posing new challenges for a monolingual approach to language acquisition and language disorders. Parents, educators, and health professionals are asked to make crucial decisions that will affect bilingual children and second language learners’ personal, educational and economic futures, and it is imperative that they be better informed about the opportunities and the challenges of raising children in multilingual and multicultural settings.

In this book Genesee, Paradis & Crago address important issues concerning bilingualism and offer a linguistically and culturally sensitive approach that will be of great relevance to all those living and working with young bilinguals. The information provided in the book is based on the state of the art of research in bilingualism and early second language learning, including much of the authors’ original work on bilingual children speaking English, French and Inuktitut with and without Specific Language Impairment (SLI).

The book is organized into three main sections covering (a) an introduction to different types of bilingual settings, the relevance of cultural differences in the study of language development, the relationship between language and cognition with specific reference to dual language learners (Section 1); (b) an overview of bilingual first language acquisition and the manifestation of SLI in bilingual children; the linguistic and sociolinguistic constraints on code mixing; the process of early second language acquisition; education in a second language (Section 2); and finally (c) the crucial issue of assessment and intervention for dual language learners with SLI.

The book opens with an introduction of seven hypothetical profiles of dual language learners: three of these fictional children are classified as simultaneous bilinguals inasmuch as they have been exposed to two languages from birth on a regular basis. The other four children qualify as second
language learners as they have come into contact with their second language later in life, typically at the start of nursery or primary school. Through this ingenious expedient the authors present the concept of minority and majority ethnolinguistic community, although throughout the rest of the book they adopt the term “dual language learners” to encompass children who are raised in a bilingual environment regardless of the age of first exposure to the two languages. Broadly speaking dual language learners are divided into four main groups depending on whether they belong to a majority or a minority ethnolinguistic community and on the age of first exposure to a second language. The introductory chapter also includes a definition and a characterization of SLI and some of the implications for dual language learners; such implications are explored in greater detail in subsequent chapters.

Central to Genesee et al.’s approach is the emphasis on the indissoluble connection between language and culture. In many cases, children who are exposed to two languages are also exposed to two cultures. Depending on the status of each language and culture in the child’s community, parents and educators can expect very different patterns of linguistic and social behaviours. The situation of a child growing up with English and French in a fully bilingual community such as Quebec, where the two languages and the two cultures enjoy a similar high prestige, will clearly be very different from that of the child of political refugees speaking a little known minority language. Through language children are socialized in the life and culture of the community, and dual language learners need to learn and conform to the social and linguistic norms of both of their cultures. Understanding cultural differences is vital for professionals dealing with dual language learners. Patterns of behaviour that might seem deviant or inappropriate in one culture may be the norm in another. Failing to recognize the significance of cross-cultural differences can have dire consequences for children’s social wellbeing and linguistic development.

As language cannot be divorced from culture, it can equally not be considered separate from general cognition. The relationship between language and cognition is explored by Genesee et al. in both directions for dual language learning: the two questions the authors focus upon are the cognitive foundations of language acquisition and use, and the consequences of dual language learning for cognitive development. Genesee et al. draw on up-to-date evidence to explore the cognitive capacity of children for learning more than one language, and to debunk the myth that dual language learning constitutes a cognitive burden. As long as children receive adequate and consistent input in both languages they are perfectly capable of acquiring both without any significant disadvantage compared to monolingual children. As for the effect that learning two languages can have on
children’s cognitive abilities, Genesee et al. warn that this will depend to a large extent on the specific circumstances in which the two languages are acquired. Positive cognitive effects, such as enhanced metalinguistic awareness, are more likely to be found in additive bilingual environments, where there is substantial support for the native language as children acquire a second language, or support for both languages in the case of simultaneous bilinguals, and high levels of proficiency are encouraged in both languages. Findings investigating dual language learners’ cognitive abilities are sometimes contradictory and much of the research conducted before the early 1960s was methodologically flawed in many ways. More recent research controlling for variables such as SES and educational level has reported a number of cognitive advantages for fully proficient bilinguals. These advantages lie specifically in the range of independent cognitive strategies at their disposal and in their problem-solving skills.

The introductory section on language, culture and cognition provides the necessary background knowledge for dealing with the core issue of the book explored in depth in Section 2: dual language learning in simultaneous and successive bilinguals. Chapter 4, the first in Section 2, is devoted to the simultaneous acquisition of two languages and to some of the questions that are at the forefront of researchers’, professionals’ and parents’ concerns. Genesee et al.’s goal is to present a profile of what has typically been observed in children consistently exposed to two languages from birth, so that parents and professionals can have realistic expectations of bilingual children’s linguistic development. The four key points on which the discussion focuses are (1) the issue of whether bilingual children start out with one vs. two language systems; (2) the comparison with their monolingual peers in terms of the stages of development, (3) the comparison with monolinguals with respect to the rate of development; and (4) the incidence and manifestation of SLI in simultaneous bilingualism. After a careful and reasonably wide review of the existing literature, Genesee et al. conclude that there is sound evidence that children are more than capable of dealing with dual language input. The current view, shared by the majority of researchers in the field, is that bilingual children have two differentiated language systems very early on. In addition, they by and large go through the same developmental milestones as monolingual children, although they may do so at a slower pace than monolinguals, especially in the language in which they receive less input. Nevertheless, the qualitative similarity between bilingual and monolingual development does not imply that a bilingual child is the sum of two monolinguals. The fact that a child’s two linguistic systems are differentiated does not necessarily mean that they are completely independent of each other. A number of recent studies have indeed reported phenomena of cross-linguistic influence where bilingual children’s target-deviant constructions
seem to be the result of some sort of transfer from one language to the other.

Very little is yet known about the relationship between bilingualism and SLI. Genesee et al. are among the very few researchers that have dealt with this important question, and they report some of the findings from their studies. Their preliminary conclusions are that children with SLI can indeed acquire two languages, and that they do not seem to be developing at a significantly slower rate than monolingual children with SLI. Language-specific manifestations of SLI will be evident in both languages, with some children showing more impairment in their non-dominant language.

Another issue that preoccupies parents and professionals is language mixing, often viewed as a sign of confusion and linguistic incompetence. Chapter 5 offers an insightful overview of a number of structural and sociolinguistic constraints that govern code-mixing in children as well as adults. Far from being random and haphazard, code-mixing reveals bilingual speakers' subtle knowledge of the structure of their two languages and of the social norms of their community. Code-mixing in children as well as adults is structurally systematic, and it serves a range of different functions, from filling lexical gaps to establishing community membership. The use of two languages in the same utterance or in the same conversation is a common feature of bilingualism; it is an important communicative resource, and it should not be taken as a sign of language delay or impairment. Parents and professionals must make every effort to understand code-mixing in the context of children's specific sociolinguistic setting to avoid misinterpreting a phenomenon that is an integral part of dual language learning.

The penultimate chapter in Section 2 is devoted to early second language learners, i.e. children who learn a second language after their first language is already well established, usually when they start nursery or primary school. The focus is on the typical stages early L2 learners go through in the acquisition of the second language, on the rate of development and on the effect of the L2 on the L1 over time. Regardless of the specific L1/L2 combination, children immersed in a foreign language environment will often initially start out by using their L1 in an L2 context. Depending on how successful this strategy proves with the L2 speakers children might persist for some time or desist very soon. Pressure to communicate will push children to overcome their linguistic deficiency by using gesture until they have understood and memorized a sufficient number of lexical items and constructions in the L2. Early use of the L2 is likely to be highly formulaic and only gradually will learners become increasingly productive with their new language. Acquisition will clearly not be errorless and research evidence shows that child L2 learners, and second language
learners in general, are more likely to make errors of omission than of commission. As far as rate of learning is concerned a high level of individual variation is to be expected, depending on a range of factors including the age of first exposure, the quantity and the quality of the input, the child’s language aptitude and motivation to learn the L2, and parents’ and teachers’ expectations, to name but a few. Genesee et al. also warn that, contrary to popular belief, children’s second language learning does not happen instantaneously. Even in the best possible conditions it may take years before a second language learner performs indistinguishably from a native speaker. For example, Cummins (2000) estimates that it may take up to 5 to 7 years before child second language learners achieve full proficiency in verbal academic skills.

Genesee et al.’s recent work has highlighted a number of similarities and differences between the profiles of L2 learners and children with SLI. This comparison will be of interest to parents and health professionals. Children with SLI and typically developing L2 learners usually have difficulties with the same areas of language, although L2 learners seem to make a larger number of commission errors than children with SLI. The range of L2 learners’ errors is also wider than that of children with SLI. The extent of the difficulty with certain areas of verbal morphology also points to differences between the two populations, with SLI children typically showing more difficulty with verbal morphology. Surprisingly Genesee et al. do not mention phonological difficulties; poor intelligibility and immature phonological skills are a defining trait of children with SLI but not usually of L2 learning. Processing markers of SLI such as non-word repetition and digit recall (Conti-Ramsden & Hesketh, 2003; Conti-Ramsden, 2003) would also be a promising tool to distinguish children with language impairment from children who are learning a second language.

The last chapter in Section 2 is an in-depth overview of different types of educational provision for majority and minority dual language learners. Depending on their geographical location, minority language students may have access to a range of options where the native language features more or less prominently: second language-only programmes, bilingual programmes, developmental bilingual programmes, two-way immersion programmes, transitional bilingual programmes. The validity of bilingual education has been and currently is the focus of heated debate in North America. Unfortunately some of the research investigating the pros and cons of bilingual education programmes has suffered from methodological flaws that have made conclusions ill-founded. Genesee et al.’s assessment of the available literature is that additive bilingual programmes (two-way immersion and developmental bilingual programmes), where the native language plays a significant role, contribute positively to bilingual proficiency and academic achievement.
The book concludes with Section 3 including a single chapter devoted to the assessment of dual language learners with SLI and the intervention implications. Genesee et al. go back to the profiles of simultaneous bilinguals and second language learners introduced in Chapter 1 to illustrate a number of practical scenarios using case studies. The picture that emerges from the assessment and intervention issues explored in each of the seven cases is rather complex, and at times it raises more questions than it answers. The study of how SLI affects dual language learners is still very much in its infancy and so far no unique marker has been identified to distinguish typical second language learners from dual language learners with SLI. As mentioned earlier, we believe that processing markers could provide extremely useful information in this respect. Another crucial issue is that it is often impossible to assess dual language learners in both languages, either because no assessment tools exist in both or because there are no qualified therapists to administer the standardized tests. Genesee et al. warn the reader repeatedly on the dangers of translating diagnostic tests. They suggest that a much better alternative is the use of language mediators from the same linguistic and cultural community as the child, if possible someone with some experience of typical development in the minority language. Even when assessment tools are available in both languages the picture is further complicated by the fact there are no standardized norms for typical bilingual or second language development in any language. When comparing bilingual performance with monolingual performance on measures that have been standardized on typical monolingual populations it is therefore necessary to bear this issue in mind. Working successfully with dual language learners requires an understanding of children’s linguistic and cultural background and a concerted team effort between parents and professionals to deliver the outcome that is in the children’s best interest.

In this book Genesee et al. have critically assessed an impressive amount of information on bilingual first language acquisition, second language acquisition and specific language impairment. They have succeeded in making the material accessible to non-specialists while maintaining rigorous academic standards and consistently providing scientific evidence for their arguments. The use of boxes, highlighted terms, summaries, key points, and a comprehensive glossary are especially useful for independent study and for quick referencing and will prove very popular with students and time-pressed professionals.

Because of the authors’ personal background the book principally reflects the situation of dual language learners in North America, but most of the theoretical and methodological questions transcend national barriers and will be relevant for students, parents and professionals dealing with bilingual children all over the world.
Owing largely to Chomsky’s distinction between competence and performance, there has been a prevailing tendency in the language sciences to distinguish grammatical theory from processing theory. In the extreme, the Minimalist Program argues for perfection in language design; processing phenomena are the realm of psycholinguists, who study language use. Other approaches take a less extreme line. For instance, Jackendoff’s (2002) model is amenable to processing theory, and usage-based approaches such as Goldberg’s (2005) reject the competence–performance distinction altogether, instead arguing that language generalisations are made on the basis of general cognitive learning principles. In Syntactic carpentry O’Grady offers a radically different yet thought-provoking thesis.

O’Grady’s central argument is that there is no syntax, only an efficiency-driven parser that seeks to resolve dependency relations between arguments and predicates as quickly as possible. Syntax, he claims, is an epiphenomenon of the information processing pressures placed on the parser. In O’Grady’s terms, ‘when it comes to sentences, there are no architects, only carpenters’ (p. 2), which is to say that languages are the way they are because we must identify and resolve the relationships between words in a linear speech stream using our limited resource capacity under real time pressure. Only the tools required to build sentences are necessary; no blueprint (i.e. UG) is required.

Chapters 1 & 2 outline the central thesis of the book. O’Grady takes a standard view of the lexicon, whereby words are tagged with information about the kinds of roles (category and thematic) they can take and/or license in a sentence. The computational system, the parser, makes use of two operations that are driven by the Efficiency Requirement, which states that dependencies between words should be resolved at the first opportunity.
The two operations are (i) **COMBINE**, which states that adjacent words are combined together regardless of their relationship to each other, and (ii) **RESOLVE**, which involves resolving argument dependencies between arguments and predicates. Predicates search to fulfil their argument requirements either to their left or to their right. When dependent items are separated by intervening words (as in English *wh*-dependencies) a predicate’s argument dependency is passed upward through the previously formed representation to make contact with its nominal, a process referred to as **feature passing**. The strength of O’Grady’s approach is in its simplicity. In the next six chapters he tackles a range of grammatical phenomena using only these tools.

Chapter 3 addresses pronoun interpretation. O’Grady’s computational system deals with coreference in two ways. Reflexives and reciprocal pronouns, which require a nearby antecedent, are resolved directly by the computational system during the business of argument resolution. Consider sentence (1):

(1) Gordon taught himself to play guitar.

According to O’Grady, the referential dependency between *Gordon* and *himself* is resolved as soon as the pronoun is attached to the verb. Once the pronoun enters into a dependent relationship with the verb, it encounters its antecedent in the argument grid of the verb. This is argued to follow from the efficiency principle. Plain pronouns, however, are a different matter entirely. As we know from Principle B in binding theory, plain pronouns cannot be coreferential with an antecedent within the same syntactic domain, ruling out interpretations like (2).

(2) *Gordon taught him to play guitar.*

Therefore, unlike reflexive pronouns, plain pronouns cannot be resolved at the first possible opportunity, which can lead to cases where the antecedent of the pronoun is fully ambiguous (3).

(3) Gordon taught Brian guitar before he moved to Milwaukee.

As plain pronouns cannot be resolved at the first possible opportunity, O’Grady argues that the efficiency principle does not apply; their interpretation is handled by the **pragmatic system**. Thus there are two forms of pronoun interpretation, one handled by the computational system and one that is pragmatically driven. There is a sense in which this is rather obvious; however, what matters is that O’Grady has an independently motivated architecture that predicts these effects without recourse to additional principles. The remainder of the chapter considers pronoun interpretation within various syntactic environments.
Chapters 4 & 5 consider control and raising structures, respectively. Just as certain types of pronoun resolution are handled outside of the computational system, so too, O’Grady argues, are some types of control structures. Clear-cut cases, like that in (4), are handled by the computational system.

(4) Gordon tried [to play guitar].

O’Grady argues that the covert argument of control structures is encoded as a referential dependency on the lexical entry for the matrix verb. The verb *try* is argued to be represented as in (5), in which the symbols in brackets represent the verb’s subject and object arguments, respectively

(5) $\text{try: V, } <\text{N, to}>$

Since the subject argument, the controller, is the sole nominal argument, it also serves as the subject of *play*; following the efficiency requirement the verb searches for a nominal argument and finds one in the thematic grid of the matrix verb. However, there are cases when it is not possible to immediately resolve a dependency associated with an infinitival verb, as in (6).

(6) Brian asked Gordon [how to play the guitar].

The subordinate clause has two interpretations, a specific one where *Gordon* is the controller, and a more generic interpretation (*how one plays the guitar*) (see also Jackendoff & Culicover, 2003). O’Grady argues that cases like this are not resolved by the computational system; they are instead resolved pragmatically, like plain pronouns.

Chapter 6 applies the computational architecture of the emergentist position to agreement phenomena. O’Grady makes a very convincing case for the argument that agreement is driven by efficiency, not grammar. The argument, once again, is very simple: the parser attempts to fulfill predicate–argument relations as quickly and efficiently as possible, and subsequently checks agreement relations. This explains why most agreement is between the subject and the verb: the preverbal argument, if marked with agreement features, has first look at the verb, and agreement occurs if possible. When it is not possible, as in, for instance, *there* constructions like (7) and (8), the parser looks downward to the verb’s second argument. Further evidence for this case is given by considering partial agreement, with some particularly compelling linguistic facts drawn from Moroccan Arabic and Brazilian Portuguese.

(7) There was glass on the floor.
(8) are glasses on the floor.
Chapter 7 considers \textit{wh}-questions. Instead of postulating syntactic analyses of \textit{wh}-phenomena, O’Grady argues that \textit{wh}-words look for a predicate whose argument grid contains an unresolved dependency of a matching type. For instance, consider (9):

(9) Guess what [he played next].

Once the parser encounters \textit{played} there are two operations. First, \textit{he} satisfies the subject argument of the verb, and second, the \textit{wh} dependency is resolved when the parser encounters the unresolved nominal argument (the object argument) in the thematic role grid of the verb. Using only these tools, O’Grady then tackles tougher \textit{wh}-phenomena, including island effects, the \textit{that}-trace effect, and relative clauses. These tougher phenomena have only been studied intermittently in child language research. O’Grady’s account provides a useful non-transformational approach on which future work could be based.

In Chapter 8 O’Grady argues that the effects of the computational system are felt beyond morphology, syntax, and semantics, in particular, in the phonological system, in the form of contraction. Here he focuses on the ‘syntax’ of contraction. The argument is that contraction is most natural where the computational system is able to combine the two elements involved immediately, as is the wont of the efficiency-driven parser. For the traditional notion of constituent structure, contraction is an odd phenomenon, since auxiliary and modal verbs are standardly assumed to combine with the main verb, but when contracted they combine with the subject, as in (10).

(10) She will ⇒ She’ll

The argument is that phonological contraction is a reflex of combination—a sign that two (or more) words have combined at some point in the course of sentence formation. O’Grady considers a wide range of contraction phenomena in English. Particularly relevant to the child language audience is his treatment of \textit{wanna} contraction. Much has been made of young children’s ability to correctly produce the \textit{wanna/want to} contrast (e.g. Crain, 1991). O’Grady’s treatment will sit well with researchers who argue that this contrast is learnable.

Chapters 9 to 11 will be of most interest to child language researchers and psycholinguists in general. Chapter 9 considers syntactic processing. In particular, O’Grady seeks psycholinguistic evidence for his approach and concludes that it explains many effects reported in the literature. O’Grady is keen to emphasize that the emergentist thesis he forwards does not begin to provide answers to many of the current controversies troubling sentence processing researchers. Indeed, the approach is consistent with most sentence processing theories, with one exception: it denies the existence of a
substantive grammar. In many ways this liberates processing researchers from the tyranny of constantly evolving grammatical theory. Theories of sentence processing that have maintained the implementation of a grammar during processing have been open to the criticism that their models are not consistent with current syntactic theorising (e.g. Frazier & Clifton, 1996); to do away with syntactic theorising as psychologically relevant could leave researchers to concentrate on the data rather than fitting their explanations to often unfalsifiable concepts. Of course, this is highly controversial, which O’Grady admits, quoting Newmeyer (1998): ‘...[it is] hopeless to think that one can derive grammatical principles from parsing principles’. (p. 152). O’Grady is not alone in arguing to the contrary. Hawkins (1994, 2004), for instance, has long claimed that grammatical phenomena are reducible to parsing principles. Such attempts seek to increase the psychological plausibility of linguistic theory, which is surely a goal that takes high priority in the cognitive sciences.

Chapter 10 will be of greatest interest to readers of Journal of Child Language. O’Grady reviews familiar claims about the innateness of syntax from two dominant perspectives (nativist, empiricist/constructivist) and rejects foundational claims of both. His treatment is exhilarating in its ruthlessness. His basic claims are these:

(i) As there is no syntax there cannot be innate grammar.
(ii) However, following claims about the poverty of stimulus, some syntactic regularities are too rare to be learned from the input.

So where does this leave us? Herein lies the beauty and power of the emergentist thesis: such regularities (e.g. structure dependence) emerge from the properties of the computational system, nothing more and nothing less. Some readers may see this position as a middle ground between current approaches to language acquisition, and often the middle ground is seen as an unsatisfying attempt at unification. This would be an unfair criticism. Instead, O’Grady presents an alternative account that captures a great deal of the data, even ‘hard cases’ we have struggled with for some time.

However, many questions remain. For instance, O’Grady stakes much of his claim on the notion of working memory: growth in capacity is argued to result in improvements in efficient language use. At the very least, there is a very superficial truth here. However, as MacDonald & Christiensen (2002) argue, we clearly do not know enough yet to stake everything on this claim.

Chapter 11 concludes the monograph. Here O’Grady considers how the emergentist thesis fairs against traditional requirements of linguistic theory—notably, capturing acceptability and language diversity. The discussion of typology is particularly interesting, and will be familiar to readers of Hawkins (2004). O’Grady ends with a quote by Nobel laureate
Steven Weinberg on the adequacy of explanation, which states that explanations should be elegantly simple and, to a great extent, intuitively appealing. With much modesty, O’Grady wonders whether he has achieved these desiderata. Even if the reader takes only his appeals to simplicity and efficiency away from reading the book, O’Grady has achieved a great deal. The more positive and open-minded reader will take away a great deal more.

The subject matter of the book crosses many sub-disciplines of the language sciences, and so will appeal to a broad range of researchers. The book would make an excellent addition to graduate-level courses on syntax, language processing, and language acquisition.

REFERENCES


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This edited volume asks whether the development of theory of mind (ToM) depends in any critical way on language. Whilst most authors conclude that it does, the interest lies in the very different reasons distinct authors give for reaching this conclusion. Variations in their perspective on the role of language are partly due to differences in theoretical focus and partly to differences of definition: theory of mind can refer to an array of social-cognitive skills, some or all of which language may facilitate by virtue of its syntax, semantics, pragmatics or simply its value as a representational space.

Indeed, after a helpful introduction by Astington & Baird in Chapter 1, Nelson (Chapter 2) begins by cautioning that ToM cannot be narrowly
construed as an encapsulated cognitive domain. She thus proposes to replace the ‘theory’ of mind metaphor with the concept of a community of minds. To the extent that we relate the contents of our minds to one another, we form a community that may hold or debate collective beliefs in the arenas of politics, religion, science and so on. These cultural institutions are the hallmark of human life and yet, Nelson contends, they are neglected in current research. Of course, few would deny that children learn about the cultural norms of their community. Nelson’s argument, however, is that this cultural understanding may underpin the ‘one-to-one understanding’ that is typically assessed in false belief tasks. Language is essential for accession to the community of minds since it provides a representational format for distinguishing one’s own point of view from those of others. Nelson suggests that this capacity for contrasting representations may first emerge in talking about past events, where one must represent in language something that clearly is not true of the here and now.

Whereas Nelson’s chapter concentrates on the representational function of language, Dunn & Brophy (Chapter 3) emphasize the communicational function. Their argument is that conversational exchanges are the main channel through which we discover other minds and our own. A review of cross-sectional and longitudinal studies with children from a variety of backgrounds makes it apparent that the quality of conversation different children take part in varies greatly and that this has a major impact on their developing understanding of mind. To put it briefly, the more children take part in genuinely reciprocal (‘connected’) conversations within close dyadic relationships, the more likely they are to do well on subsequent tests of ToM. Unfortunately, good conversations don’t come for free. They depend on context, on the interlocutor’s characteristics, their pragmatic intentions and the quality of their relationship with the child. For example, talk about inner states is fostered in joint pretend play, which in turn, is more likely between siblings who like each other and between friends who have a close relationship. Dunn & Brophy thus conclude that to arrive at a better understanding of the relation between ToM and language it is essential to take into account the dyadic experiences of the child as well as their individual skills and characteristics.

Harris (Chapter 4) also calls on the role of dyadic relations to explain a series of correlation and training studies that suggest conversation addressed to children develops their understanding of mind. Harris argues that it is the pragmatic intent of the interlocutor that is responsible for driving this development. For example, mothers use language to talk about other people’s differing perspectives and thereby invite children to temporarily set aside their own point of view. It is this form of role-play—also present in pretend play—that would facilitate ToM. Interestingly, Harris further speculates that role-play in language also arises
more implicitly in the context of listening to a narrative. Upon hearing a story children adopt the protagonist’s point of view and are thus prompted to imagine what other people think, perceive and feel.

O’Neill’s chapter (Chapter 5) turns the tables somewhat and considers how ToM might underlie language development. O’Neill discusses three studies in which pragmatically appropriate language use depends on assessing what is new or relevant information. In the first study, children wished to talk about a toy whose whereabouts was unknown to their parent (e.g. because s/he was out of the room when the toy was placed on a shelf). Impressively, two-year-olds were more likely to gesture towards and/or name the object they wanted in these contexts than they were if their parent had seen where the object was placed. In a second study, typically developing 22-month-olds spontaneously commented on objects more often if they were in some way discrepant from previously played-with objects (e.g. three times the size of previous toys). This is taken to illustrate how early children are able to identify topics of conversation worth sharing with others. In a third study, two-year-olds better learnt the meaning of a novel adjective when their addressee had gestured to highlight an interesting dimension of the toy, than when their addressee had simply pointed to the toy. This latter study clearly suggests that early social-cognitive skills help children break into language and thus that the developmental relation between language and ToM is a reciprocal one.

Turning to the theme of semantic development, Montgomery (Chapter 6) is concerned with how children learn the meaning of mental terms. He cautions against an ostensive definition approach that assumes children learn that terms like 

\textit{want} refer to their own internal sensation of desire. Instead he argues that such terms are learnt in the context of frequent social routines, such as trying to obtain an object, and that the meaning of the word for the child (as for adults) is the pragmatic role that it plays. Montgomery’s chapter highlights the complexity of semantic development but it also raises some thought-provoking questions. For example, how do children abstract or categorize social routines in order to learn a word’s pragmatic function?

In answer to the above question, Baldwin & Saylor (Chapter 7) argue that it is the very use of mental terms, and language more generally, that promotes the abstraction of mental concepts. First they point out that the use of mental terms in different scenarios might invite children to align these events and attend to non-obvious commonalities between them. It is now well established that labeling different objects with the same term can draw infants’ attention to shared features that otherwise go unnoticed. Baldwin & Saylor’s argument is that the same process could apply when parents label mental events. Secondly, given that language consists of influencing others’ mental states and recognizing their influence on ours,
the authors speculate that broader experience of language use will also promote the formation of mental concepts. They thus predict, for example, that talk about absent referents will drive the understanding that language is used to get people to think about things, even when these things are not present. This in turn could lead children to a more robust understanding of their own and others’ mental activity.

Jacques & Zelazo (Chapter 8) also argue that the labelling function of language helps children solve theory of mind tasks. The authors support their claim with a recent study that employed the FIST sorting task. Children are shown three items (e.g. a big yellow teapot, a big yellow shoe and a little yellow shoe) and are first asked to select two items that are in some way the same (e.g. the big and little shoes). They are then asked to select two items that are also the same but in a different way (e.g. the big teapot and the big shoe). The ability of the children to use a different dimension in their second selection is taken as a measure of their cognitive flexibility. Along with anticipated developmental trends, Jacques & Zelazo found that four-year-olds were far better at making a second selection if the relevant dimension of their first selection had been labelled than if it had not. This is surprising since we might have expected labelling the first dimension would make it harder to switch to a second dimension. The conclusion is that labelling promotes the ability to adopt different perspectives on a situation and should thus facilitate false belief comprehension.

Astington & Baird (Chapter 9) discuss the possibility that linguistic representations could be used in false belief tasks to maintain memory of what was originally believed on the one hand and what is now the case on the other. Surprisingly, though, in a pair of false belief studies, children performed no better when the task was presented purely linguistically (as a narrative) than when it was presented purely visually (as a silent video) or as a narrative accompanied by a video. The authors thus amend their original memory hypothesis in favour of a theory whereby mentalistic language enables the child to explicitly form meta-representations of situations (i.e. a representation of a situation as perceived from varying perspectives). It is in this sense that language is seen as a representational aid for false belief understanding.

In contrast to the previous authors, Jill de Villiers (Chapter 10) argues that the acquisition of mental state terms and the use of language as a representational/communicational medium will not suffice for the development of ToM. Rather, understanding false beliefs depends on the acquisition of the complement syntax of mental state verbs. The claim is that children cannot understand false beliefs until they understand language of sufficient propositional complexity to represent others’ erroneous but sincerely held beliefs. To do this children must fully acquire mental state
verbs such as think by (1) figuring out the verb’s lexical meaning (as referring to a state of mind), (2) observing its syntactic environments and (3) discovering that its complement may be false. This third and final step is achieved by drawing an analogy with verbs of communication (say), whose complements can be more directly observed as false. Complements of ‘nonfactive’ verbs like say and think are proposed to be syntactically marked with Point of View markers that ensure their logical form is properly represented.

Perner, Zauner & Sprung (Chapter 11) agree that understanding point of view is crucial to understanding false belief. However they disagree with the idea that syntax plays a key role here. First they object that, crosslinguistically, verbs of belief may behave syntactically very similarly to verbs of desire. Yet verbs of desire are consistently understood earlier than verbs of belief. J. de Villiers’ response to this is that the irrealis nature of desire complements can be understood earlier than the falsity of belief complements and, furthermore, this irrealis/realis distinction is the reason why children only analogize from verbs of communication—and not desire—to verbs of belief. Perner et al. provide a helpful discussion of the philosophical definitions required to unlock this debate before making a second counter-argument, this time against the presence of Point of View markers on complements. They observe that, when children need to understand conflicts in perspective, they do so at the same age whether the question is about conflicting desires or conflicting beliefs. It is thus argued that the ability to resolve perspective problems does not hinge on whether or not the verb in question has a Point of View marker on its complement (as think would but want would not).

To further investigate the importance of complement syntax, Lohmann, Tomasello & Meyer (Chapter 12) present two training studies designed to improve three-year-olds’ social-cognitive skills. The authors introduced children to deceptive objects (e.g. a pen that looked like a flower) and highlighted their deceptive nature with (1) language containing plenty of think, know or say complement syntax, (2) contrastive language without complement syntax, or (3) exclamations of surprise but no real language use. In a fourth condition they spoke about the objects using complement syntax but did not highlight their deceptive nature. The results showed that, for any advances in false belief understanding to be observed, training with language of some sort was necessary. For the older three-year-olds, training with sentential complements alone was sufficient but not necessary. The most effective training regime was that which employed complement syntax to highlight the deceptive aspects of the objects. The authors argue that complement syntax is the historical result of progressively reducing reflective discourse and is thus uniquely well placed to help children understand situations in terms of our mental attitudes towards them.
Peter de Villiers (Chapter 13) sheds a different light on the effect of language development on ToM with his comprehensive study of deaf and hearing children. His findings show that deaf children who are language delayed (for signed or spoken language) are also significantly delayed in their understanding of false belief, even when this is tested with non-verbal tasks. Deaf children who have no language delay (i.e. early ASL signers), in contrast, show typical ToM development when tested as early as four years of age. Interestingly, measures of both vocabulary and memory for complement clauses (but not of executive function) were predictive of false-belief understanding for all deaf children, suggesting that language may promote ToM in several distinct ways and that the theories of the authors in this volume are potentially more complementary than contradictory.

Tager-Flusberg & Joseph (Chapter 14) also find that both general language measures and specific tests of complement syntax correlate with ToM in their study of children with autism. These children have considerable difficulty interpreting social–perceptual information about other people’s mental states (e.g. facial expressions). However, some may be able to compensate for this by depending on language to pass false-belief tasks. The authors support this idea with findings that autistic children’s ToM abilities are closely linked to their understanding of verbs of communication (say, ask) but not to verbs of mental state (think, know). This suggests that language about speech acts, which are more directly observable than mental states, might provide a crucial, alternative route into the world of other minds.

The final chapter introduces a new method for looking at theory of mind, that of the twin study. After a helpful introduction to this method, Hughes presents preliminary results from a large-scale investigation of the language and ToM abilities of over a thousand 5-year-old twins. The major findings were that individual differences in ToM scores were largely accounted for by environmental factors specific to ToM, but also environmental and genetic factors common to both language and ToM. Individual differences in language scores were accounted for by both environmental and genetic factors, some of which were specific to language ability, others common to language and ToM. This suggests that the relation between language and ToM may be largely explained in terms of common underlying factors, which Hughes argues must be assessed longitudinally if we are to understand the shifting impact of environmental and genetic factors on the ontogenetic process.

The juxtaposition of these fifteen chapters serves to reveal considerable common ground beneath the terminological differences. Indeed the greatest achievement of this book is the consensus it has formed that ToM and language are interconnected on several levels—no one is arguing for their account to be the unique and simple solution. Consequently, many of the
authors call for the charting of a broader range of social-cognitive and linguistic skills as they emerge from infancy onwards. Certainly, much could be gained by investigating the cognitive advances that precede false belief understanding. This is perhaps most important if research on ToM is to enlighten child language research. Children are beginning to draw on their social-cognitive understanding to produce pragmatically appropriate (if not perfect) language at least from the age of two – well before they begin to pass false belief tasks. It would be a great step forward if we could better articulate which social cognitive skills underlie the variety of linguistic developments we observe – right from word learning to anaphora resolution and so on. To do this properly we would need to take a crosslinguistic perspective, which is perhaps the only thing lacking in this edited volume. Work, for example, by Ayhan Aksu-Koç (1988), Choi (1995), Choi & Aksu-Koç (1999), and Matsui, Yamamoto & McCagg (2006) suggests that different languages matter differently for theory of mind. Overall, though, this book offers all the inspiration and a good deal of the background necessary for child language researchers to start contributing to ToM-language debate.

REFERENCES


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