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Response to commentators

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The commentators on this review raised many interesting and important points, and I am grateful to each of them for their time and their thoughtfulness. Each commentary deserves a thorough discussion of its own, but unfortunately, due to extreme limitations of space, I will have to focus here on what I see as the major points raised by one or more of them.

Why are sentence-level constructions theoretically important?

Ingram correctly points out that many language acquisition researchers have been working with constructions, either explicitly or implicitly, for many years. Nevertheless, I believe that the work of Fillmore, Lakoff, Goldberg, and others places constructions in a new theoretical context that leads us to look at language and its acquisition in some new ways. Here are some of the ways I think it changes our understanding of what a language is:

(1) What is being acquired is not 'a' grammar, or 'the' grammar of a language, but an inventory of linguistic constructions (Langacker, 1987, 1991).

(2) Languages are not composed of lexical items plus abstract rules for their assembly. This is good because there is no other domain of cognitive development in which human beings, especially not young children, operate with abstract rules that they cannot state, and so language now seems more similar to other cognitive skills. Furthermore, as Behrens points out, if there are no rules then we cannot simply ignore the linguistic structures that do not fit the rules (i.e. those outside of 'core grammar', like *there*-constructions; Lakoff, 1987).

(3) The inventory of constructions is very much like, although in some ways different, from, the lexicon as it has been traditionally conceived. Bates cites much evidence that supports this conclusion, the implications of which for processes of acquisition are immense (see below). I should also note that this general view has also opened up new ways of looking at the grammaticalization (syntacticization) of constructions via discourse interactions in language history (e.g. Givón, 1995; Heine, 1997; Hopper & Traugott, 1993; Traugott & Heine, 1991) – reminding us, à la Vygotsky, that the linguistic constructions that children are acquiring have a cultural history that in large part explains their current form.

(4) As Croft points out, Goldberg's specific version of construction grammar is especially important, perhaps especially for developmentalists, because it makes very direct links to cognition. Of particular importance is the focus on: (i) prototypical constructions; (ii) their metaphorical extensions

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to 'similar' conceptual situations; and (iii) the hierarchy of constructions within a language that, among other things, explains why a language displays similar patterns across many (although not all) different constructions (something about which we need to know much more, as Berman points out).

How does this change the way we look at language acquisition?

Obviously if we change the way we look at what is being acquired we must change the way we look at the acquisition process. The commentators chose to focus on a number of strengths and a few weaknesses of the construction grammar approach.

(1) If children are acquiring an inventory of constructions, like they are acquiring an inventory of lexical items, then the processes of syntactic development and lexical development should be approached in similar ways – which they have not been in most previous work from any theoretical orientation (Bates). We can now ask, for example, whether there is a problem of induction in acquiring grammatical constructions that necessitates constraints on the process, as has been claimed in the study of lexical development (Markman, 1992). Or we can ask whether the role played by the social-pragmatic situation in the acquisition of constructions is the same as in the acquisition of lexical items (Tomasello, 1995). There are also some differences, of course. Most importantly, to acquire a sentence-level construction children have to have an ability to parse an event into components, to parse a linguistic construction into components, and to relate these two complex structures in something like a one-to-one manner. But it should be pointed out that to learn even a single word the child has to do some kind of parsing of situations and adult sentence as well, to isolate the single word and its discrete referent and to get them properly aligned (Akhtar & Tomasello, in preparation).

(2) If constructions are grounded in cognition, we need to look more carefully at event cognition – since constructions are used to refer to complex events and states of affairs (see commentaries by Behrend and Budwig). The vast majority of work on the cognitive bases of language has focused on object categories and lexical items, and so this new focus would open up an exciting new connection to the recent work on children's event cognition and image schemas (e.g. Mandler, 1992; Bauer & Travis, 1993; Nelson, 1996).

(3) If argument structure constructions have a special status, as Goldberg implies, we need to investigate the reasons for this. Goldberg claims that argument structure constructions correspond to something like basic events in human experience. This is very likely an important part of the picture, although Budwig's cautionary note that children may experience these events somewhat differently from adults should always be kept in mind (see also Behrens). In addition, however, I suggested that argument structure con-

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structions are especially important because they – or some discourse appropriate reduction of them – correspond to the smallest linguistic units that can convey relatively complete communicative intentions; they thus may have some special pragmatic status as well. It is nevertheless true, as Berman suggests, that we need more evidence for the psychological reality of sentence-level constructions for young children. We also need, as Clark suggests, a more systematic treatment of how sentence-level constructions are similar and different across different languages, especially those that are more isolating, like English, and polysynthetic languages like West Greenlandic (see also Bavin on Walpiri). Croft believes that an even more radical and interesting theory would place constructions as a primary level of analysis, with all of the other syntactic categories and relations being derivative (see Tomasello & Brooks, in press, for some steps in this direction). Menn's analogy between syntactic constructions and the 'canonical forms' of child phonology is also extremely helpful in this context (with abstractions of word-general elements such as phonemes being later developments that derive from the child's experience with a whole mosaic of different canonical forms).

(4) If constructions gain some of their coherence from communicative function, then, as Clark points out, the process of conversation becomes an especially important part of the process. In the to-and-fro of discourse children can see more clearly the major constituents of constructions, and indeed in many cases the child utters some incomplete adult construction and this then gets completed or expanded by adults – a process that has been demonstrated to facilitate the early acquisition of some syntactic constructions (Nelson, 1986).

(5) If children acquire constructions as prototypical structures and then extend them to similar conceptual situations – either on their own or on the basis of hearing an adult model – there should be more research into specifically which situations (perhaps as represented by specific verbs) are used with which constructions in which developmental order in which languages (see Budwig for some interesting examples and thoughts on this issue).

How do constructions become appropriately abstract?

In the review I proposed a particular view of the development of constructions, arguing that children learn them initially as whole units structured around particular verbs, that is, as Verb Island constructions (a small but important modification to the Verb Island hypothesis of Tomasello, 1992). Although I did not elaborate on the process, the overall view of development implied in this approach is that expressed more fully by Menn and Bates. Menn points out the 'messiness' of the developmental process in the domain of phonology, with children making only limited generalizations in only

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limited domains – in perfect analogy to the process of syntactic development. She thus notes that children may sometimes have constructions that are somewhat incompatible with one another, so that they will vacillate between competing ways of saying the same thing. Interestingly, this is exactly what Akhtar (1998) found when she provided English-speaking children with novel verbs used in unusual constructions such as *Ernie Bert is meeking* (SOV). Some 2·5-year-olds and many 3·5-year-olds vacillated back and forth in their spontaneous productions with *meek*, not certain whether to use it in the novel construction in which this verb had been heard or in the gradually forming transitive construction they had heard with many of their other verbs. Bates' commentary provides further support for a competition based, emergentist perspective that in my review was used implicitly as a developmental model to complement the focus on constructions.

Levy points out correctly, however, that children's earliest sentence-level constructions are not totally concrete. An example is that nominal slots are abstract and children can fill them with virtually any nominal in their vocabulary regardless of whether they have heard that nominal in that slot (Tomasello & Olguin, 1993). But this is not true of verbs. Teach 22-month-old children a novel nominal and they use it in all kinds of pre-existing constructions; teach them a novel verb and they mostly do not know what to do with it (Tomasello, Akhtar, Dodson & Rekau, 1997). This points us to one of the most interesting and important developmental findings from a construction grammar perspective, namely, that what is concrete in early development is not the nominals but the relational structure of the construction as a whole. At the level of constructions children's language is initially concrete and lexically based, only later becoming more abstract and category based. This growing abstractness leads to argument structure overgeneralizations such as the famous *Don't giggle me* (Bowerman, 1982), which are later constrained by a number of factors that we are only now beginning to identify, for example, semantic subclasses of verbs (Pinker, 1989), pre-emption of overgeneralizations by alternative forms (Brooks & Tomasello, 1998), and the entrenchment of particular verbs in particular constructions through repeated use (Brooks, Tomasello, Lewis & Dodson, 1998). Levy rightly questions whether all constructions undergo a U-shaped development such as this. We do not know the answer to this question, so I will only say for now that the English transitive construction almost certainly does undergo such a developmental course, and my hypothesis is that the other major argument structure constructions do as well.

Schlesinger stresses in his commentary that children may not be learning large patterns such as constructions, but rather only words and the relations between them (Levy also questions the existence of early sentence-level constructions). Schlesinger shows that this approach can also take us from concrete and small linguistic units such as words to larger and more abstract

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linguistic units such as syntactic categories and constructions (presumably by something like the process of semantic assimilation; Schlesinger, 1988). Since there is agreement that children's earliest language is concrete, the question is whether the units children are learning in their sentence-level productions are indeed sentence-level constructions. My own view is that the kinds of phenomena Peters (1983) and Pine & Lieven (1993) have pointed out in very early development – involving children's early use of sentence-level intonation contours and the acquisition of frozen phrases – are one line of supporting evidence. Also relevant is the fact that one can teach English-speaking 3·5-year-olds a novel verb as a single word and they will then produce in the appropriate circumstance such things as *He is meeking the cow* (Akhtar & Tomasello, 1997) – which seems to be fairly strong evidence for children possessing some kind of abstract transitive construction, albeit at a slightly older age.

Problems and prospects

I certainly do not wish to imply that the issue is settled. What I do wish to suggest is that if we think of linguistic constructions as units that are psychologically real – and perhaps even psychologically primary – we are led to look at language acquisition in some new ways and to ask some new and, I believe, extremely interesting questions. Moreover, these questions may be posed in something like the same way as they are posed for other areas of language acquisition, most especially word learning. For those of us who cannot make ourselves believe that in the short amount of evolutionary time that *Homo sapiens* has been a distinct primate species Nature has confabulated a complex formal template – containing many highly specific parametric variations that structure all of the many and diverse languages of the world – this is a very liberating prospect.

Some of the very serious problems that still need to be worked out in this approach are: (i) the role of event cognition in the acquisition of constructions (Behrend; although I disagree with his analysis of the current empirical situation; see Mandler, 1992); (ii) how the child's understanding of events and communicative intentions relates to the structure of the adult constructions she is hearing and learning (Budwig); (ii) how to characterize and label the different types of constructions, such as lexically based versus more abstract constructions, as development proceeds (Behrens); (iv) how to characterize different types of constructions in different languages (Clark, Berman, Bavin); (v) how to characterize, in adult-like competence, abstract and construction-general grammatical relations without resorting to *ad hoc* principles (Croft); and (vi) how to characterize those aspects of language development that depend less directly on children learning linguistic forms for clear-cut communicative functions (Levy). Nevertheless, the possibility that we might successfully integrate children's syntactic development with

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other areas of their language and cognitive development is a prospect so exciting that, I believe, we owe it to ourselves to give it a try. Goldberg's penetrating and wide-ranging theoretical analysis of adult linguistic competence in terms of argument structure constructions has given us a very powerful additional tool with which to pursue this goal.

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